CERCLA 108(b) FINANCIAL RESPONSIBILITY FORMULA FOR HARDROCK MINING FACILITIES

BACKGROUND DOCUMENT

September 19, 2016

PEER REVIEW DRAFT

U.S. Environmental Protection Agency

Office of Land and Emergency Management

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APPENDICES

Acronyms

ABA	-	Acid Base Accounting
ADEQ	-	Arizona Department of Environmental Quality
APPs	-	Aquifer Protection Permits
ARARs	-	Applicable or Relevant and Appropriate Requirements
ASMI	-	Arizona State Mine Inspector
ATSDR	-	Agency for Toxic Substances and Disease Registry
AWQC	-	Ambient Water Quality Criteria
BLM	-	Bureau of Land Management
CCR	-	Coal Combustion Residuals
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	-	Comprehensive Environmental Response, Compensation, and Liability Information System
CESQGs	-	Conditionally Exempt Small Quantity Generators
COCs	-	Constituents of Concern
CWA	-	Clean Water Act
DNR	-	Department of Natural Resources
EA	-	Environmental Assessment
EAWs	-	Environmental Assessment Workshops
EECA	-	Engineering Evaluation/Cost Analysis
EIS	-	Environmental Impact Statement
ENR	-	Engineering News Record
EPA	-	Environmental Protection Agency
ESDs	-	Explanations of Significant Differences
FR	-	Financial Responsibility
GAO	-	Government Accountability Office
GARD	-	Global Acid Rock Drainage
GDP	-	Gross Domestic Product
GPM	-	Gallons per Minute
HA	-	Health Consultation
HDLE	-	Heap Leach Draindown Estimator
HMF	-	Hardrock Mining Facility
HRS	-	Hazard Ranking System
IDL	-	Idaho Dept. of Lands
IFMS	-	Integrated Financial Management System
Kg	-	Kilograms
MCLs	-	Maximum Contaminant Levels
MCSs	-	Mineral Commodity Summaries
MDRS	-	Mine Data Retrieval System
MEND	-	Mine Environment Neutral Drainage
MMD	-	Minerals, and Natural Resources Dept., Mining and Minerals Division
MN DNR	-	Minnesota Dept. of Natural Resources
MSHA	-	U.S. Mine Safety and Health Administration

MWMP	-	Meteoric Water Mobility Procedure
NCP	-	National Contingency Plan
NDEP	-	Nevada Division of Environmental Protection
NFRAP	-	No Further Remedial Action Planned
NNP	-	Net Neutralization Potential
NPDES	-	National Discharge Elimination System
NPL	-	National Priorities List
NRC	-	U.S. Nuclear Regulatory Commission
NRD	-	Natural Resource Damages
OCs	-	Oversight Costs
OECA	-	Office of Enforcement and Compliance Assurance
OIG	-	EPA Office of Inspector General
OLS	-	Ordinary Least Squares
O&M	-	Operation and Maintenance
OMB	-	Office of Management and Budget
OMR	-	California Office of Mine Reclamation
OSWER	-	EPA's Office of Solid Waste and Emergency Response
PAG	-	Potential Acid Generation
PA/SI	-	Preliminary Assessment/Site Inspection
PRPs	-	Potentially Responsible Parties
RAs	-	Remedial Actions
RAOs	-	Remedial Action Objectives
RCPs	-	Reclamation and Closure Plans
RCRA	-	Resource Conservation and Recovery Act
RD/RA	-	Remedial Design/Remedial Action
RI/FS	-	Remedial Investigation/Feasibility Study
ROD	-	Record of Decision
SA	-	Superfund Alternative
SAA	-	Superfund Alternative Actions
SARA	-	Superfund Amendments and Reauthorization Act of 1986
SDWA	-	Safe Drinking Water Act
SFFAS	-	Statement of Federal Financial Accounting Standards
SPLP	-	Synthetic Precipitation Leaching Procedure
SQGs	-	Small Quantity Generators
SRCE	-	Standardized Reclamation Cost Estimator
TSDFs	-	Treatment, Storage, and disposal Facilities
U.S.	-	United States
USACE	-	Army Corps of Engineers
USGS	-	U.S. Geological Survey

Executive Summary

EPA developed the Hardrock Mining Financial Responsibility Formula for owners and operators to use to calculate the amount of financial responsibility that would be required under this proposed rule. CERCLA § 107 defines the scope of liability under the Act for potentially responsible parties to include response costs, natural resource damages, and health assessment costs. Therefore, EPA considered how to develop an amount of financial responsibility that reflected an amount of funds that might be required in the event of a release from a regulated facility. To do so, EPA separately developed three formula components to estimate financial responsibility for:

(1) Response costs,
(2) Natural resource damages, and
(3) Health assessment costs.

These components make up the proposed formula. In order to produce these formula components, EPA collected and analyzed data on both the total funds expended at CERCLA sites and the types of goods and services on which those funds were spent. Total funds expended were used to estimate both the health assessment component and the natural resource damage component, while the types of goods and services were used to estimate the response component. For each, this executive summary discusses EPA's data collection efforts, how the Agency developed FR amounts from that data, and how it developed the resulting Formula components.

ES-1 Response Component

EPA collected information on response costs from national priorities list (NPL) and non-NPL CERCLA hardrock mining facilities (HMFs). This data consisted of records of decision (RODs), settlements, actual expenditures to date by EPA, and estimated expenditures for present and future work by potentially responsible parties. EPA used these data to generate a best estimate of total response costs at these hardrock mining facilities. EPA was able to collect this information for 319 sites.

In addition to the total response cost data, EPA also collected data on specific activities conducted at 438 operable units at 88 NPL or Superfund alternative hardrock mining sites. From this data on activities themselves, EPA could link specific site features to releases or threatened releases of hazardous substances, and to remedies that incurred response costs. EPA found that 13 site features (soils and tailings were the most common) served as the source of release that resulted in remedies within the following 12 categories: (1) on-site disposal (excavation, capping, covering, revegetation); (2) off-site disposal; (3) engineering and/or containment (other); (4) surface water diversion; (5) water treatment (other); (6) water treatment (lime addition); (7) no action; (8) alternative drinking water; (9) sediment dredging/disposal; (10) monitoring (all media and as separate remedy); (11) monitored natural attenuation/recovery; and (12) deconstruction/decontamination of buildings.

(a) Linking Response Categories to Current Cost Estimates

EPA's prior experience with CERCLA cleanups leads it to expect that similar types of remedies will continue to be selected for mining sites in the future. EPA also expects that for 11 of the 12 remedy categories described above (the exception being "no action"), the magnitude of that cost will differ with changing site characteristics. For example, the expected costs of constructing a cap over a unit to prevent water infiltration can be expected to increase with the acreage of that cap. Thus, in order to produce more accurate estimations of costs at a particular facility, it is necessary to consider both specific response costs and specific response activities. However, EPA generally found that the response cost data discussed above were available in the form of payments or total expenditures. Since these payments or expenditures were aggregated across various activities, they could not be separated into more specific cost amounts (e.g., the cost to construct a particular cap on a particular tailings impoundment).

Given the above difficulty, EPA considered how to estimate the expected costs associated with these particular activities. EPA searched for existing, publicly available engineering cost estimates that contained costs specific to these activities. EPA found that such engineering cost data was readily available from cost estimates developed for state and federal mining reclamation and closure plans, and associated documents. These engineering cost data were available for currently operating facilities potentially regulated under the proposed rule, and represented similar site features (e.g., tailings facilities, open pits) as facilities for which prior response actions were taken. Thus, these data reflect recent engineering cost values appropriate for EPA's statistical analysis.

In order to monetize the expected costs of the twelve categories of remedy listed above, EPA linked the majority of those categories to similar tasks identified in the current engineering cost data. The remaining three types of CERCLA remedies, "No action," "Alternative drinking water," and "Monitored natural attenuation" cannot be shown to be nationally protective. The appropriateness of those response actions can only be determined on a site-specific basis using site-specific investigation and decision-making. Therefore, EPA excluded these actions from the initial list of 12 response categories.

Also excluded was "Sediment dredging/disposal." Although this element has appeared historically as a response category, EPA notes that it was already incorporated in the natural resource damages (NRD) component. For example, the final restoration plan for the Upper Arkansas River/California Gulch Superfund site (one of the data points used in developing the NRD multiplier) includes dredging of contaminated soils as a restoration alternative.[1] Thus, EPA believes that since this cost is already represented in the NRD multiplier, it is inappropriate to duplicate that cost in the response component of the formula.

"On-site disposal (excavation, capping, covering, revegetation)" and "Engineering/containment (other)" were linked to engineering cost estimates categorized as backfill, portal closure,

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[1] Stratus Consulting Inc. (2010). Restoration Plan and Environmental Assessment for the Upper Arkansas River Watershed. Accessed at: http://www.fws.gov/mountain-prairie/nrda/leadvillecolo/californiagulch.htm

earthwork, revegetation, feature-specific stormwater controls, and source controls. These first two remaining categories were further linked to the specific site feature being addressed: open pit, underground mine, waste rock, tailings facility, heap/dump leach, process ponds and reservoirs, and slag piles. Since not all currently operating facilities have all of these site features, this second-level linkage allowed EPA to identify costs for only the features present at a given mine.

"Off-site disposal" and "Deconstruction/decontamination of buildings" were linked to engineering cost estimates categorized as solid waste disposal, hazardous waste disposal, organic solution removal, building decontamination, contaminated soils disposal, and haulage and disposal. "Surface water drainage" was linked to drainage controls. "Water treatment (lime)" and "Water treatment (other)" were linked to engineering cost estimates categorized as site and water management, process fluid stabilization, neutralization, solution disposal, reclamation of well-field and disposal wells, seepage capture, and water treatment. Finally, "Monitoring (all media and as separate remedy)" was linked to engineering cost estimates categorized as groundwater and surface water monitoring, geotechnical stability monitoring, erosion and vegetation monitoring, fish and wildlife monitoring, and other short- and long-term monitoring.

While not specific to any remedy category, multiple remedies' operations and maintenance activities were linked to the reclamation and closure plan tasks of road maintenance, stormwater repairs, revegetation repairs, reclamation of monitoring and pumpback wells, well maintenance, evaporation pond maintenance, and stormwater, erosion, and vegetation maintenance. Additionally, all remedies were linked to reclamation and closure plan tasks necessary to conduct direct engineering work including mobilization/demobilization, engineering design/redesign, contingency, contractor profit and overhead, contractor liability insurance, payment and performance bonds, agency direct costs, and agency indirect costs.

(b) Response Component Data Collection

EPA sought through its engineering cost estimate data collection effort to accumulate as much recent, high quality cost information for currently-operating hardrock mining facilities as possible and represent the range of states and commodities produced. EPA obtained and sorted data from the Mining Safety and Health Administration (MSHA) and the U.S. Geological Survey (USGS) to generate a combined list of 354 facilities. To derive this group of 354, EPA identified facilities that would correspond to the scope of the proposed rule. Thus, EPA excluded from the combined MSHA/USGS data set, those facilities that were not identified in the 2009 Priority Notice,[2] as well as closed or abandoned facilities. Therefore, the data set consisted of active, intermittent, or temporarily idled mining or mineral processing facilities. Comprehensive lists of all data sources are available in **Appendices A** through **M** of this document.

EPA obtained a sample of 63 facilities' reclamation and closure plan engineering cost data. This 63 facility subset was representative of the frequency of states and commodities identified in the

[2] "Identification of Priority Classes of Facilities for Development of CERCLA Section 108(b) Financial Responsibility Requirements." 74 F R 37213, July 28, 2009.

full universe of 354 potentially regulated mines. Thus, EPA expected it would be representative of the larger group of facilities. This dataset included costs as well as related inputs that drive these costs components. For example, acreage is an input of the Standardized Reclamation Cost Estimator model used to conduct several of the collected engineering cost estimates. One of the highest-dollar response categories, water treatment, also presented one of the smallest cost sample sizes with only 15 facilities represented. As a result, EPA supplemented the closure plan cost data on water treatment costs with data from the three CERCLA sites contained in EPA's CERCLA site data set, for which water treatment cost data were readily available, and could be disaggregated from the sites' full costs.

EPA subject-matter experts believed that other variables could explain the differences between higher and lower costs at sites based on their professional experience. First, these experts believed that water-related factors such as distance to groundwater or surface water, as well as net precipitation could influence the costs estimated for a site. Second, these experts believed that the process methods used could influence costs necessary for a site. These data are not included in the reclamation plan data collected above. Therefore, EPA located and collected them from Environmental Impact Statements or other publicly available documents. Water-balance-related data that were available in these public documents included precipitation, evaporation, distance to surface water, and depth to groundwater. In addition to water-balance-related data, EPA collected data related to process methods for the four leaching processes identified at the 63 sites in EPA's data set. These process method data included the use of floatation, cyanide, acid, and in-situ leaching processes. For more details about the data collected, see **Section 4** of this document.

(c) Response Component Regression Analysis

EPA performed statistical analysis on the engineering cost data collected above, for each response category. The purpose of this statistical analysis was to establish a numerical relationship between a limited number of a facility's site-specific characteristics and the resulting associated reclamation and closure plan costs. Once this relationship was established, it could be used to generate a sub-formula that results in an expected financial responsibility amount for each response category, on a nation-wide basis.

A number of site-specific engineering-based models generated the detailed engineering cost estimates collected by EPA. However, certain parameters appeared to be central to the workings of those calculations. For instance, capital costs appeared to be affected by the relevant acreage that these costs were applied. While EPA did not know the exact suite of variables that might be relevant for any particular response category, some variables were much more likely to be statistically significant based on the use of these variables in reclamation and closure plan cost estimates. As a result, EPA chose to conduct a bidirectional elimination stepwise regression that started with variables believed to be most significant and test the addition or deletion of individual variables. Further details of the regression methodology are available in **Section 5** of this document. The results of the 12 stepwise regressions are presented in **Table ES-1** below.

Table ES-1. Stepwise Regression Results

Fitted Regression[1]
$OpenPit = 5.07 \times 10^{2.88+1.08\times LogAcres_{OpenPit}+1.36\times SourceControl_{OpenPit}}$
$WasteRock = 1.85 \times 10^{4.45+0.75\times LogAcres_{WasteRock}+0.73\times SourceControl_{WasteRock}}$
$HeapDumpLeach = 2.29 \times 10^{3.87+1.01\times LogAcres_{HeapDumpLeach}+0.70\times SourceControl_{HeapDumpLeach}}$
$TailingsFacility = 1.71 \times 10^{4.73+0.68\times LogAcres_{Tailings}+0.59\times SourceControl_{Tailings}}$
$ProcessPondReservoir = 1.6410^{4.29+1.03\times LogAcres_{ProcessPondReservoir}}$
$UndergroundMine = 2.23 \times 10^{4.96+1.35\times HydraulicHead}$
$Drainage = 9.56 \times 10^{3.42+0.57\times LogAcres_{Total+1}}$
$SolidHazardousWasteDisposal = \$2{,}600{,}000$
$SlagPile = \$64{,}000 \times Acres_{SlagPile}$
$ShortTermO\&MMonitoring = 1.82 \times 10^{4.01+0.38\times LogAcres_{Total+1}}$
$LongTermO\&MMonitoring = 1.64 \times 10^{3.12+0.58\times LogAcres_{Total+1}}$
$InterimO\&M = 1.46 \times 10^{6.04+0.01\times NetPrecipitation+0.34\times LogAcres_{HeapDumpLeach+1}+0.10\times LogAcres_{WetTailings+1}}$
$WaterTreatment = 1.16 \times 10^{2.16+1.10\times LogFlow+1.06\times Treat+0.70\times InSituLeach}$

[1] SolidHazardousWasteDisposal and SlagPile receive a fixed value and are not in log format

These results generally confirmed the significance of the variables EPA expected to be predictive. EPA performed an additional 88 robustness tests to demonstrate that the regressions selected by the stepwise regression process were the best fit possible for the data. Slag piles were represented by only one cost data point, and therefore were included as a fixed cost of $64,000 per acre based on that data point.

EPA also calculated overhead and oversight costs (OCs) as a percent of direct engineering costs rather than through regressions on site-specific characteristics. However, not every facility calculated or reported every category of OCs. Thus, to avoid biasing any of the OC estimates low, EPA calculated each OC separately, and used only data from facilities which had calculated that OC cost. EPA estimated each OC category at each facility as a percent of engineering costs. This was done by dividing the OC in question at a facility by that facility's total direct engineering costs. Once all facility-specific OC percentages were calculated, EPA averaged these OC percentages for each category. These average OC percentages are reported in **Table ES-2** below.

Table ES-2. Average Overhead and Oversight Costs

OC Category	HMFs Reporting	Average % of Engineering Costs
Mobilization/Demobilization	46	2.83%
Engineering Design and Redesign	45	4.76%
Contingency	59	11.82%
Contractor Profit and Overhead	48	12.95%
Contractor Liability Insurance	32	0.77%
Payment and Performance Bonds	34	2.65%
Subtotal (Overhead Costs)		***35.78%***
Agency Direct Costs	54	8.88%
Agency Indirect Costs	N/A	Region-Specific[1]

[1] EPA indirect rates are presented in **Table 3-8** of this document by region.

(d) Converting O&M Costs into a Net Present Value

Four of the response cost categories - interim O&M, water treatment, short-term O&M, and long-term O&M - represent the expected costs for activities over time. Thus, the regression equations for represent annualized amounts. These annualized amounts must further be converted into a single net present value, so that they can be included as part of the final formula, which represents a facility's total FR amount. EPA converted to net present value using the same equation as that presented in U.S. EPA (2001).[3]

[3] U.S. EPA (Environmental Protection Agency). 2001. *Groundwater Pump and Treat Systems: Summary of Selected Cost and Performance Information at Superfund-financed Sites*. EPA 542-R-01-021a. OSWER. Washington, DC 20460. December. Available online at: http://www.epa.gov/superfund/cleanup/postconstruction/p1report.pdf

EPA used an O&M period of ten years for converting both the short-term O&M and interim O&M costs into a net present value. This period has been discussed and used in guidance documents such as U.S. EPA and USACE (2000).[4] O&M after ten years could prove to be unnecessary, or continue indefinitely. The cost estimation formula uses a perpetual period of O&M for both water treatment and long-term O&M. EPA considered using a period of 30 years similar to the default long-term O&M period of 30 years historically used by EPA for purposes of cost estimation in the absence of detailed estimates of project duration (U.S. EPA, 1988).[5] However, more recent guidance relies less heavily on this default period and more heavily on the actual project duration of each alternative considered in the RI/FS process (U.S. EPA and USACE, 2000).

In addition, EPA's CERCLA data from HMFs indicates that perpetual O&M expenditures are common. Specifically, in U.S. EPA (2004)[6] EPA's Office of Inspector General collected survey responses from regional experts regarding expected long-term O&M durations at 156 HMFs. The median response from that survey was that long-term O&M at HRMFs would continue into perpetuity. Therefore, the cost estimation formula uses a perpetual period of O&M for both water treatment and long-term O&M.

Finally, annualized O&M costs are converted to a net present value based on the 10-year short-term and perpetual long-term time horizons seen in the CERCLA cost data using the rate of return of the Superfund. Analysis of these real rates of return from the Superfund yielded a geometric mean of 2.63%. This approach is also consistent with recent EPA guidance on O&M cost estimation processes in the separate context of CERCLA settlement agreements and unilateral orders (U.S. EPA, 2015)[7] which recommends using a discount rate representative of real investment returns.

(e) State-Specific Adjustment Factors

EPA calculated the national OC percentages presented in **Table ES-2**. On average, the sub-total of overhead costs was found to be 35.78 percent of direct engineering costs. However, a similar sub-total of oversight cost percentages was not estimated due to the region-specific nature of agency indirect costs. To calculate these percentages, region-specific indirect cost rates are multiplied by the national average agency direct cost percentage to estimate the agency indirect

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[4] U.S. EPA (Environmental Protection Agency) and USACE (Army Corps of Engineers). 2000. *A Guide to Developing and Documenting Cost Estimates during the Feasibility Study*. EPA 540-R-00-002. OSWER. Washington, DC 20460. July. Available online at: www.epa.gov/superfund/policy/remedy/pdfs/finaldoc.pdf

[5] U.S. EPA (Environmental Protection Agency). 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (Interim Final). EPA/540/G-89/004. OSWER. Washington, DC 20460. October. Available online at: www.epa.gov/superfund/policy/remedy/pdfs/540g-89004-s.pdf

[6] U.S. EPA (Environmental Protection Agency). 2004. Nationwide Identification of Hardrock Mining Sites. Report No. 2004-P-00005. OIG. Washington, DC. 20460. March. Available online at: https://www.epa.gov/sites/production/files/2015-12/documents/20040331-2004-p-00005.pdf

[7] U.S. EPA (Environmental Protection Agency). 2015. Guidance on Financial Assurance in Superfund Settlement Agreements and Unilateral Administrative Orders. OECA. Washington, DC 20460. April 6. Available online at : https://www.epa.gov/sites/production/files/2015-04/documents/fa-guide-2015.pdf

costs as a percentage of direct engineering costs. Adding agency direct cost percentage to the region-specific indirect cost percentages yields region-specific agency cost percentages. Total non-construction costs are estimated by adding the 35.78 percent overhead cost percentage sub-total to the region-specific total agency cost percentages. Using this approach, EPA calculated 10 region-specific OC percentages to be applied to the direct engineering costs estimated in the formula response components above.

Furthermore, the relationships estimated above represent only a generic, nationwide engineering cost of a CERCLA response because the response category regressions above were estimated using reclamation and closure plan cost data that had been normalized to national values. While this was necessary to perform regression analysis and develop a nationwide formula, the same labor and materials can have different prices in different locations. Hence, the resulting estimates in the sections above would immediately be inaccurate for any given state. To adjust for these locality differences in prices, the response cost formula is multiplied by the most current state cost adjustment factors in USACE (2015).

ES-2 Natural Resource Damage Component

EPA collected data on both natural resource damages and natural resource damage assessment costs at hardrock mining sites from CERCLA court settlements and judgments, and voluntary payments. This effort resulted in data on 64 sites. EPA's data indicate that natural resource damages and response costs are not independent of each other. Instead, response actions have regularly been shown to influence natural resource damages. This is particularly true in the case of sites receiving technical impracticability (TI) waivers. When a TI waiver is issued, previously projected response costs may be reduced. However, the remaining contamination may lead to additional natural resource damages.

One example summarized in U.S. EPA (2012)[8] is the TI waiver at the Silver Bow Creek/Butte Area. At that site, an EPA evaluation concluded that the water quality in an affected alluvial aquifer could not be improved within a reasonable time frame even assuming the most extensive and costly alternatives. Thus, EPA issued a TI decision that waived cleanup levels for several constituents in that aquifer. However, when such an aquifer is left contaminated, trustees may seek NRD for that aquifer. In the case of the Silver Bow Creek/Butte Area, this same

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[8] U.S. EPA (Environmental Protection Agency). 2012. *Summary of Technical Impracticability Waivers at National Priorities List Sites*. OSWER Directive 9230.2-24. August. Available online at: https://nepis.epa.gov/Exe/ZyNET.exe/P100EYIC.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2011+Thru+2015&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C11thru15%5CTxt%5C00000005%5CP100EYIC.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL

groundwater appeared in the trustees' final restoration plan.[9] So while the TI waiver reduced response costs, it increased the natural resource damages. Thus, while the proportion of total liabilities relating to response costs and NRD was altered, the overall magnitude was similar.

EPA notes that although the extent of response actions ultimately necessary as a result of a release may affect the relative portion of how much NRD may be in comparison with damages, the total magnitude of potential liabilities (response costs and natural resource damages combined) will increase or decrease together. This is effectively captured by a multiplier. Thus, EPA uses a similar approach here as to U.S. EPA (2014)[10] where the Agency estimated natural resource damages as a percent of cleanup costs where both future cleanup costs and future natural resource damages were uncertain. This average percent was used as a multiplier for the purposes of estimating natural resource damages once potential future response costs were estimated. As with that previous study, the natural resource damages and response costs are uncertain, but EPA found that a similar relationship between damages and costs was presented.

Within this dataset, EPA had both natural resource damages and total response costs from **ES-1** above for 24 sites. From this subset of 24, EPA divided the average natural resource damages by the average response costs to generate a hardrock mining-specific natural resource damages multiplier. This resulted in natural resource damages and natural resource damage assessment costs of 13.4 percent of the response costs to account for natural resource damages and assessment costs. Thus, EPA included a multiplier of 1.134 in the cost formula for the natural resource damage component.

ES-3 Health Assessment Component

Under 42 CFR 90.14, by the Agency for Toxic Substances and Disease Registry (ATSDR) is required to maintain documentation pertaining to the costs associated with all phases of a Public Health Assessment or a Health Consultation (HA) performed by the Agency to form the basis for cost recovery by EPA.[11] . Upon EPA's request, ATSDR provided cost information for recently completed health assessments. ATSDR limited the data provided to the minimum, maximum, and average costs of health assessments conducted over the past 18 months (as of March 2016). ATSDR did not provide hardrock mining-specific data, and thus non-mining health assessment costs are included in this dataset.

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[9] Butte Natural Resource Damage Restoration Council (BNRC) and Montana Natural Resource Damage Program (NRDP). 2012. Butte Area One: Final Restoration Plan. December. Available online at: https://dojmt.gov/wp-content/uploads/Final-BAO-Restoration-Plan.pdf

[10] U.S. EPA (Environmental Protection Agency). 2014. Regulatory Impact Analysis (RIA) for EPA's 2015 Coal Combustion Residuals (CCR) Final Rule. OSWER. Washington, DC. December. Available online at: www.regulations.gov Document ID#: EPA-HQ-RCRA-2009-0640-12034

[11] 42 CFR § 90.14 Documentation and cost recovery: (a) During all phases of ATSDR health assessments and health effects studies, documentation shall be completed and maintained to form the basis for cost recovery, as specified in section 107 of CERCLA; (b) Where appropriate, the information and reports compiled by ATSDR pertaining to costs shall be forwarded to the appropriate EPA regional office for cost recovery purposes.

Based on the information available to it, EPA adopted a fixed amount of $550,000 representing the average health assessment cost reported by ATSDR as the health assessment component of the proposed formula. Health assessments often make use of EPA-collected data. Because this approach avoids potentially costly data collection activities, a relatively low amount of $550,000 is not unexpected for an average cost. Furthermore, EPA expects future health assessments to generally be consistent with this amount since ATSDR has experience performing the same types of reports routinely. Finally, EPA notes that this average health assessment cost reported by ATSDR is consistent with additional second-hand sources of estimates that EPA presents in **Section 7** of this document.

ES-4 Hardrock Mining Financial Responsibility Formula

EPA's proposed rule requires that a facility's financial responsibility amount be adjusted for inflation to preserve the real value of the financial responsibility. This inflation adjustment must be made to the entire FR amount as calculated in 2014 dollars. The proposed rule uses an inflation factor derived from the most recent Implicit Price Deflator for Gross Domestic Product (GDP) published by the U.S. Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for 2014. EPA selected the Implicit Price Deflator for the GDP as that has become the Department of Commerce's favored basis for the Implicit Price Deflators a representation of national output. Furthermore, the data is readily accessible from the Department of Commerce's Bureau of Economic Analysis providing for transparent implementation.[12]

Additionally, in the absence of a site-specific remedial investigation/feasibility study (RI/FS) or ROD, EPA cannot categorically determine that source controls and water treatment activities would not be necessary to minimize the volume, toxicity, or mobility of hazardous substances. Therefore, as a conservative assumption to help ensure the adequacy of the amount of financial responsibility should source controls and water treatment prove necessary, EPA assumes that both will be used, and sets the variables $SourceControl_{OpenPit}$, $SourceControl_{WasteRock}$, $SourceControl_{HeapDumpLeach}$, $SourceControl_{Tailings}$, and *Treat* equal to one for all HMFs calculating 108(b) FR amounts.

Furthermore, the cost equation for water treatment requires the input of gallon per minute flows that require treatment. However, as discussed above, EPA calculates the potential costs associated with the use of source control covers for many site features. Albright (2015)[13] provides results of EPA's *Alternative Cover Assessment Program* (ACAP). These results indicate that such controls in place will necessarily reduce the amounts of seepage that may require capture and treatment prior to discharge. Thus, EPA expects that source controls would have the effect of reducing the expected volumes of water requiring treatment. The average infiltration for the ACAP data set was 5% of precipitation. As a result of these considerations,

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[12] See Table 1.1.9, Implicit Price Deflators for Gross Domestic Product. Available online at: http://www.bea.gov/iTable/iTableHtml.cfm?reqid=9&step=3&isuri=1&903=13

[13] Albright, William. 2015. *Final Covers for Mine Tailings*. Desert Research Institute Clu-In Seminar. Available online at: https://clu-in.org/conf/tio/mining_052015/slides/Albright_Day_Two.pdf

EPA has adopted the presumption of 95% effectiveness for source control covers, resulting in a residual 5% infiltration based on gross precipitation.

For a hypothetical facility with a single site feature of each type (*e.g.*, a single heap leach), EPA expanded the equations above into **Equation ES-1** below. This equation utilizes the formula components estimated above, the future inflation factor, the assumption of source controls, the assumption of water treatment, the calculation of flows, the use of ten years for short term O&M costs, the expectation of long-term O&M costs into perpetuity, and the calculated real Superfund rate of return of 2.63%.

Equation ES-1 Facility-wide Financial Responsibility in 2014 Dollars

$$
\begin{aligned}
&TotalFinancialResponsibility_y = \frac{Deflator_y}{Deflator_{2014}} \times \Bigg(\Bigg[\$2{,}600{,}000 + 5.07 \times \\
&10^{(4.24+1.08\times LogAcres_{OpenPit})} + 2.23 \times 10^{(4.96+1.35\times HydraulicHead)} + 1.85 \times \\
&10^{(5.18+0.75\times LogAcres_{WasteRock})} + 2.29 \times 10^{(4.57+1.01\times LogAcres_{HeapDumpLeach})} + 1.71 \times \\
&10^{(5.32+0.68\times LogAcres_{Tailings})} + 1.64 \times 10^{(4.29+1.03\times lLogAcres_{ProcessPondReservoir}} + \\
&9.56 \times 10^{(3.42+0.57\times LogAcres_{Total+1})} + \$64{,}000 \times Acres_{SlagPile} + \\
&\sum_{t=1}^{10} \frac{1.46\times 10^{(6.04+0.01\times NetPrecipitation+0.34\times LogAcres_{HeapDumpLeach+1}+0.10\times LogAcres_{WetTailings+1})}}{(1.0263)^{t-1}} + \\
&\frac{1.16\times 10^{(3.22+1.10\times Log\left[Flow_{Underground}+Flow_{InSituLeach}+\sum_{f=1}^{k}\left\{0.05\times Precipitation\times Acres_f\times 0.05166\right\}\right]+0.70\times InSituLeach)}}{0.0263} + \\
&\sum_{t=1}^{10} \frac{1.82\times 10^{(4.01+0.38\times LogAcres_{Total+1})}}{(1.0263)^{t-1}} + \frac{1.64\times 10^{(3.12+0.58\times LogAcres_{Total+1})}}{0.0263}\Bigg] \times [1 + \\
&OverheadOversight_r] \times StateAdjustmentFactor_s \times 1.134 + \$550{,}000\Bigg)
\end{aligned}
$$

<u>Where:</u>

y	= year *y* when the financial responsibility is calculated (e.g., 2022);
t	= time period *t* of the 10-year O&M period (e.g., year 4 of 10);
f	= the f^{th} site feature;
k	= the total number of site features present;
$Acres_f$	= acreage of site feature *f*;
r	= EPA region *r* (e.g., EPA Region 3); and
s	= state *s* (e.g., Montana).

1 Introduction and Background

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) is a United States (U.S.) federal law designed to support the cleanup of sites contaminated with hazardous substances. Under CERCLA section 107, responsible parties are liable for:

- All costs of removal or remedial action incurred by the federal or state government, or an Indian tribe not inconsistent with the national contingency plan (NCP);
- Any other necessary costs of response incurred by any other person consistent with the NCP;
- Damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss; and
- The costs of any health assessment or health effects study carried out under section 9604(i) of CERCLA.

EPA developed the Hardrock Mining Financial Responsibility Formula for owners and operators to use to calculate the amount of financial responsibility (FR) that would be required under this proposed rule. EPA is proposing to make the instruments available for all types of CERCLA liabilities enumerated in CERCLA § 107. In developing the cost formula, EPA sought to take into account the same three categories of costs (response costs, natural resource damages, and health assessment costs) that may be incurred by owners and operators of facilities subject to the rule. EPA considered how to develop an amount of financial responsibility that reflected a national, Class 5 estimate[14] of funds that might be required in the event of a release from a regulated facility. To do so, EPA separately developed three formula components to estimate financial responsibility for:

(1) Response costs,
(2) Natural resource damages (NRD), and
(3) Health assessment (HA) costs.

These components make up the final formula.

In CERCLA 108(b)(2), Congress directs EPA to initially establish the level of FR based on "the payment experience of the Fund, commercial insurers, courts settlements and judgments, and voluntary claims satisfaction…" EPA thus collected information in these categories as summarized in **Table 1-1** below. Furthermore, where such data on monetary transactions is collected, EPA adjusts all estimates to 2014 dollars using the Gross Domestic Product (GDP) deflator.[15]

[14] AACE International. 2004. Project and Cost Engineers' Handbook (Fourth Edition). Humphreys, K.

[15] U.S. Department of Commerce, Bureau of Economic Analysis. Table 1.1.9. Implicit Price Deflators for Gross Domestic Product. Available at: http://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1#reqid=9&step=3&isuri=1&903=13

Table 1-1. Categories of Information Listed in CERCLA 108(b)(2) and Information Collected

Category	Information Collected
The Fund (*i.e.*, Superfund Trust Fund)	• Fund payment or reimbursement for response costs of removal or remedial actions • Fund payment or reimbursement for NRD • Fund payment or reimbursement for HA costs • Activities paid for by the above
Commercial Insurers	• Section 107 costs recovered against commercial insurers of potentially responsible parties (PRPs) • Activities paid for by the above
Court Settlements and Judgments	• Court settlements between EPA and PRPs for response costs paid into special accounts to fund removal or remedial actions • Court settlements between trustees and PRPs for NRD and NRD assessments (NRDAs) • Joint court settlements of section 107 liabilities between EPA, trustees, and PRPs • Court judgments awarding recovery for costs of section 107 liabilities • Activities paid for by the above
Voluntary Claims Satisfaction	• Response actions performed by a PRP under an administrative order issued by EPA • Superfund alternative (SA) actions • Voluntary NRD satisfaction by a PRP • Good Samaritan cleanup activities • Activities paid for by the above

While EPA has sorted the categories of information in the table above for illustration purposes, it notes that many can be considered under multiple categories. For example, EPA responses funded from the Superfund, and subsequently recovered through a court settlement, may qualify as both "payment experience of the Fund" and "payment experience of […] court settlements and judgments."

EPA gathered information not only on the total amount of funds expended, but also on the types of goods and services on which those funds were spent. For example, EPA gathered information on the fact that a potentially responsible party settled with EPA for a specific dollar amount. In addition, EPA recognized that specific amount would necessarily have been obtained to pay for the specific response activities (*e.g.*, treating contaminated groundwater). Thus, the Agency gathered and used data representing both of these types of information. The collection and analysis of this data is discussed further in **Sections 2-7** of this document.

The remainder of this document discusses how each of these components was developed, and is organized into the following Sections:

- **Section 2: Response Component** – This Section lists the data sources that the Agency used to identify response costs and common response activities.
- **Section 3: Response Component Data Collection** – This Section lists the data sources that the Agency used to gather current engineering cost estimates of CERCLA-like response activities, and presents summaries of the relevant data.
- **Section 4: Response Component Regression Analysis** – This Section describes the statistical analysis used to establish a quantitative relationship for each response category, the conversion into a net present value, and other adjustments.
- **Section 5: Natural Resource Damage Component** – This Section lists the data sources that the Agency used to gather natural resource damages, and the development of a multiplier for use within the financial responsibility formula.
- **Section 6: Health Assessment Component** – This Section lists the data source that the Agency used to gather health assessment costs.
- **Section 7: Hardrock Mining Financial Responsibility Formula** – This Section combines the individual formula components into the complete Hardrock Mining Financial Responsibility Formula.

2 Response Component

EPA collected data on the response costs (**Section 2.1**) and categories of response activities (**Section 2.2**) for CERCLA hardrock mining facilities (HMFs). EPA used data available from several sources to compile information about both the extent of response costs incurred, as well as remedy selection and cleanup activities. This section provides a summary of the response activity study universe, discusses the contamination sources and pathways, and summarizes the particular remedies selected and constituents that drove those selections.

2.1 CERCLA Response Costs

To calculate the response costs at CERCLA HMFs, EPA relied on data from three EPA databases and two investigative documents. Specifically, EPA collected and reviewed the data available in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS),[16] the Integrated Financial Management System (IFMS), the Office of Enforcement and Compliance Assurance (OECA) settlements database, U.S. EPA (2004),[17] and U.S. GAO (2010).[18] These data sources are discussed further below.

- *CERCLIS*

  EPA uses CERCLIS to track specific information and activities conducted under the Superfund program for each individual site. Sites identified by EPA due to potential for releasing hazardous substances into the environment are added to the CERCLIS inventory. EPA learns of these sites through notification by the site owner, citizen complaints, state and local government identification, and investigations by EPA programs other than Superfund. Sites in CERCLIS may include sites that are potentially hazardous and require preliminary investigation, as well as final and proposed National Priorities List (NPL) sites.

- *IFMS*

  IFMS is a customized version of Federal Financial System software, which is maintained and modified through contracted services. IFMS supports such core financial management activities as general ledger, budget execution, funds control, accounts payable, disbursements, accounts receivable and collections, travel and project cost accounting, fixed assets, and standard reporting functions. For purposes of this analysis, IFMS contains data on various types of expenditures associated with Superfund sites.

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[16] CERCLIS is available online at: https://www.epa.gov/enviro/cerclis-overview

[17] U.S. EPA (Environmental Protection Agency). 2004. "Nationwide Identification of Hardrock Mining Sites." Report No. 2004-P-00005. OIG. March 31. Available online at: https://www.epa.gov/sites/production/files/2015-12/documents/20040331-2004-p-00005.pdf

[18] U.S. GAO (Government Accountability Office). 2010. "Superfund: EPA's Estimated Costs to Remediate Existing Sites Exceed Current Funding Levels, and More Sites Are Expected to Be Added to the National Priorities List." Report No. GAO-10-380. May. Available online at: http://www.gao.gov/assets/310/304124.pdf

- *OECA Settlements Database*

  The EPA's Office of Enforcement and Compliance Assurance (OECA) develops and supports the OECA settlements database. The database records information about settlements with PRPs, including "cashout" funds accrued and deposits into special accounts associated with settlements at each site.[19] Because settlements can cover the past expenditures at the site and future costs, EPA used these data to supplement the analysis of past and/or future expenditures at each site, as further described below.

- *U.S. EPA (2004)*

  Office of Inspector General (OIG) report contains information on EPA's 2004 inventory of 156 hardrock mining sites. OIG asked regional site managers to provide current individual operable unit information, including information from the Record of Decision (ROD). At the time of the OIG report's development, EPA had issued more than one ROD for some of the 156 hardrock mining sites but had not yet issued an ROD for others. Site managers for 102 of the sites in the database were able to provide cost estimate ranges and current site status for operable units. Furthermore, the estimates were nearly a decade out of date by the time of this data collection. Since the cost data was both outdated and presented in range format rather than best estimates, EPA concluded that the report did not provide sufficiently accurate data to warrant use of the report's cost estimates.

- *U.S. GAO (2010)*

  This GAO report analyzed Superfund program data, surveyed and interviewed EPA officials, and interviewed state officials to determine (1) the cleanup and funding status at currently listed nonfederal NPL sites with unacceptable or unknown human exposure; (2) what is known about EPA's future cleanup costs at nonfederal NPL sites; (3) EPA's process for allocating remedial program funding; and (4) how many NPL sites some state and EPA officials expect to be added in the next five years including their expected cleanup costs. EPA used this data source to validate the response cost estimates, but did not apply these data to the calculations.

From the sources above, CERCLIS/IFMS data were combined into a Microsoft Access file to summarize the Fund expenditures incurred at each site to date. This file includes data on the type of expenditure (broadly speaking, construction versus non-construction) and the source of funds (e.g., special account). It also provides information regarding the number of operable units at each site, type of action, site lead status, the status of the construction activities at the site, and the year of construction completion (if appropriate). A separate Microsoft Access file was compiled for each site's ROD data. These data provide a dollar estimate for each remedial action chosen at a site. **Appendix A** lists all tables and fields within each Microsoft Access file and identifies the tables and fields that were used in the analysis, as well as presents more detailed data processing steps. A link to an FTP site containing these files is provided in the docket.

EPA developed a tailored approach that attempts to characterize the total (*i.e.*, past and future) response costs at each of the 319 NPL and non-NPL CERCLA HMFs. This approach utilizes all available data sources and site characteristics to ensure that the resulting analysis is as

[19] "Cashout" funds represent future costs to be incurred at a Superfund site.

comprehensive as possible. EPA's initial analytic approach relied on the CERCLIS, IFMS, and OECA databases and is simplified below into three alternative equations (**Equations 2-1**, **2-2**, and **2-3**). These equations represent alternative methods for estimating the total response costs at each of the 319 sites. Due to the potential for data gaps in each individual equation, EPA selected the highest calculated value to conservatively estimate response costs.

The goal of each of the alternate equations is to capture a best estimate of total response costs, which include both costs incurred to date, as well as expected future costs, incurred by all parties. In cases where EPA has led cleanup activities, past expenditures may be most accurate due to management of all Superfund expenditures in IFMS. Expenditures by other parties can also be estimated, though indirectly, because EPA did not spend the money. These expenditures are analyzed in conjunction with settlements and ROD data to ensure that future costs are also captured.

The most straightforward calculation of response costs involves **Equation 2-1**. This equation starts with total Superfund expenditures as reported in IFMS and adds the "value of response," or value of PRP work performed at the site that did not (and will not) flow through the Fund. This equation may more often capture the maximum extent of costs at "Construction Complete", Fund lead sites, but also serves as a check on the other equations to ensure that (at a minimum) all response costs incurred to date are represented.

Equation 2-1

$$RC = SF_{Tot} + VR$$

<u>Where:</u>

RC = total estimated response costs;

SF_{Tot} = Total Superfund expenditures in IFMS; and

VR = the value of response actions taken by any PRPs.

In many cases, however, Superfund expenditures and PRP expenditures to date do not capture the future response costs yet to be incurred. **Equations 2-2** and **2-3** attempt to capture these future response costs through alternative methods. However, as discussed below, these mechanisms for capturing future costs also require a finer parsing of the costs incurred to date to avoid double counting any response costs.

Equation 2-2 bases its estimate of future costs on settlement data. This presumes that the majority of expenditures will be paid for out of PRP settlements. Two types of settlement data are relevant for this estimate. PRPs may settle with EPA in a "cashout" settlement. Cashouts are most commonly made for peripheral parties. Alternatively, PRPs may settle with EPA and deposit the associated settlement amount into a "special account." Special accounts are subaccounts within Superfund that are tracked separately in IFMS. For the purposes of estimating future costs, **Equation 2-2** uses the greater value of the cashout or the deposits to special accounts to avoid underestimating the non-Fund expenditures to be made by EPA at a site.

With respect to special accounts, this particular analysis makes use of *deposits* into these special accounts rather than *expenditures.* Estimates of future work to be done at a site inform settlement negotiations (from which special accounts originate), and thus, deposits account for present and future work. In contrast, expenditures from special accounts capture only money spent to date, and thus, do not address the potential for future expenditures. Therefore, the analysis includes the entire special account balance in an attempt to incorporate a measure of future response costs not reflected in past special account expenditures.

With respect to the current costs, **Equation 2-2** still considers the Superfund expenditures and PRP value of response. However, settlement amounts by PRPs may cover both past and future work at the site. Where settlements include money that was already spent by EPA, the use of EPA expenditures combined with settlement data may result in double counting. Therefore, for the purposes of this equation, the portion of historical payments gathered from IFMS was limited to Superfund expenditures that were not paid from special accounts so as to preclude such double counting.

Equation 2-2

$$RC = SF_{EPA} + VR + Max(Cash|Dep)$$

Where:

RC = total estimated response costs;

SF_{EPA} = Superfund expenditures in IFMS not from a special account;

VR = the value of response actions taken by any PRPs;

Max = the maximum function;

$Cash$ = the amount of cashouts paid in settlements for future work; and

Dep = the amount of deposits paid into a special account.

By contrast, **Equation 2-3** bases its estimate of future costs on ROD estimates. Because the ROD cost estimates are prospective, they capture all costs associated with the sites or operable units that they cover. As a result, any Superfund expenditures on construction costs may be duplicative with the costs that the ROD cost estimate covers. However, RODs do not contain estimates of non-construction costs, and **Equation 2-3** retains this portion of expenditure data from IFMS.

Equation 2-3

$$RC = ROD + SF_{NCC}$$

Where:

RC = total estimated response costs;

SF_{NCC} = Superfund expenditures in IFMS for non-construction costs; and

ROD = engineering cost estimates from records of decision.

Response costs for the 185 evaluated NPL sites are estimated to be $20.5 billion in 2014 dollars, resulting in an estimated average response cost at an NPL HMF of $110.7 million. Response costs at the 134 non-NPL CERCLA HMFs were predictably much lower, and totaled $895.6 million in 2014 dollars, yielding an estimated average response cost for these facilities of $6.6

million. The full estimated response costs for each site are presented in **Appendix B**, with summary statistics displayed in **Table 2-1** below.

Table 2-1. CERCLA Hardrock Mining Response Cost Statistics

Statistic	Response Costs (Millions of 2014$)
Minimum	$0.1
Median	$8.9
Mean	$67.0
Maximum	$4,461.0
±1 Standard Deviation	$0 to $357.7
Interquartile Range	$1.9 to $31.7

2.2 CERCLA Response Activities

As discussed in **Section 1**, EPA also sought to identify the types of response activities that have occurred at CERCLA sites. To do so, EPA identified 125 NPL mining sites from the 188 above for which response activity data were potentially available. This universe of mining sites comprises 111 proposed/final HMFs and 14 deleted HMFs. Additionally, EPA identified six Superfund Alternative (SA) approach HMFs.[20] Out of the 131 sites in the site universe, the analysis identified 88 sites with available remedy documentation, such as a signed ROD, across a total of 438 OUs. In this section, these 88 sites are referred collectively as the Remedy Study Universe. The documentation for these 88 sites included 294 completed RODs, ROD amendments, or explanations of significant differences (ESDs) in combination with 154 five-year review reports.

The Remedy Study Universe also included a wide range of commodity types being produced at the facility. **Figure 2-1** captures the primary commodity or ore mined at these 131 sites. Copper, lead, and gold were the most frequently found commodities, accounting for 52.3 percent of primary commodities at the sites. For sites with multiple commodities (*e.g.*, lead and copper), a primary commodity was chosen based on best available information found in **Appendix C**.

[20] EPA verified the six SA approach sites: Copper Basin Mining District (R4), Coronet Industries (R4), Henry's Knob (R4), Alcoa Properties (R5), Kennecott, South Zone (R8) and Asarco Hayden Plant (R9).

Figure 2-1. Remedy Study Universe: Primary Commodities/Ore Types Mined[21]

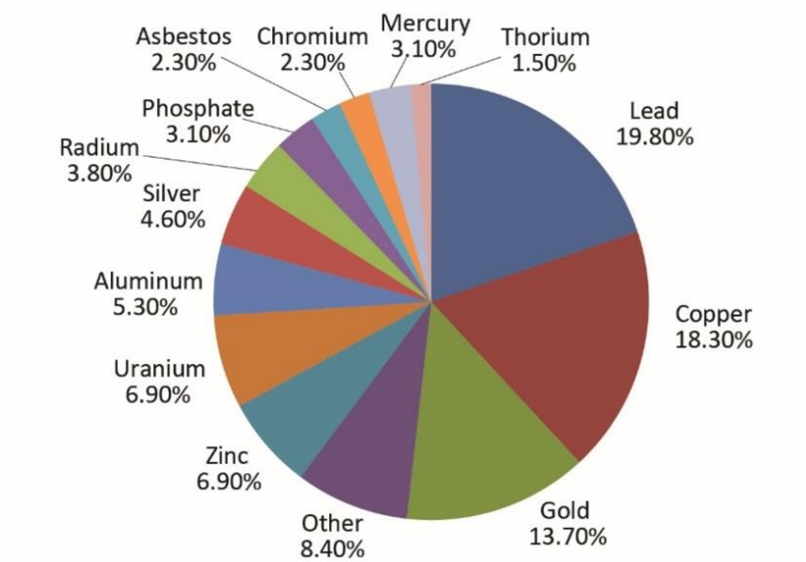
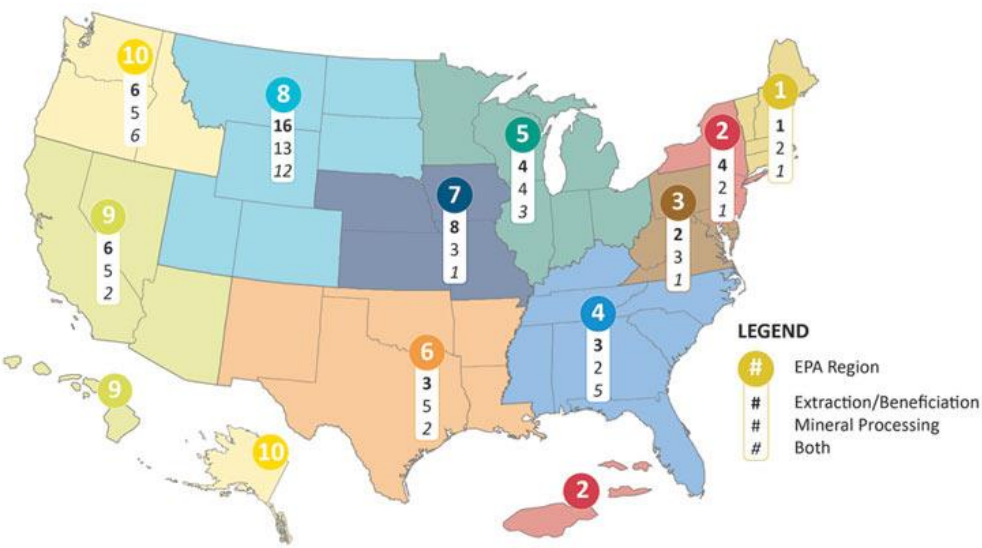


Figure 2-2. Remedy Study Universe Regional Site Distribution

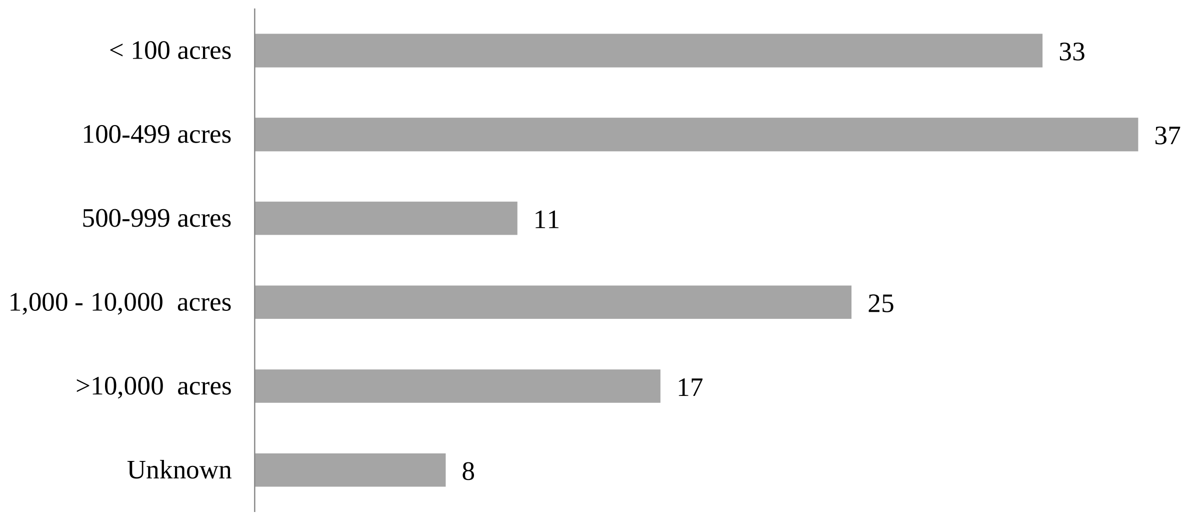


[21] In **Figure 2-1,** "other" includes primary commodities mined at only a single site, and included antimony, cobalt, kyanite, lithium, magnesium, molybdenum, sulfur, tin, titanium, tungsten and zirconium.

Along with diverse commodities, the Remedy Study Universe includes 44 mineral processing HMFs (primarily smelting operations), 53 extraction/beneficiation HMFs, and 34 HMFs where both activities took place. **Figure 2-2** above illustrates the distribution of each of these three activity types across all ten EPA Regions. While mining sites are distributed across the United States, most HMFs within the Remedy Study Universe are located west of the Mississippi River. Region 8 has 41 such sites accounting for 33 percent of the total universe, while Regions 7, 9, and 10 each account for more than ten percent of the total NPL/SA approach mine site universe.

The Remedy Study Universe also includes HMFs of various sizes. **Figure 2-3** below illustrates the distribution of the mining site universe by size. Site sizes are estimates of site size based on best available information found in site decision documents. More than 53 percent of sites (70 of 131) are less than 500 acres in size while 13 percent (17 of 131) are more than 10,000 acres in size.

Figure 2-3. Remedy Study Universe Site Acreage[22]



HMFs in the Remedy Study Universe are not all at the same stage of the CERCLA cleanup process. To characterize cleanup status, EPA used the site-wide milestones reported in CERCLIS. Status reflects site-wide indicators, so some OUs may be at a later stage of the CERCLA process than the site-wide stage described below. If a site has multiple OUs of different status, the earliest status among the site's OUs is the reported status for the site.

The majority of the site universe (84 sites, or 64 percent) has achieved the "Construction Underway" or "Construction Complete" milestones, with an even split between these two designations as shown in **Figure 2-4** below. "Construction Underway" denotes sites undergoing the actual remedial action in the implementation phase of Superfund site cleanup, whereas "Construction Complete" status denotes that:

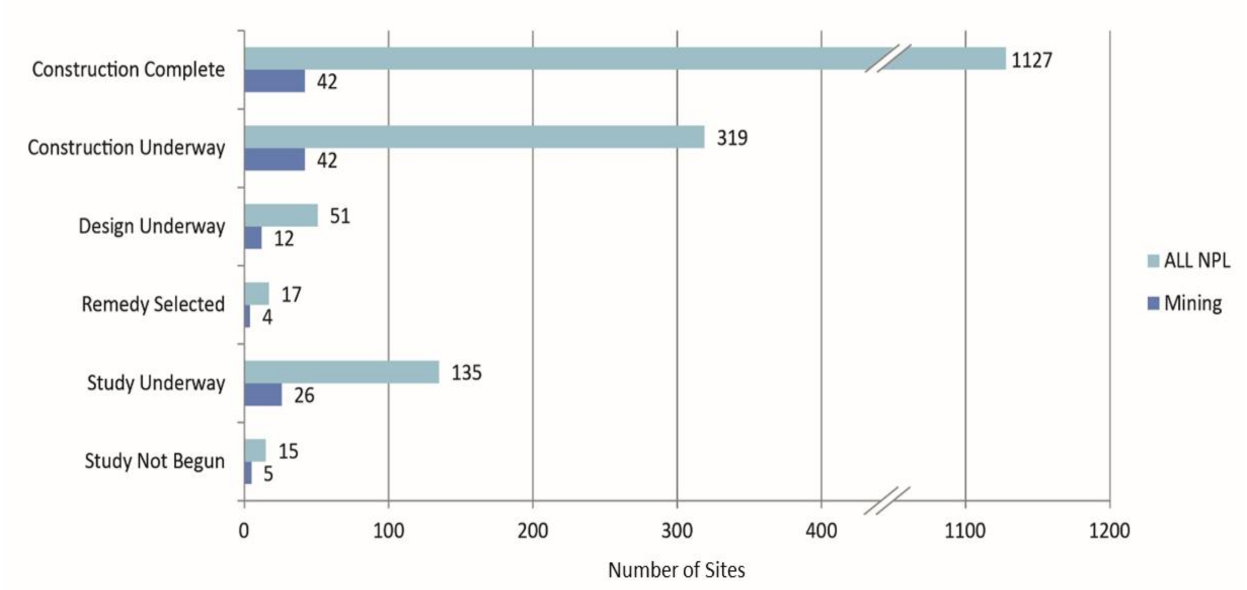
---

[22] Several sites, such as Milltown Reservoir, include hundreds of miles of river edge in addition to other site acreage. Since this portion of the acreage does not necessarily reflect the size of the mining or mineral processing practice, these types of sites were classified as unknown.

- Any necessary physical construction is complete;
- EPA has determined that the response action should be limited to measures that do not involve construction; or
- The site qualifies for deletion from the NPL.

Furthermore, "Construction Complete" does not mean that the full cleanup process itself is complete. For example, parties may have to operate a system constructed to pump and treat groundwater for more than 30 years until contaminants in the water are reduced to acceptable levels.

Figure 2-4. Remedy Study Universe Site Cleanup Status



The remaining 47 sites are at one of several pre-construction stages. Five sites are designated as "Study Not Begun." In these cases, sites have undergone the screening-level preliminary inspection and site assessment required for listing on the NPL, but have not progressed to the remedial investigation/ feasibility study (RI/FS). In some cases, however, these sites had, or will have, an emergency removal action. An additional 26 sites (20 percent) are designated "Study Underway" because the RI/FS process has already begun. Four sites have achieved the "Remedy Selected" milestones. These sites include those where the ROD has been signed, but the design of remedies has not started and may still be under consideration. Finally, 12 sites meet the "Design Underway" milestone where the technical specifications for cleanup remedies and technologies outlined in the RODs are designed, but have not yet been implemented.

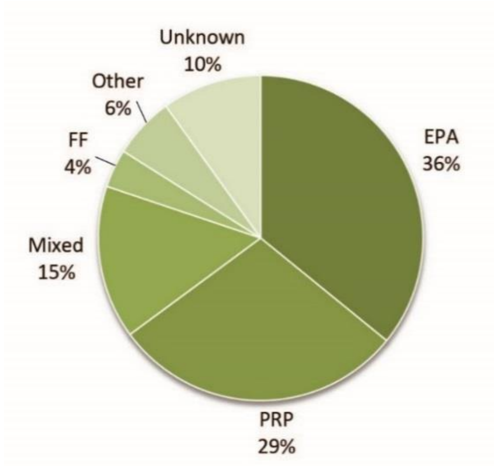
Finally, the analysis identified site cleanup lead types using information from KeyLogic's eFacts database.[23] The eFacts database only includes information from Final and Deleted NPL sites; therefore, sites proposed to the NPL have been categorized as unknown. eFacts also has an

[23] KeyLogic Systems, Inc. "Superfund eFacts database." http://www.keylogic.com/experience/energy-and-environment/environmental-protection-agency/superfund-efacts.aspx

"other" designation that includes sites which have not started any remedial actions (RAs) (therefore the lead is not yet finalized) and sites that have a lead that does not fall within the specified categories (*e.g.,* a State lead). **Figure 2-5** shows the distribution of site cleanup leads across the Remedy Study Universe.

Sixty-nine percent of sites are being cleaned up under a single lead. Of these, EPA is the site lead at 47 sites (36 percent) and other federal agencies are the lead at four sites (2 percent). The analysis identified PRP lead responsibility at 38 sites in the site universe (29 percent) and multiple "mixed" lead types were in place at 20 sites (15 percent). Thirteen sites have an unknown lead and eight sites were categorized in eFacts as "other" (six percent).

Figure 2-5. Remedy Study Universe Lead Type

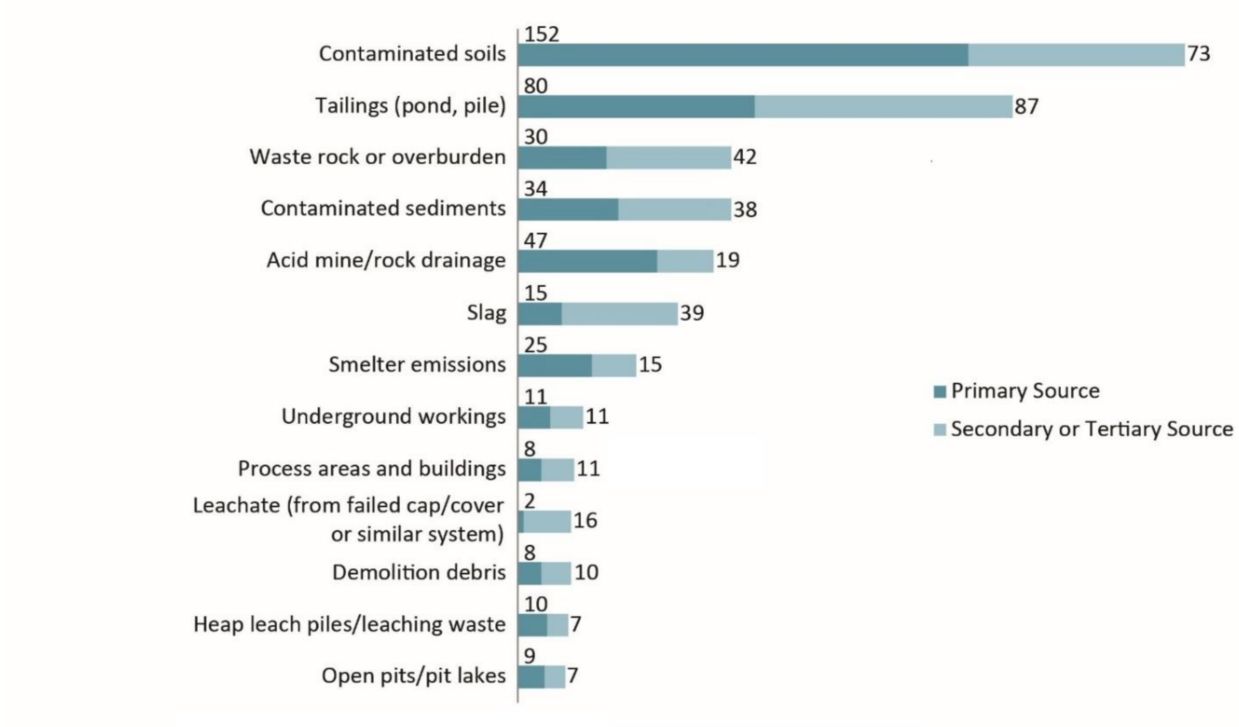


2.2.1 Response Activity Results

At the 88 sites in the Remedy Study Universe, 415 separate remedy components were identified as addressing 999 contamination sources. Of these contamination sources, 533 were found to be primary sources. Primary sources are those identified as the initial source of contamination in the ROD. The remaining 466 sources found in the remedy documents were retained by EPA, and presented below as secondary or tertiary sources.

Contaminated soils and tailings are the most common sources of contamination appearing in the Remedy Study Universe (23 and 17 percent, respectively) as seen in **Figure 2-6** below. Contaminated sediments, waste rock/overburden, acid mine/rock drainage, slag, and smelter emissions each contribute more than two percent of the total.

Figure 2-6. Number of Remedy Study Universe Contamination Sources



There are 61 sites (69 percent) in the Remedy Study Universe with surface and/or groundwater contamination identified in **Appendix C** as a primary media of concern at the site. Most of these sites are located in regions west of the Mississippi River as seen in **Figures 2-7** and **2-8**. In particular, 43 sites were found to have groundwater contamination and 43 were found to have surface water contamination. Combined, these counts add to more than 61 sites because 25 facilities listed both groundwater and surface water as a primary media of concern.

Figures 2-7. Surface Water and 2-8. Groundwater Sites, by Region

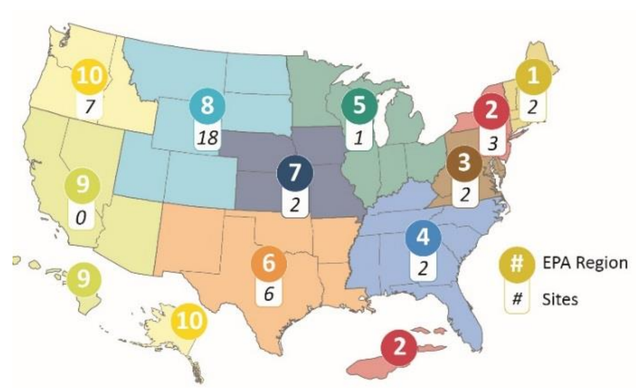
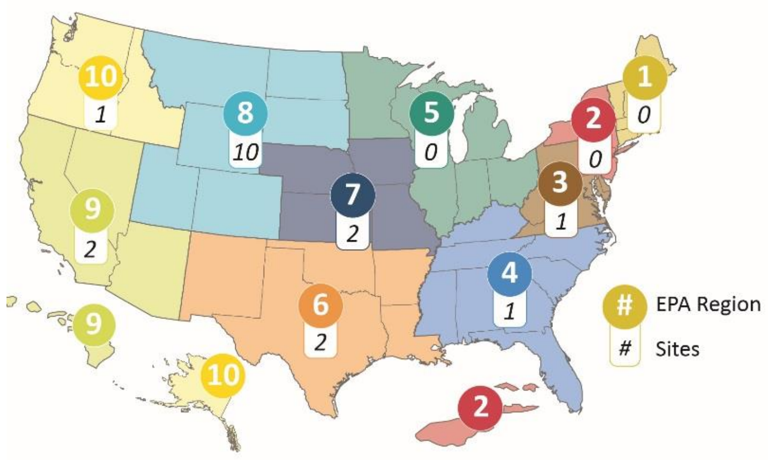


Figure 2-9. Potential Acid Mine Drainage, by EPA Region



At an additional 16 sites, groundwater and surface water were not identified as a primary media of concern in **Appendix C**. The remaining 11 sites have surface and/or groundwater studies underway or not yet begun. Of these, six have surface water studies that have not yet begun and nine have groundwater studies not yet begun, with four awaiting studies on both media.

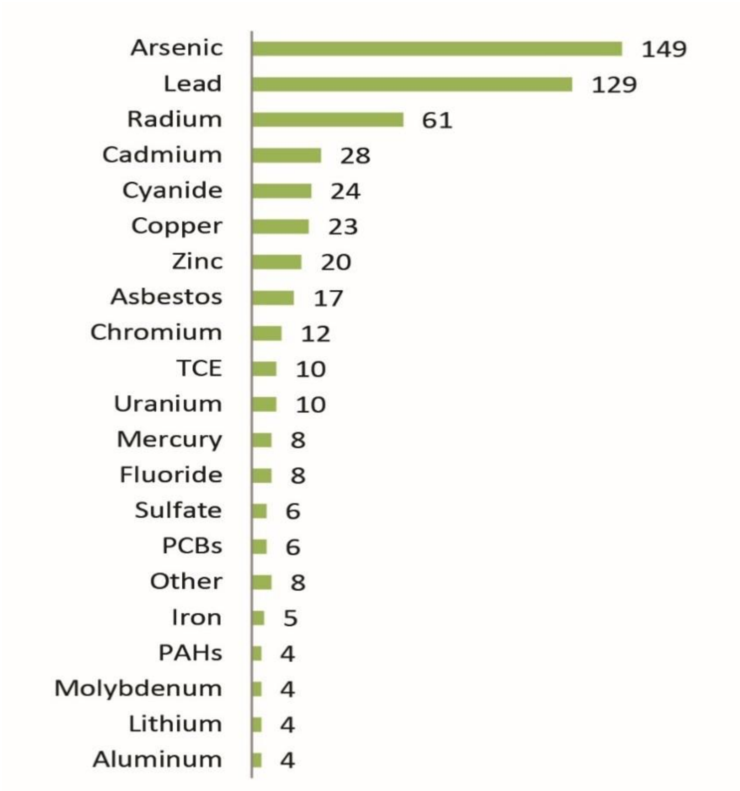
In addition, EPA identified remedies that are directly addressing acid mine drainage at 19 sites. **Figure 2-9** shows the location of these sites by region. More than half of the sites addressing acid mine drainage are located in Region 8. The other regions average between one and two sites. This figure only includes sites where acid mine drainage is directly treated by a specific remedy in a ROD. It is possible that there are many more sites within the Remedy Study Universe where acid mine drainage occurs. This may be the case due to the acid mine drainage:

- Not currently being treated directly;
- Addressed via an action not included in a current ROD;
- Not yet part of a site remedy, or
- Addressed via another remedy (*e.g.*, tailings removal and disposal from a streambed).

In addition, some sites still have studies underway, including studies of potential acid mine drainage. The most common sources of acid mine drainage is tailings (51 percent). Another 30 percent of acid mine drainages were described as acid mine/rock drainage without attribution to a source. The remaining source types of acid mine drainage were underground workings, heap leach piles/leaching waste, and open pits/pit lakes. Each of these represented seven percent or less of all primary acid mine drainage sources.

The documentation collected by EPA for the Remedy Study Universe indicates that multiple constituents of concern (COCs) drive the selection of remedies. However, EPA sought to identify whether a specific COC was identified in decision documents as the primary COC driving the cleanup approach selected for a site or site OU. Thus, EPA tracked COCs at the remedy level rather than the site level. The analysis found that three COCs were the primary contaminants driving the selection of remedies. As seen in **Figure 2-10** below, these were arsenic (38 percent), lead (33 percent), and radium (16 percent). Cadmium, cyanide, copper, and zinc each drive five percent to ten percent of remedies. Remaining COCs drove fewer than five percent of remedies.

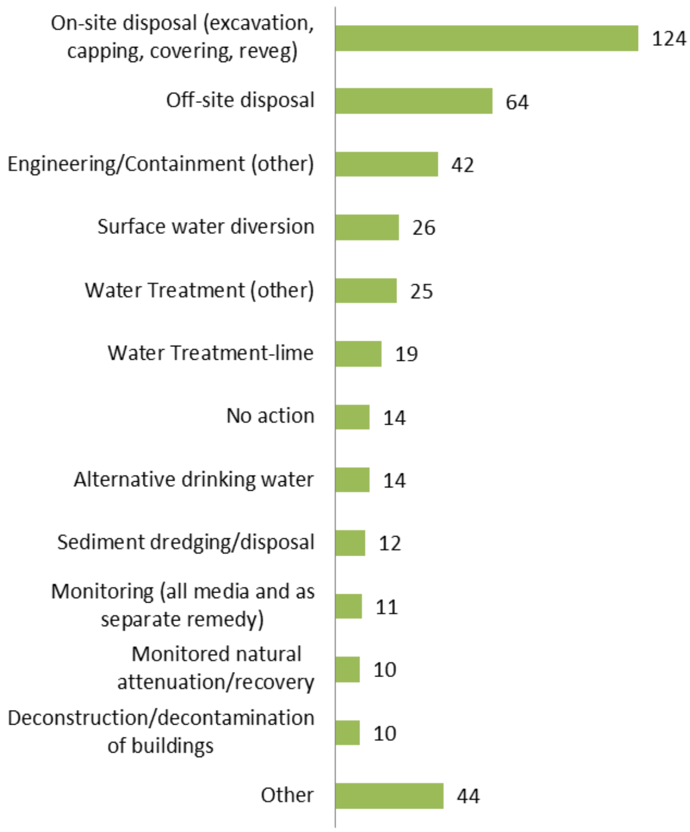
Figure 2-10. Primary COCs Driving Site Remedies



Remedial Action Objectives (RAOs) are site-specific goals for protecting human health and the environment to be achieved by the cleanup remedies selected at sites. The analysis identified 415 separate remedies addressing contamination at the 88 sites in the Remedy Study Universe. The most frequently selected remedies, as shown in **Figure 2-11**, include on-site disposal (29 percent), off-site disposal (15 percent), and engineering/containment (10 percent). "Other" in **Figure 2-11** includes: impoundments, soil amendments, other treatment technology, solidification, bioreactors, created wetlands, permeable reactive barrier, resident relocation, air stripping, chemical oxidation, soil flushing/washing, soil vapor extraction, and thermal treatment.

EPA found that 54 of these 415 remedies involve water treatment and 361 of the remedies are non-water treatment remedies. The 54 water treatment remedies are in place at 44 percent of all sites. It is worth noting some sites have not yet selected a groundwater remedy, but may do so in the future. Thus, it is possible that the frequency of water treatment in the Remedy Study Universe may underrepresent actual water treatment frequency in the future.

Figure 2-11. Remedy Types at HMFs



EPA also identified institutional controls as a selected remedy component 125 times at the 88 sites in the Remedy Study Universe. Tracking institutional controls allowed EPA to determine which sources and COCs the institutional controls were meant to address. At the site level, decision documents cited institutional controls for 72 of the 88 sites examined. This result is expected because a majority of the mine sites will leave waste in place and will require institutional controls to complement remedy protectiveness.

2.2.2 Supplemental Response Activity Data Collection

The Remedy Study Universe sites discussed in **Section 2.2.1** and **Appendix C** were NPL or SA approach sites. However, many of these sites began as removal actions, and thus can be expected to capture the same types of response activities that would be representative of removal-only sites. However, to verify this, EPA conducted a supplemental data collection of removal activities at sites which were not yet listed on the NPL at the time the data in **Appendix C** was collected.

Unlike NPL sites, removal-only sites do not have RODs. Rather, these sites typically have action memorandums and pollution reports that document the activities taking place at a given site. The

EPA On-Scene Coordinator (OSC) Website (or EPAOSC)[24] is intended to be a resource for EPA OSCs to access, track, and share information with OSCs throughout the country. Documentation on removal sites has become much more consistently placed on EPAOSC over the past decade. However, older sites with no recent activity either do not appear on EPAOSC or have very minimal documentation. As a result, EPA used the following hierarchy for collecting data on removal-only sites:

(1) Documentation on the EPAOSC website, including:

   a. Action memoranda – an action memorandum provides a concise written record of the selection and approval of a removal action;[25]

   b. Pollution reports – a pollution report provides documentation of activities for removal actions under CERCLA;[26] and

   c. Other documentation available on EPAOSC;

(2) Documentation on another EPA website; or

(3) Any other publicly available documentation.

The analysis identified 171 response actions addressing contamination at 82 sites. These 82 sites are referred to as the Removal-only Site Universe. Just as for the Remedy Study Universe discussed in **Section 2.2.1**, the most frequently selected response actions, as shown in **Figure 2-13**, include on-site disposal (23 percent), off-site disposal (32 percent), and engineering/containment (11 percent). "Other" in **Figure 2-13** includes: building fences and dam reconstruction. EPA found that 9 of these 171 response actions involve water treatment and the remaining 162 involve non-water treatment response actions. For further information, see **Appendix D**.

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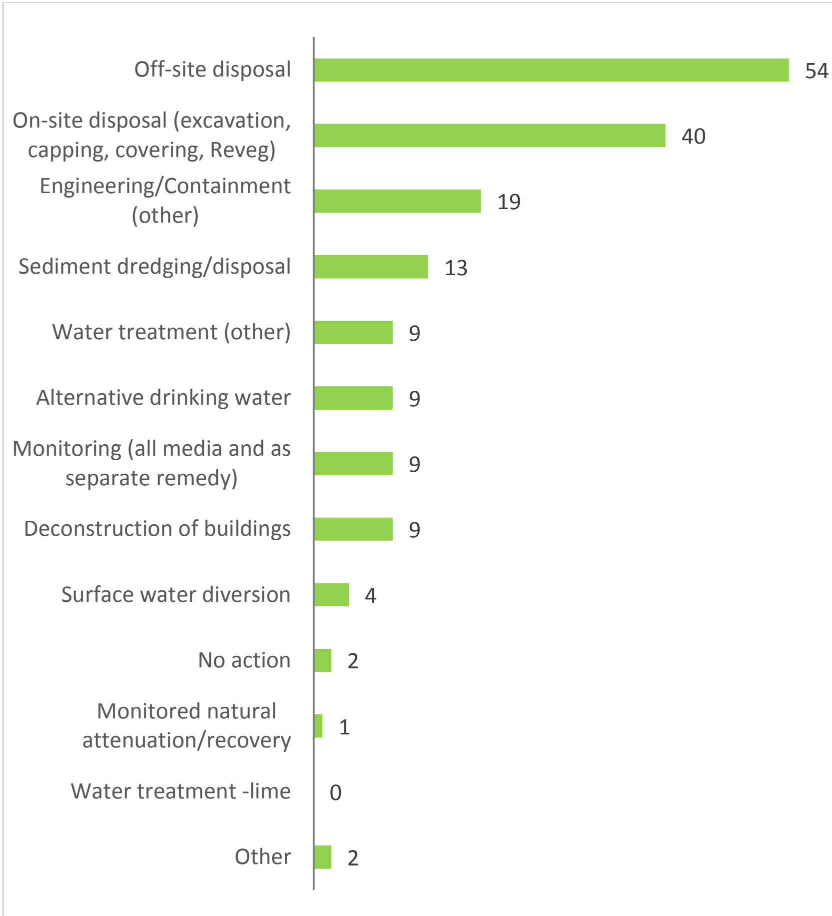
[24] Available online at www.epaosc.org

[25] U.S. EPA (Environmental Protection Agency). 2009. *Superfund Removal Guidance for Preparing Action Memoranda*. OSWER. Washington, DC 20460. September. Available online at: https://www.epa.gov/sites/production/files/2014-02/documents/superfund_removal_guide_for_preparing_action_memo.pdf

[26] U.S. EPA (Environmental Protection Agency). 1994. *Superfund Removal Procedures. Removal Response Reporting: POLREPs and OSC Reports*. OSWER. Washington, DC 20460. EPA-540/R-94/023. June. U.S. EPA (Environmental Protection Agency). 1994. *Superfund Removal Procedures. Removal Response Reporting: POLREPs and OSC Reports*. OSWER. Washington, DC 20460. EPA-540/R-94/023. June. Available online at: https://nepis.epa.gov/Exe/ZyNET.exe/P100EYIC.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2011+Thru+2015&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C11thru15%5CTxt%5C00000005%5CP100EYIC.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL.

Figure 2-13. Response Actions at Removal-Only Sites



2.3 Linking Response Categories to Engineering Cost Estimates

EPA's prior experience with CERCLA cleanups leads it to expect that similar types of remedies will continue to be selected for mining sites in the future. EPA also expects that for 11 of the 12 response categories described in **Section 2.2** (the exception being "no action"), the magnitude of those costs differ with changing site characteristics. For example, the expected costs of constructing a cap over a unit to prevent water infiltration can be expected to increase with the acreage of that cap. Thus, in order to produce more accurate estimations of costs at a particular facility, EPA considered both specific response costs and specific response activities. However, EPA generally found that the response cost data collected above were available in the form of payments or total expenditures. Since these payments or expenditures were aggregated across various activities, they could not be separated into more specific cost amounts (e.g., the cost to construct a particular cap on a particular tailings impoundment).

Given the above difficulty, EPA considered how to estimate the expected costs associated with these particular activities. EPA searched for existing, publicly available engineering cost estimates that contained costs specific to these activities. EPA found that such engineering cost data were readily available from state and federal mining reclamation and closure plans, and associated documents. These engineering cost data were available for currently operating facilities potentially regulated under the proposed rule, and represented similar site features (e.g., tailings facilities, open pits) as facilities for which prior response actions were taken. Thus, these data reflect recent engineering cost values appropriate for EPA's statistical analysis.

In order to monetize the expected costs of the twelve categories of remedy listed above, EPA linked the majority of those categories to similar tasks identified in the current engineering cost data. The remaining three categories of CERCLA remedies, "No action," "Alternative drinking water," and "Monitored natural attenuation" are excluded from the initial list of 12 response categories. Since these three categories of remedies do not involve engineered controls, EPA was concerned that including them as part of a nationally-applicable rule could have the effect of producing an inadequate amount of FR for those sites where engineered controls were necessary. Therefore, as a conservative assumption to help ensure the adequacy of the amount of financial responsibility should engineering controls prove necessary, EPA excluded these categories of remedies.

Also excluded was "Sediment dredging/disposal." Although this element has appeared historically as a response category, EPA notes that it is incorporated in the NRD component discussed in **Section 5** and **Appendix L**. For example, the final restoration plan for the Upper Arkansas River/California Gulch Superfund site includes dredging of contaminated soils as a restoration alternative.[27] Thus, EPA believes that since this cost is already represented in the NRD component of the formula, it is appropriate to exclude it from the response component of the formula.

The remaining categories of remedies were separated into bins to facilitate data collection. EPA captured the costs associated with each remedy category by linking each category to reclamation and closure plan tasks for currently operating mines. Furthermore, some reclamation and closure plan tasks were linked to multiple remedy categories. **Table 2-2** below summarizes EPA's sorting of Superfund remedy types and reclamation and closure tasks, as well as the relevant contamination sources they address. The remaining subsections describe in more detail the various response categories that EPA evaluates throughout this document.

[27] Stratus Consulting Inc. (2010). Restoration Plan and Environmental Assessment for the Upper Arkansas River Watershed. Available online at: http://www.fws.gov/mountain-prairie/nrda/leadvillecolo/californiagulch.htm

Table 2-2. Sorting of Superfund Remedy Categories and Tasks Contained in Reclamation and Closure Plans

Superfund Remedy Category	Reclamation and Closure Plan Cost Estimate Tasks	Relevant Site-Features	Response Category for Analysis
• On-Site Disposal (excavation, capping, covering, revegetation) • Engineering/Containment (other)	• Backfill • Portal Closure • Earthwork • Revegetation • Feature-Specific Stormwater Controls • Source Controls	• Open Pit • Underground Mine • Waste Rock • Tailings Facility • Heap/Dump Leach • Process Pond/Reservoir • Slag Pile	• Open Pit Capital Costs • Underground Mine Capital Costs • Waste Rock Capital Costs • Tailings Facility Capital Costs • Heap/Dump Leach Capital Costs • Process Pond and Reservoir Capital Costs • Slag Pile Capital Costs
• Off-site Disposal • Deconstruction/ Decontamination of Buildings	• Solid Waste Disposal • Hazardous Waste Disposal • Organic Solution Removal • Building Decontamination • Contaminated Soils Disposal • Haulage and Disposal	• Site-wide	• Solid and Hazardous Waste Disposal Capital Costs
• Surface Water Drainage	• Drainage Controls	• Site-wide	• Drainage Capital Costs
• Water Treatment (lime) • Water Treatment (other)	• Site and Water Management • Process Fluid Stabilization • Neutralization • Solution Disposal	• Tailings Facility • Heap/Dump Leach	• Interim O&M Costs
	• Reclamation of Well-Field and Disposal Wells • Seepage Capture • Water Treatment	• Site-wide	• Water Treatment Costs

Superfund Remedy Category	Reclamation and Closure Plan Cost Estimate Tasks	Relevant Site-Features	Response Category for Analysis
• Monitoring (all media and as separate remedy)	• Short- and Long-Term Groundwater and Surface Water Monitoring; • Short- and Long-Term Geotechnical Stability Monitoring; • Short- and Long-Term Erosion and Vegetation Monitoring; • Short- and Long-Term Fish and Wildlife Monitoring; • Other Short- and Long-Term Monitoring	• Site-wide	• Short-Term O&M and Monitoring Costs • Long-Term O&M and Monitoring Costs
• Multiple Remedy Operations and Maintenance	• Short- and Long-Term Road Maintenance; • Short-Term Stormwater Repairs; • Short-Term Revegetation Repairs; • Short-Term Reclamation of Monitoring and Pumpback Wells; • Long-Term Well Maintenance; • Long-Term Evaporation Pond Maintenance; • Long-Term Stormwater, Erosion, and Vegetation Maintenance		
• All Remedies	• Mobilization/ Demobilization; • Engineering Design/ Redesign; • Contingency; • Contractor Profit and Overhead; • Contractor Liability Insurance; • Payment and Performance Bonds; • Agency Direct Costs; • Agency Indirect Costs	• Site-wide	• Overhead and Oversight Costs

2.3.1 On-Site Disposal and Engineering/Containment

On-site disposal and engineering/containment at CERCLA sites primarily involve dirt-moving operations that minimize the toxicity and mobility of hazardous substances. Specifically, the instructions during data collection involved searching for items such as caps, covers, and other designs that focused on keeping hazardous substances in place. The reclamation and closure plan cost data collected by EPA also include cost information related to similar dirt-moving operations designed to keep mining materials in place. These consist of backfill, portal closure (with or without a pressurized bulkhead), earthwork (such as regrading), revegetation and/or stormwater diversion (to reduce or prevent runoff and erosion), and source controls (such as amendments or synthetic barriers).

Furthermore, each of these reclamation and closure plan tasks is specific to a site feature. The fact that backfilling is conducted for an open pit is independent of the fact that backfilling is conducted for a tailings impoundment. As shown in the table above, relevant site features that EPA identified in the reclamation and closure plans in **Section 3** include open pits, underground mines, waste rock piles, tailings facilities, heap/dump leach piles, process ponds and reservoirs, and slag piles. Each of these site features and the associated tasks is described in more detail below.

- **Open Pit:** describes any open pits, cuts, or other surface features from which ore was extracted. It does not include borrow pits, sand boxes, or other surface features used for extracting soil, gravel, or sand or any purposes other than ore extraction. Reclamation and closure plan tasks relevant to open pits from the list above include backfill, earthwork, revegetation, stormwater diversion, and source controls specific to a given open pit. For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as "open pit capital costs" or the variable *OpenPit*.
- **Underground Mine:** describes adits, portals, shafts, raises, drifts, and general workings (stopes, rooms or caving areas), vents and other features associated with underground extraction of ore. Reclamation and closure plan tasks relevant to underground mines from the list above include portal closure with or without a pressurized bulkhead.[28] For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as "underground mine capital costs" or the variable *UndergroundMine*.
- **Waste Rock:** describes waste rock and overburden piles, dumps, and other features associated with run-of-mine disposal of waste on the surface whether from open pit or underground mines. Reclamation and closure plan tasks relevant to waste rock from the list above include backfill, earthwork, revegetation, stormwater diversion, and source controls. For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as "waste rock capital costs" or the variable *WasteRock*.
- **Heap/Dump Leach:** describes both heap and valley leach facilities, which are used for gold and sometimes copper processing, or run-of-mine copper leach dumps (or piles), which may have been originally intended for leaching, or originally were waste rock that

[28] EPA notes that some underground mine site data collected in **Section 3** also had regrading and revegetation costs that were associated with the portal closure itself.

was later leached in place. Reclamation and closure plan tasks relevant to heap and dump leaches from the list above include backfill, earthwork, revegetation, stormwater diversion, and source controls. For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as “heap/dump leach capital costs” or the variable *HeapDumpLeach*.

- **Tailings Facility:** describes ponds, dams, and other facilities including spillways and associated features used for the deposition of process/beneficiation waste or tailings from either pulp or vat leaching, flotation, or gravity processing facilities. This also includes paste and dry stacks. Reclamation and closure plan tasks relevant to heap and dump leaches from the list above include backfill, earthwork, revegetation, stormwater diversion, and source controls. For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as “tailings facility capital costs” or the variable *TailingsFacility*.
- **Process Pond/Reservoir:** describes process ponds, reservoirs, ditches, channels or other wet acreage that were used in heap leach, dump leach, metals or minerals processing and other activities that have resulted in deposits of sludge and other potentially toxic and/or hazardous materials within those features. Reclamation and closure plan tasks relevant to heap and dump leaches from the list above include backfill, earthwork, revegetation, stormwater diversion, and source controls. For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as “process pond/reservoir capital costs” or the variable *ProcessPondsReservoirs*.
- **Slag Pile:** describes the storage location of glass-like particles generated when molten materials are quenched in a smelter. Reclamation and closure plan tasks relevant to slag piles from the list above include backfill, earthwork, revegetation, stormwater diversion, and source controls. For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as “slag pile capital costs” or the variable *SlagPile*.

2.3.2 Off-Site Disposal and Deconstruction/Decontamination of Buildings

Off-site disposal and deconstruction/decontamination of buildings at CERCLA sites primarily involve activities that take waste materials containing hazardous substances and transporting them off-site for disposal. Specifically, the instructions during data collection involved searching for movement of waste or soil to off-site disposal locations and the deconstruction or decontamination of buildings. The reclamation and closure plan cost data collected by EPA also include cost information for removing soils, contaminated structures, and other wastes. These consist of solid waste disposal, hazardous waste disposal, organic solution removal, building decontamination, contaminated soils disposal, and haulage and disposal.

Unlike the feature-specific nature of tasks in the previous section, during the data collection in **Section 3** EPA found that each of the reclamation and closure plan tasks in off-site disposal and deconstruction/decontamination of buildings is site-wide. Thus, all solid and hazardous waste from the site taken for off-site disposal would be relevant for this task. For the remainder of this analysis, this group of reclamation and closure tasks will be referred to as “solid and hazardous waste disposal capital costs” or the variable *SolidHazardousWasteDisposal*.

2.3.3 Surface Water Drainage

Surface water drainage at CERCLA sites primarily involve the construction of channels to route storm water away from mine features to prevent contamination through run-on or run-off. The reclamation and closure plan cost data collected by EPA also include cost information for drainage controls to handle run-on and run-off. During the data collection in **Section 3** EPA found that drainage controls in reclamation and closure plans tend to be site-wide, and may exist even when feature specific stormwater diversion is practiced. For the remainder of this analysis, this reclamation and closure plan task will be referred to as "drainage capital costs" or the variable *Drainage*.

2.3.4 Water Treatment

Water treatment activities at CERCLA sites include both short- and long-term treatment to minimize the toxicity of mine-influenced waters. Specifically, the instructions during data collection involved searching for water treatment with chemicals (e.g., lime) as well as other forms of water treatment with fixed flows. The reclamation and closure plan cost data collected by EPA also include cost information for short- and long-term water treatment activities. Short-term water treatment activities include site and water management, process fluid stabilization, neutralization, and solution disposal. Long-term water treatment activities include reclamation of well-field and disposal wells, seepage capture, and water treatment.

As shown in the table above, relevant site features for short-term water treatment activities that EPA identified in the reclamation and closure plans in **Section 3** include tailings facilities and heap/dump leaches. Each of these site features and the associated tasks is described in more detail below.

- **<u>Site and Water Management</u>**: refers to the emergency water management in the event of sudden cessation of operations, such as might be caused by the bankruptcy of a mine operator. Site and water management activities prevent the release of contaminated water present in active heap/dump leaches or wet, paste, or dry stack tailings facilities.

- **<u>Process Fluid Stabilization, Neutralization, and Solution Disposal</u>**: encompass the management of process fluids resulting from heap and dump leaching operations as well as wet tailings impoundments. It includes the conduct of heap rinsing or detoxification measures intended to remove any toxic chemicals (*e.g.,* cyanide) together with draindown and water management. For the remainder of this analysis, this group of reclamation and closure tasks will be referred to as "Interim O&M" or the variable *InterimO&M*.

Unlike the short-term water treatment activities, long-term water treatment activities that EPA identified in the reclamation and closure plans in **Section 3** tend to be site-wide. While seepage may originate at individual facilities, all of these flows were generally found to be treated at a single water treatment plant. For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as "water treatment" or the variable *WaterTreatment*.

2.3.5 Monitoring and Multiple Remedy Operations and Maintenance

Monitoring at CERCLA sites consists of activities designed to confirm the effectiveness of other remedies and/or to identify when additional actions may be needed. The reclamation and closure plan cost data collected by EPA also include cost information for short-term and long-term monitoring. These consist of groundwater and surface water monitoring, geotechnical stability monitoring, erosion and vegetation monitoring, fish and wildlife monitoring, and other types of monitoring. Since the monitoring activities collected from reclamation and closure plans in **Section 3** pertain primarily to site-wide media (e.g. groundwater) and receptors (e.g., fish), EPA finds monitoring tasks to be site-wide.

In conjunction with monitoring, multiple remedy operations and maintenance (O&M) at CERCLA sites consists of activities designed to repair and maintain several other remedies once the one-time engineering activities (e.g., construction of a cap) are completed. Thus, while EPA did not identify a separate remedy of O&M, the remedies that were identified would be supported by such activities. O&M in conjunction with monitoring has the effect of extending the effectiveness of other remedies as they minimize the toxicity and mobility of hazardous substances. The reclamation and closure plan cost data collected by EPA also include cost information for short- and long-term O&M. Short-term O&M consists of road maintenance, stormwater repairs, revegetation repairs, and reclamation of monitoring and pumpback wells. Long-term O&M consists of road maintenance, well maintenance, evaporation pond maintenance, and stormwater, erosion, and vegetation maintenance. Furthermore, since the O&M activities collected from the reclamation and closure plans in **Section 3** pertain across the facility, EPA finds O&M to be site-wide. For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as "short-term O&M and monitoring" and "long-term O&M and monitoring" or the variables *ShortTermO&MMonitoring* and *LongTermO&MMonitoring*, respectively.

2.3.6 Overhead and Oversight Costs

The sections above discuss direct engineering activities found in the Remedy Study Universe. However, in **Section 2.1** above EPA also identified "non-construction" costs that were historically paid from the Fund or special accounts. Such costs include costs to the Agency for oversight as well as costs paid for work necessary to conduct the actual engineering work (e.g., design). The reclamation and closure plan cost data collected by EPA also include cost information for non-engineering costs that are nevertheless incurred. These consist of mobilization/demobilization, engineering design/redesign, contingency, contractor profit and overhead, liability insurance, payment and performance bonds, agency direct costs, and agency indirect costs. Each of these activities found in reclamation and closure plans has the effect of allowing engineering tasks to move forward, and thus is similar to the "non-construction" costs of **Section 2.1**. Each of these tasks is described in further detail below. For the remainder of this analysis, this group of reclamation and closure plan tasks will be referred to as "overhead and oversight costs" or the variable *OverheadOversight.*

- **Mobilization/Demobilization:** describes costs for moving personnel, equipment, supplies and incidentals to and from the reclamation site. These costs will be incurred by the engineering, construction and operations contractors. It also includes the establishment of field offices, shop buildings, warehouses, sanitary facilities, utilities and other facilities needed to proceed with the project work.

- **Engineering Design/Redesign:** describes the site characterization needed to develop the engineering specifications and drawings required for contracting. Furthermore, changed environmental conditions or impacts may necessitate a change in the final reclamation of the site, requiring supplemental environmental analysis prior to design implementation.

- **Contingency:** describes cost overruns that regularly occur but cannot be ascertained when an operation is being reviewed. Contingency costs generally reflect the level of detail and completeness of the cost estimate, as well as the level of uncertainty in the assumptions used for the reclamation plan and FA. However, contingency costs are not intended to account for changes in the scope of the operation or unforeseeable or unanticipated events such as earthquakes, labor strikes, or floods.
- **Contractor Profit and Overhead:** In most cases, EPA will hire an outside party or contractor to conduct the actual reclamation work. Government contracts generally include a line item for the prime contractor's profit over and above the estimated reclamation O&M costs.
- **Liability Insurance:** describes liability insurance purchased by the contractor operating under government contract.
- **Payment and Performance Bonds:** Federal construction contracts exceeding $100,000 OR $25,000 require payment of premiums for both a performance bond and a payment bond, as required by the Miller Act, and must be included in the cost estimate (40 U.S.C. 3131 to 3134).
- **Agency Direct Costs:** describes government agency contract administration costs such as labor and operations costs for the offices to administer the contract.
- **Agency Indirect Costs:** describes the non-site portion of personnel compensation and benefits, travel, rent, communications, utilities, contracted services, materials and supplies costs.

3 Response Component Data Collection

Section 2.1 and **Section 2.2** presented the collection of data representing the response costs and associated response activities. As previously discussed, response costs were in total dollars per site rather than in dollars per category of response activity. Therefore, EPA decided to develop estimates of the costs of these response activities for use in EPA's statistical analysis through obtaining current engineering cost estimates of similar activities and further, link them to characteristics of currently operating mines that would allow for differentiation of the levels of financial responsibility amounts.

To gather this additional data, EPA first examined the current universe of operating HMFs that might be subject to this proposed rule (**Section 3.1**). Next, EPA selected a subset of sites that are representative of the depth and breadth of this current universe for which relevant data were potentially available (**Section 3.2**). For these selected sites, EPA collected data on the engineering cost estimates of CERCLA-like activities (**Section 3.3**), and HMF characteristics that EPA believed had the potential to influence those cost estimates (**Section 3.4**).

3.1 Currently Operating Facilities

EPA sought to identify currently operating HMFs that may be subject to the rule, in order to select a subset from which to gather current cost data. The universe of potentially regulated facilities described in this section represents facilities known to be operating as of July 2015. In establishing the facilities in this data set, EPA primarily relied on the July 2015 data in the U.S. Mine Safety and Health Administration (MSHA) Mine Data Retrieval System (MDRS),[29] U.S. EIA (2015),[30] and the 2015 U.S. Geological Survey (USGS) Mineral Commodity Summaries (MCSs).[31]

- *MDRS*

  MSHA maintains information on mining and processing operations under its jurisdiction in the MDRS database and Mines Data Set. MDRS stores an overview of each mine, as well as violation histories, accident and injury information, and sampling data. MDRS can be queried by company or mine and the Mines Data Set aggregates public information on mines under MSHA's jurisdiction. Both are updated on a regular basis. As of July 2015, the Mines Data Set contained records of 84,780 mining operations. From these initial records, EPA removed 35,103 mines identified as coal mining operations not subject to the proposed rule. Remaining non-coal facilities were retained for further analysis.

[29] MDRS data are available at http://www.msha.gov/drs/drshome.htm and Mines Data Set, http://www.msha.gov/OpenGovernmentData/OGIMSHA.asp

[30] U.S. EIA (Energy Information Administration). 2015. 2014 Domestic Uranium Production Report. Washington, DC. April. Available online at: http://www.eia.gov/uranium/production/annual/pdf/dupr.pdf

[31] MCS can be accessed at http://minerals.usgs.gov/minerals/pubs/mcs/

- *U.S. EIA (2015)*

  While MSHA data provided information on traditional uranium mines and processors, uranium facilities using more recent techniques (*e.g.*, in-situ recovery) were underrepresented. These facilities are, however, represented in U.S. EIA (2015). Data in this report are based primarily on information reported on Form EIA-851A, "Domestic Uranium Production Report (Annual)" and Form EIA-858, "Uranium Marketing Annual Survey." Form EIA-851A survey collects data on uranium milling and in-situ recovery processing, feed sources, mining, employment, drilling, expenditures, and reserve estimates while Form EIA-858 survey includes data collected on contracts and deliveries. Using the in-situ recovery uranium recovery facilities in this report resulted in an addition of eight HMFs.

- *USGS 2015 MCSs*

  Certain processing facilities, including some smelters and most processors located independently from mining operations, do not fall under MSHA's jurisdiction and are not included in the MSHA data. MCSs are published on an annual basis, and furnish estimates covering nonfuel mineral industry data. Data sheets contain information on the domestic industry structure, government programs, tariffs, and five-year salient statistics for over 90 individual minerals and materials. Using these reports, EPA added 62 additional sites from MCSs, and state regulatory programs.

- *Company and Government Agency Websites*

  To complete EPA's list of currently operating hardrock mining and processing facilities, EPA accessed company and government agency websites, as well as publicly available Internet sources, to verify information provided in MSHA, USGS, and EIA documents (for instance, to verify a facility's operating status). See **Appendix E** for a complete list of websites visited while completing this task.

From this list of potentially regulated facilities, 44,774 mines were associated with the 59 non-coal commodities that were not included as part of the hard rock mining classes of facilities identified in EPA's 2009 Priority Notice. U.S. EPA (2009).[32] Several of these commodities are not expected to be mined or processed in the United States in the future based on the 2015 MCS (*e.g.*, arsenic, asbestos, columbium, gallium, mercury, and thorium). After removing these facilities, EPA also removed an additional 4,548 abandoned HMFs. The remaining list included only mining and processing facilities falling under the 33 commodities of interest presented in **Table 3-1**, and also considered to be "authorized to operate" as defined in the proposed rule. Such facilities were included under the following MSHA definitions:

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[32] U.S. EPA (Environmental Protection Agency). 2009. Mining Classes Not Included in Identified Hardrock Mining Classes of Facilities. Available online at: http://www.regulations.gov/contentStreamer?documentId=EPA-HQ-SFUND-2009-0265-0033&disposition=attachment&contentType=pdf

- Active facilities, which operate on a full-time basis throughout the entire year, barring temporary closure due to unforeseen circumstances such as strikes, accidents, or maintenance shutdowns;
- Intermittent facilities, which only operate during a portion of the year because of seasonal or periodic factors such as weather or economic demand; and
- Temporarily idled facilities, which have ceased all activity, but still have recoverable reserves and anticipate reopening operations.

Table 3-1. Hardrock Commodities Considered for the Potentially Regulated Universe

• Antimony	• Lead
• Barium/barite	• Lithium
• Bauxite/alumina	• Magnesium
• Beryllium	• Molybdenum
• Bismuth	• Nickel
• Boron	• Phosphate/phosphorous
• Cadmium	• Platinum
• Chromium and compounds	• Potash
• Cobalt	• Rare Earths
• Copper	• Silver
• Fluorspar/fluorite/fluoride compounds	• Titanium
• Germanium	• Tungsten
• Gold	• Uranium
• Hafnium	• Vanadium
• Indium	• Vermiculite
• Iron	• Zinc
	• Zirconium

As of July 2015, EPA had identified a total of 354 HMFs that it believes may be subject to the proposed rule. Of these, 298 facilities are associated with active mining operations while 75 facilities are associated with active processing operations. Because some mining and processing activities are co-located, these two groups overlap to some extent, and thus the sum of these two groups is greater than the final facility count of 354. The complete list of these HMFs that EPA believes are potentially subject to this proposed rule is presented in **Appendix E**.

Table 3-1 describes the distribution of facilities by facility activity and operating status. Of the 354 facilities in the maximum extent universe, 45 facilities have co-located activities (*e.g.*, surface mining and processing, or surface mining and underground mining). Surface mining is the most common activity, occurring at 219 facilities (62 percent of total). Processing takes place at 75 facilities (21 percent of total). Underground mining occurs at 66 facilities (19 percent of total). 243 facilities (66 percent) are classified by MSHA as active throughout the year. Of the 120 intermittent or temporarily idled operations, 111 (93 percent) are surface mines. It is less common for other types of HMFs to be operated intermittently or to be temporarily idled.

Table 3-2 describes the distribution of commodities and the operating status of facilities. The most common commodity in the currently operating universe is gold, representing 161 facilities. The majority of these facilities are in Alaska (59), Nevada (49), and Montana (13). Of the 161 gold mining and processing facilities, 101 are intermittent or temporarily idled. The primary commodities most commonly mined or processed after gold are iron ore (44 facilities) and copper (30 facilities). The majority of iron ore operations are in Minnesota (13), Michigan (9), and Indiana (4). Copper facilities are largely located in Arizona (17), Nevada (3), and Utah (4). Of the 234 active facilities, gold, copper, and iron ore operations account for 121, or the majority of facilities (52 percent).

Table 3-1. Currently Operating HMFs, by Facility Activity and Operating Status

Facility Activity	Operating Status			Subtotal
	Active	Intermittent Operation	Temporarily Idled	
Brine Extraction	6	0	0	**6**
In-situ Recovery	8	0	0	**8**
Surface Mine	108	87	24	**219**
Underground Mine	62	0	4	**66**
Processing	69	5	1	**75**
Primary Smelter	25	0	0	**25**

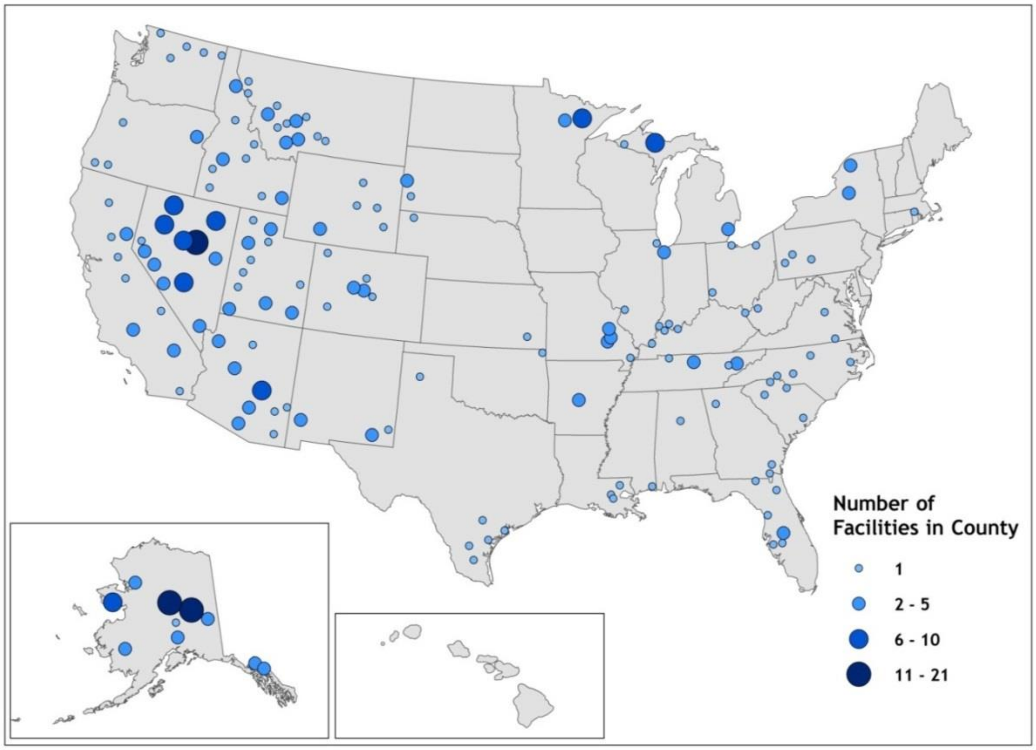
Note: Many of the 354 facilities conduct multiple activities. Thus, facilities may be counted in multiple rows of this exhibit.

Table 3-2. Currently Operating HMFs, by Commodity and Operating Status

Commodity	Operating Status			Subtotal
	Active	Intermittent Operation	Temporarily Idled	
Alumina	4	-	-	**4**
Aluminum	8	-	-	**8**
Antimony	3	-	-	**3**
Barite Barium Ore	8	1	-	**9**
Bauxite	2	1	-	**3**
Beryllium	3	-	-	**3**
Boron	4	-	-	**4**
Brucite	2	-	-	**2**
Chromite Chromium Ore	1	-	-	**1**
Copper	31	-	-	**31**
Fluorspar	1	-	-	**1**
Germanium	3	-	-	**3**
Gold	59	75	26	**160**
Indium	2	-	-	**2**
Iron Ore	31	11	2	**44**
Lead-Zinc Ore	8	-	-	**8**
Lithium	2	-	-	**2**
Magnesium	1	-	-	**1**
Molybdenum	5	-	-	**5**
Nickel	1	-	-	**1**
Phosphate Rock	13	-	-	**13**
Platinum Group Ore	2	-	-	**2**
Potash	7	-	-	**7**
Rare Earths	2	1	-	**3**
Silver Ore	5	1	-	**6**
Titanium	2	-	-	**2**
Tungsten	-	1	-	**1**
Uranium	10	-	1	**11**
Vermiculite	2	-	-	**2**
Zinc	8	-	-	**8**
Zirconium and Hafnium	4	-	-	**4**
TOTAL	**234**	**91**	**29**	**354**

Figure 3-1 illustrates the geographic distribution of the universe of facilities, based on the available county and state data from MSHA. The majority of these facilities are located in five states: Nevada (70), Alaska (60), Arizona (23), Montana (19), and Utah (17).

Figure 3-1. Geographic Distribution of the Currently Operating Universe



3.2 Obtaining a Representative Sample

The overall goal of the engineering cost estimate data collection effort was to accumulate as much recent, high quality cost information for the hardrock mining sector as possible while being representative of the range of states and commodities produced.[33] EPA sought to collect the maximum amount of data available via state government websites. Eight states contain almost two-thirds of the 354 facilities in the HMF universe: Nevada, Alaska, Arizona, Montana, Utah, California, Idaho, and Minnesota. When engineering cost estimate data were unavailable from state government websites in those eight states, EPA submitted requests for data to state government agencies.

Data were not collected for mines less than five acres both because EPA is proposing to exclude such mines from the proposed rule, and also because such mines are typically exempt from the very state programs from which EPA was collecting cost data. Furthermore, cost data more than ten years old were not collected, to make sure the cost data are as representative as possible. The

[33] The sample of facilities drew from the currently operating universe of 354 HMFs, as well as recently closed and proposed facilities that are not part of the universe.

full list of the 63 HMFs in EPA's data collection sample is presented in **Appendix F**, and discussion of the selection of facilities and collection of documentation is presented by state below.

Alaska

Cost documentation was collected for nine HMFs in Alaska. These include six active HMFs as well as one proposed and two recently closed HMFs. EPA accessed cost estimation data from detailed permit documents available through the Alaska Department of Natural Resources, Mining, Land, and Water Division, Mineral Resources Section, Large Mine Permitting Team's website.[34] Alaska facilities consist of:

- Fort Knox
- Greens Creek
- Kensington
- Niblack
- Nixon Fork
- Pogo
- Red Dog
- Rock Creek
- True North

Arizona

Cost documentation was included for nine HMFs from Arizona. These include eight active HMFs and one proposed HMF (though this facility is listed as active by MSHA). EPA received mine reclamation and closure information from the Arizona State Mine Inspector (ASMI) and/or Arizona Department of Environmental Quality (ADEQ). The ASMI is responsible for surface reclamation under the Arizona Mined Land Reclamation Act and Rules[35] while the ADEQ is responsible for groundwater and surface water protection including requirements for an Aquifer Protection Permit that includes water quality protection.[36] No publicly accessible records on mine reclamation and closure or financial assurance were found on either agency website. However, EPA noted that Arizona was one of the eight states that contain the most HMFs, and thus documentation was requested from the ASMI and ADEQ and an in-person visit to both offices was made to obtain documents on the following facilities:

- Arizona 1
- Bagdad
- Johnson Camp
- Mission
- Pinto Valley
- Rosemont
- Safford
- Ray
- Silver Bell

California

Cost documentation was included for three HMFs from California. The California Office of Mine Reclamation (OMR) maintains a database of information submitted annually by mine operators, including the reclamation status, FR amount and type, commodities produced, and

[34] http://dnr.alaska.gov/mlw/mining/largemine/

[35] https://asmi.az.gov/services/reclamation

[36] http://www.azdeq.gov/environ/water/permits/app.html

disturbed and permitted acreage.[37] California is the only state in which mine reclamation is regulated through 109 city, county, and state lead agencies. No publicly accessible records on mine reclamation or financial assurance were found on the OMR website. However, EPA noted that California was one of the eight states that contain the most HMFs, and thus cost documentation was requested from OMR for the following facilities:

- Briggs
- Mesquite
- Mountain Pass

Colorado

Cost documentation was collected for three active HMFs in Colorado. Metallic mining in Colorado is regulated by the Dept. of Natural Resources (DNR), Division of Reclamation Mining & Safety under the Colorado Mined Land Reclamation Act.[38] A database allows searches of active Colorado mines by county, operator, permit, or mine and also allows access to reclamation and FR documents.[39]

- Climax
- Cresson
- Revenue

Idaho

Cost documentation was collected for four active HMFs in Idaho. Metallic mining in Idaho is regulated by the Idaho Dept. of Lands[40] (IDL) under the Idaho Surface Mining Act of 1971, though the act is not applicable to underground mines.[41] No publicly accessible records on mine reclamation and closure or FR for Idaho were found on the IDL website. However, EPA noted that Idaho was one of the eight states that contain the most HMFs, and thus cost documentation was requested from IDL for the following facilities:[42]

- Blackfoot Bridge
- Idaho Cobalt
- Smoky Canyon
- Thompson Creek

Minnesota

Cost documentation was collected for five active HMFs in Minnesota. The Minnesota Department of Natural Resources (MN DNR), through its Division of Land and Minerals,

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[37] http://www.conservation.ca.gov/omr/SMARA%20Mines/reporting_compliance/Documents/DBase_Request_Form%200711.pdf

[38] http://mining.state.co.us/SiteCollectionDocuments/HR(2008)34-32.pdfhttp://mining.state.co.us/Programs/MineralMines/MineralResponsibilites/Pages/Bonding.aspx

[39] http://mining.state.co.us/Reports/MiningData/Pages/MiningData.aspx

[40] http://www.idl.idaho.gov/mining/regulation/

[41] http://www.idl.idaho.gov/mining/regulation/sma-overview.pdf

[42] One of the documents provided by IDL was actually U.S. Forest Service document.

regulates the reclamation of lands subjected to ferrous and nonferrous metallic mineral and peat mining operations.[43] No publicly accessible records on mine reclamation or financial assurance were identified on the MN DNR website. However, EPA noted that Minnesota was one of the eight states that contain the most HMFs, and thus cost documentation was requested from MN DNR for the following facilities:

- Essar
- Hibbing Taconite
- Minntac
- Northshore
- SCRAM

Montana

Cost documentation was collected for three active HMFs in Montana. Metallic mining in Montana is regulated by the Dept. of Environmental Quality, hardrock Mining Program, under the Metal Mine Reclamation Act.[44] The MT DEQ website contains links to pending applications and amendments for mining projects but no cost documentation.[45] However, EPA noted that Montana was one of the eight states that contain the most HMFs, and thus cost documentation was requested from the MT DEQ for the following facilities:[46]

- Continental
- East Boulder
- Golden Sunlight

Nevada

Cost documentation was collected for 17 active HMFs in Nevada. The Nevada Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation regulates hardrock mining under regulations adopted in 1989.[47] The Bureau is composed of three technical branches: regulation,[48] closure,[49] and reclamation.[50] No public accessible records on mine reclamation and closure or financial assurance for Nevada were available on the NDEP website. However, EPA noted that Nevada was one of the eight states that contain the most HMFs (it contains the most), and thus cost documentation was requested from the NDEP for the following facilities:[51]

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[43] http://www.dnr.state.mn.us/lands_minerals/mineland_reclamation/index.html

[44] http://www.deq.mt.gov/hardrock/LawsRules.mcpx

[45] http://www.deq.mt.gov/hardrock/default.mcpx

[46] Additional cost estimation data were provided however the estimates were not current (*i.e.*, pre-2005).

[47] http://ndep.nv.gov/bmrr/index.htm

[48] http://ndep.nv.gov/bmrr/reghome.htm

[49] http://ndep.nv.gov/bmrr/clshome.htm

[50] http://ndep.nv.gov/bmrr/reclhome.htm

[51] Nevada offered to provide documentation for 56 facilities. However, EPA did not wish to bias the sample of facilities towards those located in a single state.

- Bald Mountain (North)
- Emigrant
- Goldstrike
- Hollister
- Hycroft
- Jerritt Canyon
- Lone Tree
- Marigold
- Phoenix Copper
- Phoenix Historic
- Robinson
- Rochester
- Round Mountain
- Ruby Hill
- SOAP
- Standard
- Trenton Canyon

New Mexico

Cost documentation was collected for four HMFs in New Mexico. The documentation includes two active HMFs as well as one on standby and one recently closed. In New Mexico, hardrock mining is regulated by the New Mexico Energy, Minerals, and Natural Resources Dept., Mining and Minerals Division (MMD), under the New Mexico Mining Act of 1993.[52] Detailed permit information (reclamation and closure plans, FA documents, discharge permits) for mines in New Mexico is available on line from MMD.[53] These documents were accessed for the following facilities:

- Chino
- Mt Taylor
- St Anthony
- Tyrone

Utah

Cost documentation was collected for one active HMF in Utah. Mining in Utah is regulated by the Dept. of Natural Resources under Rule 647-1 of the Utah Administrative Code.[54] A database allows searches of permitting information where EPA was able to locate information for only the following facility:

- Lisbon Valley

Nebraska and Wyoming

Cost documentation was collected for four HMFs engaging in in-situ recovery in Nebraska and Wyoming. At present, the only in-situ facilities identifiable in the U.S. are uranium in-situ recovery facilities. The U.S. Nuclear Regulatory Commission (NRC), which regulates operating uranium recovery facilities in both Nebraska and Wyoming, provided documentation on the following facilities:

- Crow Butte (NE)
- Nichols Ranch (WY)
- Smith/Reynolds Ranch (WY)
- Highland (WY)

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[52] http://www.emnrd.state.nm.us/MMD/MARP/documents/MiningAct.PDF

http://www.emnrd.state.nm.us/MMD/MARP/MARPRulesRegs.html

[53] http://www.emnrd.state.nm.us/mmd/MARP/MARPPermitsRevModClose.html

[54] http://www.rules.utah.gov/publicat/code/r647/r647-001.htm

Other States

EPA is aware that other states have HMFs. Due to the low number of facilities in other states, however, information from these states was treated as a lower priority. EPA did not examine or collect this data. As an exception, cost documentation was collected for one operating HMF in South Carolina because EPA was aware that this facility had developed a very recent engineering cost estimate. EPA accessed this documentation through the South Carolina Department of Health and Environmental Control, which provided an application for a mine operating permit and a reclamation plan for the following facility which is also available online:[55]

- Haile

As discussed in **Section 3.1**, EPA estimated that 354 facilities in 38 states are potentially subject to today's proposed rule. Eight of these 37 states (Nevada, Alaska, Arizona, Montana, Utah, California, Idaho, and Minnesota) contain almost two-thirds of the universe, with Nevada and Alaska alone accounting for approximately one-third. The 29 states making up the final third of the remaining facilities have between zero and three percent each. As presented above, EPA prioritized data collection efforts in the eight states containing the majority of currently operating HMFs. A count of HMFs in each state, as well as the individual and cumulative percent of total HMFs is provided in **Table 3-3** below.

With respect to commodities mined, EPA identified 33 commodities currently mined or processed in **Section 3.1**. Nearly three-quarters of the 354 currently operating facilities report mining five commodities (gold, iron, copper, phosphate, and uranium), with gold mines alone making up nearly half of the universe. The 28 commodities making up the final quarter of the universe are each mined or processed at between 0 and three percent of facilities. EPA prioritized data collection efforts on HMFs handling the five major commodities. A count of HMFs mining or processing each commodity, as well as the individual and cumulative percent of total HMFs is provided in **Table 3-4** below.

[55] http://www.hailegoldmineeis.com/our-environment/haile-gold-mine-eis/final-environmental-impact-statement-feis/default.aspx

Table 3-3. Full HMF Universe and Data Collection Sample by State

#	State	Full Universe			Data Collection Sample		
		Count of Facilities	Percent	Cumulative Percent	Count of Facilities	Percent	Cumulative Percent
1	NV	70	19.8%	19.8%	17	27.0%	27.0%
2	AK	60	16.9%	36.7%	9	14.3%	41.3%
3	AZ	23	6.5%	43.2%	9	14.3%	55.6%
4	MT	19	5.4%	48.6%	3	4.8%	60.3%
5	UT	17	4.8%	53.4%	1	1.6%	61.9%
6	CA	16	4.5%	57.9%	3	4.8%	66.7%
7	ID	14	4.0%	61.9%	4	6.3%	73.0%
8	MN	14	4.0%	65.8%	5	7.9%	81.0%
9	MI	10	2.8%	68.6%	0	0.0%	81.0%
10	CO	8	2.3%	70.9%	3	4.8%	85.7%
11	MO	8	2.3%	73.2%	0	0.0%	85.7%
12	OR	8	2.3%	75.4%	0	0.0%	85.7%
13	FL	7	2.0%	77.4%	0	0.0%	85.7%
14	TN	7	2.0%	79.4%	0	0.0%	85.7%
15	NM	6	1.7%	81.1%	4	6.3%	92.1%
16	TX	6	1.7%	82.8%	0	0.0%	92.1%
17	WY	5	1.4%	84.2%	3	4.8%	96.8%
18	IN	5	1.4%	85.6%	0	0.0%	96.8%
19	WA	5	1.4%	87.0%	0	0.0%	96.8%
20	KY	4	1.1%	88.1%	0	0.0%	96.8%
21	NC	4	1.1%	89.3%	0	0.0%	96.8%
22	NY	4	1.1%	90.4%	0	0.0%	96.8%
23	SC	4	1.1%	91.5%	1	1.6%	98.4%
24	SD	4	1.1%	92.7%	0	0.0%	98.4%
25	GA	3	0.8%	93.5%	0	0.0%	98.4%
26	LA	3	0.8%	94.4%	0	0.0%	98.4%
27	OH	3	0.8%	95.2%	0	0.0%	98.4%
28	PA	3	0.8%	96.0%	0	0.0%	98.4%
29	AR	2	0.6%	96.6%	0	0.0%	98.4%
30	IL	2	0.6%	97.2%	0	0.0%	98.4%
31	VA	2	0.6%	97.7%	0	0.0%	98.4%
32	AL	1	0.3%	98.0%	0	0.0%	98.4%
33	KS	1	0.3%	98.3%	0	0.0%	98.4%
34	MS	1	0.3%	98.6%	0	0.0%	98.4%
35	NE	1	0.3%	98.9%	1	1.6%	100.0%
36	OK	1	0.3%	99.2%	0	0.0%	100.0%
37	RI	1	0.3%	99.4%	0	0.0%	100.0%
38	UT/WY	1	0.3%	99.7%	0	0.0%	100.0%
39	WV	1	0.3%	100.0%	0	0.0%	100.0%
All States		**354**	**100.0%**	**100.0%**	**63**	**100.0%**	**100.0%**

Note: One facility in the universe, Simplot Vernal/Rock Springs, has operations in both Utah and Wyoming.

Figure 3-2. Cumulative Distribution of Full Universe vs. Data Collection Sample

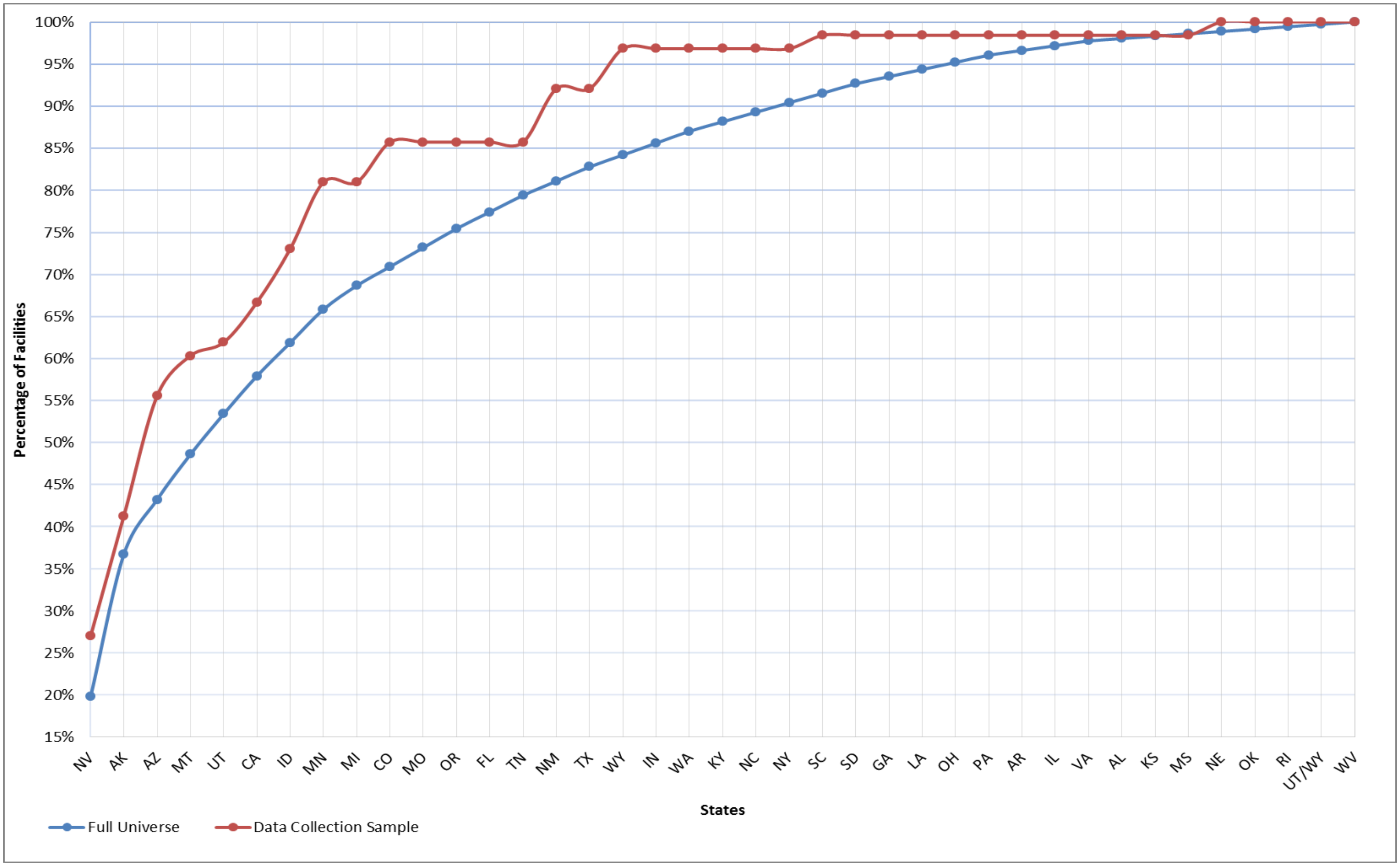


Table 3-4. Full Universe and Data Collection Sample by Commodities Handled

n	Commodity	Full Universe			Data Collection Sample		
		Count	%	Total %	Count	%	Total %
1	Gold	160	45.2%	45.2%	27	37.5%	37.5%
2	Iron Ore	44	12.4%	57.6%	5	6.9%	44.4%
3	Copper	31	8.8%	66.4%	16	22.2%	66.7%
4	Phosphate Rock	13	3.7%	70.1%	2	2.8%	69.4%
5	Uranium	11	3.1%	73.2%	7	9.7%	79.2%
6	Barite Barium Ore	9	2.5%	75.7%	0	0.0%	79.2%
7	Aluminum	8	2.3%	78.0%	0	0.0%	79.2%
8	Lead-Zinc Ore	8	2.3%	80.2%	2	2.8%	81.9%
9	Zinc	8	2.3%	82.5%	1	1.4%	83.3%
10	Potash	7	2.0%	84.5%	0	0.0%	83.3%
11	Silver Ore	6	1.7%	86.2%	7	9.7%	93.1%
12	Molybdenum	5	1.4%	87.6%	2	2.8%	95.8%
13	Alumina	4	1.1%	88.7%	0	0.0%	95.8%
14	Boron	4	1.1%	89.8%	0	0.0%	95.8%
15	Zirconium/Hafnium	4	1.1%	91.0%	0	0.0%	95.8%
16	Antimony	3	0.8%	91.8%	0	0.0%	95.8%
17	Bauxite	3	0.8%	92.7%	0	0.0%	95.8%
18	Beryllium	3	0.8%	93.5%	0	0.0%	95.8%
19	Germanium	3	0.8%	94.4%	0	0.0%	95.8%
20	Rare Earths	3	0.8%	95.2%	1	1.4%	97.2%
21	Brucite	2	0.6%	95.8%	0	0.0%	97.2%
22	Indium	2	0.6%	96.3%	0	0.0%	97.2%
23	Lithium	2	0.6%	96.9%	0	0.0%	97.2%
24	Platinum Group	2	0.6%	97.5%	1	1.4%	98.6%
25	Titanium	2	0.6%	98.0%	0	0.0%	98.6%
26	Vermiculite	2	0.6%	98.6%	0	0.0%	98.6%
27	Chromite Chromium	1	0.3%	98.9%	0	0.0%	98.6%
28	Fluorspar	1	0.3%	99.2%	0	0.0%	98.6%
29	Magnesium	1	0.3%	99.4%	0	0.0%	98.6%
30	Nickel	1	0.3%	99.7%	0	0.0%	98.6%
31	Tungsten	1	0.3%	100.0%	0	0.0%	98.6%
32	Cobalt	0	0.0%	100.0%	1	1.4%	100.0%
All Commodities		**354**	**100.0%**	**100.0%**	**72**	**100.0%**	**100.0%**

Note: The accounting of commodities for the full universe of HMFs is different from the accounting of commodities in the data collection sample. For the full universe, each facility is listed as producing one "primary" commodity. The sample, on the other hand, includes all of the commodities produced or processed by a facility. Thus, in the sample, if a facility produces or processes multiple commodities, it will contribute multiple entries into the sample's commodity dataset. For this reason, the number of commodity occurrences in the sample is 72, greater than the 63 facilities that comprise the sample.

Figure 3-3. Cumulative Distribution by Commodity of Full Universe vs. Data Collection Sample

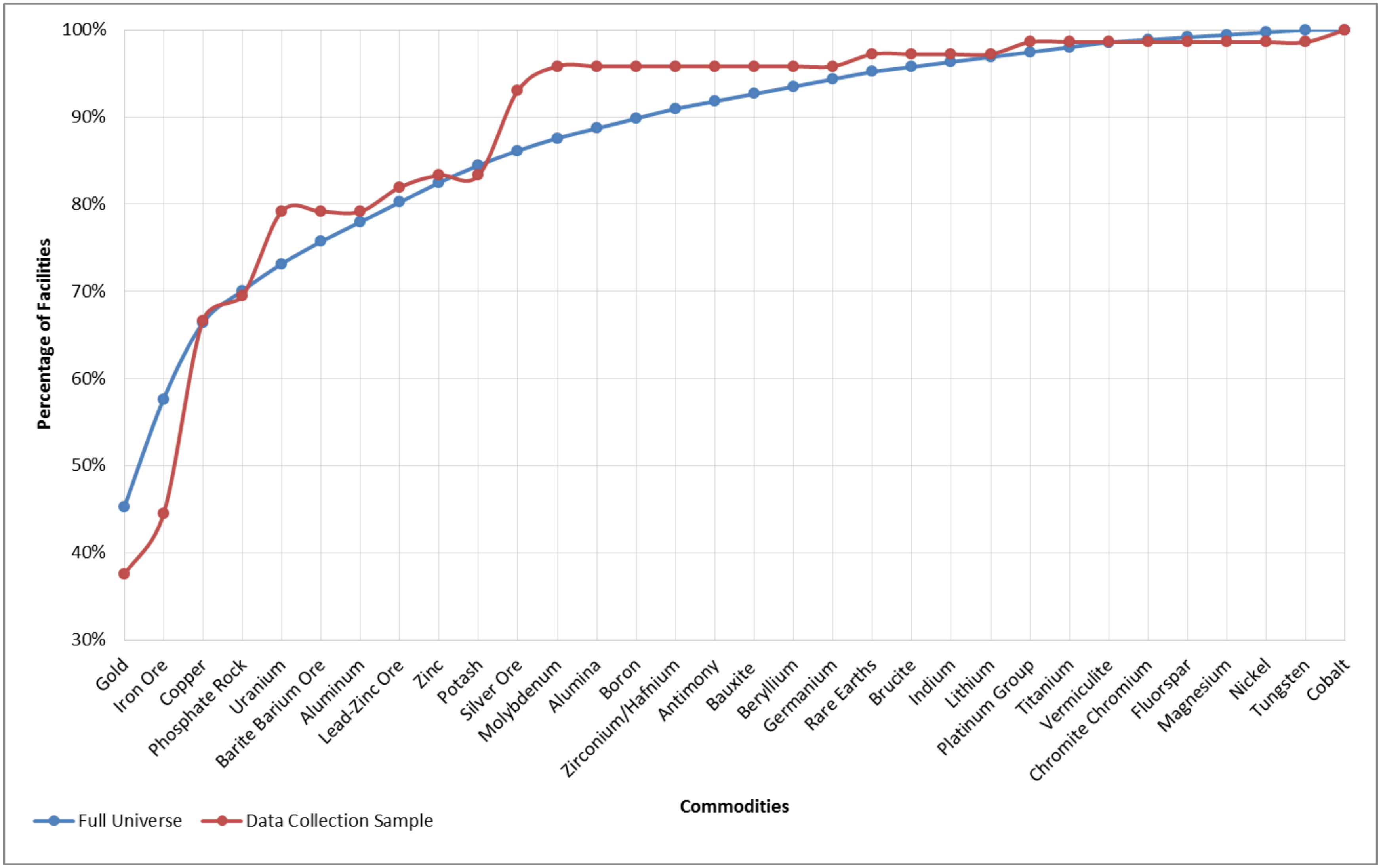
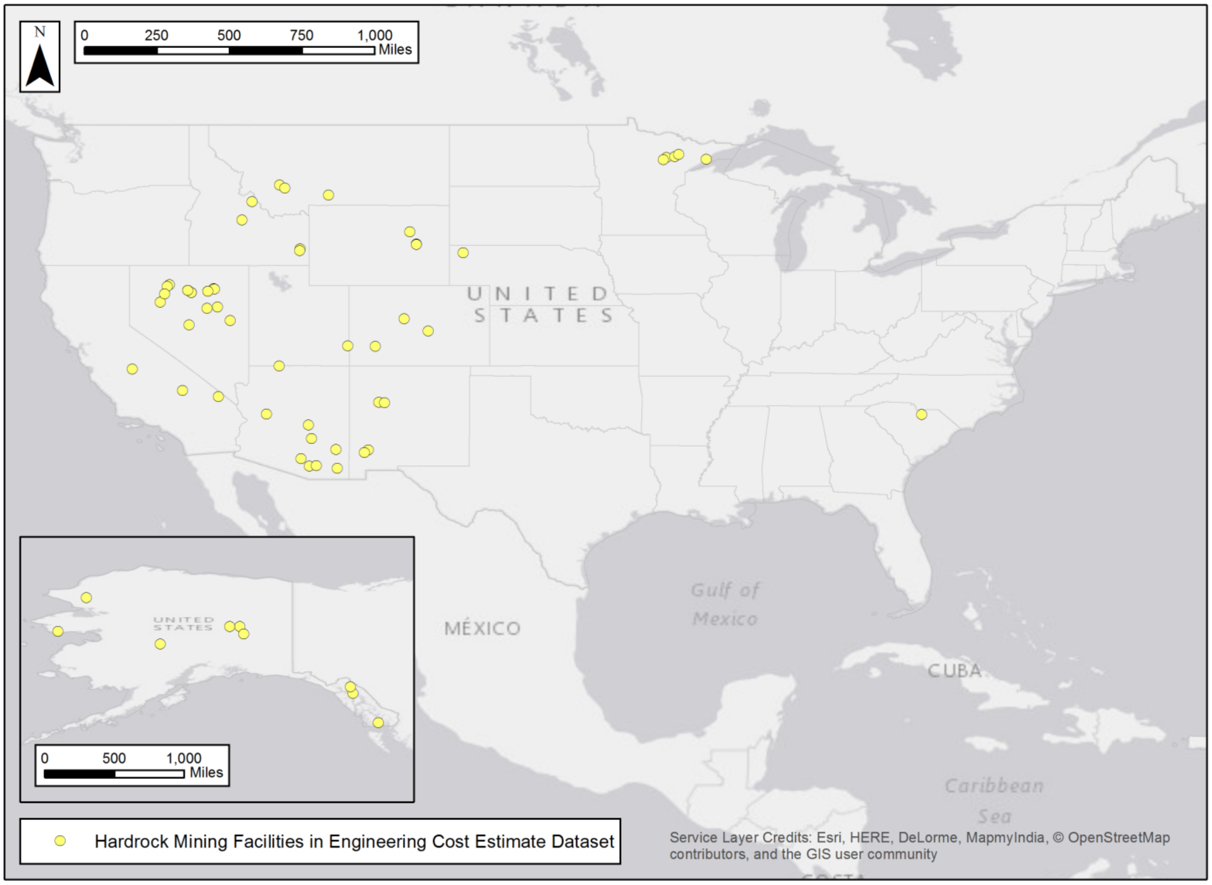


Figure 3-4 below depicts the final sample of 63 facilities selected for data collection. EPA notes that while the sample data set appears to focus on HMFs in the western United States, this is also where the vast majority of HMFs in the currently operating universe are located (as shown in **Figure 3-1** above).

Figure 3-4. Geographical Depiction of Operating HMF Data Collection Sample



3.3 Reclamation and Closure Plan Data Collection

EPA gathered cost documentation for 63 HMFs in 13 states as discussed in **Section 3.2** above. From these documents, EPA examined cost data relating to the tasks identified in **Section 2.3** and grouped these into the 14 overarching response categories identified in the right-most column of **Table 2-2** entitled "Response Categories for Analysis." These response categories consisted of seven feature-specific response categories (*e.g.*, open pit capital costs), six site-wide response categories (*e.g.*, interim O&M costs), and overhead and oversight costs. In addition, EPA collected the relevant acreage and flow data reported in the documentation of the engineering cost estimate.

For six of the feature-specific capital response categories, where cost estimates and acreages existed for tasks at a given feature, EPA collected both. The one exception, underground mines, generally did not have corresponding acreage data. Thus, if capital costs existed, EPA assumed an underground mine existed, and collected the relevant cost data.

EPA also attempted to collect data on acreage and capital costs for slag piles. Only one data point was located: a closed slag pile at the Chino mine in New Mexico. EPA collected the capital cost associated with the slag pile, but no acreage data existed in that source document. However, EPA notes that the smelter operation was conducted over approximately 25 acres and presumes that the majority of that acreage consisted of slag.[56]

For water treatment costs, flows in gallons per minute (GPM) were necessary for the cost to be incurred at a site. Thus, if both flows and costs existed for water treatment, EPA retained both pieces of data for an observation.

With respect to the remaining five site-wide response categories, EPA simply collected whatever cost data were available. Because the site-wide capital and O&M response categories were not tied to the existence of a single site feature or flow, no additional data was needed to make an observation complete. Thus, EPA retained all cost data for these five response categories.

Finally, EPA collected data on overhead and oversight costs. While there were seven tasks identified in **Section 2.3** relating to these costs, it was unnecessary for EPA to collect data on agency indirect costs because EPA publishes indirect rates to be applied for CERCLA actions.[57]

To verify the cost estimates for each facility, EPA conducted a thorough review of the dataset following data collection. Reviewers independently replicated the data entry process using the original source documents to ensure that cost estimates were accurate, attributed to the appropriate task (or subtask), and not double-counted. This review was completed when each cost estimate was accounted for and attributed to the appropriate subtask and mine feature.

Data Standardization

Upon finalizing data collection and data validation of the engineering cost estimate dataset, EPA adjusted the data to facilitate comparison of cost estimates across facilities. First, EPA normalized all costs to 2014 dollars using the Engineering News Record (ENR) Construction Cost Index.[58] This was completed for each mine task and subtask based on the year each cost estimate was most recently prepared. **Equation 3-1** was used to inflate the estimated costs to 2014 dollars:

Equation 3-1

$$Cost_{2014\$} = Cost_{n\$} \times \frac{CI_{2014}}{CI_n}$$

[56] U.S. EPA (Environmental Protection Agency). 2013. *RE-Powering America's Land: Evaluating the Feasibility of Siting Renewable Energy Production on Potentially Contaminated Land*. April. Available online at: https://www.epa.gov/sites/production/files/2015-07/documents/fs_silver_city_nm.pdf

[57] U.S. EPA (Environmental Protection Agency). 2012. *Superfund Actual Indirect Cost Rates for FY 2011*. OCFO. Washington DC, 20460. August 30. Available online at: https://quicksilver.epa.gov/work/HQ/176103.pdf

[58] "Construction Cost Index History – As of October 2015," *Engineering News Record* (October 14, 2015).

Where:

n = the year of basis for engineering cost estimate*; and*

CI_n = the ENR Cost Index for year n.

Table 3-6. ENR Construction Cost Index (2005-2014)

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ENR CI Average	7,446	7,751	7,966	8,310	8,570	8,802	9,070	9,308	9,547	9,806

Additionally, EPA standardized all engineering cost estimates to the U.S. national level to account for differences in labor and materials costs across states using multipliers developed by the Army Corps of Engineers.[59] This step was done using **Equation 3-2** below:

Equation 3-2

$$C_{US} = \frac{C_s}{M_s}$$

Where:

C_{US} = the nationalized engineering cost estimate;

s = the state in which the engineering cost estimate was developed;

C_s = the engineering cost estimate from state s adjusted to 2014 dollars; and

M_s = the multiplier for state s.

Finally, EPA standardized the O&M response categories. In most cases, O&M data were collected from the source documents as a nominal cost stream that EPA converted into an annualized cost. Also, in the case of water treatment, capital costs of the water treatment plant construction were amortized into an annualized payment[60] so that both the capital costs and O&M were in the same format. Here EPA used an amortization period of ten years for short-term default capital costs and 30 years for long-term capital costs.[61]

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[59] U.S. Army Corps of Engineers, "Civil Works Construction Cost Index System," Manual No. 1110-2-1304 (31 March 2012, revised through 30 September 2015). Available at http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-1304.pdf

[60] This is representative of a facility taking out a loan to build a plant and then paying off that loan over a fixed repayment period.

[61] For default, short-term costs see U.S. EPA and USACE (Army Corps of Engineers). 2000. *A Guide to Developing and Documenting Cost Estimates during the Feasibility Study*. EPA 540-R-00-002. OSWER. Washington, DC 20460. July. Available online at: https://www.epa.gov/sites/production/files/2015-02/documents/a_guide_to_developing_and_documenting_cost_estimates_during_the_feasibility_study.pdf and for long-term costs see U.S. EPA. 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies*

For most data elements, EPA collected 25 or more observations. However, four data elements had very few complete observations. These were underground mine capital costs (14 observations), slag pile capital costs and acreage (one observation) water treatment costs and flows (18 observations), and long-term O&M and monitoring (14 observations). EPA noted that underground mine and long-term O&M these costs tended to fall more than an order of magnitude below the other capital and O&M costs collected, respectively. Thus, the lack of data was unlikely to affect the ultimate formula. However, water treatment costs were a significant response category. Due to the very high impact these costs could have on the ultimate formula, EPA sought to supplement this particular dataset with additional observations.

EPA noted that of the major response categories for which it had collected data, water treatment was the least well represented.[62] Only 15 sites reported long-term water treatment costs and related flows. Due to the significance of this response category, and the small number of data points, EPA decided to supplement the data set with CERCLA HMFs where data were readily available due to regional staff and contractor knowledge of the sites.

EPA identified several sites that had water treatment as a remedy. In many cases actual water treatment has yet to be designed or implemented. In other cases the site is operated by a potentially responsible party that has not disclosed actual capital or operating costs. While EPA has cost data for some sites, in many cases it is not supported by detailed engineering estimates or cost accounting. For these reasons, only three CERCLA sites were identified where detailed water treatment cost data were available. Those sites were

- Clear Creek in Colorado (EPA ID COD980717557);
- Summitville in Colorado (EPA ID COD983778432); and
- Zortman Landusky in Montana (MSHA ID 240150).

Only water treatment costs and related flows were collected from these sites, and these data are presented in **Appendix G**.

Cost Data Collection Results

Table 3-7 provides the counts of data points collected under the collection process described above as well as the minimum, maximum, and mean for each data element. The full results of the data collection are presented in **Appendix G**.

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under CERCLA (Interim Final). EPA/540/G-89/004. OSWER. Washington, DC 20460. October. Available online at: https://rais.ornl.gov/documents/GUIDANCE.PDF

[62] Underground mines and long-term O&M were also represented by very few data points, however these response categories tended to be very small in magnitude.

Table 3-7. Summary of Results from Cost Data Collection

Data Element	#	Min	Max	Mean
Solid and Hazardous Waste Disposal Costs	25	$4,491	$3,608,464	$750,637
Open Pit Capital Costs	37	$1,559	$222,825,269	$8,149,201
Open Pit Acreage		4 acres	1,600 acres	407 acres
Underground Mine Capital Costs	14	$10,517	$4,408,801	$531,369
Waste Rock Capital Costs	46	$36,077	$110,335,032	$12,228,704
Waste Rock Acreage		3 acres	3,968 acres	919 acres
Heap/Dump Leach Capital Costs	28	$40,164	$85,971,992	$11,339,922
Heap/Dump Leach Acreage		23 acres	1,321 acres	520 acres
Tailings Facility Capital Costs	33	$62,689	$74,854,056	$10,274,192
Tailings Facility Acreage		10 acres	6,200 acres	1,076 acres
Process Pond and Reservoir Capital Costs	31	$5,817	$5,901,456	$1,101,448
Process Pond and Reservoir Acreage		1 acres	216 acres	31 acres
Slag Pile Capital Costs	1	$1,623,995	$1,623,995	$1,623,995
Slag Pile Acreage		25 acres	25 acres	25 acres
Drainage Capital Costs	27	$2,955	$14,276,403	$1,740,990
ANNUAL COSTS				
Interim O&M Costs	34	$84,649	$17,237,910	$4,465,425
Water Treatment O&M Costs	18	$16,616	$11,931,095	$2,516,391
Water Treatment Flows		11 GPM	1,600 GPM	542 GPM
Short-Term O&M and Monitoring Costs	52	$4,464	$1,509,168	$259,067
Long-Term O&M and Monitoring Costs	14	$9,192	$1,131,853	$175,741
OVERHEAD AND OVERSIGHT COSTS				
Mobilization/Demobilization	46	$4,928	$5,817,273	$687,114
Engineering Design/Redesign	45	$9,738	$15,410,532	$1,917,265
Contingency	59	$36,584	$17,805,859	$2,849,634
Contractor Profit and Overhead	48	$19,651	$42,414,319	$5,188,535
Liability Insurance	32	$5,633	$1,809,657	$345,688
Payment and Performance Bonds	34	$2,928	$11,557,899	$1,362,767
Agency Direct Costs	54	$7,658	$23,115,798	$2,622,617
Agency Indirect Costs[1]	N/A	N/A	N/A	N/A

[1] Agency indirect costs were not collected from reclamation and closure plan cost estimates because EPA generates the set of region-specific indirect cost rates presented in **Table 3-8** below.

In addition to the overhead and oversight costs above, the Office of Management and Budget (OMB) issued Statement of Federal Financial Accounting Standards (SFFAS) No. 4 on July 31, 1995, which required agencies to account for the full cost of each of their programs. The full cost includes both those costs specifically identifiable with each particular program (Agency direct costs) and those costs supporting the full suite of programs that an agency administers (Agency indirect costs). In response to OMB SFFAS No. 4, EPA issued a methodology for calculating

Superfund-specific indirect cost factors. This methodology is presented in U.S. EPA (2000),[63] and used in U.S. EPA (2011)[64] to calculate the indirect cost rates presented in **Table 3-8** below.

Table 3-8. Regional Indirect Cost Rates

Region	Indirect Rate	Region	Indirect Rate
1	44.85%	**6**	45.02%
2	33.08%	**7**	33.40%
3	76.18%	**8**	39.77%
4	55.33%	**9**	45.79%
5	61.61%	**10**	39.14%

3.4 Collection of Water Balance and Chemical Process Data

EPA collected cost and related data for certain tasks in **Section 3.3** for the purpose of conducting regression analyses. In addition to these data elements, EPA subject-matter experts believed that other variables could explain the differences between higher and lower costs at sites based on their professional experience. First, these experts believed that water-related factors such as distance to groundwater or surface water, as well as net precipitation could influence the costs estimated for a site. Second, these experts believed that the process methods used could influence costs necessary for a site. Thus, EPA attempted to collect these data for the sample of 63 currently operating HMFs and three CERCLA HMFs. As explained below, EPA developed a hierarchy of data sources (**Section 3.4.1**) and applied a consistent data collection methodology to those sources (**Section 3.4.2**) leading to a final set of data on these additional explanatory variables (**Section 3.4.3**).

3.4.1 Hierarchy of Data Sources

To guide the collection of the additional data elements described above, EPA established a hierarchy of data sources. This hierarchy differs for the 59 conventional HMFs, four in-situ recovery HMFs, and three CERCLA sites because of the differing documents, permits, and records required for these types of sites. In general, the hierarchy was designed to first examine global documents that might contain all relevant data elements at a given facility (*e.g.*, environmental impact statements). Each of these tiers is discussed below, and a summary of the hierarchy is provided in **Table 3-9** below.

Tier I Sources

For HMFs, the most widely available documents that could contain all of the relevant data elements were environmental impact statements (EISs). Thus, EPA established EISs as the only Tier I data source.

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[63] U.S. EPA (Environmental Protection Agency). 2000. *Comptroller Policy Announcement 00-05*. OCFO. Washington, DC. May 26.

[64] U.S. EPA (Environmental Protection Agency). 2012. *Superfund Actual Indirect Cost Rates for FY 2011*. OCFO. Washington DC, 20460. August 30. Available online at: https://quicksilver.epa.gov/work/HQ/176103.pdf

Tier II Sources

If an EIS was not available for a given facility, or if all data elements were not available from an EIS document, EPA proceeded to Tier II data sources where the Agency examined other documents that had the potential to include most or all of the relevant data elements. These included environmental assessments (EAs), environmental assessment workshops (EAWs), closure/closeout plans (CCPs), and reclamation and closure plans (RCPs). For the in-situ recovery HMFs, an additional data source was the engineering evaluation/cost analysis (EECA) documents, and for the CERCLA sites, an additional data source were records of decision (RODs).

Tier III Sources

Where no Tier I or Tier II documents were available, or where specific data elements could not be located in those documents, EPA proceeded to Tier III data sources. These data sources consisted of regulatory documents that were likely to contain useful information for a more limited number of data elements. These included national pollutant discharge elimination system (NPDES) permits and aquifer protection permits (APPs).

Tier IV Sources

Where no Tier I through III data sources were available, EPA turned to any other local, state, regional, or national sources of available data. These included conference proceedings and materials, state environmental quality documents, USGS (2014a),[65] USGS (2014b),[66] USGS (2011),[67] WRCC Evaporation Stations Data,[68] Nebraska Water Center (2010),[69] and SC DNR pan evaporation records.[70] The full set of sources can be found in the references of **Appendix H**.

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[65] USGS (U.S. Geological Survey). 2014a. One Million-Scale Streams of the United States. Available online at http://nationalmap.gov/small_scale/mld/1strmsl.html

[66] USGS (U.S. Geological Survey). 2014b. One Million-Scale Waterbodies and Wetlands of the United States. Available online at http://nationalmap.gov/small_scale/mld/1lakesp.html

[67] USGS (U.S. Geological Survey). 2011. United States Average Annual Precipitation, 2005-2009. Available online at http://catalog.data.gov/dataset/united-states-average-annual-precipitation-2005-2009-direct-download

[68] WRCC (Western Regional Climate Center). Evaporation Stations Data. Available online at http://www.wrcc.dri.edu/htmlfiles/westevap.final.html

[69] Nebraska Water Center. 2010. Mapping Evapotranspiration. Available online at http://watercenter.unl.edu/archives/2010MappingET.asp

[70] SC DNR (South Carolina Department of Natural Resources). South Carolina State Climatology Office. Pan Evaporation Records for the South Carolina Area. Available online at http://www.dnr.sc.gov/climate/sco/Publications/pan_evap_records.php

Table 3-9. Source Hierarchy for Global Explanatory Variable Data Collection

Tier	Data Sources		
	All HMFs	**ISR Only**	**CERCLA Only**
I	• EISs	• None	• None
II	• EAs • EAWs • CCPs • RCPs	• EECA	• ROD
III	• NPDES permits • APPs	• None	• None
IV	• USGS (2011) • USGS (2014a) • USGS (2014b) • WRCC Data • Nebraska Water Center (2010) • SC DNR Records • Conference proceedings • State environmental quality documents • Other local data sources	• None	• None

3.4.2 Methods for Data Collection and Validation

EPA established up-front criteria for identifying potentially relevant information from the hierarchy of sources established in **Section 3.4.1** above. This was done for each data element for which EPA believed information might be useful for explaining variability in the engineering cost estimates collected in **Section 3.3**. Once the methods below yielded the relevant piece of data at a given data collection tier, EPA recorded that observation and did not examine any further tiers. At the completion of the data collection, each data element observation was independently verified as explained below.

Distance to Surface Water

EPA conducted key word searches for "surface water," "river," "streams," and "spring" in each of the documents reviewed. When the distance to the nearest surface water body was identified, that value was recorded. If a map was available within the reviewed document, distance to the nearest surface water body was measured using a ruler and the scale available on the map. A distance of 0 meters was entered when descriptions included identification of surface water within or directly adjacent to the project area.

For some sites, EPA was ultimately unable to locate data on distance to surface water from the four tiers of documents listed above. Therefore, EPA supplemented the remaining sites using USGS GIS layers to estimate the distance to surface water for each facility.

Depth to Groundwater

EPA conducted key word searches for the terms "groundwater," "bedrock," "alluvial," and "aquifer" in each tier of the documents reviewed to determine the location of relevant information in the document. EPA also specifically reviewed Section 3 in EIS documents (Section on Affected Environment) for any information on groundwater depth. Where depths to groundwater were identified, those depths were entered. If a single value was available, EPA recorded that value. In other instances, only a range was available. Here, EPA recorded both the minimum and maximum values of that range. Finally, EPA entered a value of0 feet where descriptions of the facility included the following:

- Identification of springs and seeps within or directly adjacent to the project area;
- Existence of artesian wells;
- Groundwater cited as causing the formation of a pit lake; or
- Discussion of a mine shaft bisecting an aquifer.

If none of the above depth to groundwater data were available, EPA searched for groundwater and facility elevation in an attempt to estimate the depth to groundwater. For determining elevation, EPA conducted key term searches for "elevation," and "AMSL"[71] in each tier of the documents reviewed. When a range of elevations was documented at a facility, the minimum and maximum elevations were recorded. Where only a single elevation was identified, that value was recorded.

Where the elevations were not described in the text but were available in topographical maps/figures of the mining facility, EPA extracted elevation from those maps and figures. First, EPA would look for the site-specific elevation range. Where this range was unavailable, EPA searched for elevations close to the mining area or within the region of the mining facility. Finally, if an elevation range was not provided for the region of the mining facility, and could not be estimated from figures and maps, EPA looked for elevations of individual features (*e.g.*, open pit). If elevations for site features were available, lowest and highest elevations from these features were used in place of the overall elevation of the facility.

If groundwater elevation and surface elevation data as discussed above were identified, depth to groundwater was estimated. EPA estimated the depth to groundwater by subtracting the groundwater elevation from the surface elevation. Where available, EPA used post-mining groundwater elevations for this calculation which reflect the natural groundwater state. If post-mining groundwater elevations were not available, pre-mining groundwater elevations were used.

In several cases, the documents reviewed did not provide information on depth to groundwater or the elevations necessary to estimate depth to groundwater. As a result, six of the 66 facilities did not have a depth to groundwater recorded in the final dataset.

Net Precipitation

EPA conducted key word searches for terms "precipitation," and "climate" in each tier of the documents reviewed. In some cases net precipitation values were reported, and those values were

[71] Above Mean Sea Level

recorded. More often, however, EPA had to search for and identify precipitation and evaporation values separately.

Where a range of precipitation values were identified at a facility, the minimum and maximum precipitation values were recorded. When precipitation values could not be identified in the first three tiers of the hierarchy, EPA used GIS data and a national USGS precipitation dataset to identify appropriate precipitation rates as discussed below.

With respect to evaporation, values were recorded where a lake evaporation, pan evaporation, or unspecified evaporation value was presented. When a document provided unspecified evaporation, EPA assumed the data were for pan evaporation. To create a consistent dataset, EPA adjusted lake evaporation data using the following formula:[72]

Equation 3-3

$$E_{Pan} = E_{Lake} \times \frac{1}{0.75}$$

Where:

E_{Pan} = pan evaporation; and

E_{Lake} = lake evaporation.

When evaporation values could not be identified in the first three tiers of the hierarchy, EPA used GIS data and three state and regional evaporation databases to identify appropriate evaporation rates as discussed below.

To generate net precipitation values when no data were provided for net precipitation, EPA subtracted a site's pan evaporation from its precipitation:

Equation 3-4

$$P_{Net} = P_{Total} - E_{Pan}$$

Where:

P_{Total} = total precipitation;

E_{Pan} = pan evaporation; and

P_{Net} = net precipitation.

Flotation Processes

EPA conducted key word searches for the terms "flotation," "modifiers," "collectors," "frothers," "milling," and "flocculents" in each tier of the documents reviewed. If the term "milling" was found and referred to copper, a "1" (or yes) was recorded for the facility using floatation processes. Similarly, if the other keywords listed above were identified as a method of

[72] E. Linacre, "Ratio of Lake to Pan Evaporation Rates," accessed 26 April 2016 at: http://www-das.uwyo.edu/~geerts/cwx/notes/chap04/eoep.html (Linacre gives coefficient for converting pan evaporation to lake evaporation as "often taken as about 1.3" and 1/1.3=0.75.)

processing at the facility, a "1" (or yes) was recorded for the facility using floatation processes. Otherwise, a "0" (or no) was recorded for the facility using floatation processes.

Cyanide Leach Processes

EPA conducted key word searches for the terms "cyanide," "carbon adsorption," and "Merrill-Crowe" in each tier of the documents reviewed. If any of the key words were found in relation to the processing methods at a facility, a "1" (or yes) was recorded for the facility using cyanide leach processes. EPA conducted a supplemental key word search for facilities which mine for gold. In this supplemental search, EPA looked for the terms "heaps" and "heap leaching." If either term was found, a "1" (or yes) was recorded for the facility using cyanide leach processes. Otherwise, a "0" (or no) was recorded for the facility using cyanide leach processes.

Acid Leach Processes

EPA conducted key word searches for the terms "acid," "SX/EW," and "raffinate" in each tier of the documents reviewed. If any of the key words were found and were in reference to a type of processing method used at that facility, a "1" (or yes) was recorded for the facility using acid leach processes. Otherwise, a "0" (or no) was recorded for the facility using acid leach processes.

In-situ Leach Processes

EPA conducted key word searches for terms related to the in-situ leach process: "alkaline," "metal recovery," "ion exchange," lixiviant," "ISL,"[73] and "ISR."[74] If any of the key words were found and were in reference to a type of processing method used for that facility, a "1" (or yes) was recorded for the facility using in-situ leach processes. Otherwise, a "0" (or no) was recorded for the facility using in-situ leach processes.

Collection of Missing Surface Water and Net Precipitation Data using GIS

In addition to information on HMFs identified through searches of the tiers of data in the hierarchy, EPA researched publicly available national GIS datasets to obtain data on the geological characteristics of hardrock mining facilities. Specifically, EPA identified national GIS datasets containing information on distance to surface water and annual average precipitation from USGS.

In order to derive facility-specific estimates of missing surface water and net precipitation data from geographic datasets, EPA identified the geographic coordinates associated with each mine in the engineering cost estimate dataset. For the majority of facilities, EPA identified approximate geographic coordinates through the MSHA Mines Data Set.[75] For facilities not present in the Mines Data Set, EPA conducted targeted research through EPA's Facility Registry System (via the Envirofacts database)[76] and Google Earth, supplemented with information

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[73] In-Situ Leach

[74] In-Situ Recovery

[75] MSHA. "Mines Data Set," accessed on July 28, 2015 at http://www.msha.gov/OpenGovernmentData/OGIMSHA.asp

[76] EPA Facility Registry Service (FRS), accessed December 21, 2015 at https://www.epa.gov/enviro/facility-registry-service-frs

accessed through company and state government websites. The accuracy of all coordinates was manually confirmed using Google Earth.

EPA then assigned distances to surface water and precipitation using the USGS datasets described above. The closest weather stations or surface waterbodies were chosen and the precipitation and distance recorded, respectively. Furthermore, historical pan evaporation data were available at weather stations in all states containing HMFs. The geographic locations of these individual data stations were manually identified in Google Earth. Each HMF was assigned the evaporation data associated with the closest weather station. EPA then assigned individual mining facilities the average annual pan evaporation estimate associated with the closest data station.

Tailings Handling Method

For facilities which reported cost and acreage data for tailings facilities in **Section 3.3**, EPA conducted key word searches for the tailings handling terms "wet," "slurry," "cyclone," and "spigot" in each tier of the documents reviewed. If the key terms were identified in reference to a wet tailings deposition method used at the facility, a "1" (or yes) was recorded for the facility's tailings being handled wet.

Where none of the terms above could be identified, EPA conducted a supplemental key word search for the terms "paste," "filtered," and "dewatered" in each tier of the documents reviewed. If the key terms were identified and in reference to a paste or filtered dry tailings deposition methodology used at the facility, a "0" (or no) was recorded for the facility's tailings being handled wet.

Environmental and Operational Data Validation

To verify the values that were entered for each of the 63currently operating HMFs and three CERCLA HMFs, EPA conducted a thorough review of the dataset following data collection. Reviewers independently replicated the data entry process using the original source documents to ensure that the data were accurate, descriptions were attributed to an appropriate category and both data and descriptions matched the cited reference(s).

3.4.3 Results of Data Collection

Table 3-10 provides the counts of data points collected under the collection process described in the text above as well as the minimum, maximum, and mean. (In cases where data were binary, the count of zeros and ones were reported in place of minimums and maximums.) The full results of the data collection are presented in **Appendix H**. For most data elements, EPA collected data on the full sample of HMFs, or 66 observations. However, for depth to groundwater (60 observations) EPA was unable to develop a complete set of observations. With respect to depth to groundwater, EPA noted that data were collected for all but six of the sites.

Table 3-10. Summary of Results from Global Explanatory Variable Data Collection

Data Element	n	Min (absence)	Max (presence)	Mean
Distance to Surface Water	55	0 m	32,187 m	3,366 m
Depth to Groundwater	60	0 ft	1,400 ft	59 ft
Net Precipitation	66	-145 in	159 in	-33 in
Use of Flotation Processes	66	36	30	N/A
Use of Cyanide Leach Processes	66	39	27	N/A
Use of Acid Leach Processes	66	52	14	N/A
Use of In-situ Leach Processes	66	62	4	N/A

4 Response Component Regression Analysis

After gathering the monetary transactions and response activities in **Section 2** and collecting supplemental data from current mines in **Section 3**, EPA had sufficient data to generate relationships between existing site features and reclamation and closure plan costs. **Section 4.1** discusses the development of the formula components for estimating categories of financial responsibility that are direct engineering responses. **Section 4.2** then presents the results of that analysis. Next, annualized results are converted into a net present value (**Section 4.3**). Finally, state-specific labor and supplies premiums as well as various categories of indirect overhead and oversight costs are estimated (**Section 4.4**).

4.1 Response Regression Preparation

EPA's goal was to use the data gathered in previous sections to estimate a national formula for the FR amount that could be incurred by any facility with a given set of site characteristics. Thus, across a number of response categories specific to individual tasks and mine features, EPA used regression analysis to estimate the relationship between reclamation and closure plan costs and a limited set of predictor variables that are readily obtainable for each site.

4.1.1 Regression Approach Overview

Section 3 identified categories of engineering cost estimates that are representative of similar categories of response actions taken at CERCLA HMFs. EPA sought to use regression analysis to tie each of these categories of costs (the dependent variables) to some subset of site-specific factors that the regressions identified as influential (the independent or explanatory variables). Since EPA did not know with certainty which variables would be most significant in explaining the variation in costs across sites, a step-wise regression process was chosen.

Step-wise regression is an automated process of testing individual regression models by successively adding or removing variables. This process ultimately identifies a regression model that achieves a good statistical fit with some combination of these variables. Step-wise regression can be conducted using forward selection, backward selection, or bidirectional selection. Furthermore, statistical fit can be described with a number of alternative parameters. A summary of these various considerations is presented in **Table 4-1** below.

Table 4-1. Summary of Step-wise Regression Methods and Statistical Fit Parameters

Selection Method	Statistical Fit Parameter
Forward Selection starts with no independent variables then adds the variable (if any) that improves the model the most using a chosen statistical criterion. This process is repeated until the regression can no longer be improved. ***Backward Elimination*** starts with a full suite of independent variables then removes the variable (if any) that is the least statistically significant using a chosen elimination criterion. This process is repeated until the regression can no longer be improved. ***Bidirectional Elimination*** consists of a combination of the two approaches, testing the addition or removal of variables at each step through the forward selection or backward elimination processes above.	The ***F-statistic*** represents whether the model under consideration has any statistically significant predictive capability (*i.e.*, whether at least one independent variable coefficient is statistically significant or two or more variables are jointly significant). The ***t-statistic*** represents whether a specific independent variable is statistically significant; its associated probability of being significant is referred to as the ***p-value***. R^2 represents the fraction of variability that a given model captures (*i.e.*, the percent of variability in the dependent variable that is captured by the given independent variables) whereas ***Adjusted*** R^2 adjusts the statistic downward based on the number of independent variables in the model, such that any independent variable with a strong correlation to the dependent variable would increase the ***adjusted*** R^2 and any independent variable without a strong correlation will decrease the ***adjusted*** R^2

A number of site-specific engineering-based models generated the detailed engineering cost estimates collected by EPA. However, certain parameters appeared to be central to the workings of those calculations. For instance, capital costs appeared to be affected by the relevant acreage that these costs were applied. While EPA did not know the exact suite of variables that might be relevant for any particular response category, some variables were much more likely to be statistically significant based on the use of these variables in reclamation and closure plan cost estimates. As a result, EPA chose to conduct a bidirectional elimination stepwise regression that started with variables believed to be most significant and test the addition or deletion of individual variables.

4.1.2 Satisfying the Requirements for Linear Regression

EPA sought to ensure that any regression analysis conducted would yield unbiased estimators of the response categories discussed in **Section 2.3**. In accordance with the Gauss-Markov

Theorem, an Ordinary Least Squares (OLS) regression is an unbiased estimator when the following classical linear regression model assumptions are made:[77]

1. The model is linear in parameters;
2. There is no perfect collinearity;
3. The conditional mean is zero;
4. There is no multicollinearity; and
5. There is no homoskedasticity.
6. Residuals are normally distributed.

EPA noted that it was unclear without examining the potential input data whether the input parameters and resulting residuals were likely to be normally distributed, and thus EPA singled out assumption 6 above for further analysis. Performing a regression on data that is not normally distributed presents the potential for the resulting residuals to also fail to be normally distributed, and can result in biased results. Thus, in order to perform an unbiased regression analysis, EPA analyzed the potential input distributions visually, and tested them statistically using the Anderson-Darling test statistic to determine normality.

Visual Interpretation of Data

Histograms were created for the each of the continuous variables collected in **Section 3** as reported in **Appendix I**. Visual interpretation of most raw data sets showed that the data were not evenly distributed around the mean in a bell curve shape. Instead, the majority of the raw data distributions were positively, or right, skewed with a few very large values present far out in the tails of the data. This was visible for all variables that EPA examined, the one exception being net precipitation. For net precipitation, EPA performed the statistical tests discussed below on the actual, reported values to verify that the net precipitation data were, in fact, normally distributed.

In order to obtain normally distributed data for the remaining variables, EPA elected to perform a log transformation where the log of each data point is taken. In doing so, EPA noted that log base ten is an easy value to interpret (the number of zeroes in the unlogged value). This makes cost data in particular easier to understand in orders of magnitude. Thus, EPA transformed the variables with skewed data into a base ten logarithmic format. When viewing histograms for these log transformed data distributions (also presented in **Appendix I**) EPA noted that the data now followed a bell-shaped curve much more closely. For these variables, EPA performed the statistical tests discussed below on the log-transformed values to verify that each dataset was, in fact, log-normally distributed.

Two exceptions to the normality (or lognormality) of the data were distance to surface water and depth to groundwater. Both datasets included a large number of zero values which could not be converted into a log format. To allow for statistical testing, EPA elected to make a transformation of an addition of one prior to taking the log. EPA notes that this results in all zero values being transformed into log(0+1) which is also zero. Even after performing this transformation, the data still appeared positive, or right, skewed.

[77] Wooldridge, Jeffrey M. (2009). Introductory Econometrics: A Modern Approach, 4e. Mason, OH: South-Western CENGAGE Learning.

Both distance to surface water and depth to groundwater were visibly neither normally nor log-normally distributed. Thus, EPA elected to treat both as binary variables to eliminate the potential for the skew in these distributions to generate non-normally distributed residuals. A binary variable takes on a value of zero or one in a regression based on whether or not a variable is present in the model. Where a distance to surface water was reported, EPA transformed this value to a "1" to indicate that the facility was some distance to a surface water body. A value of "0" was given to facilities adjacent to surface water bodies. Similarly, where a groundwater depth of zero was reported, EPA transformed this value to a "1" to indicate that facility was at or below the groundwater table. Where a non-zero depth was reported, that value was transformed to a "0" to indicate that facility was not at or below the groundwater table.

Anderson-Darling Normal vs. Lognormal Tests

The Anderson-Darling test assesses whether or not data comes from a specified distribution, and is useful in testing the normality of data.[78,79] The Anderson-Darling test statistic is defined as:

Equation 4-1

$$AD = -n - \frac{1}{n}\sum_{i=1}^{n}(2i - 1[lnF(X_i) + \ln\big(1 - F(X_{n-i+1})\big)]$$

Where

n = sample size;

$F(X)$ = cumulative distribution function for the specified distribution; and

i = the i^{th} sample when the data are sorted in ascending order.

Test Hypotheses for Normal Distribution:

H_0: Data are sampled from a population that is normally distributed.
H_A: Data are sampled from a population that is not normally distributed.

This test statistic determines if there is sufficient evidence to reject the null hypothesis that the data are normally distributed. A p-value greater than a significance level of 0.05 ($p > \alpha = 0.05$, 95 percent confidence interval) would fail to reject the null hypothesis, indicating the data are normally distributed. A p-value less than or equal to a significance level of 0.05 ($p \leq \alpha = 0.05$, 95 percent confidence interval) indicates the null hypothesis can be rejected and the data are not normally distributed. The Anderson-Darling test can be used to determine whether or not the data follow a lognormal distribution by the same method. A base ten logarithmic transformation of the data was performed before the test statistic was calculated. Now the test hypothesis is as follows:

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[78] Anderson, T. W.; Darling, D. A. (1952). "Asymptotic theory of certain "goodness-of-fit" criteria based on stochastic processes". Annals of Mathematical Statistics 23: 193–212. doi:10.1214/aoms/1177729437.

[79] Stephens, M. A. (1974). "EDF Statistics for Goodness of Fit and Some Comparisons". Journal of the American Statistical Association 69: 730–737. doi:10.2307/2286009.

- H_0: Data are sampled from a population that is lognormally distributed.
- H_A: Data are sampled from a population that is not lognormally normally distributed.

A p-value greater than a significance level of 0.05 ($p > \alpha = 0.05$, 95 percent confidence interval) would fail to reject the null hypothesis, indicating the data are lognormally distributed. A p-value less than or equal to a significance level of 0.05 ($p \leq \alpha = 0.05$, 95 percent confidence interval) indicates the null hypothesis can be rejected and the data are not lognormally distributed.

Distribution Analysis Results

Table 4-2. Summary of Input Variable Normality Findings

Variable	Graphical Normality	Anderson-Darling Normality
DEPENDENT VARIABLES		
Solid and Hazardous Waste Disposal Capital Costs	lognormal	lognormal
Open Pit Capital Costs	lognormal	lognormal
Underground Mine Capital Costs	lognormal	lognormal
Waste Rock Capital Costs	lognormal	lognormal
Heap and Dump Leach Capital Costs	lognormal	lognormal
Tailings Facility Capital Costs	lognormal	lognormal
Process Pond and Reservoir Capital Costs	lognormal	lognormal
Drainage Capital Costs	uncertain	lognormal
Interim O&M Costs	lognormal	lognormal
Water Treatment Costs	lognormal	lognormal
Short-Term O&M and Monitoring Costs	lognormal	lognormal
Long-Term O&M and Monitoring Costs	lognormal	lognormal
Overhead and Oversight Costs[1]	N/A	N/A
INDEPENDENT VARIABLES		
Open Pit Acreage	lognormal	lognormal
Waste Rock Acreage	lognormal	lognormal
Heap/Dump Leach Acreage	lognormal	lognormal
Tailings Facility Acreage	lognormal	lognormal
Process Pond/Reservoir Acreage	lognormal	lognormal
On-site Water Flows	lognormal	lognormal
Distance to Surface Water	neither	neither
Depth to Groundwater	neither	neither
Net Precipitation	normal	normal

[1] As discussed in **Section 4.1.3** below, no regressions were run for overhead and oversight costs due to the fact that these costs are treated as a percentage of direct engineering costs.

Table 4-2 above reports the distribution determined by the visual examination of the graphical distribution and by the Anderson-Darling test statistics. Both tests yielded the same results with the exception of drainage where the visual distribution was unclear, and thus EPA elected to rely on the Anderson-Darling test statistic. Furthermore, all variables except for net precipitation were found to be lognormally distributed ($p > \alpha = 0.05$). Net precipitation was the only variable that was found to be normally distributed ($p \leq \alpha = 0.05$). For the complete test statistic results and graphs for the individual variables see **Appendix I**.

4.1.3 Regression Likely and Potential Explanatory Variables

The first step in conducting bidirectional elimination stepwise regressions was to identify the starting set of variables that EPA believed would be significant for each of the 13 previously identified response categories. The rationale for, and description of, such variables is presented below. A summary of those variables either selected for initial regressions or tested through the stepwise procedure is presented in **Table 4-4**, with the variable name and form presented in **Table 4-3**. For further discussion of these cost categories see **Section 2.3**.

Likely Feature-Specific Capital Cost Explanatory Variables

Several of the response categories related to feature-specific capital costs. This included the capital costs for engineered covers of open pits, waste rock piles, heap and dump leaches, tailings facilities, process ponds and reservoirs, and slag piles.[80] For these site feature's feature-specific capital costs, models such as Standardized Reclamation Cost Estimator (SRCE) typically require the acreage of a site feature.[81] Thus, EPA predicted that acreage would be a significant predictor of costs. Furthermore, many state cost estimates did not include costs for source controls, and instead merely include the costs of backfill, earthwork, and revegetation. However, engineering estimates that include source controls are likely to be higher than those involving simple earthwork due to the additional task. Thus, EPA predicted that the inclusion of source controls would be a significant driver of costs as well.[82]

For underground mines, EPA notes that the typical capital costs collected related to portal closure. These costs are relatively small, and appeared to be relatively consistent. However, in the light of the Gold King Mine release, EPA also examined differences in capital costs for underground mines predicting current or future high hydraulic head, and believed this could be a significant driver of capital costs due to the need for a pressurized bulkhead.

Likely Site-Wide Capital and O&M Cost Explanatory Variables

Drainage construction, solid and hazardous waste disposal, and both short-term and long-term operations, maintenance, and monitoring are expected to be proportional to the size of the site over which they must be performed. Thus, for these capital and O&M costs, EPA predicted that total site-wide acreage would be a significant predictor of costs. $LogAcres_{Total}$

[80] Since EPA had a single data point for slag piles, EPA was unable to perform a regression. Instead, EPA uses the cost-per-acre for the single available data point.

[81] Standardized Reclamation Cost Estimator User Manual: Version 1.13 Public Domain Version. November 2013. Available online at http://www.nvbond.org/downloads/SRCE_User_Manual_03.pdf

[82] No process ponds in EPA's dataset included source controls, and therefore this variable was not included.

For interim O&M, EPA noted that the Heap Leach Draindown Estimator[83] calculates draindown costs based on a number of inputs, the most significant of which appear to be the area of the feature being drained and precipitation and evaporation at the site. Thus, EPA predicted that the heap/dump leach acreage and the tailings acreage that is handled wet would both be significant drivers of costs, as would net precipitation.

For long-term water treatment of contaminated mining fluids, EPA notes that models such as SRCE make use of the estimated flows (in GPM) to be treated. Thus, EPA predicted that total flows would be a significant predictor of costs. Furthermore, some reclamation and closure plan cost estimates did not provide for actual treatment, but rather simply envisioned seepage capture (or "pumpback") of contaminated water. However, engineering cost estimates that include seepage capture and treatment are likely to be higher than estimates that include seepage capture alone. Thus, EPA predicted that the inclusion of actual treatment would be a significant driver of costs as well.

Potential Explanatory Variables

In addition to beginning each initial regression with the variables discussed above, EPA wished to test additional explanatory variables relating to either proximity to water resources or the leaching processes on site. These global variables, collected in **Section 3.4**, include distance to surface water, below groundwater, net precipitation, use of flotation chemicals, use of cyanide leaching, use of acid leaching, and use of in-situ leaching. Potential explanatory variable names and a presentation of variables in each regression are available in **Tables 4-3** and **4-4** below.

Overhead and Oversight Costs

Unlike the direct engineering costs above, which are driven by site characteristics, overhead and oversight costs are more closely related to the direct engineering costs themselves. For instance, contractor profit may be a fixed percentage of a government contract. EPA therefore used a fixed percent of direct engineering costs to represent overhead and oversight costs. This is consistent with the SRCE model which adds these costs to the total costs at the end. For example, mobilization and demobilization costs are calculated separately and entered into SRCE. For further discussion of the fixed overhead and oversight cost percentages, see **Section 4.2.1** below.

[83] HDLE (Heap Leach Draindown Estimator): Version 1.2. September 2011. Available online at: http://www.blm.gov/nv/st/en/prog/minerals/mining.print.html

Table 4-3. Initial and Potential Variables Considered for Each Stepwise Regression

Response Activity	Type	Initial Variables	Potential Variables
OpenPit	Capital	$LogAcres_{OpenPit}$; $SourceControl_{OpenPit}$	*DistanceSurfaceWater; BelowGroundwater; NetPrecipitation; Flotation; CyanideLeach; AcidLeach; InSituLeach*
WasteRock	Capital	$LogAcres_{WasteRock}$; $SourceControl_{WasteRock}$	
HeapDumpLeach	Capital	$LogAcres_{HeapDumpLeach}$; $SourceControl_{HeapDumpLeach}$	
TailingsFacility	Capital	$LogAcres_{Tailings}$; $SourceControl_{Tailings}$	
ProcessPondReservoir	Capital	$LogAcres_{ProcessPondReservoir}$	
UndergroundMine	Capital	*HydraulicHead*	
SlagPile	Capital	$Acres_{Slag}$	
Drainage	Capital	$LogAcres_{Total+1}$	
SolidHazardousWasteDisposal	Capital	$LogAcres_{Total+1}$	
ShortTermO&MMonitoring	O&M	$LogAcres_{Total+1}$	
LongTermO&MMonitoring	O&M	$LogAcres_{Total+1}$	
InterimO&M	O&M	*NetPrecipitation;* $LogAcres_{HeapDumpLeach+1}$; $LogAcres_{WetTailings+1}$	
WaterTreatment	Both	*LogFlow; Treat*	

Table 4-4. Variable Names and Forms Used in the Stepwise Regression Process

Variable	Description	Normality	Regression Form
DEPENDENT VARIABLES			
SolidHazardousWasteDisposal	Capital costs of solid and hazardous materials management and decontamination	lognormal	logarithmic, continuous
OpenPit	Capital costs of covering an open pit	lognormal	logarithmic, continuous
UndergroundMine	Capital costs of closing underground workings	lognormal	logarithmic, continuous
WasteRock	Capital costs of covering a waste rock pile	lognormal	logarithmic, continuous
HeapDumpLeach	Capital costs of covering a heap or dump leach	lognormal	logarithmic, continuous
TailingsFacility	Capital costs of covering a tailings impoundment or dry stack	lognormal	logarithmic, continuous
ProcessPondsReservoirs	Capital costs of covering a process pond or reservoir	lognormal	logarithmic, continuous
Drainage	Capital costs of installing drainage ditches and other drainage features	lognormal	logarithmic, continuous
InterimO&M	Short-term emergency O&M and heap/dump leaches & tailings impoundment draindown	lognormal	logarithmic, continuous
WaterTreatment	Long-term O&M costs for water treatment	lognormal	logarithmic, continuous
ShortTermO&MMonitoring	Short-term O&M costs for short-term O&M and monitoring	lognormal	logarithmic, continuous
LongTermO&MMonitoring	Long-term O&M costs for long-term O&M and monitoring	lognormal	logarithmic, continuous
INDEPENDENT VARIABLES			
$LogAcres_{OpenPit}$	Acres of open pit	lognormal	lognormal, continuous
$LogAcres_{WasteRock}$	Acres of waste rock piles	lognormal	lognormal, continuous
$LogAcres_{HeapDumpLeach}$	Acres of heap or dump leach	lognormal	lognormal, continuous
$LogAcres_{HeapDumpLeach+1}$	Acres of heap or dump leach (with linear transformation +1)	lognormal	lognormal, continuous

Variable	Description	Normality	Regression Form
$LogAcres_{Tailings}$	Acres of tailings impoundment or dry stack	lognormal	lognormal, continuous
$LogAcres_{WetTailings+1}$	Acres of wet tailings impoundment (with linear transformation +1)	lognormal	lognormal, continuous
$LogAcres_{ProcessPondReservoir}$	Acres of process ponds or reservoirs	lognormal	lognormal, continuous
$LogAcres_{Total+1}$	Total sitewide acreage (with linear transformation +1)	lognormal	lognormal, continuous
LogFlow	On-site water flows requiring long-term treatment in gallons per minute	lognormal	lognormal, continuous
$SourceControl_{OpenPit}$	If open pit capital costs include source controls = 1, else = 0	neither	binary
HydraulicHead	If underground workings had hydraulic head requiring a pressurized bulkhead = 1, else = 0	neither	binary
$SourceControl_{WasteRock}$	If waste rock pile capital costs include source controls = 1, else = 0	neither	binary
$SourceControl_{HeapDumpLeach}$	If heap or dump leach capital costs include source controls = 1, else = 0	neither	binary
$SourceControl_{Tailings}$	If tailings impoundment or dry stack capital costs include source controls = 1, else = 0	neither	binary
DistanceSurfaceWater	Distance to the nearest surface water = 1, else = 0	neither	binary
BelowGroundwater	Below groundwater table = 1, else = 0	neither	binary
NetPrecipitation	Net precipitation in inches	normal	linear, continuous
Flotation	Use of floatation chemicals = 1, else = 0	neither	binary
CyanideLeach	Use of cyanide leaching = 1, else = 0	neither	binary
AcidLeach	Use of acid leaching = 1, else = 0	neither	binary
InSituLeach	Use of in-situ leaching = 1, else = 0	neither	binary
Treat	Pumped water obtaining treatment = 1, else = 0	neither	binary

4.1.4 Stepwise Criteria and Procedure

For each of the 13 response categories, EPA conducted a separate stepwise regression analysis. The first step of the analysis was to run a regression on the set of initial variables EPA identified in the section above. This first step would then be tested for statistical fit. EPA used a 90 percent confidence level for evaluating both the estimated regressions and variables. Thus, EPA required that any particular F- or t-statistic have an associated p-value less than 0.1. If any of the variables in the initial regression (or the regression as a whole) were found to be insignificant at the 90 percent confidence level, EPA would remove the least significant independent variable and run a new regression with the remaining variables.

Once no more variables could be removed under this criterion, EPA would attempt to add potentially significant variables into the model one-at-a-time.[84] In step-wise regression, it is important to note that the addition criterion must be more stringent than removal criterion. Otherwise, it is possible that the step-wise procedure could cycle endlessly through additions and removals. Thus, for adding variables to the regression, EPA used a 95 percent confidence level for evaluating variables. This required that any particular t-statistic have an associated p-value of less than 0.05.

Once each potentially significant variable was tested, if a single variable could be added without resulting in any of the existing variables being insignificant at the 90 percent confidence level, EPA did so. Where multiple variables could be added under these criteria, EPA added only the single most significant variable to the model, and then performed another iteration of the process. Thus, if EPA tested eight variables for addition and two came back with p-values of 0.02 and 0.01 without making any of the existing variables insignificant, EPA would choose the latter due to its higher significance. Then the remaining seven variables would each be tested in a completely new round for addition.

Once no more variables could be added or removed, EPA performed additional steps to confirm the results. First, EPA visually reviewed plots of actual versus expected costs, and examined the R^2 and adjusted R^2, which are indicators of how much of the data variability are captured by the model. EPA also verified that the final F-statistic was significant. Finally, EPA examined the sign on the coefficient of any significant variables and noted whether any had opposite signs than expected. For example, EPA would expect cost to increase as acreage increases, so a result that had a negative coefficient on acreage would be examined further. The findings of these additional steps are discussed in the regression results below, and relevant plots and statistics can be found in **Appendix J**.

4.2 Response Regression Results

EPA conducted the regressions using the procedures discussed in **Section 4.1** and the results of these analyses are presented below. EPA first analyzed the results to ensure conformity with the criteria established (**Section 4.2.1**). Next, EPA applied an adjustment factor to correct for a

[84] Some observations did not report depth to groundwater data. Accordingly, when variable were added and tested, the regression would automatically be performed on the subset of observations for which the full suite of variables, including groundwater, was available. If groundwater was found not to be a significant variable, EPA would duplicate the process to maximize the number of observations relied on in the ultimate result.

known prediction bias with OLS linear regression of log-transformed variables (**Section 4.2.2**). Finally, EPA performed additional robustness analyses to ensure that the most appropriate regression form was chosen (**Section 4.2.3**).

4.2.1 Regression Results

A summary of the 12 stepwise regression results, as well as the average cost per acre for slag piles, is presented in **Table 4-5** below. Overall, the results of the regressions generally found that the initially predicted variables such as acres were in fact significant. Furthermore, the results of the regressions generally found that additional variables were not significant. Further discussion of each result is presented below, with additional detail provided where the final regression differed from the initial form. For detailed summary statistics see **Appendix J**.

Open Pit Capital Costs

The initial regression for open pit costs was a regression on acreage and the use of source controls, which both demonstrated significance at the 90 percent confidence level. Furthermore, EPA tested all of the potential variables from **Table 4-3** at the 95 percent confidence level and was unable to improve the capital cost regression for open pits. Thus, no further discussion is necessary.

Waste Rock Capital Costs

The initial regression for waste rock costs was a regression on acreage and the use of source controls, which both demonstrated significance at the 90 percent confidence level. Furthermore, EPA tested all of the potential variables from **Table 4-3** at the 95 percent confidence level and was unable to improve the capital cost regression for waste rock. Thus, no further discussion is necessary.

Heap/Dump Leach Capital Costs

For heap/dump leaches, the initial regression found that source controls were not a significant predictor of costs (p-value = 0.14). However, once this variable was removed, EPA was unable to further improve the regression by adding additional variables through the stepwise process. Since the other three capital cost regressions with source controls found that element to be significant, EPA examined the underlying data to determine what might be causing this inconsistency. Only two sites in EPA's data set had source controls for their heap leaches. These were Lisbon Valley (Utah) and Phoenix Copper (Nevada).

EPA notes that the R^2 and adjusted R^2 both improved with the addition of the source control variable (that is, the fraction of the variability captured by the model increased). Furthermore, the sign on source controls is positive, indicating that the presence of source controls increased the costs. This is the same direction that one would expect. Finally, the p-value for the term is close to the level of significance established in **Section 4.1** (0.14 vs. 0.10). The lower a p-value, the higher the probability that an estimated coefficient is statistically significant. So although the p-value of 0.14 lays above the objective criterion, it is still relatively low. Since only two sites had source controls, EPA believes the shortage of data on this element is more likely preventing the variable from being significant than some unidentified factor by which source controls at heap/dump leaches are somehow cheaper than for any other site feature. Given the weight of the evidence available, EPA chose to retain the source control variable in this instance.

Table 4-5. Stepwise Regression Results

Log(Cost)[1]	Fitted Regression
OpenPit	$2.88 + 1.08 \times LogAcres_{OpenPit} + 1.36 \times SourceControl_{OpenPit}$
WasteRock	$4.45 + 0.75 \times LogAcres_{WasteRock} + 0.73 \times SourceControl_{WasteRock}$
HeapDumpLeach	$3.87 + 1.01 \times LogAcres_{HeapDumpLeach} + 0.70 \times SourceControl_{HeapDumpLeach}$
TailingsFacility	$4.73 + 0.68 \times LogAcres_{Tailings} + 0.59 \times SourceControl_{Tailings}$
ProcessPondsReservoirs	$4.29 + 1.03 \times LogAcres_{ProcessPondReservoir}$
UndergroundMine	$4.96 + 1.35 \times HydraulicHead$
Drainage	$3.42 + 0.57 \times LogAcres_{Total+1}$
SolidHazardousWasteDisposal	Fixed cost per site of $2,600,000
SlagPile	Fixed cost per acre of $64,000
ShortTermO&MMonitoring	$4.01 + 0.38 \times LogAcres_{Total+1}$
LongTermO&MMonitoring	$3.12 + 0.58 \times LogAcres_{Total+1}$
InterimO&M	$6.04 + 0.01 \times NetPrecipitation + 0.34 \times LogAcres_{HeapDumpLeach+1} + 0.10 \times LogAcres_{WetTailings+1}$
WaterTreatment	$2.16 + 1.10 \times LogFlow + 1.06 \times Treat + 0.70 \times InSituLeach$

[1] SolidHazardousWasteDisposal and SlagPile receive a fixed value and are not in log format

Tailings Facility Capital Costs

The initial regression for tailings facility costs was a regression on acreage and the use of source controls, which both demonstrated significance at the 90 percent confidence level. Furthermore, EPA tested all of the potential variables from **Table 4-3** at the 95 percent confidence level and was unable to improve the capital cost regression for tailings facilities. Thus, no further discussion is necessary.

Process Pond/Reservoir Capital Costs

The initial regression for process pond and reservoir costs was a regression on acreage and the use of source controls, which both demonstrated significance at the 90 percent confidence level. Furthermore, EPA tested all of the potential variables from **Table 4-3** at the 95 percent confidence level and was unable to improve the capital cost regression for process ponds and reservoirs. Thus, no further discussion is necessary.

Underground Mine Capital Costs

The initial regression for underground mine costs was a regression on hydraulic head, which demonstrated significance at the 90 percent confidence level. Furthermore, EPA tested all of the potential variables from **Table 4-3** at the 95 percent confidence level and was unable to improve the capital cost regression for underground mines. Thus, no further discussion is necessary.

Drainage Capital Costs

The initial regression for drainage costs was a regression on site-wide acreage, which demonstrated significance at the 90 percent confidence level. Furthermore, EPA tested all of the potential variables from **Table 4-3** at the 95 percent confidence level and was unable to improve the capital cost regression for drainage. Thus, no further discussion is necessary.

Solid and Hazardous Waste Disposal Capital Costs

In the case of solid and hazardous waste disposal, EPA found the site-wide acreage term in the initial regression to be insignificant at the 90 percent confidence level, and removed it from the solid and hazardous waste disposal regression model. Not only was this term insignificant, but it was also negative, the opposite direction as expected. In this case, EPA has elected to use an average cost.

EPA finds a simple average to be reasonable here because the variability in the costs does not appear to vary with the size of the operations. However, because most facilities in EPA's data set did not have estimates of each of the six reclamation and closure tasks, EPA took averages of each of these tasks to derive a sum of averages as shown in **Table 4-6** below. As seen in that table, the resulting solid and hazardous waste disposal capital cost for the response component of the formula is approximately $2.6 million.

Table 4-6. Average Solid and Hazardous Waste Disposal Capital Costs

Response Subcategory	Average	Min	Max	Std Dev	Count
Solid Waste	$119,345	$923	$1,170,030	$331,668	12
Hazardous Materials	$139,415	$7,920	$643,260	$191,451	20
Contaminated Soils	$275,998	$3,824	$2,203,285	$596,500	13
Solution Removal	$282,033	$282,033	$282,033	N/A	1
Building Decontamination	$665,692	$108,205	$1,831,680	$745,868	5
Haulage and Disposal	$1,092,085	$93,819	$2,863,024	$1,087,248	7
TOTAL	**$2,574,568**				

Slag Pile Capital Costs

EPA had a single data point for estimating the capital costs for the engineering controls at slag piles. EPA did not have adequate data to run a regression and instead presents the cost per acre of the single estimate. For each of the site feature capital costs where regressions were run, EPA found acreage to be a statistically significant term. Here, the use of a cost per acre from the single engineering cost estimate is the only approach that allows for variability of costs with feature acreage. Using this approach, the cost estimate of $1.6 million corresponds to a smelting operation 25 acres in size, or a $64,000 per acre cost.

Short-Term O&M/Monitoring Costs

The initial regression for short-term O&M and monitoring costs was a regression on site-wide acreage, which demonstrated significance at the 90 percent confidence level. Furthermore, EPA tested all of the potential variables from **Table 4-3** at the 95 percent confidence level and was unable to improve the cost regression for short-term O&M and monitoring. Thus, no further discussion is necessary.

Long-Term O&M/Monitoring Costs

Like the short-term O&M and monitoring regression, the initial regression for long-term O&M and monitoring costs showed that site-wide acreage was indeed significant. However, during the stepwise procedure, the binary variable for below groundwater was also found to be significant. This was not found for short-term O&M, a much nearer-term and more predictable cost, so EPA examined the potential causes.

EPA noticed that the sign on the groundwater coefficient was negative. Here, instead of location below the groundwater table increasing O&M and monitoring costs as would be expected, the stepwise process resulted in a negative coefficient. This counter-intuitive result caused EPA to examine the dataset more closely. Here, the long-term O&M and monitoring dataset was much smaller than that for short-term O&M and monitoring (14 and 52 observations, respectively). The fact that a binary variable was added with a counterintuitive sign into a model based on a small dataset is more likely attributable to the small sample size than to the fact that placing mines below the groundwater table will result in lower O&M and monitoring costs in the long-term. In fact, EPA explicitly prohibits the placement of waste below the groundwater table in several regulatory contexts due to the increased degree and duration of risk, and corresponding costs of minimizing that risk.[85] This is further justified by the fact that the same costs over the short-term, where the sample size was much larger, were not found to be influenced by location of groundwater. For these reasons, EPA did not retain the groundwater term.

Interim O&M Costs

The initial regression for interim O&M costs was a regression on heap/dump leach acreage, wet tailings acreage, and net precipitation. All three of these variables demonstrated significance at the 90 percent confidence level. Furthermore, EPA tested all of the potential variables from **Table 4-3** at the 95 percent confidence level and was unable to improve the cost regression for interim O&M. Thus, no further discussion is necessary.

Water Treatment Costs

EPA found both initial variables for site-wide water flow and the use of treatment to be statistically significant at the 90 percent confidence level. During the forward stepwise process, the existence of in-situ leaching was also found to be statistically significant. Since the total sample size, as well as the subset which used in-situ leaching, was small, EPA examined this result more closely. Here, not only was the p-value very low (0.01), but the R^2 and adjusted R^2 both increased substantially once the in-situ leaching variable was added (0.65 to 0.80 and 0.61 to 0.71, respectively).

EPA notes that the three in-situ leaching sites were all uranium mines that estimated costs based on the use of reverse osmosis water treatment. Either the material or the treatment could explain the nearly order-of-magnitude increase in costs above what would otherwise be explained by flows alone. Since the stepwise process showed this variable to be significant, and a reasonable explanation existed for the variable's significance, no further discussion is necessary.

Overhead and Oversight Costs

As discussed in **Section 4.1.3** above, EPA calculated overhead and oversight costs (OCs) as a percent of direct engineering costs rather than through regressions on site-specific characteristics. However, not every facility calculated or reported every category of OCs. Thus, to avoid biasing any of the OC estimates low, EPA calculated each OC separately, and used only data from facilities which had calculated that OC cost.

EPA estimated each OC category at each facility as a percent of engineering costs. This was done by dividing the OC in question at a facility by that facility's total direct engineering costs. Once all facility-specific OC percentages were calculated, EPA averaged these OC percentages for each category. These average OC percentages are reported in **Table 4-7** below.

[85] For example, see 40 CFR Part 257.

Table 4-7. Average Overhead and Oversight Costs

OC Category	HMFs Reporting	Average % of Engineering Costs
Mobilization/Demobilization	46	2.83%
Engineering Design and Redesign	45	4.76%
Contingency	59	11.82%
Contractor Profit and Overhead	48	12.95%
Contractor Liability Insurance	32	0.77%
Payment and Performance Bonds	34	2.65%
Subtotal (Overhead Costs)		***35.78%***
Agency Direct Costs	54	8.88%
Agency Indirect Costs	N/A	Region-Specific[1]

[1] EPA indirect rates are presented in **Table 3-8** by region.

4.2.2 Re-transformation of Predicted Costs

As described in **Section 4.1** above, EPA performed log transformations to many of the regression variables discussed above to achieve normality. While such monotonic transformations are reasonable to estimate a well-fitting regression, prediction using these log models can result in retransformation bias. Thus, EPA adjusted any exponentiated prediction values to reduce this potential bias. EPA used smearing factors derived from Duan (1983).[86] These smearing factors were estimated using **Equation 4-2** below using the exponentiated residuals presented in **Appendix J**.

The final set of estimated smearing factors is presented in **Table 4-8**. As can be seen in the table, smearing factors tended to be lower for the O&M cost regressions. Most smearing factors fell between 1.5 and 2.5 with a median smearing factor of 1.82. Each time a prediction is made with the corresponding regression, the exponentiated prediction is multiplied by the relevant smearing factor in this table.

Equation 4-2

$$SF_i = \frac{\sum_{j=1}^{N_i} 10^{\widehat{u_\iota}}}{N_i}$$

Where:

SF_i = the smearing factor for regression *i*;

$\widehat{u_\iota}$ = the estimated residual for observation *j* in regression *i*; and

N_i = the total number of observations

[86] Duan, N. 1983. *Smearing estimate: A nonparametric retransformation method*. Journal of the American Statistical Association. 78: 605-610. Available online at: http://www.tandfonline.com/doi/abs/10.1080/01621459.1983.10478017.

Table 4-8 Smearing Factors Estimated using Duan (1983)

Log(Cost)	Smearing Factor
OpenPit	5.07
WasteRock	1.85
HeapDumpLeach	2.29
TailingsFacility	1.71
ProcessPondsReservoirs	1.64
UndergroundMine	2.23
Drainage	9.56
ShortTermO&MMonitoring	1.82
LongTermO&MMonitoring	1.64
InterimO&M	1.46
WaterTreatment	1.16

4.2.3 Robustness Analysis

In an effort to ensure the most appropriate model specification was selected for each cost feature, two sets of robustness checks were performed. For the first robustness check, eight alternative regression approaches were applied to each cost feature, varying criteria such as significance level, direction of selection, and the suite of variables considered. The majority of the results of these robustness tests (55 of 88) were consistent with the final model selection criteria. In cases where all regression methods did not yield perfectly symmetrical outputs, there were typically more variables due to a loosening of the selection criteria or fewer variables due to the tightening of selection criteria. This indicates that the step-wise process was applied consistently, and that the models returned by the process had the form that predicted the most variability in the data.

The second robustness check compared the external validity of the final model to two alternative specifications by analyzing the average external transfer value. This comparison of the average external transfer value allowed EPA to test the accuracy of the final model. The first alternative specification was an "average" model where a fixed, average cost was used but no additional variables were considered. The second alternative specification was an "all variable" model. This model included every initial and potential variable EPA considered. In every case, the final model had the lowest external transfer value, indicating that the final model out-performed the accuracy of the "average" and "all variable" versions when producing out of sample estimates. The robustness test methods and their results are discussed in detail in **Appendix K**.

4.3 Converting O&M Costs into a Net Present Value

Four of the response cost categories - interim O&M, water treatment, short-term O&M, and long-term O&M - represent the expected costs for activities over time. Thus, the regression equations represent annualized amounts. These annualized amounts must further be converted into a single net present value, so that they can be included as part of the final formula, which represents a facility's total FR amount discounted over the full period of remedial activity. For the purposes of estimating O&M costs, EPA uses **Equation 4-3** below which is taken from U.S. EPA (2001):[87]

Equation 4-3 Net Present Value for O&M Costs

$$C_{NPV} = \sum_{t=1}^{n} \frac{C_A}{(1+D)^{t-1}}$$

<u>Where:</u>

C_{NPV} = the net present value cost of future pump and treat activities;

C_A = the annual O&M cost;

t = time (in years);

n = the period of O&M costs; and

D = the applicable discount rate.

EPA used an O&M period of ten years for converting both the short-term O&M and interim O&M costs into a net present value. This period has been discussed and used in guidance documents such as U.S. EPA and USACE (2000).[88] O&M after ten years could prove to be unnecessary, or continue indefinitely. The cost estimation formula uses a perpetual period of O&M for both water treatment and long-term O&M. EPA considered using a period of 30 years similar to the default long-term O&M period of 30 years historically used by EPA for purposes of cost estimation in the absence of detailed forecasts of project duration (U.S. EPA, 1988).[89] However, more recent guidance relies less heavily on this default period and more heavily on the actual project duration of each alternative considered in the RI/FS process (U.S. EPA and USACE, 2000).

In addition, EPA's CERCLA data from HMFs indicates that perpetual O&M expenditures are common. Specifically, in U.S. EPA (2004)[90] EPA's Office of Inspector General collected survey responses from regional experts regarding expected long-term O&M durations at 156 HMFs. Responses from this data are displayed in **Figure 4-1** below. As can be seen from the figure above, the median response from that survey was that long-term O&M at HMFs would continue

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[87] U.S. EPA (Environmental Protection Agency). 2001. *Groundwater Pump and Treat Systems: Summary of Selected Cost and Performance Information at Superfund-financed Sites*. EPA 542-R-01-021a. OSWER. Washington, DC 20460. December. Available online at: http://www.epa.gov/superfund/cleanup/postconstruction/p1report.pdf

[88] U.S. EPA (Environmental Protection Agency) and USACE (Army Corps of Engineers). 2000. *A Guide to Developing and Documenting Cost Estimates during the Feasibility Study*. EPA 540-R-00-002. OSWER. Washington, DC 20460. July. Available online at: www.epa.gov/superfund/policy/remedy/pdfs/finaldoc.pdf

[89] U.S. EPA (Environmental Protection Agency). 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (Interim Final). EPA/540/G-89/004. OSWER. Washington, DC 20460. October. Available online at: www.epa.gov/superfund/policy/remedy/pdfs/540g-89004-s.pdf

[90] U.S. EPA (Environmental Protection Agency). 2004. Nationwide Identification of Hardrock Mining Sites. Report No. 2004-P-00005. OIG. Washington, DC. 20460. March. Available online at: https://www.epa.gov/sites/production/files/2015-12/documents/20040331-2004-p-00005.pdf

into perpetuity. Therefore, the cost estimation formula uses a perpetual period of O&M for both water treatment and long-term O&M using the infinite stream of payments equation presented in **Equation 4-4** below.

Equation 4-4 Net Present Value for Perpetual O&M Costs

$$C_{NPV} = \frac{C_A}{D}$$

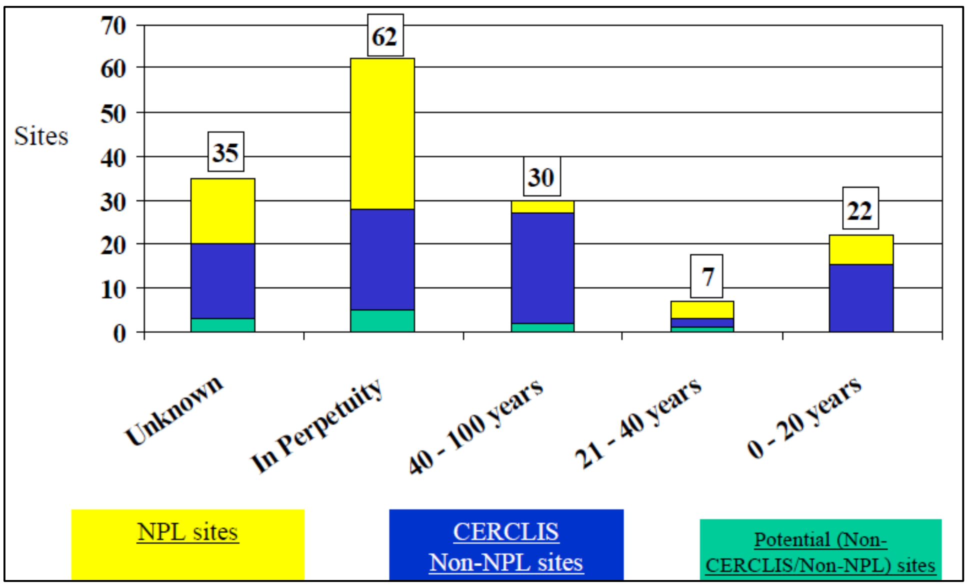
Where:

C_{NPV} = the net present value cost of future pump and treat activities;

C_A = the annual O&M cost; and

D = the applicable discount rate.

Figure 4-1. Long-Term O&M Timeframes at CERCLA HMFs (U.S. EPA, 2004)[91]



Finally, annualized O&M costs are converted to a net present value based on the 10-year short-term and perpetual long-term time horizons seen in the CERCLA cost data using the rate of return of the Superfund. To estimate this rate EPA first collected the nominal rates of return (*i*) from the Superfund as reported by EPA's own Office of the Chief Financial Officer.[92] EPA then calculated inflation (π) as a percent change in the implicit price deflator for GDP reported by the Bureau of Economic Analysis.[93] Real rates or return (*r*) in each individual year were then

[91] This figure is adapted from Figure 2.9 of U.S. EPA (2004).

[92] Available online at www.epa.gov/ocfo/finstatement/superfund/int_rate.htm

[93] US Department of Commerce, Bureau of Economic Analysis. National Data. Domestic Product and Income Tables. Table 1.1.9. Available online at

calculated using **Equation 4-5** and presented in **Table 4-9** below. Analysis of these real rates of return from the Superfund yielded a geometric mean of 2.63%. This approach is also consistent with recent EPA guidance on O&M cost estimation processes in the separate context of CERCLA settlement agreements and unilateral orders (U.S. EPA, 2015)[94] which recommends using a discount rate representative of real investment returns.

Equation 4-5 Yearly Real Rates of Return

$$r = \frac{1+i}{1+\pi} - 1$$

Table 4-9. Superfund Nominal and Real Interest Rates by Year

Year	Nominal Rate (*i*)	Price Deflator	Inflation (*π*)	Real Rate (*r*)	Year	Nominal Rate (*i*)	Price Deflator	Inflation (*π*)	Real Rate (*r*)
2014	0.81%	108.289	1.46%	-0.64%	1996	5.86%	76.699	1.83%	3.96%
2013	0.78%	106.733	1.49%	-0.70%	1995	5.63%	75.324	2.09%	3.47%
2012	0.74%	105.166	1.80%	-1.04%	1994	3.36%	73.785	2.13%	1.21%
2011	0.69%	103.311	2.06%	-1.35%	1993	3.49%	72.248	2.38%	1.08%
2010	2.24%	101.221	1.22%	1.01%	1992	5.70%	70.569	2.28%	3.34%
2009	2.15%	100	0.76%	1.38%	1991	7.99%	68.996	3.33%	4.51%
2008	4.34%	99.246	1.96%	2.33%	1990	8.47%	66.773	3.70%	4.60%
2007	5.02%	97.337	2.66%	2.30%	1989	8.39%	64.392	3.89%	4.33%
2006	4.11%	94.814	3.07%	1.01%	1988	6.99%	61.982	3.50%	3.37%
2005	2.21%	91.988	3.22%	-0.98%	1987	5.63%	59.885	2.55%	3.00%
2004	1.27%	89.12	2.75%	-1.44%	1986	7.43%	58.395	2.02%	5.31%
2003	1.47%	86.735	1.99%	-0.51%	1985	10.82%	57.24	3.20%	7.39%
2002	3.35%	85.039	1.53%	1.79%	1984	9.40%	55.466	3.55%	5.65%
2001	6.18%	83.754	2.28%	3.81%	1983	11.32%	53.565	3.95%	7.09%
2000	5.30%	81.887	2.28%	2.96%	1982	17.26%	51.53	6.20%	10.41%
1999	4.53%	80.065	1.53%	2.96%	1981	10.93%	48.52	9.34%	1.46%
1998	5.61%	78.859	1.09%	4.48%	1980	10.88%	44.377	9.02%	1.71%
1997	5.69%	78.012	1.71%	3.91%					

4.4 Location-Specific Adjustments

EPA calculated the national OC percentages presented in **Table 4-7**. On average, the sub-total of overhead costs was found to be 35.78 percent of direct engineering costs. However, a similar sub-total of oversight cost percentages was not estimated due to the region-specific nature of agency indirect costs. In **Table 4-10** below, EPA presents the regional indirect cost rates from

www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1#reqid=9&step=1&isuri=1&904=2014&903=13&906=a&905=1979&910=x&911=0

[94] U.S. EPA (Environmental Protection Agency). 2015. Guidance on Financial Assurance in Superfund Settlement Agreements and Unilateral Administrative Orders. OECA. Washington, DC 20460. April 6. Available online at : https://www.epa.gov/sites/production/files/2015-04/documents/fa-guide-2015.pdf

Table 3-8. These rates are multiplied by the national average agency direct cost percentage estimated in **Section 4.2.1** to estimate the agency indirect costs as a percentage of direct engineering costs. Adding agency direct cost percentage to the region-specific indirect cost percentages yields region-specific agency cost percentages.

Table 4-10. EPA Regional Oversight Cost Percentages

Region	EPA Regional Indirect Cost Rate	Agency Direct Cost Percentage	Agency Indirect Cost Percentages	Agency Cost Percentages (Total)
1	44.85%	8.88%	3.98%	12.86%
2	33.08%	8.88%	2.94%	11.82%
3	76.18%	8.88%	6.76%	15.64%
4	55.33%	8.88%	4.91%	13.79%
5	61.61%	8.88%	5.47%	14.35%
6	45.02%	8.88%	4.00%	12.88%
7	33.40%	8.88%	2.97%	11.85%
8	39.77%	8.88%	3.53%	12.41%
9	45.79%	8.88%	4.07%	12.95%
10	39.14%	8.88%	3.48%	12.36%

Total non-construction costs are estimated by adding the overhead cost percentage sub-total from **Table 4-7** to the region-specific total agency cost percentages in **Table 4-10**. Using this approach, EPA calculated 10 region-specific OC percentages to be applied to the direct engineering costs estimated in the formula response components above. For the list of calculated region-specific factors, see **Table 4-11** below.

Table 4-11. Region-Specific Overhead and Oversight Costs

Region	Overhead Cost Percentage	Oversight Cost Percentage	Total OC Percentage
1	35.78%	12.86%	48.64%
2	35.78%	11.82%	47.60%
3	35.78%	15.64%	51.42%
4	35.78%	13.79%	49.57%
5	35.78%	14.35%	50.13%
6	35.78%	12.88%	48.66%
7	35.78%	11.85%	47.63%
8	35.78%	12.41%	48.19%
9	35.78%	12.95%	48.73%
10	35.78%	12.36%	48.14%

Furthermore, the relationships estimated above represent only a generic, nationwide engineering cost of a CERCLA response because the response category regressions above were estimated using reclamation and closure plan cost data that had been normalized to national values as described in **Section 3.3**. While this was necessary to perform regression analysis and develop a nationwide formula, the same labor and materials can have different prices in different locations. Hence, the resulting estimates in the sections above would immediately be inaccurate for any given state. To adjust for these locality differences in prices, the response cost formula is multiplied by the most current state cost adjustment factors in USACE (2015). These factors are presented in **Table 4-12** below.

Table 4-12. State-Specific Adjustment Factors from USACE (2015)

State	USACE (2015) Adjustment Factor	State	USACE (2015) Adjustment Factor	State	USACE (2015) Adjustment Factor
AK	1.19	LA	0.89	OH	1.02
AL	0.91	MA	1.2	OK	0.88
AR	0.87	MD	0.99	OR	1.06
AZ	0.96	ME	1.03	PA	1.09
CA	1.17	MI	1.04	RI	1.16
CO	0.97	MN	1.12	SC	0.87
CT	1.18	MO	1.04	SD	0.87
DE	1.1	MS	0.89	TN	0.91
FL	0.92	MT	0.97	TX	0.89
GA	0.89	NC	0.87	UT	0.95
HI	1.19	ND	0.92	VA	0.94
IA	0.98	NE	0.97	VT	1.01
ID	0.97	NH	1.06	WA	1.05
IL	1.15	NJ	1.2	WI	1.06
IN	1	NM	0.92	WV	1.04
KS	0.94	NV	1.08	WY	0.92
KY	0.99	NY	1.17		

5 Natural Resource Damage Component

EPA collected data on both natural resource damages and natural resource damage assessment costs at hardrock mining sites from CERCLA court settlements and judgments, and voluntary payments. This effort resulted in data on 64 sites as discussed in **Section 5.1** below. EPA's data indicate that natural resource damages and response costs are not independent of each other. Instead, response actions have regularly been shown to influence natural resource damages. This is particularly true in the case of sites receiving technical impracticability (TI) waivers. When a technical impracticability waiver is issued, previously projected response costs may be reduced. However, the remaining contamination may lead to additional natural resource damages.

One example summarized in U.S. EPA (2012)[95] is the TI waiver at the Silver Bow Creek/Butte Area. At that site, an EPA evaluation concluded that the water quality in an affected alluvial aquifer could not be improved within a reasonable time frame even assuming the most extensive and costly alternatives. Thus, EPA issued a TI decision that waived cleanup levels for several constituents in that aquifer. However, when such an aquifer is left contaminated, trustees may seek NRD for that aquifer. In the case of the Silver Bow Creek/Butte Area, this same groundwater appeared in the trustees' final restoration plan.[96] So while the TI waiver reduced response costs, it increased the natural resource damages. Thus, while the proportion of total liabilities relating to response costs and NRD was altered, the overall magnitude was similar.

EPA notes that although the extent of response actions ultimately necessary as a result of a release may affect the relative portion of how much NRD may be in comparison with damages, the total magnitude of potential liabilities (response costs and natural resource damages combined) will increase or decrease together. This is effectively captured by a multiplier. Thus, EPA uses a similar approach here as to U.S. EPA (2014)[97] where the Agency estimated natural resource damages as a percent of cleanup costs where both future cleanup costs and future natural resource damages were uncertain. This average percent was used as a multiplier for the purposes of estimating natural resource damages once potential future response costs were estimated. As with that previous study, the natural resource damages and response costs are

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[95] U.S. EPA (Environmental Protection Agency). 2012. *Summary of Technical Impracticability Waivers at National Priorities List Sites*. OSWER Directive 9230.2-24. August. Available online at: https://nepis.epa.gov/Exe/ZyNET.exe/P100EYIC.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2011+Thru+2015&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C11thru15%5CTxt%5C00000005%5CP100EYIC.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL

[96] Butte Natural Resource Damage Restoration Council (BNRC) and Montana Natural Resource Damage Program (NRDP). 2012. Butte Area One: Final Restoration Plan. December. Available online at: https://dojmt.gov/wp-content/uploads/Final-BAO-Restoration-Plan.pdf

[97] U.S. EPA (Environmental Protection Agency). 2014. Regulatory Impact Analysis (RIA) for EPA's 2015 Coal Combustion Residuals (CCR) Final Rule. OSWER. Washington, DC. December. Available online at: www.regulations.gov Document ID#: EPA-HQ-RCRA-2009-0640-12034

uncertain, but EPA found that a similar relationship between damages and costs was presented. Using the same approach as U.S. EPA (2014), these multipliers take the following form:

Equation 5-1 NRD Multiplier

$$M_{NRD} = 1 + \frac{C_{NRD}}{C_{Resp}}$$

Where:

M_{NRD} = the NRD multiplier;

C_{NRD} = CERCLA NRD payouts; and

C_{Resp} = CERCLA response costs.

To produce these multipliers, EPA collected data on NRD payments (**Section 5.1**). EPA then examined potential relationships between these amounts and the CERCLA response costs from **Section 2.1** to calculate NRD multipliers (**Section 5.2**).

5.1 CERCLA Natural Resource Damages

EPA reviewed public records such as consent decrees, complaints, injury assessments, fact sheets, and restoration plans that document NRD settlement amounts at 53 mining and processing sites. These data include costs recovered for conducting the NRD assessment, NRD and/or cultural resource restoration/mitigation costs, NRD compensation costs, NRD where a specific purpose was not stated, and non-monetary (*e.g.*, real estate) NRD settlement terms. This information was supplemented with additional data on NRD settlements from Israel (2013).[98] Israel (2013) provides a comprehensive state-by-state overview of NRD programs and trustees in all 50 states, as well as describes major NRD cases, identified through communications with every state trustee.[99] Across all 50 states, Israel obtained information on 136 NRD cases with readily available monetary estimates of NRD. The 136 NRD cases span a variety of release types. A review of the available information identified 19 cases that involved a mining or processing facility.

Integration of the Israel and EPA datasets provides a sample of 64 mining and processing facilities with NRD settlements. Eight sites were listed in both the Israel and EPA datasets. If the two datasets listed conflicting settlement values, the source documents informing both datasets were reviewed to determine the most accurate value. **Table 5-1** displays summary statistics for these 64 sites. The average NRD settlement value is approximately $16 million across these sites, though individual settlements range from $32,000 to over $400 million. A full listing of NRD amounts for each of the 64 sites is presented in **Appendix L**.

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[98] Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP. Available online at http://www.arnoldporter.com/~/media/files/perspectives/publications/2015/03/statebystate-guide-to-nrd-programs-in-all-50-sta__/files/publication/fileattachment/nrd-statebystate-guide1.pdf

[99] Israel's State-by-State Guide to NRD Programs was originally published in 2006 and is updated periodically. This analysis relied upon the 2013 edition, which was the most recent version available at the time of this analysis.

Table 5-1. Summary of NPL Sites NRD Statistics

Statistic	NRD Amount (Millions of 2014$)
Minimum	$0.03
Median	$3.6
Mean	$16.1
Maximum	$412.5
±1 Standard Deviation	$0 to $69.8
Interquartile Range	$0.2 to $6.9

5.2 Natural Resource Damages Multiplier

Table 5-3 compares average CERCLA response costs across all 319 sites to average CERCLA NRD across 64 mining and processing facilities with NRD settlements. As these data demonstrate, the average NRD settlement value is 24 percent of the average response cost.

Table 5-3. NRD as a Percent of Response Costs at HMFs

Statistic	NRD Millions of $2014	Response Costs Millions of $2014	NRD as a % of Response Costs
Minimum	$0.03	$0.1	N/A
Median	$3.6	$8.9	41%
Average	$16.1	$67.0	24%
Maximum	$412.5	$4,461.0	N/A
±1 Standard Deviation	$0 to $69.8	$0 to $357.7	N/A
Interquartile Range	$0.2 to $6.9	$1.9 to $31.7	N/A

The multipliers developed through the approach outlined at the beginning of this Section likely overestimate NRD as a percentage of response costs, because publically available NRD data were not identified for many of the non-NPL CERCLA sites with comparatively low response costs. As a result, the summary statistics presented in **Table 5-3** are not likely to be representative of hardrock mining or processing sites that incur both response costs and NRD. Indeed, the findings of U.S. GAO (1996)[100] were that "total compensation for natural resource injuries at all Superfund sites on the National Priorities List has been less than one percent of the total cost to clean up the sites."

To address the potential bias associated with including HMFs that did not have identified NRD, EPA limited the data set to sites with both known response costs and known NRD settlement values. **Table 5-4** and **Figure 5-1** present comparisons of response costs and natural resource

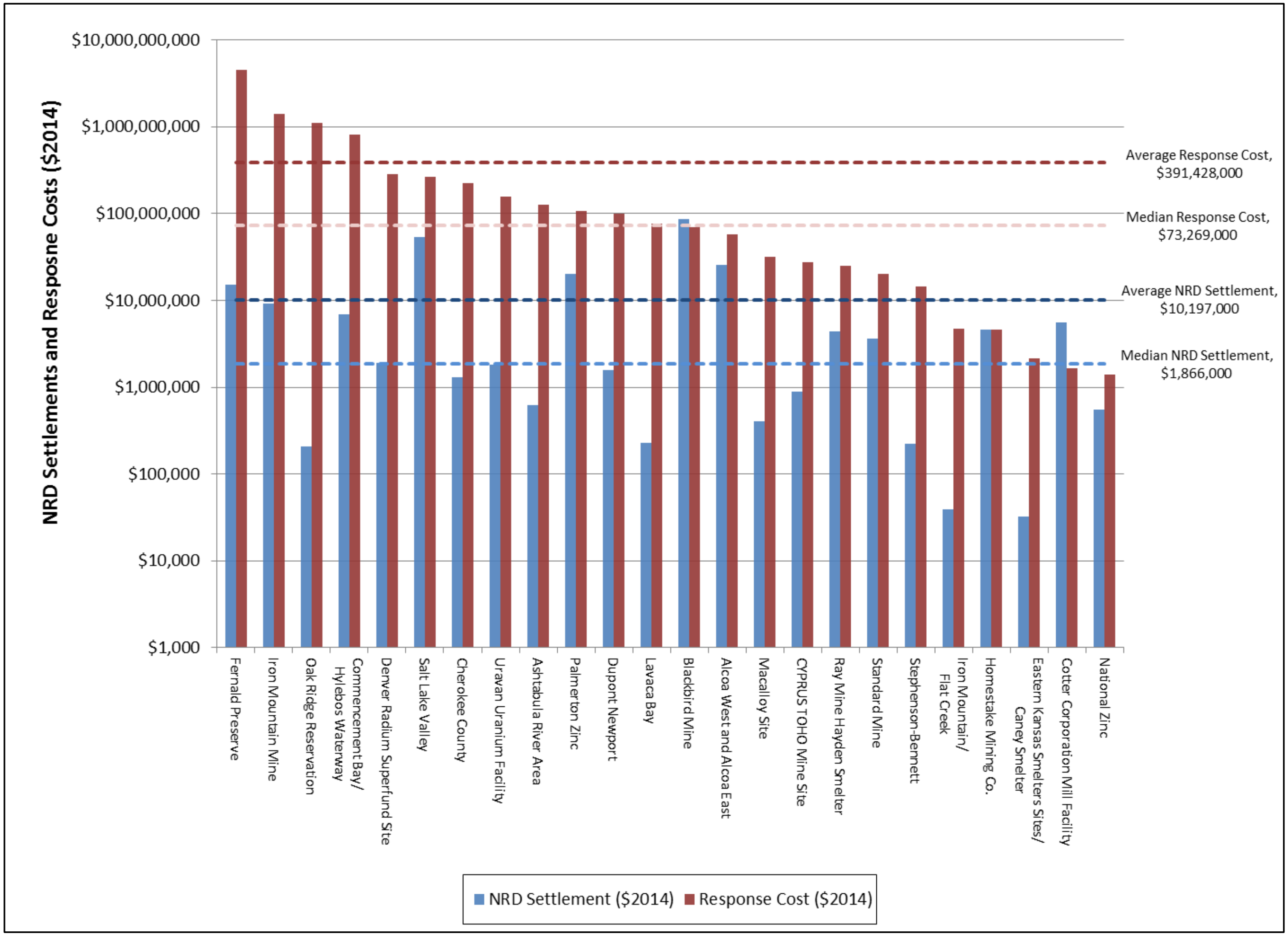
[100] U.S. GAO (Government Accountability Office). 1996. Outlook for and Experience with Natural Resource Damage Settlements. April 16. Available online at: http://www.gao.gov/assets/230/222624.pdf

damages at the resulting 24 sites. The relationship between NRD and response costs demonstrates up to two orders of magnitude variation across these sites.

Table 5-4. Response Costs and NRD at 24 HMFs

HMF	NRD ($2014)	Response Cost ($2014)	NRD as a % of Response Cost
Cotter Corporation Mill Facility	$5,508,000	$1,669,000	330%
Blackbird Mine Superfund Site	$86,575,000	$69,212,000	125%
Homestake Mining Company	$4,585,000	$4,628,000	99%
Alcoa West and Alcoa East	$25,581,000	$56,997,000	45%
National Zinc	$554,000	$1,412,000	39%
Salt Lake Valley	$53,388,000	$261,733,000	20%
Palmerton Zinc	$20,210,000	$105,688,000	19%
Standard Mine	$3,623,000	$20,007,000	18%
Ray Mine Hayden Smelter	$4,347,000	$25,209,000	17%
Cyprus Tohono Mine Site	$897,000	$27,542,000	3%
Dupont Newport	$1,567,000	$99,690,000	2%
Stephenson-Bennett	$224,000	$14,488,000	2%
E. Kansas Smelters Sites/Caney Smelter	$32,000	$2,138,000	1%
Macalloy Site	$401,000	$31,835,000	1%
Uravan Uranium Facility	$1,815,000	$155,291,000	1%
Commencement Bay/Hylebos Waterway	$6,892,000	$813,883,000	1%
Iron Mountain/Flat Creek	$39,000	$4,728,000	1%
Denver Radium Superfund Site	$1,917,000	$284,273,000	1%
Iron Mountain Mine CERCLA Site	$9,148,000	$1,410,426,000	1%
Cherokee County Superfund Site	$1,314,000	$223,994,000	1%
Ashtabula River Area	$615,000	$127,355,000	0.5%
Fernald Preserve	$15,058,000	$4,461,026,000	0.3%
Lavaca Bay	$230,000	$77,326,000	0.3%
Oak Ridge Reservation	$208,000	$1,113,724,000	<0.1%

Figure 5-1. Response Costs and NRD at 24 HMFs



Note: Y-axis uses a logarithmic scale; each gridline (in grey) represents response costs increasing by an order of magnitude. Thus, actual differences in response costs are not shown to scale.

As the costs illustrated in **Figure 5-1** show, there are four mine sites in the sample of 24 with exceptionally high response costs. These sites have response costs greater than two interquartile ranges above the third quartile cost, and are thus considered statistical outliers that are not likely to be representative of response costs at other sites. When these sites are removed from the sample, median NRD as a percent of median response costs are 3.8 percent and average NRD as a percent of average response costs are 13.4 percent as seen in **Table 5-5** below.

Table 5-5. NRD as a Percent of Response Costs at 20 Mining Sites

Statistic	NRD Millions of $2014	Response Costs Millions of $2014	NRD as a % of Response Costs
Minimum	$0.03	$1.4	2.3%
Median	$1.7	$44.4	3.8%
Average	$10.7	$79.8	13.4%
Maximum	$86.6	$284.3	30.5%
±1 Standard Deviation	$0 to $32.2	$0 to $166.6	N/A to 19.30%
Interquartile Range	$0.5 to $4.8	$12.0 to $111.1	4.28% to 4.33%

Note: The data presented in this table do not reflect the following four mines that were excluded as outliers: Commencement Bay/Hylebos Waterway, Fernald Preserve, Iron Mountain Mine, and Oak Ridge Reservation.

After restricting the analysis to the 20 non-outlier sites with both NRD settlements and response costs, the average NRD settlement was 13.4 percent of the average response cost. Because this value is based on the dollars transacted at actual CERCLA HMFs, EPA finds it appropriate to use an NRD multiplier of 1.134 for the NRD component of the formula.

6 Health Assessment Component

Under 42 CFR 90.14, by the Agency for Toxic Substances and Disease Registry (ATSDR) is required to maintain documentation pertaining to the costs associated with all phases of a Public Health Assessment or a Health Consultation (HA) performed by the Agency to form the basis for cost recovery by EPA.[101] This section summarizes EPA's efforts to collect data pertaining to HA costs incurred by ATSDR.

EPA reviewed documents available on the ATSDR website[102] looking for any references to costs and/or level-of-effort associated with HAs in **Appendix M**. EPA performed this review state-by-state (alphabetically, beginning with Alabama), and site-by-site, using search terms and text scans (where the PDFs were not searchable). After reviewing approximately 25 percent of the listed sites and finding no relevant data or references, EPA began sampling documents, state-by-state, sampling one or more documents for all of the listed states. Again, EPA found no relevant data.

EPA also performed primary research via the Internet looking for relevant documents such as budget reviews, government audit reports, analyses, and editorials concerning ATSDR HAs. This effort yielded only two relevant sources. The first source contained a critical review of the approval processing time for public release of the various reports.[103] That review, however, included nothing about HA costs. The second source provided an anecdotal mention that "the average cost of a completed public health assessment is approximately $200,000."[104] EPA notes that this anecdotal estimate in 1997 dollars yields an estimate of approximately $280,000 in 2014 dollars.

Third, EPA conducted a review of the historical ATSDR budgets and budget requests. This review shows that ATSDR has been funded at a relatively consistent level of approximately $75 million per year. ATSDR also reports performance statistics on the number of health assessments that it performs per year. This reporting showed 168 HAs performed in fiscal year 2015 and 125 projected to be performed in fiscal year 2016. Simply dividing the budget by the number of HAs conducted yields a cost per HA of between approximately $450,000 and $600,000 in 2014 dollars.[105]

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[101] 42 CFR § 90.14 Documentation and cost recovery: (a) During all phases of ATSDR health assessments and health effects studies, documentation shall be completed and maintained to form the basis for cost recovery, as specified in section 107 of CERCLA; (b) Where appropriate, the information and reports compiled by ATSDR pertaining to costs shall be forwarded to the appropriate EPA regional office for cost recovery purposes.

[102] ASTDR. http://www.atsdr.cdc.gov/hac/pha/index.asp

[103] Office of Management and Budget (OMB). (2013). Information Collection: "State and Local Environmental Public Health Employees Usage of Public Health Assessments and Consultations Documents ." Accessed at: http://www.reginfo.gov/public/do/PRAViewIC?ref_nbr=201110-0920-004&icID=205658

[104] Public Health Assessment, Pantex Plant, Amarillo, Carson County, Texas, September 30, 1998. Appendix F. "Public Comments on the Pantex Plant Public Health Assessment and ATSDR's Responses" (*see* #26). Accessed at http://www.atsdr.cdc.gov/hac/pha/pha.asp?docid=128&pg=7

[105] Calculation: $75,000,000 ÷ 168 = $446,429; and $75,000,000 ÷ 125 = $600,000.

The Office of Financial, Administrative and Information Services, National Center for Environmental Health, ATSDR confirmed this result. Upon EPA's request, ATSDR provided cost information for recently completed health assessments. ATSDR limited the data provided to the minimum, maximum, and average costs of health assessments conducted over the past 18 months (as of March 2016). They reported an average cost per health assessment of $550,000, with a range of $21,000 to $2,151,000 based on an analysis of public health assessments completed over the previous 18 months as of March 2016.[106] ATSDR did not provide hardrock mining-specific data, and thus non-mining health assessment costs are included in this dataset.

Health assessments often make use of EPA-collected data. Because this approach avoids potentially costly data collection activities, a relatively low amount of $550,000 is not unexpected for an average cost. Furthermore, EPA expects future health assessments to generally be consistent with the low $550,000 cost since ATSDR has experience performing the same types of reports routinely. Finally, a comparison of the $450,000 and $600,000 range to the anecdotal $280,000 estimate and the $550,000 value estimated from data provided by ATSDR shows that these estimates are of the same order of magnitude, and thus likely capture the approximate range of typical HA costs. Thus, EPA set the formula health assessment component to a fixed cost of $550,000 representing the average health assessment cost reported by ATSDR.

[106] Personal communication with Michelle Canady. March 13, 2016.

7 Hardrock Mining Financial Responsibility Formula

The Sections above derived estimates of the three main components of the formula including the response component (**Sections 2-4**), the natural resource damage component (**Section 5**), and the health assessment component (**Section 6**). For estimating CERCLA 108(b) financial responsibility, EPA combined these three components in **Equation 7-1** as follows:

Equation 7-1 Facility-wide Financial Responsibility in 2014 Dollars

$$TotalFinancialResponsibility = [\sum_{i=1}^{n} ResponseCost_i] \times [1 + OverheadOversight_r] \times$$

$$StateAdjustmentFactor_s \times 1.134 + \$550{,}000$$

<u>Where:</u>

i = the i^{th} response category (e.g., water treatment costs);

n = the total number of relevant response categories;

r = EPA region r (e.g., EPA Region 3); and

s = state s (e.g., Montana).

This equation represents EPA's national, site-based formula for estimating financial responsibility in 2014 dollars at hardrock mining facilities. The sections below detail how the formula is to be implemented by the user, including how the formula is adjusted for future inflation (**Section 7.1**) and the assumptions regarding source controls and water treatment (**Section 7.2**). The fully expanded formula is then presented (**Section 7.3**).

7.1 Inflation Adjustment

EPA's proposed rule requires that a facility's financial responsibility amount be adjusted for inflation to preserve the real value of the financial responsibility. This inflation adjustment must be made to the entire FR amount as calculated in 2014 dollars. The proposed rule uses an inflation factor derived from the most recent Implicit Price Deflator for Gross Domestic Product (GDP) published by the U.S. Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for 2014. EPA selected the Implicit Price Deflator for the GDP as that has become the Department of Commerce's favored basis for the Implicit Price Deflators a representation of national output. Furthermore, the data is readily accessible from the Department of Commerce's Bureau of Economic Analysis providing for transparent implementation.[107] EPA expects the familiarity with this data series will allow for ease of implementation. The inflation factor to be used in any subsequent year will calculated using **Equation 7-2**:

[107] See Table 1.1.9, Implicit Price Deflators for Gross Domestic Product. Available online at: http://www.bea.gov/iTable/iTableHtml.cfm?reqid=9&step=3&isuri=1&903=13

Equation 7-2 Future Inflationary Adjustment

$$IF_y = \frac{D_{y*}}{D_{2014}}$$

Where:

IF_y = the inflation factor for year y;

D_{y*} = the most recent available GDP Implicit Price Deflator for year *y*; and

D_{2014} = the GDP Implicit Price Deflator for 2014.

A similar approach to inflation adjustments is also provided for under EPA's RCRA Subtitle C regulations for hazardous waste treatment, storage, and disposal facilities.[108] The formula for future years' financial responsibility is presented in **Equation 7-3** below.

Equation 7-3 Facility-wide Financial Responsibility

$$TotalFinancialResponsibility_y = \frac{Deflator_{y*}}{D_{eflator2014}} \times \left(\left[\sum_{i=1}^{n} ResponseCost_i\right] \times [1 + OverheadOversight_r] \times StateAdjustmentFactor_s \times 1.134 + \$550{,}000\right)$$

Where:

$Deflator_y$ = the most recent available GDP Implicit Price Deflator for year *y*; and

$Deflator_{2014}$ = the GDP Implicit Price Deflator for 2014

i = the i^{th} response category (e.g., water treatment costs);

n = the total number of relevant response categories;

r = EPA region *r* (e.g., EPA Region 3); and

s = state *s* (e.g., Montana).

7.2 Source Controls, Water Treatment, and Treatable Flows

In the absence of a site-specific RI/FS or ROD, EPA cannot categorically determine that source controls and water treatment activities would not be necessary to minimize the volume, toxicity, or mobility of hazardous substances. Therefore, as a conservative assumption to help ensure the adequacy of the amount of financial responsibility should source controls and water treatment prove necessary, EPA assumes that both will be used, and sets the variables $SourceControl_{OpenPit}$, $SourceControl_{WasteRock}$, $SourceControl_{HeapDumpLeach}$, $SourceControl_{Tailings}$, and *Treat* equal to one for all HMFs calculating 108(b) FR amounts. Setting these values to one, the regressions from **Section 4** are presented in the revised form in **Table 7-1** below.

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108 See e.g., 40 C.F.R. 264.142(b); 264.144(b).

Table 7-1. Simplified Response Category Equations

Log(cost)	Fitted Regression Equation Assuming Source Controls/Water Treatment
$OpenPit$	$4.24 + 1.08 \times LogAcres_{OpenPit}$
$WasteRock$	$5.18 + 0.75 \times LogAcres_{WasteRock}$
$HeapDumpLeach$	$4.57 + 1.01 \times LogAcres_{HeapDumpLeach}$
$TailingsFacility$	$5.32 + 0.68 \times LogAcres_{Tailings}$
$ProcessPondsReservoirs$	$4.29 + 1.03 \times LogAcres_{ProcessPondReservoir}$
$UndergroundMine$	$4.96 + 1.35 \times HydraulicHead$
$Drainage$	$3.42 + 0.57 \times LogAcres_{Total+1}$
$SolidHazardousWasteDisposal$	Fixed cost per site of $2,600,000
$SlagPile$	Fixed cost per acre of $64,000
$ShortTermO\&MMonitoring$	$4.01 + 0.38 \times LogAcres_{Total+1}$
$LongTermO\&MMonitoring$	$3.12 + 0.58 \times LogAcres_{Total+1}$
$InterimO\&M$	$6.04 + 0.01 \times NetPrecipitation + 0.34 \times LogAcres_{HeapDumpLeach+1} + 0.10 \times LogAcres_{WetTailings+1}$
$WaterTreatment$	$3.22 + 1.10 \times LogFlow + 0.70 \times InSituLeach$

*SolidHazardousWasteDisposal and SlagPile receive a fixed value and are not in log format

Furthermore, the cost equation for water treatment requires the input of gallon per minute flows that require treatment. However, as discussed above, EPA calculates the potential costs assuming the use of source control covers. Albright (2015)[109] provides results of EPA's *Alternative Cover Assessment Program* (ACAP). These results indicate that such controls in place will necessarily reduce the amounts of seepage that may require capture and treatment prior to discharge. Thus, EPA expects that source controls would have the effect of reducing the expected volumes of water requiring treatment. To account for the relationship between these two control measures, EPA sought a nationally-applicable equation for estimating such mitigated flow volumes.

EPA's ACAP evaluated two typical forms of covers: conventional covers[110] and water balance covers.[111] Results of this program found measurable infiltration for all cover designs. Infiltration rates varied with precipitation, climate, lateral flow on geomembrane, differential settlement, and installation quality assurance/quality control. Infiltration measured from 0% to greater than 17.1% of precipitation for conventional covers and from 0% to more than 25% of precipitation for water balance covers. The average infiltration for the combined data set was 5% of precipitation. These infiltration rates as a function of precipitation are also consistent with the earlier ACAP findings reported in Milczarek et al (2000).[112] As a result of these considerations, EPA has adopted the presumption of 95% effectiveness for source control covers, resulting in a residual 5% infiltration based on gross precipitation. The resulting default calculation for flows is provided in **Equation 7-4** below.

Equation 7-4 Equation for Estimating Water Flows Requiring Treatment

$$LogFlow = Log\left[Flow_{Underground} + Flow_{InSituLeach} + \sum_{f=1}^{k} Flow_f\right] = Log\left[Flow_{Underground} + Flow_{InSituLeach} + \sum_{f=1}^{k}\left(0.05 \times Precipitation \times Acres_f \times 0.05166\right)\right]$$

[109] Albright, William. 2015. *Final Covers for Mine Tailings*. Desert Research Institute Clu-In Seminar. Available online at: https://clu-in.org/conf/tio/mining_052015/slides/Albright_Day_Two.pdf

[110] Conventional Covers: Designs where a barrier layer with low saturated hydraulic conductivity is the primary impediment to leakage and gas flow (these include clay, composite or geosynthetic clay).

[111] Water Balance Covers: Control leakage by balancing the water storage capacity of unsaturated finer-textured soils and the ability of plants and the atmosphere to extract water stored in the soil (these include evapotranspiration, store-and-release, monolithic, and capillary barrier covers).

[112] M. Milczarek, D. Hammermeister, and J. Vinson, MYTHS, MODELS, AND REALITIES, Infiltration and Seepage Control in Mine Reclamation Covers in the U.S. Southwest, 5th International Conference on Acid Rock Drainage, May 22-25, 2000, Denver, CO.

Where:

$Flow_{Underground}$	= the water flow in gallons per minute for all underground mines;
$Flow_{InSituLeach}$	= the water flow in gallons per minute for all in-situ leaches;
$Flow_f$	= water flow in gallons per minute for site feature *f*;
f	= the f^{th} site feature;
k	= the total number of site features present;
$Precipitation$	= annual precipitation in inches;
$Acres_f$	= acreage of site feature *f*; and
0.05	= presumed fraction of precipitation infiltrating a cover;
0.05166	= conversion factor from inch-acres/year to gallons/minute.[113]

Underground mines and in-situ leaches are not closed with source control covers. Thus, for flows that result from these site features, owners and operators would enter the gallons per minute expected to be treated at the end of operations based on an engineer's best professional judgment.

7.3 Example of Fully Expanded Financial Responsibility Formula

For a hypothetical facility with a single site feature of each type (*e.g.*, a single heap leach), EPA expanded the equations above into **Equation 7-5** below. This equation utilizes the future inflation factor, the assumption of source controls, the assumption of water treatment, the calculation of flows, the use of ten years for short term O&M costs, the expectation of long-term O&M costs into perpetuity, and the calculated real Superfund rate of return of 2.63%.

[113] $Conversion\ Factor = \frac{1/12ft}{in} \times \frac{43560ft^2}{ac} \times \frac{7.48gal}{ft^3} \div \frac{365d}{y} \div \frac{1440min}{d}$ = 0.05166

Equation 7-5 Facility-wide FR in 2014 Dollars (Expanded)

$$TotalFinancialResponsibility_y = \frac{Deflator_y}{Deflator_{2014}} \times \Bigg(\Bigg[\$2{,}600{,}000 + 5.07 \times$$

$$10^{(4.24+1.08\times LogAcres_{OpenPit})} + 2.23 \times 10^{(4.96+1.35\times HydraulicHead)} + 1.85 \times$$

$$10^{(5.18+0.75\times LogAcres_{WasteRock})} + 2.29 \times 10^{(4.57+1.01\times LogAcres_{HeapDumpLeach})} + 1.71 \times$$

$$10^{(5.32+0.68\times LogAcres_{Tailings})} + 1.64 \times 10^{(4.29+1.03\times lLogAcres_{ProcessPondReservoir}} +$$

$$9.56 \times 10^{(3.42+0.57\times LogAcres_{Total+1})} + \$64{,}000 \times Acres_{SlagPile} +$$

$$\sum_{t=1}^{10} \frac{1.46\times 10^{(6.04+0.01\times NetPrecipitation+0.34\times LogAcres_{HeapDumpLeach+1}+0.10\times LogAcres_{WetTailings+1})}}{(1.0263)^{t-1}} +$$

$$\frac{1.16\times 10^{(3.22+1.10\times Log\left[Flow_{Underground}+Flow_{InSituLeach}+\sum_{f=1}^{k}\left\{0.05\times Precipitation\times Acres_f\times 0.05166\right\}\right]+0.70\times InSituLeach)}}{0.0263} +$$

$$\sum_{t=1}^{10} \frac{1.82\times 10^{(4.01+0.38\times LogAcres_{Total+1})}}{(1.0263)^{t-1}} + \frac{1.64\times 10^{(3.12+0.58\times LogAcres_{Total+1})}}{0.0263}\Bigg] \times [1 +$$

$$OverheadOversight_r] \times StateAdjustmentFactor_s \times 1.134 + \$550{,}000\Bigg)$$

Where:

y	= year *y* when the financial responsibility is calculated (e.g., 2022);
t	= time period *t* of the 10-year O&M period (e.g., year 4 of 10);
f	= the f^{th} site feature;
k	= the total number of site features present;
$Acres_f$	= acreage of site feature *f*;
r	= EPA region *r* (e.g., EPA Region 3); and
s	= state *s* (e.g., Montana).

Appendix A:
Response Cost Sources and Data Dictionary

This appendix discusses the data sources for the analysis of response costs at hardrock mining sites on the National Priorities List (NPL) and at non-NPL CERCLA sites. To calculate the response costs at the historical sites, EPA relied on data pulls from CERCLIS, Integrated Financial Management System (IFMS), and Office of Enforcement and Compliance Assurance (OECA) information resources. These data pulls were compiled into the following three databases which have been posted to an FTP site.

- **Expenditures Database:** This database is a CERCLIS/IFMS data pull that summarizes the Fund expenditures incurred at each site to date. It provides data on the type of expenditure (broadly speaking, construction versus non-construction) and the source of funds (whether the Fund was reimbursed by the potentially responsible party (PRP) through a "special account" or not). It also provides information regarding the number of operable units at each site, type of action, site lead status, the status of the construction activities at the site, and the year of construction completion (if appropriate). EPA used a combination of these data to estimate past expenditures at each site.

- **ROD Costs Database:** This database is a CERCLIS/IFMS data pull that summarizes Records of Decision (RODs) at each site. A ROD is a document that provides the justification for the remedial action (treatment) chosen at a Superfund site. It also contains information concerning site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, scope and role of response action, and the remedy selected for cleanup. The ROD Costs database provides a dollar estimate for each remedial action chosen at a site. EPA used these data to assess both past and future expenditures at each site.

- **Settlements Database:** This database is developed and supported by OECA. The database records information about settlements with PRPs, including "cashout" funds accrued and deposits into special accounts associated with settlements at each site. Because settlements can be both retroactive (to cover the past expenditures at the site) and forward-looking, EPA used these data to supplement the analysis of past and/or future expenditures at each site, as further described below.

Tables A-1 and **A-2** list all tables and fields within each EPA database and identify the tables and fields that were used in the analysis.

Table A-1. EPA Databases and Database Tables Used in the Analysis

TABLE NAME	DATABASE	DATA PULL	USED?
Mining Sites	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Base Table A	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	Yes
MegaSite Table	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
OUs for Actions	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
NPL Dates	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
SSIDs	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
OU Count for Actions	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
OUs	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
RAs-CERCLIS Pull	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
CERCLIS Base RA Table	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Actions	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Base Lead Table	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
FRD 01	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Acres	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Planned Deletions	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Planned CCs	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
FRD Actions 01	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
FRD Actions 02	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
FRD FYs	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Last Pln RO JQ AM	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Final Leads	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Ref AML Sites	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Ref EOFY	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Ref Listing Years for No Date Sites	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Ref Mining Smelting Records	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Ref Site Population	EOFY 2011 NPL Site Analysis	CERCLIS/IFMS Data Mining Sites Revised	
Mining Site Media	Media_Contaminants	CERCLIS/IFMS Data Mining Sites Revised	
Mining Site COCs	Media_Contaminants	CERCLIS/IFMS Data Mining Sites Revised	
ROD Base 01	ROD Costs	CERCLIS/IFMS Data Mining Sites Revised	
ROD 01	ROD Costs	CERCLIS/IFMS Data Mining Sites Revised	
OM 01	ROD Costs	CERCLIS/IFMS Data Mining Sites Revised	
Final 01	ROD Costs	CERCLIS/IFMS Data Mining Sites Revised	Yes
Settlements	adh783c AML Sites 06-17-2010	OECA	Yes
Writeoffs	adh783c AML Sites 06-17-2010	OECA	
Mining Sites	Site Exp	CERCLIS/IFMS Data Mining Site Exp	
Mining SSIDs	Site Exp	CERCLIS/IFMS Data Mining Site Exp	
Exp1 Detail	Site Exp	CERCLIS/IFMS Data Mining Site Exp	
Exp2 Detail	Site Exp	CERCLIS/IFMS Data Mining Site Exp	

TABLE NAME	DATABASE	DATA PULL	USED?
Exp3 Detail	Site Exp	CERCLIS/IFMS Data Mining Site Exp	
Tot Exp	Site Exp	CERCLIS/IFMS Data Mining Site Exp	
Tot Exp Conv	Site Exp	CERCLIS/IFMS Data Mining Site Exp	Yes
Final Site Exp	Site Exp	CERCLIS/IFMS Data Mining Site Exp	
Final Site Exp Special Accounts	Site Exp	CERCLIS/IFMS Data Mining Site Exp	
Deflation Factors	Site Exp	CERCLIS/IFMS Data Mining Site Exp	
Ref Mining Sites	Site Exp	CERCLIS/IFMS Data Mining Site Exp	

Table A-2. Field and Table Names Used in the Analysis

FIELD	TABLE	USED?
RRegion Code	Base Table A	
RState Code	Base Table A	
Site City Name	Base Table A	
Site ID	Base Table A	
Site EPA ID	Base Table A	Yes
Site Name	Base Table A	Yes
RNPL Status Code	Base Table A	Yes
RFed Facility Code	Base Table A	
Population in 1 Mile	Base Table A	
NPL Proposal Year	Base Table A	
NPL Listing Year	Base Table A	
CC Year	Base Table A	
CC Status	Base Table A	Yes
NPL Deletion Year	Base Table A	
Pln CC FY	Base Table A	
Pln Deletion FY	Base Table A	
Mega Site	Base Table A	
Mega Status	Base Table A	
OUs	Base Table A	
FRD FY	Base Table A	
CERCLIS Pln FRD FY	Base Table A	
Last Pln Remedy FY	Base Table A	
RV/RA Lead Site	Base Table A	Yes
Site Acres	Base Table A	
CERCLIS Pull Date	Base Table A	
RRegion Code	Final 01	
RState Code	Final 01	
Site Name	Final 01	Yes
Site EPA ID	Final 01	Yes
Site ID	Final 01	
OU ID	Final 01	
RAT Code	Final 01	
ACT Code ID	Final 01	
ROD FY	Final 01	Yes
Low Cap Cost	Final 01	
High Cap Cost	Final 01	Yes
Low Present Worth	Final 01	
High Present Worth	Final 01	Yes

FIELD	TABLE	USED?
Low ROD Tot OM	Final 01	
High ROD Tot OM	Final 01	Yes
OM Discount	Final 01	Yes
OM Duration	Final 01	Yes
Low Ann OM Cost	Final 01	
High Ann OM Cost	Final 01	Yes
Comments	Final 01	
Region	Tot Exp Conv	Yes
State	Tot Exp Conv	
Site Name	Tot Exp Conv	Yes
Site EPA ID	Tot Exp Conv	Yes
Site ID	Tot Exp Conv	
TR	Tot Exp Conv	
BFY	Tot Exp Conv	
FY	Tot Exp Conv	Yes
APPR	Tot Exp Conv	
Adj Fund	Tot Exp Conv	
Fund Cat 1	Tot Exp Conv	
Fund Cat 2	Tot Exp Conv	Yes
Fund Cat 3	Tot Exp Conv	
PRC	Tot Exp Conv	
Adj PRC Desc	Tot Exp Conv	
NPM	Tot Exp Conv	
NPM Name	Tot Exp Conv	
Adj NPM	Tot Exp Conv	
Adj NPM Name	Tot Exp Conv	
Appr Func	Tot Exp Conv	
RPIO	Tot Exp Conv	
RPIO Name	Tot Exp Conv	
Adj RPIO Name	Tot Exp Conv	
ORG	Tot Exp Conv	
AH	Tot Exp Conv	
SA	Tot Exp Conv	
BOC	Tot Exp Conv	
FOC	Tot Exp Conv	
Adj FOC	Tot Exp Conv	
Adj FOC Desc	Tot Exp Conv	
Adj FOC Cat	Tot Exp Conv	
Adj FOC Subcat	Tot Exp Conv	
Adj P/A	Tot Exp Conv	

FIELD	TABLE	USED?
P/A	Tot Exp Conv	
Intra/Extra Type	Tot Exp Conv	
Site/NonSite	Tot Exp Conv	
SiteProj	Tot Exp Conv	
SSID	Tot Exp Conv	
RAT	Tot Exp Conv	Yes
OU	Tot Exp Conv	
ACT	Tot Exp Conv	
UNLIQ COM	Tot Exp Conv	
Obs	Tot Exp Conv	
Exp	Tot Exp Conv	Yes
2011 Conversion Factor	Tot Exp Conv	
2011 Expenditures	Tot Exp Conv	
Region	Settlements	
Site Name	Settlements	Yes
Site ID	Settlements	
EPA ID	Settlements	Yes
RAT Name	Settlements	
Start	Settlements	
Lodged	Settlements	
Complete	Settlements	Yes
Notice	Settlements	
Response	Settlements	Yes
Past Cost	Settlements	
Future Cost	Settlements	Yes
Res Prem	Settlements	
CR Prem	Settlements	
Fed SA Flag	Settlements	
Fed SA Amount	Settlements	Yes
State SA Amount	Settlements	
Resp SA Flag	Settlements	
Resp SA Amount	Settlements	

Table A-3. Data Field Definitions and Description of Data Processing Steps to Calculate the Response Cost Analysis Inputs

ITEM #	DATABASE NOMENCLATURE	EXPLANATION	FORMULA (IF APPLICABLE)	HAVE THE DATA BEEN PROCESSED?*	DEFINITION	SOURCE
1	CC STATUS	Construction Complete Status	N/A	No, directly from database	Identifies whether the construction at the site is complete ("CC") or not complete ("non-CC").	File: EOFY 2011 NPL Site Analysis.mdb Table: 000000 Base Table A Field name: CC Status Date received: 2012.04.18 From: A. Youkeles
2	RV/RA LEAD SITE	Site Lead: PRP, Fund, Mixed**	N/A	No, directly from database	The type of lead at the site generally defines the entity implementing the construction projects and financing the expenditures (the Superfund Trust Fund for the Fund lead, the PRPs for the PRP lead, and a combination of both for Mixed lead). It also defines whether the money flows through the Fund (generally “yes” in the case of Fund lead, generally “no” in the case of PRP lead, and a combination of the two for Mixed lead). Note that even for PRP lead sites there are certain expenditures that flow through the Fund (for example, oversight expenditures).	File: EOFY 2011 NPL Site Analysis.mdb Table: 000000 Base Table A Field name: RV/RA Lead Site Date received: 2012.04.18 From: A. Youkeles
3	RESPONSE COST	Total Estimated Response Cost	See **Section 3.1.1**	Yes, steps as discussed in **Section 3.1.1**	A measure of past and future expenditures at the site derived using the data processing algorithm.	File: Various Table: Various Field name: Various Date received: Various
4	EXP2011	IFMS Expenditure (non-construction and construction)	N/A	Yes: - summarized data from operable unit level to site level - converted to 2011 dollars	Total expenditure incurred by the Fund at the site (non-construction, oversight expenditure and construction expenditure).	File: Site Exp.mdb Table: 00015 Tot Exp Conv Field name: Exp Date received: 2012.04.18 From: A. Youkeles

ITEM #	DATABASE NOMENCLATURE	EXPLANATION	FORMULA (IF APPLICABLE)	HAVE THE DATA BEEN PROCESSED?*	DEFINITION	SOURCE
5	HIGHROD2011$	High Net Present Value of costs in Record of Decision (ROD)	N/A	Yes: - summarized data from operable unit level to site level - converted to 2011 dollars - corrected the data deficiencies identified by EPA***	A ROD is a document that provides the justification for the remedial action (treatment) chosen at a Superfund site. It also contains site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, scope and role of response action, and the remedy selected for cleanup. RODs database provides a dollar estimate for each remedial action chosen at a site.	File: ROD Costs.mdb Table: 000003 Final 01 Field name: High Present Worth Date received: 2012.04.18 From: A. Youkeles
6	RESPONSE2011 $	Value of Response	N/A	Yes: - summarized data from the settlement action level to site level - converted to 2011 dollars	Value of PRP work performed at the site that did not (and will not) flow through the Fund.	File: cerclis_historical_sites_41612.mdb Table: Settlements Field name: response Date received: 2012.04.17 From: M. Bell
7	DEP_FED_ACCT 2011$	Measure of Future Costs at the Site	Maximum of Deposits Into a Federal Special Account and "Cashout" Funds Achieved in the Context of Settlement (maximum of lines 7A and 7B)	Yes: - processed data to calculate according to formula (maximum of lines 7A and 7B)	The higher of the deposits into a federal special account for the site and the "cashout" funds achieved in the context of settlement. Represents a measure of the future costs at the site.	File: cerclis_historical_sites_41612.mdb Table: Settlements Field name: various Date received: 2012.04.17 From: M. Bell

ITEM #	DATABASE NOMENCLATURE	EXPLANATION	FORMULA (IF APPLICABLE)	HAVE THE DATA BEEN PROCESSED?*	DEFINITION	SOURCE
7A	N/A	Deposits into a Federal Special Account	N/A	Yes: - summarized data from the settlement action level to site level - converted to 2011 dollars	Under CERCLA, EPA is authorized to retain and use funds received in settlements to address CERCLA response actions contemplated in the settlement agreements. EPA retains these funds in site-specific accounts, called “special accounts,” which are subaccounts within the EPA Hazardous Substance Superfund (Trust Fund). Special account deposits by PRPs may cover both past and future work at the site.	File: cerclis_historical_sites_41612.mdb Table: Settlements Field name: fed_sa_amt Date received: 2012.04.17 From: M. Bell
7B	N/A	"Cashout" Funds Achieved in the Context of Settlement	N/A	Yes: - summarized data from the settlement action level to site level - converted to 2011 dollars	Future Cost field in the OECA database records the “cashout” funds achieved in the context of a settlement. “Cashout” represents the costs to be incurred at a Superfund site. Therefore, this field may represent the amount of the future expenditures at the site.	File: cerclis_historical_sites_41612.mdb Table: Settlements Field name: futurecost Date received: 2012.04.17 From: M. Bell
8	Exp2011_nonRRALR	Non-construction IFMS Expenditure	Sum of IFMS Expenditure (EXP2011, line 4) for which RAT Code is not R, RA, or LR	Yes: - processed data to separate applicable data codes (R, RA, and LR RAT Codes represent construction activities in CERCLIS) - summarized data from operable unit level to site level - converted to 2011 dollars	Total non-construction, oversight expenditure incurred by the Fund at the site.	File: Site Exp.mdb Table: 00015 Tot Exp Conv Field name: Exp Date received: 2012.04.18 From: A. Youkeles

ITEM #	DATABASE NOMENCLATURE	EXPLANATION	FORMULA (IF APPLICABLE)	HAVE THE DATA BEEN PROCESSED?*	DEFINITION	SOURCE
9	Exp2011_SA	IFMS Expenditure from Special Account	Sum of IFMS Expenditure (EXP2011, line 4) for which Fund_Cat_2 is "REIM SA"	Yes: - processed data to separate applicable data codes ("REIM SA" Fund_Cat_2 code identifies Special Account reimbursement) - summarized data from operable unit level to site level - converted to 2011 dollars	Expenditure incurred by the Fund at the site for which the Fund was reimbursed by the PRP and the funds were deposited into a special account (includes non-construction, oversight expenditure and construction expenditure).	File: Site Exp.mdb Table: 00015 Tot Exp Conv Field name: Exp Date received: 2012.04.18 From: A. Youkeles
10	Exp2011_nonSA	IFMS Expenditure not from Special Account	Total IFMS Expenditure less IFMS Expenditure from Special Account. Formula: EXP2011 - Exp2011_SA (line 4 less line 9)	Yes: - processed data to calculate according to formula - summarized data from operable unit level to site level - converted to 2011 dollars	Expenditure incurred by the Fund at the site for which the Fund had not been reimbursed by past settlements. It is possible that reimbursement occurred in settlements after the expenditure was made or may occur as a part of future settlements, but at this time EPA does not have the data to evaluate that. Includes non-construction, oversight expenditure and construction expenditure.	File: Site Exp.mdb Table: 00015 Tot Exp Conv Field name: Exp Date received: 2012.04.18 From: A. Youkeles
11	Exp2011_SA_nonRRALR	Non-construction IFMS Expenditure from Special Account	Sum of IFMS Special Account Expenditure (EXP2011_SA, line 9) for which RAT Code is not R, RA, or LR	Yes: - processed data to calculate according to formula - summarized data from operable unit level to site level - converted to 2011 dollars	Non-construction, oversight expenditure incurred by the Fund at the site for which the Fund was reimbursed by the PRP and the funds were deposited into a special account.	File: Site Exp.mdb Table: 00015 Tot Exp Conv Field name: Exp Date received: 2012.04.18 From: A. Youkeles

ITEM #	DATABASE NOMENCLATURE	EXPLANATION	FORMULA (IF APPLICABLE)	HAVE THE DATA BEEN PROCESSED?*	DEFINITION	SOURCE
12	Exp2011_nonSA_RRALR	Construction IFMS Expenditure not from Special Account	Sum of IFMS Expenditure not from Special Account (EXP2011_nonSA, line 10) for which RAT Code is R, RA, or LR. Formula: Exp_nonSA - Exp_nonSA_nonRRALR (line 10 less line 13)	Yes: - processed data to calculate according to formula - summarized data from operable unit level to site level - converted to 2011 dollars	Construction expenditure incurred by the Fund at the site for which the Fund had not been reimbursed by past settlements. It is possible that reimbursement occurred in settlements after the expenditure was made or may occur as a part of future settlements, but at this time EPA does not have the data to evaluate that.	File: Site Exp.mdb Table: 00015 Tot Exp Conv Field name: Exp Date received: 2012.04.18 From: A. Youkeles
13	Exp2011_nonSA_nonRRALR	Non-construction IFMS Expenditure not from Special Account	Sum of IFMS Expenditure not from Special Account (EXP2011_nonSA, line 10) for which RAT Code is not R, RA, or LR. Formula: Exp_nonSA - Exp_nonSA_RRALR (line 10 less line 12)	Yes: - processed data to calculate according to formula - summarized data from operable unit level to site level - converted to 2011 dollars	Non-construction, oversight expenditure incurred by the Fund at the site for which the Fund had not been reimbursed by past settlements. It is possible that reimbursement occurred in settlements after the expenditure was made or may occur as a part of future settlements, but at this time EPA does not have the data to evaluate that.	File: Site Exp.mdb Table: 00015 Tot Exp Conv Field name: Exp Date received: 2012.04.18 From: A. Youkeles

Notes:

* All data adjusted for inflation and presented in 2011 dollars. Inflation adjustment performed using "Table 10.1—Gross Domestic Product and Deflators Used in the Historical Tables: 1940–2017." Available at: https://www.whitehouse.gov/sites/default/files/omb/budget/fy2013/assets/hist10z1.xls; downloaded April 20, 2012.

** A small number of sites on the historical list of sites have the following lead designations: "FF Site" (Federal Facility Site), "No Actual/Planned Construction at Site," "Planned Construction Only," and "Other Lead Construction." These sites are treated the same way as the sites with mixed lead.

*** EPA develops a single ROD estimate for each site. The final value may be a combination of multiple RODs if multiple RODs exist for the site. Each ROD entered into the database does not report the same values in terms of total ROD cost. The database has values for high and low present worth, high and low total operations and maintenance (O&M), high and low annual O&M (as well as associated discount rate and duration), and high and low capital cost. EPA uses the following algorithm to incorporate the available data from the different cost categories without double-counting any costs.

For each individual ROD at a site, EPA takes the high end estimate of the present worth of the ROD if available. If the present worth estimate is missing or zero, the analysis combines the high end estimate of total O&M with the high end estimate of capital cost. If the high end estimate of total O&M is missing or zero, EPA calculates the present value of O&M using the given discount rate, duration, and high end annual O&M estimate, and then combines this with the high end capital cost figure. If the only value provided is the high end capital cost estimate, EPA uses this as the best estimate of total ROD cost.

Appendix B: CERCLA Hardrock Mining Facilities and Estimated Response Costs

This appendix presents the estimated response costs at 185 NPL and 134 non-NPL CERCLA hardrock mining facilities (for a total of 319). EPA estimated response costs based on information pulled from multiple databases maintained by the CERCLIS Integrated Financial Management System (IFMS) and the Office of Enforcement and Compliance Assurance (OECA).

B.1 – Overview of Facilities

As seen in **Table B-1** below, Regions 4 and 8 have the most CERCLA hardrock mining facilities with response costs (56 each) which comprise approximately one-third of such facilities. Regions 1, 2, and 6 have the fewest such facilities with response costs (under 20 each).

Table B-1. Regional Distribution of CERCLA Hardrock Mining Facilities with Response Cost Data

EPA Region	1	2	3	4	5	6	7	8	9	10
HRMF Count	15	16	29	56	41	19	23	56	35	29

Of these facilities, 88 facilities, or 28 percent, had achieved the construction complete milestone. The construction complete measure is a site-wide measure that documents sites where physical construction of all cleanup activities is complete, including actions to address all immediate threats and to bring all long-term threats under control. Construction complete is significant in the response cost estimation process because facilities with this designation are likely to most accurately reflect actual response costs. Even where sites did not achieve this status, it is still possible that specific portions of the site (or operable units) had achieved construction complete.[1]

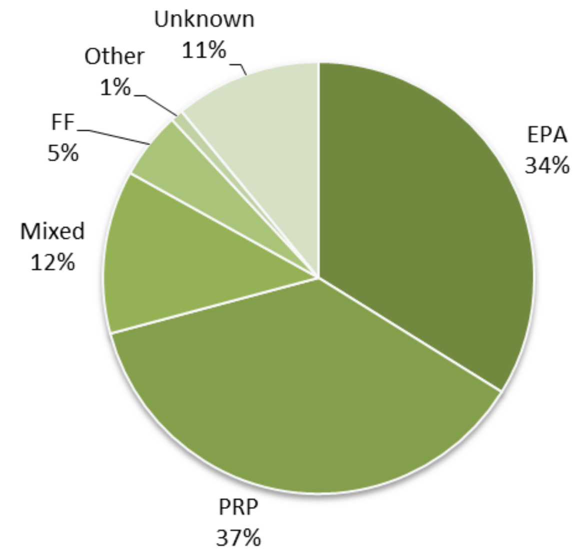
EPA also examined which party led the cleanup process, referred to as the site "lead." The site lead generally defines the entity implementing the construction projects and financing the expenditures, as well as whether the money flows through the Fund. EPA lead projects are implemented and financed primarily by the Superfund. PRP lead projects are typically financed by the PRPs, while a combination of both implements and finances mixed lead sites. Note that even for PRP lead sites certain expenditures flow through the Fund (for example, oversight expenditures).

Figure B-1 shows the distribution of site cleanup leads. As shown in the figure, Seventy-six percent of sites are being cleaned up under a single lead (EPA, PRP, or a Federal Facility [FF]). EPA is the site lead at 108 sites (34 percent). The analysis identified PRP lead responsibility at

[1] In some cases, cleanup of a site is divided into smaller portions of the site, known as operable units, and cleanup may proceed at different rates at each of these operable units.

118 sites in the site universe (37 percent) and multiple “mixed” lead types were in place at 39 sites (12 percent). In addition, 35 sites (11 percent) have an unknown lead and three sites (1 percent) are listed as “other lead construction”.

Figure B-1. CERCLA Hardrock Mining Facilities with Response Costs, by Lead Type



B.2 - Estimated Response Costs

Using the equations discussed in **Section 2.1** of this document, EPA estimated response costs at the facilities summarized above. These estimated response costs are presented in the table below in 2014 dollars. Additional detail on the data sources and individual data elements used to estimate these costs are further discussed in **Appendix A**.

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
1	1	CT	Broad Brook Mill	CT0002055887	NPL	$879,329
2	1	CT	Gallup's Quarry	CTD108960972	NPL	$7,552,569
3	1	MA	Nuclear Metals, Inc.	MAD062166335	NPL	$95,164,775
4	1	MA	Sullivan's Ledge	MAD980731343	NPL	$59,866,027
5	1	MA	Hocomonco Pond	MAD980732341	NPL	$18,075,037
6	1	MA	Zonolite/W.R. Grace	MASFN0103055	Non-NPL	$811,763
7	1	ME	McKin Co.	MED980524078	NPL	$32,795,526
8	1	ME	Callahan Mining Corp	MED980524128	NPL	$26,910,458
9	1	NH	Sylvester	NHD099363541	NPL	$48,886,107
10	1	NH	Chlor-Alkali Facility (Former)	NHN000103313	NPL	$6,097,080
11	1	RI	Western Sand & Gravel	RID009764929	NPL	$16,362,372
12	1	VT	Ely Copper Mine	VTD988366571	NPL	$6,753,932
13	1	VT	Elizabeth Mine	VTD988366621	NPL	$65,110,313
14	1	VT	Pike Hill Copper Mine	VTD988366720	NPL	$1,791,768
15	1	VT	Vermont Asbestos Group Mine	VTN000105222	Non-NPL	$39,409,164
16	2	NJ	W.R. Grace & Co., Inc./Wayne Interim Storage Site (USDOE)	NJ1891837980	NPL	$45,187,603
17	2	NJ	Shieldalloy Corp.	NJD002365930	NPL	$15,735,594
18	2	NJ	WR Grace Hamilton TWP	NJD067387472	Non-NPL	$3,041,151
19	2	NJ	LCP Chemicals Inc.	NJD079303020	NPL	$18,334,380
20	2	NJ	Delilah Road	NJD980529002	NPL	$29,900,323
21	2	NJ	Ringwood Mines/Landfill	NJD980529739	NPL	$17,409,310
22	2	NJ	Maywoood Chemical	NJD980529762	NPL	$325,021,217
23	2	NJ	U.S. Radium Corp.	NJD980654172	NPL	$169,719,284
24	2	NJ	GLEN RIDGE RADIUM SITE	NJD980785646	NPL	$190,694,216
25	2	NJ	MONTCLAIR/WEST ORANGE RADIUM SITE	NJD980785653	NPL	$179,085,139
26	2	NY	Reynolds Metals Aluminum Reduction Site	NYD002245967	Non-NPL	$56,997,311
27	2	NY	Ludlow Sand and Gravel	NYD013468939	NPL	$41,018,724
28	2	NY	Aluminum Company of America	NYD980506232	Non-NPL	$56,545,348
29	2	NY	Jewett White Lead Co. Site	NYD980531545	Non-NPL	$828,238
30	2	NY	Li Tungsten Corp.	NYD986882660	NPL	$117,438,012
31	2	NY	Onondaga Lake	NYD986913580	NPL	$715,510,227
32	3	DE	Delaware Sand and	DED000605972	NPL	$104,645,374

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
			Gravel Landfill			
33	3	DE	E.I. du Pont de Nemours & Co., Inc. (Newport Pigment Plant Landfill)	DED980555122	NPL	$99,690,304
34	3	MD	Central Chemical (Hagerstown)	MDD003061447	NPL	$18,176,875
35	3	MD	Sand Gravel & Stone Site	MDD980705164	NPL	$69,220,211
36	3	MD	Powhatan Mining Company	MDN000306665	Non-NPL	$2,877,256
37	3	PA	Ambler Asbestos Piles	PAD000436436	NPL	$17,357,718
38	3	PA	Jackson Ceramix	PAD001222025	NPL	$3,477,848
39	3	PA	Palmerton Zinc Pile	PAD002395887	NPL	$105,687,538
40	3	PA	Crater Resources	PAD980419097	NPL	$16,611,809
41	3	PA	Ohio River Park	PAD980508816	NPL	$25,652,482
42	3	PA	Berks Sand Pit	PAD980691794	NPL	$16,721,788
43	3	PA	Salford Quarry	PAD980693204	NPL	$11,312,739
44	3	PA	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	PAD980829493	NPL	$142,361,256
45	3	PA	Landsdowne Radiation	PAD980830921	NPL	$19,945,949
46	3	PA	Vermiculite WRG4	PAN000305592	Non-NPL	$3,869,850
47	3	PA	FRANKLIN SLAG PILE (MDC)	PASFN0305549	NPL	$11,444,571
48	3	VA	Saltville Waste Disposal Ponds	VAD003127578	NPL	$69,788,210
49	3	VA	Allied-Pulaski	VAD980551915	Non-NPL	$5,094,786
50	3	VA	First Piedmont Corp. Rock Quarry	VAD980554984	NPL	$6,143,505
51	3	VA	U.S. Titanium	VAD980705404	NPL	$12,876,695
52	3	WV	Spelter Zinc Plant	WV0000634584	Non-NPL	$3,143,923
53	3	WV	Sloan Glass Site	WV0004294104	Non-NPL	$239,835
54	3	WV	Hanlin-Allied-Olin	WVD024185373	NPL	$38,977,344
55	3	WV	Fourco Glass	WVD988768693	Non-NPL	$249,933
56	3	WV	Beaumont Glass Company Site	WVD988788345	Non-NPL	$15,366,054
57	3	WV	8th and Plutus Streets' Pottery Site	WVN000305784	Non-NPL	$3,627,594
58	3	WV	Carr China	WVN000306608	Non-NPL	$2,667,484
59	3	WV	Yankee Street Arsenic Site	WVN000306627	Non-NPL	$421,168
60	3	WV	Dalzell Viking Glass Company	WVSFN0305531	Non-NPL	$1,269,115
61	4	AL	Gulf States Steel/Black Creek	ALD004014973	Non-NPL	$13,283,939
62	4	AL	Stauffer Chemical	ALD008161176	NPL	$37,079,129

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
			LeMoyne			
63	4	AL	Olin Corporation (McIntosh Plant)	ALD008188708	NPL	$21,156,370
64	4	AL	INTERSTATE LEAD CO. (ILCO)	ALD041906173	NPL	$133,310,121
65	4	FL	Sydney Mine Sludge Ponds	FLD000648055	NPL	$6,001,746
66	4	FL	Coronet Industries	FLD001704741	Non-NPL	$2,653,850
67	4	FL	Stauffer Chemical Co. (Tarpon Springs)	FLD010596013	NPL	$42,076,363
68	4	FL	Pioneer Sand Pit	FLD056116965	NPL	$6,610,070
69	4	FL	Agrico Chemical Company	FLD980221857	NPL	$34,237,012
70	4	GA	Cedartown Industries, Inc.	GAD095840674	NPL	$9,220,138
71	4	GA	LCP Chemicals	GAD099303182	NPL	$13,507,146
72	4	GA	Powersville Landfill	GAD980496954	NPL	$9,521,947
73	4	GA	VCC Albany	GAD981237043	Non-NPL	$147,493
74	4	GA	VCC Augusta	GAN000407494	Non-NPL	$10,853,664
75	4	GA	VCC Social Circle	GAN000407760	Non-NPL	$7,077,728
76	4	GA	VCC Columbus	GAN000409850	Non-NPL	$468,194
77	4	GA	Zonolite Road GAO 144	GAN000410399	Non-NPL	$1,609,523
78	4	GA	VCC Rome	GAN000410416	Non-NPL	$5,796,025
79	4	KY	U.S. DOE Gaseous Diffusion Plant	KY8890008982	NPL	$124,741,697
80	4	KY	National Southwire Aluminum Co.	KYD049062375	NPL	$37,993,265
81	4	KY	Fort Hartford Coal Co. Stone Quarry	KYD980844625	NPL	$15,926,647
82	4	KY	W.R. Grace - Wilder, KY	KYN000407413	Non-NPL	$3,642,046
83	4	MS	Flowood	MSD980710941	NPL	$10,397,121
84	4	NC	Wright Chemical Corporation	NCD024766719	NPL	$139,408
85	4	NC	Estech General Chemical	NCD051827905	Non-NPL	$7,725,539
86	4	NC	Holtra Chem	NCD991278631	Non-NPL	$20,523,275
87	4	NC	Loflin Gold Mine	NCN000407301	Non-NPL	$1,694,780
88	4	NC	Horton Iron and Metal	NCN000407480	NPL	$504,075
89	4	NC	Caraleigh Phosphate and Fertilizer Works	NCN000407686	Non-NPL	$1,046,812
90	4	NC	Ore Knob Mine	NCN000409895	NPL	$9,175,910
91	4	NC	VCC Winston Salem	NCN000410344	Non-NPL	$1,313,516
92	4	NC	Northeast Chemical	NCSFN0406973	Non-NPL	$9,575,579
93	4	SC	Columbia Nitrogen	SC0001040393	Non-NPL	$2,712,877
94	4	SC	Ashepoo Phosphate/Fertilizer	SC0001645373	Non-NPL	$718,916

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
			Works			
95	4	SC	Stono Phosphate Works	SC0002316404	Non-NPL	$7,004,178
96	4	SC	Atlantic Phosphate Works	SC0002332815	Non-NPL	$8,537,770
97	4	SC	Savannah River Site (US DOE)	SC1890008989	NPL	$1,027,122,367
98	4	SC	Vermiculite EXFO W R Grace GAO150	SCD003344108	Non-NPL	$172,760
99	4	SC	International Minerals and Chemicals (IMC)	SCD003350493	Non-NPL	$3,438,717
100	4	SC	Macalloy Corporation	SCD003360476	NPL	$31,834,873
101	4	SC	Swift Agri-Chem	SCD058181991	Non-NPL	$9,422,434
102	4	SC	Starmet CMI	SCD987570405	Non-NPL	$34,532,735
103	4	SC	Brewer Gold Mine	SCD987577913	NPL	$14,823,043
104	4	SC	Henry's Knob	SCN000407376	Non-NPL	$1,953,179
105	4	SC	Barite Hill/Nevada Goldfields	SCN000407714	NPL	$6,890,746
106	4	SC	Virginia Carolina Chemical (VCC) Port of Baldwin Mines	SCN000407725	Non-NPL	$7,147,666
107	4	SC	VCC Greenville	SCN000407814	Non-NPL	$3,620,895
108	4	SC	Virginia Carolina Chemical (VCC) Wando	SCN000410243	Non-NPL	$8,861,330
109	4	SC	Virginia Carolina Chemical (VCC) Columbia	SCN000410253	Non-NPL	$254,671
110	4	SC	VCC Pon Pon	SCS123457002	Non-NPL	$6,832,532
111	4	TN	Copper Basin Mining District	TN0001890839	Non-NPL	$157,410,571
112	4	TN	U.S. DOE Oak Ridge Reservation	TN1890090003	NPL	$1,113,723,855
113	4	TN	Gallaway Pits	TND980728992	NPL	$3,772,502
114	4	TN	Lewisburg Dump	TND980729115	NPL	$3,448,257
115	4	TN	Wrigley Charcoal Plant	TND980844781	NPL	$18,375,342
116	4	TN	Chemet Co.	TND987768546	NPL	$2,196,257
117	5	IL	Old American Zinc Plant	IL0000034355	Non-NPL	$5,829,851
118	5	IL	Matthiessen and Hegeler Zinc Company	IL0000064782	NPL	$5,622,503
119	5	IL	Petersen Sand & Gravel	ILD003817137	NPL	$1,322,988
120	5	IL	Ottawa Township Flat Glass Site	ILD005468616	Non-NPL	$3,998,904
121	5	IL	Wauconda Sand & Gravel	ILD047019732	NPL	$55,078,156
122	5	IL	Circle Smelting Corp.	ILD050231976	NPL	$39,309,200
123	5	IL	Sandoval Zinc Company	ILD053980454	NPL	$191,616
124	5	IL	DEPUE/New Jersey	ILD062340641	NPL	$2,527,910

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
			Zinc/Mobil Chemical Corp.			
125	5	IL	Vulcan-Louisville/Fansteel	ILD097271563	Non-NPL	$10,778,034
126	5	IL	Pagel's Pit	ILD980606685	NPL	$18,525,412
127	5	IL	Eagle Zinc Co Div T L Diamond	ILD980606941	NPL	$12,680,226
128	5	IL	St Louis Smelting & Refining Co	ILD980607006	Non-NPL	$21,015,320
129	5	IL	Kerr-McGee Kress Creek/West Branch Dupage River	ILD980823991	NPL	$120,141,316
130	5	IL	Hegeler Zinc	ILN000508134	NPL	$29,475,828
131	5	IL	ASARCO Taylor Springs	ILN000508170	NPL	$10,380,945
132	5	IL	Abingdon Pottery	ILN000510219	Non-NPL	$1,238,193
133	5	IL	Bautsch-Gray Mine	ILN000510407	NPL	$3,827,089
134	5	IL	ALCOA Properties	ILSFN0508010	Non-NPL	$2,705,781
135	5	IN	Bennett Stone Quarry	IND006418651	NPL	$38,671,558
136	5	IN	U.S. Smelter and Lead Refinery, Inc.	IND047030226	NPL	$2,528,897
137	5	IN	Mine Site 2028	INN000510234	Non-NPL	$253,979
138	5	MI	Tar Lake	MID980794655	NPL	$43,043,314
139	5	MI	Torch Lake	MID980901946	NPL	$25,214,949
140	5	MI	National Plate Glass	MIN000508745	Non-NPL	$152,639
141	5	MN	St. Louis River Site	MND039045430	NPL	$71,651,433
142	5	MN	Morris Arsenic Dump	MND980792287	NPL	$188,889
143	5	MN	Western Mineral Products	MNN000508056	Non-NPL	$24,561,292
144	5	OH	Feed Materials Production Center (USDOE)	OH6890008976	NPL	$4,461,025,938
145	5	OH	Ormet Corp.	OHD004379970	NPL	$28,559,113
146	5	OH	SCIO Pottery Site	OHD004465084	Non-NPL	$226,165
147	5	OH	Allied Chemical & Ironton Coke	OHD043730217	NPL	$397,790,869
148	5	OH	ARMCO, Inc., Hamilton Plant	OHD074705930	NPL	$2,056,336
149	5	OH	Midwest Portland Cement	OHD075020842	Non-NPL	$2,209,889
150	5	OH	Reilly Tar & Chemical Corp. (Dover Plant)	OHD980610042	NPL	$5,072,608
151	5	OH	Big D Campground	OHD980611735	NPL	$70,217,074
152	5	OH	Diamond Shamrock (Painesville Works)	OHD980611909	NPL	$1,108,339
153	5	OH	Fields Brook	OHD980614572	NPL	$127,355,329
154	5	OH	Republic Steel Corp.	OHD980903447	NPL	$1,983,893

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
			Quarry			
155	5	OH	Mosaic Tile Dump	OHN000508430	Non-NPL	$2,690,568
156	5	WI	Hagen Farm	WID980610059	NPL	$46,489,065
157	5	WI	Wheeler Pit	WID980610620	NPL	$6,625,446
158	6	LA	Cleve Reber	LAD980501456	NPL	$119,095,982
159	6	NM	Chevron Questa	NMD002899094	NPL	$15,697,661
160	6	NM	Homestake Mining Co.	NMD007860935	NPL	$4,627,862
161	6	NM	United Nuclear Corp.	NMD030443303	NPL	$35,316,695
162	6	NM	Cimarron Mining Corp.	NMD980749378	NPL	$5,329,094
163	6	NM	Stephenson – Bennett Mine	NMD986684231	Non-NPL	$14,488,451
164	6	NM	Jackpile-Paguate Uranium Mine	NMN000607033	Non-NPL	$371,177
165	6	NM	Northeast Churchrock Mine Site	NNN000906132	Non-NPL	$11,375,470
166	6	NM	Ne Churchrock Quivira Mines	NNSFN0905492	Non-NPL	$3,036,461
167	6	OK	National Zinc Corp.	OKD000829440	NPL	$94,189,270
168	6	OK	Compass Industries (Avery Drive)	OKD980620983	NPL	$25,821,265
169	6	OK	Tar Creek (Ottawa County)	OKD980629844	NPL	$452,568,751
170	6	OK	Quinton Smelter	OKD987088366	Non-NPL	$1,401,249
171	6	TX	Brine Service Company	TX0000605264	NPL	$2,652,746
172	6	TX	ALCOA/Lavaca Bay	TXD008123168	NPL	$77,326,357
173	6	TX	Tex-Tin Corp.	TXD062113329	NPL	$97,937,530
174	6	TX	Rockwool Industries Inc.	TXD066379645	NPL	$13,685,517
175	6	TX	RSR CORPORATION	TXD079348397	NPL	$89,827,640
176	6	TX	French Limited	TXD980514814	NPL	$103,302,367
177	7	IA	Lawrence Todtz Farm	IAD000606038	NPL	$5,602,703
178	7	IA	Lehigh Portland Cement Co.	IAD005288634	NPL	$8,950,116
179	7	IA	Northwestern States Portland Cement Co.	IAD980852461	NPL	$3,944,199
180	7	KS	National Zinc Co.	KSD980406698	Non-NPL	$1,412,388
181	7	KS	Prime Western Smelter	KSD980685366	Non-NPL	$2,964,945
182	7	KS	Big River Sand Company	KSD980686174	NPL	$193,852
183	7	KS	Cherokee County	KSD980741862	NPL	$223,993,824
184	7	KS	Caney Smelter	KSD984971986	Non-NPL	$2,138,261
185	7	KS	Pittsburg Zinc	KSD985015338	Non-NPL	$2,303,357
186	7	KS	Former United Zinc Smelter	KSN000705026	Non-NPL	$2,939,544
187	7	MO	Annapolis Lead Mine	MO0000958611	NPL	$4,216,551

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
188	7	MO	Weldon Spring Quarry/Plant/Pits (USDOE/Army)	MO3210090004	NPL	$1,018,668,187
189	7	MO	Madison County Mines	MOD098633415	NPL	$49,731,186
190	7	MO	Lawrence County Mining Area Sites	MON000703982	Non-NPL	$2,053,277
191	7	MO	Washington County Lead District - Potosi	MON000705023	NPL	$13,340,385
192	7	MO	Franklin County Lead	MON000705442	Non-NPL	$434,901
193	7	MO	Central Mining District Lead – Cole Co.	MON000705444	Non-NPL	$261,458
194	7	MO	Central Mining District Lead – Miller Co.	MON000705678	Non-NPL	$171,320
195	7	MO	Central Mining District Lead – Camden Co.	MON000705679	Non-NPL	$878,619
196	7	MO	Central Mining District Lead – Morgan Co.	MON000705680	Non-NPL	$335,598
197	7	MO	Central Mining District Lead – Moniteau Co.	MON000705681	Non-NPL	$231,267
198	7	MO	Washington County Lead District - Furnace Creek	MON000705842	NPL	$4,560,223
199	7	MO	Washington County Lead District - Pea Ridge	MON000706017	Non-NPL	$480,612
200	8	CO	Golden Age Mine	CO0000023077	Non-NPL	$239,738
201	8	CO	Industrial Minerals	CO0001407543	Non-NPL	$295,957
202	8	CO	Iron Springs Mining District	CO0001916360	Non-NPL	$728,878
203	8	CO	Standard Mine	CO0002378230	NPL	$20,006,836
204	8	CO	Western Minerals Denver Plant	CO0010165136	Non-NPL	$2,508,669
205	8	CO	Rocky Flats Plant (USDOE)	CO7890010526	NPL	$67,587,786
206	8	CO	Uravan Uranium Project (Union Carbide Corp.)	COD007063274	NPL	$155,291,291
207	8	CO	Lincoln Park	COD042167858	NPL	$1,669,291
208	8	CO	Hendricks Mining & Milling	COD078348737	Non-NPL	$339,247
209	8	CO	Denver Radium Site	COD980716955	NPL	$284,273,343
210	8	CO	Central City, Clear Creek	COD980717557	NPL	$123,038,298
211	8	CO	Smuggler Mountain	COD980806277	NPL	$16,804,115
212	8	CO	Ilse Mine AKA Terrible Mine	COD980957674	Non-NPL	$2,585,891
213	8	CO	Captain Jack Mill	COD981551427	NPL	$16,530,720
214	8	CO	Summitville Mine	COD983778432	NPL	$321,978,223
215	8	CO	Gem Park Complex	CON000801985	Non-NPL	$830,009

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
216	8	CO	Bueno Mill & Mine SIte	CON000802129	Non-NPL	$1,363,522
217	8	CO	Belden Cribbings	CON000802450	Non-NPL	$2,183,693
218	8	CO	Nelson Tunnel/Commodore Waste Rock	CON000802630	NPL	$5,689,490
219	8	CO	Claim Jumper/Shock Hill	CON000802644	Non-NPL	$1,278,633
220	8	CO	American Lead and Zinc Mill	CON000802649	Non-NPL	$3,048,210
221	8	MT	Carpenter Snow Creek Mining District	MT0001096353	NPL	$16,853,494
222	8	MT	Rumsey Tailings	MT0001992585	Non-NPL	$223,201
223	8	MT	Libby Asbestos Site	MT0009083840	NPL	$524,779,952
224	8	MT	Flat Creek IMM	MT0012694970	NPL	$4,728,357
225	8	MT	Barker Hughesville Mining District	MT6122307485	NPL	$13,460,711
226	8	MT	Mouat Industries	MTD021997689	NPL	$54,968,290
227	8	MT	ACM Smelter and Refinery	MTD093291599	NPL	$5,563,246
228	8	MT	Anaconda Co. Smelter	MTD093291656	NPL	$293,460,923
229	8	MT	MILLTOWN RESERVOIR SEDIMENTS	MTD980717565	NPL	$350,019,589
230	8	MT	McLaren Mill Tailings	MTD981550841	Non-NPL	$1,502,422
231	8	MT	Basin Mining Area	MTD982572562	NPL	$22,790,367
232	8	MT	Georgetown Railroad	MTD986068930	Non-NPL	$537,619
233	8	MT	King Creek	MTD986069920	Non-NPL	$4,067,479
234	8	MT	Great Republic Smelter	MTN000802591	Non-NPL	$410,601
235	8	MT	Upper Tenmile Creek Mining Area	MTSFN7578012	NPL	$70,257,039
236	8	ND	Robinson Insulation	ND0010165116	Non-NPL	$2,157,418
237	8	SD	Whitewood Creek	SDD980717136	NPL	$4,173,317
238	8	SD	Annie Creek Mine Tailings	SDD987666013	NPL	$1,334,598
239	8	UT	Leeds 5 Stamp Mill	UT0000934653	Non-NPL	$273,432
240	8	UT	Empire Canyon	UT0002005981	Non-NPL	$1,765,748
241	8	UT	Eureka Mills	UT0002240158	NPL	$146,592,643
242	8	UT	Jacobs Smelter	UT0002391472	NPL	$23,289,758
243	8	UT	Intermountain Insulation SLC Plant	UT0010165126	Non-NPL	$1,108,009
244	8	UT	Ophir Mills and Smelter	UT0010221516	Non-NPL	$2,627,901
245	8	UT	Monticello Mill Tailings (USDOE)	UT3890090035	NPL	$105,358,111
246	8	UT	Kennecott (South Zone) (SA)	UTD000826404	NPL	$261,732,842
247	8	UT	MONTICELLO RADIOACTIVELY	UTD980667208	NPL	$794,761

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
			CONTAMINATED PROPERTIES			
248	8	UT	Sharon Steel Corp. (Midvale Tailings)	UTD980951388	NPL	$225,538,258
249	8	UT	Silver Creek Tailings	UTD980951404	NPL	$930,098
250	8	UT	Richardson Flat Tailings	UTD980952840	NPL	$15,973,345
251	8	UT	Leeds Silver Reclamation Site	UTD981550619	Non-NPL	$962,635
252	8	UT	American Fork Canyon/UINTA National	UTD988074951	Non-NPL	$265,799
253	8	UT	Sandy Smelter Site	UTD988078044	Non-NPL	$10,942,097
254	8	UT	Vermiculite Intermountain Site	UTN000802119	Non-NPL	$2,877,282
255	8	UT	U.S. Magnesium	UTN000802704	NPL	$17,785,995
256	9	AZ	McCleur Tailings	AZ0000309096	Non-NPL	$513,899
257	9	AZ	ASARCO Hayden Plant	AZD008397127	Non-NPL	$25,209,450
258	9	AZ	Cyprus Tohono Mine	AZD094524097	Non-NPL	$27,541,739
259	9	AZ	Mountain View Mobile Home Estates	AZD980735724	NPL	$14,626,568
260	9	CA	Central Eureka Mine	CA0000726539	Non-NPL	$4,421,880
261	9	CA	New Idria Mercury Mine	CA0001900463	NPL	$395,051
262	9	CA	Gambonini Mercury Mine	CA0002322469	Non-NPL	$4,237,550
263	9	CA	Riconada Mine	CA0141190579	Non-NPL	$3,605,772
264	9	CA	Klau/Buena Vista Mine	CA1141190578	NPL	$15,036,240
265	9	CA	Riverbank Army Ammunition Plant	CA7210020759	NPL	$14,493,736
266	9	CA	Grey Eagle Mine	CAD000629923	Non-NPL	$2,514,068
267	9	CA	Aerojet General	CAD980358832	NPL	$285,095,525
268	9	CA	Atlas Asbestos Mine	CAD980496863	NPL	$21,235,143
269	9	CA	Iron Mountain Mine	CAD980498612	NPL	$1,410,425,947
270	9	CA	Celtor Chemical Works	CAD980638860	NPL	$11,178,243
271	9	CA	Leviathan Mine	CAD980673685	NPL	$27,841,040
272	9	CA	Marsh Creek Rd Abandoned Dump SIte	CAD980736060	Non-NPL	$180,788
273	9	CA	Coalinga Asbestos Mine	CAD980817217	NPL	$17,284,821
274	9	CA	Sulphur Bank Mercury Mine	CAD980893275	NPL	$51,541,178
275	9	CA	Lava Cap Mine	CAD983618893	NPL	$31,598,976
276	9	CA	Zeibright Mine	CAN000905925	Non-NPL	$177,074
277	9	CA	MTA Vermiculite Rail Spur	CAN000905933	Non-NPL	$193,639
278	9	CA	Pioneer Pit and Gardner's Point Placer Mines	CAN000905978	Non-NPL	$571,287

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
279	9	CA	Blue Ledge Mine	CAN000906063	NPL	$861,963
280	9	CA	Shaharald Mine	CAN000908300	Non-NPL	$144,054
281	9	CA	Abbot/Turkey Run Mine	CAN000908401	Non-NPL	$4,425,043
282	9	CA	Altoona Mine	CAN000908402	Non-NPL	$7,996,375
283	9	CA	Bodie State Historical Park	CAN000908532	Non-NPL	$1,867,499
284	9	CA	Goldome Mine	CAN000908600	Non-NPL	$279,499
285	9	CA	Polar Star Mine	CASFN0905494	Non-NPL	$1,866,101
286	9	AZ	Abandoned Uranium Mines on the Navajo Nation	NNN000906087	Non-NPL	$24,879,001
287	9	NV	Eagle 1 Mill Site	NV0001995604	Non-NPL	$157,034
288	9	NV	Veta Grande Mining Co	NVD038275020	Non-NPL	$447,712
289	9	NV	Anaconda Copper Company	NVD083917252	Non-NPL	$44,017,870
290	9	NV	Carson River Mercury Site	NVD980813646	NPL	$16,642,603
291	10	AK	Salt Chuck Mine	AK0001897602	NPL	$136,364
292	10	ID	USDA FS Boise NF: Monarch Mine Stamp Mill USDA	ID0001413723	Non-NPL	$901,227
293	10	ID	Kerr-McGee Chemical Soda Springs Plant	IDD041310707	NPL	$12,092,375
294	10	ID	Monsanto Chemical Co. (Soda Springs Plant)	IDD081830994	NPL	$15,140,795
295	10	ID	Pacific Hide & Fur Recycling Company	IDD098812878	NPL	$20,015,512
296	10	ID	Cinnabar Mine	IDD980665160	Non-NPL	$1,825,175
297	10	ID	Blackbird Mine	IDD980725832	NPL	$69,211,682
298	10	ID	Triumph Mine Tailings Piles	IDD984666024	NPL	$12,710,910
299	10	ID	Eastern Michaud Flats Contamination	IDD984666610	NPL	$75,793,171
300	10	ID	Southeast Idaho Selenium Project	IDN001002245	Non-NPL	$14,862,489
301	10	ID	Salmon River Uranium Development	IDN001002662	Non-NPL	$420,092
302	10	ID	Harmony Mine & Mill Site	IDSFN1002104	Non-NPL	$751,923
303	10	ID	Grouse Creek Mine	IDSFN1002152	Non-NPL	$12,493,754
304	10	OR	Black Butte Mine	OR0000515759	NPL	$869,287
305	10	OR	Fremont National Forest/White King and Lucky Lass Uranium Mines (USDA)	OR7122307658	NPL	$23,286,628
306	10	OR	Reynolds Metals Company	ORD009412677	NPL	$31,284,515
307	10	OR	Teledyne Wah Chang	ORD050955848	NPL	$36,807,827

Count	Region	State	Facility Name	EPA ID	NPL Status	Estimated Response Cost (2014$)
308	10	OR	Martin-Marietta Aluminum Co.	ORD052221025	NPL	$16,763,050
309	10	OR	Formosa Mine	ORN001002616	NPL	$3,391,189
310	10	WA	Holden Mine	WA9122307672	Non-NPL	$838,204
311	10	WA	Kaiser Aluminum (Mead Works)	WAD000065508	NPL	$23,800,235
312	10	WA	Queen City Farms	WAD980511745	NPL	$84,994,133
313	10	WA	Silver Mountain Mine	WAD980722789	NPL	$2,280,162
314	10	WA	Alder Mill	WAD980722847	Non-NPL	$1,188,436
315	10	WA	Commencement Bay, Near Shore/Tide Flats	WAD980726368	NPL	$813,883,289
316	10	WA	Midnite Mine	WAD980978753	NPL	$278,378,495
317	10	WA	Vermiculite Northwest	WAN001002259	Non-NPL	$229,982
318	10	WA	Silverton Mercury (Hg) Concentrators	WAN001002702	Non-NPL	$333,795
319	10	WA	Grandview Mine	WASFN1002165	Non-NPL	$1,987,081

Appendix C:
CERCLA Response Activity Data

This appendix presents the CERCLA response activity data data collected for the Remedy Study Universe described in **Section 2.2**. **Tables C-1** through **C-10** list all data collected for each site, operating unit, and selected remedy. Additionally, **Tables C-11** and **C-12** list the full set of completed RODs and Five-Year Reviews that were used in the data collection process. The CERCLA response activity data is summarized in **Section 2.2**. OUs highlighted in red indicate either that no documentation was available for that specific OU, are being addressed as part of another OU, or are not related to mining. Thus, they were not included for the analysis presented in **Section 2.2**. Data collection instructions used in developing this appendix are presented in **Attachment C.1**.

Table C-1 – Site and Operating Unit Detail at the 126 Site Universe (Part 1)

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
01	MED980524128	CALLAHAN MINING CORP	F	Mixed						
01	MED980524128	CALLAHAN MINING CORP	F			01	PCB/RESIDENTIAL		ROD - 9/30/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009010003146.pdf	On-site disposal (excavation, capping, covering, reveg)
01	MED980524128	CALLAHAN MINING CORP	F			01	PCB/RESIDENTIAL		ROD - 9/30/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009010003146.pdf	On-site disposal (excavation, capping, covering, reveg)
01	MED980524128	CALLAHAN MINING CORP	F			01	PCB/RESIDENTIAL		ROD - 9/30/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009010003146.pdf	Off-site disposal
01	MED980524128	CALLAHAN MINING CORP	F			01	PCB/RESIDENTIAL		ROD - 9/30/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009010003146.pdf	Sediment dredging/ disposal
01	MED980524128	CALLAHAN MINING CORP	F			01	PCB/RESIDENTIAL		ROD - 9/30/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009010003146.pdf	Institutional Controls
01	MED980524128	CALLAHAN MINING CORP	F			02	SITEWIDE GROUNDWATER		Not Available	
01	MED980524128	CALLAHAN MINING CORP	F			03	SEDIMENTS/CAP		Not Available	
01	VTD988366621	ELIZABETH MINE	F	EPA						
01	VTD988366621	ELIZABETH MINE	F			01	ENTIRE SITE		ROD - 9/28/2006: http://www.epa.gov/region1/superfund/sites/elizmine/259304.pdf ESD - 6/26/2008: http://www.epa.gov/region1/superfund/sites/elizmine/295425.pdf	On-site disposal (excavation, capping, covering, reveg)
01	VTD988366621	ELIZABETH MINE	F			01	ENTIRE SITE		ROD - 9/28/2006: http://www.epa.gov/region1/superfund/sites/elizmine/259304.pdf ESD - 6/26/2008: http://www.epa.gov/region1/superfund/sites/elizmine/295425.pdf	Surface water diversion
01	VTD988366621	ELIZABETH MINE	F			01	ENTIRE SITE		ROD - 9/28/2006: http://www.epa.gov/region1/superfund/sites/elizmine/259304.pdf ESD - 6/26/2008: http://www.epa.gov/region1/superfund/sites/elizmine/295425.pdf	Monitored natural attenuation/recovery
01	VTD988366621	ELIZABETH MINE	F			01	ENTIRE SITE		ROD - 9/28/2006: http://www.epa.gov/region1/superfund/sites/elizmine/259304.pdf ESD - 6/26/2008: http://www.epa.gov/region1/superfund/sites/elizmine/295425.pdf	Institutional Controls
01	VTD988366571	ELY COPPER MINE	F	EPA				X		

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
01	VTD988366571	ELY COPPER MINE	F			01	WASTE PILES		Not Available	
01	VTD988366571	ELY COPPER MINE	F			02	GROUNDWATER/SMELTER		Not Available	
01	VTD988366720	PIKE HILL COPPER MINE	F	Mixed				X		
01	VTD988366720	PIKE HILL COPPER MINE	F			01	ENTIRE SITE		Not Available	
02	NJD980785646	GLEN RIDGE RADIUM SITE	D	EPA	9/15/2005					
02	NJD980785646	GLEN RIDGE RADIUM SITE	D			01	MITIGATION SYSTEMS & HOMES		ROD - 6/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0289079.pdf	Off-site disposal
02	NJD980785646	GLEN RIDGE RADIUM SITE	D			01	MITIGATION SYSTEMS & HOMES		ROD - 6/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0289079.pdf	Other – Engineering/Containment
02	NJD980785646	GLEN RIDGE RADIUM SITE	D			01	MITIGATION SYSTEMS & HOMES		ROD - 6/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0289079.pdf	Institutional Controls
02	NJD980785646	GLEN RIDGE RADIUM SITE	D			02	GROUNDWATER		ROD - 9/14/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0205021.pdf	No action
02	NJD980785646	GLEN RIDGE RADIUM SITE	D			03	HOME & STREET REMEDIATION		ROD - 6/1/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0290125.pdf	Off-site disposal
02	NYD986882660	LI TUNGSTEN CORP.	F	Mixed	9/25/2008					
02	NYD986882660	LI TUNGSTEN CORP.	F			01	ENTIRE SITE		ROD - 9/30/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0299158.pdf	Off-site disposal
02	NYD986882660	LI TUNGSTEN CORP.	F			01	ENTIRE SITE		ROD - 9/30/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0299158.pdf	Institutional Controls
02	NYD986882660	LI TUNGSTEN CORP.	F			02	OU 2 - CAPTAIN'S COVE RAD		ROD - 9/30/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0299158.pdf ESD - 10/28/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e2003020001616.pdf ESD - 5/2/2005: http://www.epa.gov/superfund/sites/rods/fulltext/e2005020001615.pdf	Off-site disposal
02	NYD986882660	LI TUNGSTEN CORP.	F			02	OU 2 - CAPTAIN'S COVE RAD		ROD - 9/30/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0299158.pdf ESD - 10/28/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e2003020001616.pdf ESD - 5/2/2005: http://www.epa.gov/superfund/sites/rods/fulltext/e2005020001615.pdf	Institutional Controls
02	NYD986882660	LI TUNGSTEN CORP.	F			03	BUILDING DEMO/SURVEY		Not Available	

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
02	NYD986882660	LI TUNGSTEN CORP.	F			04	CREEK RADIATION		ROD - 3/30/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0205017.pdf	Sediment dredging/ disposal
02	NJD980529762	MAYWOOD CHEMICAL CO.	F	Mixed						
02	NJD980529762	MAYWOOD CHEMICAL CO.	F			01	STEPAN COMPANY		Not Available	
02	NJD980529762	MAYWOOD CHEMICAL CO.	F			02	DOE - MISS		ROD - 9/22/2003: http://cumulis.epa.gov/superrods/index.cfm?fuseaction=data.siterods&siteid=0200665 FYR - 9/25/2009: http://www.epa.gov/superfund/sites/fiveyear/f2009020003031.pdf	Off-site disposal
02	NJD980529762	MAYWOOD CHEMICAL CO.	F			02	DOE - MISS		ROD - 9/22/2003: http://cumulis.epa.gov/superrods/index.cfm?fuseaction=data.siterods&siteid=0200665 FYR - 9/25/2009: http://www.epa.gov/superfund/sites/fiveyear/f2009020003031.pdf	Institutional Controls
02	NJD980529762	MAYWOOD CHEMICAL CO.	F			02	DOE - MISS		ROD - 9/22/2003: http://cumulis.epa.gov/superrods/index.cfm?fuseaction=data.siterods&siteid=0200665 FYR - 9/25/2009: http://www.epa.gov/superfund/sites/fiveyear/f2009020003031.pdf	Deconstruction/ decontamination of buildings
02	NJD980529762	MAYWOOD CHEMICAL CO.	F			03	GROUNDWATER		Not Available	
02	NJD980785653	MONTCLAIR/WEST ORANGE RADIUM SITE	D	EPA	9/15/2005					
02	NJD980785653	MONTCLAIR/WEST ORANGE RADIUM SITE	D			01	MITIGATION SYSTEM & HOMES		ROD - 6/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0289080.pdf	Off-site disposal
02	NJD980785653	MONTCLAIR/WEST ORANGE RADIUM SITE	D			02	GROUNDWATER		ROD - 9/14/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0205026.pdf	No action
02	NJD980785653	MONTCLAIR/WEST ORANGE RADIUM SITE	D			03	HOME & STREET REMEDIATION		ROD - 6/1/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0290126.pdf	Off-site disposal
02	NJD002365930	SHIELDALLOY CORP.	F	PRP						
02	NJD002365930	SHIELDALLOY CORP.	F			01	GROUNDWATER		ROD - 9/24/1996: http://www.epa.gov/superfund/sites/rods/fulltext/r0296283.pdf	Air Stripping
02	NJD002365930	SHIELDALLOY CORP.	F			01	GROUNDWATER		ROD - 9/24/1996: http://www.epa.gov/superfund/sites/rods/fulltext/r0296283.pdf	Water treatment-other
02	NJD002365930	SHIELDALLOY CORP.	F			02	SOIL, SEDIMENT, SURFACE WATER		Not Available	
02	NJD002365930	SHIELDALLOY CORP.	F			03	PERCHLORATE CONTAMINATION		Not Available	
02	NJD980654172	U.S. RADIUM CORP.	F	Mixed	9/28/2006					

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
02	NJD980654172	U.S. RADIUM CORP.	F			01	SATELLITE AND VICINITY PROP.		ROD - 9/21/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0293207.pdf	Off-site disposal
02	NJD980654172	U.S. RADIUM CORP.	F			02	HIGH & ALDEN STS		ROD - 8/29/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0295253.pdf	Off-site disposal
02	NJD980654172	U.S. RADIUM CORP.	F			03	GROUND WATER		ROD - 9/27/2006: http://www.epa.gov/superfund/sites/rods/fulltext/r2006020001435.pdf	No action
02	NJ1891837980	W.R. GRACE & CO., INC./WAYNE INTERIM STORAGE SITE (USDOE)	F	FF	9/16/2003					
02	NJ1891837980	W.R. GRACE & CO., INC./WAYNE INTERIM STORAGE SITE (USDOE)	F			01			5yr - 9/30/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008020002615.pdf ROD - 5/15/2000: www.lm.doe.gov/Wayne/WYN00000017.pdf ESD - 12/10/2003: www.lm.doe.gov/Wayne/WYN00000018.pdf	Off-site disposal
02	NJ1891837980	W.R. GRACE & CO., INC./WAYNE INTERIM STORAGE SITE (USDOE)	F			01			5yr - 9/30/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008020002615.pdf ROD - 5/15/2000: www.lm.doe.gov/Wayne/WYN00000017.pdf ESD - 12/10/2003: www.lm.doe.gov/Wayne/WYN00000018.pdf	Water treatment-other
02	NJ1891837980	W.R. GRACE & CO., INC./WAYNE INTERIM STORAGE SITE (USDOE)	F			01			5yr - 9/30/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008020002615.pdf ROD - 5/15/2000: www.lm.doe.gov/Wayne/WYN00000017.pdf ESD - 12/10/2003: www.lm.doe.gov/Wayne/WYN00000018.pdf	Institutional Controls
03	PAD987341716	AUSTIN AVENUE RADIATION SITE	D	EPA	9/27/1999					
03	PAD987341716	AUSTIN AVENUE RADIATION SITE	D			01	HOMES		ROD - 6/27/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0394181.pdf	Off-site disposal
03	PAD987341716	AUSTIN AVENUE RADIATION SITE	D			01	HOMES		ROD - 6/27/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0394181.pdf	Resident relocation
03	PAD987341716	AUSTIN AVENUE RADIATION SITE	D			01	HOMES		ROD - 6/27/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0394181.pdf	Institutional Controls
03	PAD987341716	AUSTIN AVENUE RADIATION SITE	D			02	GROUNDWATER		ROD - 6/27/1996: http://www.epa.gov/superfund/sites/rods/fulltext/r0396238.pdf	No action
03	PAD077087989	FOOTE MINERAL CO.	F	PRP	10/28/2010					
03	PAD077087989	FOOTE MINERAL CO.	F			01	SITEWIDE		ROD - 3/31/2006: http://www.epa.gov/superfund/sites/rods/fullt	Off-site disposal

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ext/r2006030001596.pdf Missing a supplemental ROD document	
03	PAD077087989	FOOTE MINERAL CO.	F			01	SITEWIDE		ROD - 3/31/2006: http://www.epa.gov/superfund/sites/rods/fulltext/r2006030001596.pdf Missing a supplemental ROD document	On-site disposal (excavation, capping, covering, reveg)
03	PAD077087989	FOOTE MINERAL CO.	F			01	SITEWIDE		ROD - 3/31/2006: http://www.epa.gov/superfund/sites/rods/fulltext/r2006030001596.pdf Missing a supplemental ROD document	Other – Treatment Technology
03	PAD077087989	FOOTE MINERAL CO.	F			01	SITEWIDE		ROD - 3/31/2006: http://www.epa.gov/superfund/sites/rods/fulltext/r2006030001596.pdf Missing a supplemental ROD document	Institutional Controls
03	PASFN0305549	FRANKLIN SLAG PILE (MDC)	F	EPA				X		
03	PASFN0305549	FRANKLIN SLAG PILE (MDC)	F			01	SLAG PILE		Not Available	
03	PASFN0305549	FRANKLIN SLAG PILE (MDC)	F			02	GROUNDWATER		Not Available	
03	PAD980829493	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	F	Mixed	12/23/2004					
03	PAD980829493	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	F			01	SOIL		ROD - 9/30/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0397087.pdf ESD - 4/19/2001: http://www.epa.gov/superfund/sites/rods/fulltext/e0301505.pdf 5yr - 4/28/2006: http://www.epa.gov/superfund/sites/fiveyear/f0603021.pdf Missing a supplemtnal ROD document	Off-site disposal
03	PAD980829493	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	F			01	SOIL		ROD - 9/30/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0397087.pdf ESD - 4/19/2001: http://www.epa.gov/superfund/sites/rods/fulltext/e0301505.pdf 5yr - 4/28/2006: http://www.epa.gov/superfund/sites/fiveyear/f0603021.pdf Missing a supplemtnal ROD document	On-site disposal (excavation, capping, covering, reveg)
03	PAD980829493	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	F			01	SOIL		ROD - 9/30/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0397087.pdf ESD - 4/19/2001: http://www.epa.gov/superfund/sites/rods/fulltext/e0301505.pdf 5yr - 4/28/2006: http://www.epa.gov/superfund/sites/fiveyear/f	Institutional Controls

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									0603021.pdf Missing a supplemtnal ROD document	
03	PAD002395887	PALMERTON ZINC PILE	F	Mixed						
03	PAD002395887	PALMERTON ZINC PILE	F			01	BLUE MOUNTAIN		ROD - 9/4/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0387036.pdf	Soil Amendments
03	PAD002395887	PALMERTON ZINC PILE	F			02	CINDERBANK		ROD - 6/29/1988: http://www.epa.gov/superfund/sites/rods/fulltext/e0302058.pdf ESD - 8/27/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e0302058.pdf	Water treatment-lime
03	PAD002395887	PALMERTON ZINC PILE	F			02	CINDERBANK		ROD - 6/29/1988: http://www.epa.gov/superfund/sites/rods/fulltext/e0302058.pdf ESD - 8/27/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e0302058.pdf	On-site disposal (excavation, capping, covering, reveg)
03	PAD002395887	PALMERTON ZINC PILE	F			02	CINDERBANK		ROD - 6/29/1988: http://www.epa.gov/superfund/sites/rods/fulltext/e0302058.pdf ESD - 8/27/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e0302058.pdf	On-site disposal (excavation, capping, covering, reveg)
03	PAD002395887	PALMERTON ZINC PILE	F			03	COMMUNITY SOILS		ROD - 10/9/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0302007.pdf	On-site disposal (excavation, capping, covering, reveg)
03	PAD002395887	PALMERTON ZINC PILE	F			03	COMMUNITY SOILS		ROD - 10/9/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0302007.pdf	Off-site disposal
03	PAD002395887	PALMERTON ZINC PILE	F			03	COMMUNITY SOILS		ROD - 10/9/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0302007.pdf	Institutional Controls
03	PAD002395887	PALMERTON ZINC PILE	F			04	GW/SW AND ECOLOGICAL RI/FS		Not Available	
03	VAD980705404	U.S. TITANIUM	F	Mixed	8/25/1997					
03	VAD980705404	U.S. TITANIUM	F			01			ROD - 11/21/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0390083.pdf ESD - 9/26/1990: http://www.epa.gov/superfund/sites/rods/fulltext/e0390502.pdf ESD - 9/25/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e0302059.pdf 5yr - 3/17/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-03018.pdf 5yr - 3/24/2005:	Water treatment-lime

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/fiveyear/f0503005.pdf 5yr - 3/24/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010030003390.pdf Missing a supplemtnal ROD document	
03	VAD980705404	U.S. TITANIUM	F			01			ROD - 11/21/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0390083.pdf ESD - 9/26/1990: http://www.epa.gov/superfund/sites/rods/fulltext/e0390502.pdf ESD - 9/25/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e0302059.pdf 5yr - 3/17/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-03018.pdf 5yr - 3/24/2005: http://www.epa.gov/superfund/sites/fiveyear/f0503005.pdf 5yr - 3/24/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010030003390.pdf Missing a supplemtnal ROD document	Water treatment - Created Wetlands
03	VAD980705404	U.S. TITANIUM	F			01			ROD - 11/21/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0390083.pdf ESD - 9/26/1990: http://www.epa.gov/superfund/sites/rods/fulltext/e0390502.pdf ESD - 9/25/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e0302059.pdf 5yr - 3/17/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-03018.pdf 5yr - 3/24/2005: http://www.epa.gov/superfund/sites/fiveyear/f0503005.pdf 5yr - 3/24/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010030003390.pdf Missing a supplemtnal ROD document	Surface water diversion
03	VAD980705404	U.S. TITANIUM	F			01			ROD - 11/21/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0390083.pdf ESD - 9/26/1990: http://www.epa.gov/superfund/sites/rods/fulltext/e0390502.pdf ESD - 9/25/2002:	On-site disposal (excavation, capping, covering, reveg)

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/rods/fulltext/e0302059.pdf 5yr - 3/17/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-03018.pdf 5yr - 3/24/2005: http://www.epa.gov/superfund/sites/fiveyear/f0503005.pdf 5yr - 3/24/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010030003390.pdf Missing a supplemtnal ROD document	
03	VAD980705404	U.S. TITANIUM	F			01			ROD - 11/21/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0390083.pdf ESD - 9/26/1990: http://www.epa.gov/superfund/sites/rods/fulltext/e0390502.pdf ESD - 9/25/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e0302059.pdf 5yr - 3/17/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-03018.pdf 5yr - 3/24/2005: http://www.epa.gov/superfund/sites/fiveyear/f0503005.pdf 5yr - 3/24/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010030003390.pdf Missing a supplemtnal ROD document	Institutional Controls
04	SCN000407714	BARITE HILL/NEVADA GOLDFIELDS	F	EPA				X		
04	SCN000407714	BARITE HILL/NEVADA GOLDFIELDS	F			01	OPERABLE UNIT 1		Not Available	
04	SCD987577913	BREWER GOLD MINE	F	Mixed						
04	SCD987577913	BREWER GOLD MINE	F			01	OPERABLE UNIT 1		ROD - 9/29/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r2005040001494.pdf	Water treatment-lime
04	TND987768546	CHEMET CO.	D	EPA	5/15/1996			X		
04	TND987768546	CHEMET CO.	D			01			Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N	EPA				X		
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			01	NORTH POTATO CREEK WATERSHED		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			02	NORTH POTATO CREEK NTC REMOVAL		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			03	DAVIS MILL CREEK REMOVAL		Not Available	

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			04	DAVIS MILL CREEK WATERSHED		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			05	OCOEE RIVER		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			06	OR 1 - PARKSVILLE RESERVOIR		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			07	OR 2 - POWERHOUSE 2 REACH		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			08	OR 3 - OLYMPIC REACH		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			09	OR 4 - OCOEE 3 RESERVOIR		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			10	OR 5 - COPPER BASIN REACH		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			11	DM 3 - LOWER DAVIS CREEK		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			12	DM 2 - DAVIS MILL WASTE		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			13	DM 4 - CANTRELL FLATS		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			14	DM 5 - COPPERHILL PLANT		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			15	DM 6 - APACHE BLAST - SEE OU5		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			16	DM 7 - DEEP GROUNDWATER		Not Available	
04	TN0001890839	COPPER BASIN MINING DISTRICT	N			17	DM 1 - GYPSUM POND		Not Available	
04	FLD001704741	CORONET INDUSTRIES	N	Mixed				X		
04	FLD001704741	CORONET INDUSTRIES	N			01	OPERABLE UNIT 1		Not Available	
04	FLD001704741	CORONET INDUSTRIES	N			02	LAKESIDE STATION		Not Available	
04	SCN000407376	HENRY'S KNOB	S	Mixed				X		
04	SCN000407376	HENRY'S KNOB	S			01	OPERABLE UNIT 1		Not Available	
04	SCD003360476	MACALLOY CORPORATION	F	Mixed	9/26/2006					
04	SCD003360476	MACALLOY CORPORATION	F			01	OPERABLE UNIT 1		ROD - 8/21/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0402084.pdf 5yr - 6/27/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010040003553.pdf	Water treatment-other
04	SCD003360476	MACALLOY CORPORATION	F			01	OPERABLE UNIT 1		ROD - 8/21/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0402084.pdf 5yr - 6/27/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010040003553.pdf	Sediment dredging/ disposal
04	SCD003360476	MACALLOY CORPORATION	F			01	OPERABLE UNIT 1		ROD - 8/21/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0402084.pdf	Soil Amendments

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									5yr - 6/27/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010040003553.pdf	
04	SCD003360476	MACALLOY CORPORATION	F			01	OPERABLE UNIT 1		ROD - 8/21/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0402084.pdf 5yr - 6/27/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010040003553.pdf	Institutional Controls
04	SCD003360476	MACALLOY CORPORATION	F			01	OPERABLE UNIT 1		ROD - 8/21/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0402084.pdf 5yr - 6/27/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010040003553.pdf	Off-site disposal
04	SCD003360476	MACALLOY CORPORATION	F			01	OPERABLE UNIT 1		ROD - 8/21/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0402084.pdf 5yr - 6/27/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010040003553.pdf	Surface water diversion
04	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	F	PRP	9/24/2008					
04	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	F			00	SITEWIDE		ROD - 7/6/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0400079.pdf 5yr - 9/14/2006: http://www.epa.gov/superfund/sites/fiveyear/f2006040001347.pdf	Institutional Controls
04	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	F			00	SITEWIDE		ROD - 7/6/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0400079.pdf 5yr - 9/14/2006: http://www.epa.gov/superfund/sites/fiveyear/f2006040001347.pdf	On-site disposal (excavation, capping, covering, reveg)
04	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	F			00	SITEWIDE		ROD - 7/6/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0400079.pdf 5yr - 9/14/2006: http://www.epa.gov/superfund/sites/fiveyear/f2006040001347.pdf	Off-site disposal
04	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	F			01	OPERABLE UNIT 1		ROD - 2/19/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0493132.pdf 5yr - 8/2/2001: http://www.epa.gov/superfund/sites/fiveyear/f01-04009.pdf	Water treatment-other
04	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	F			02			Not Available	
04	NCN000409895	ORE KNOB MINE	F	Mixed				X		

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
04	NCN000409895	ORE KNOB MINE	F			01	OPERABLE UNIT 1		Not Available	
04	FLD010596013	STAUFFER CHEMICAL CO. (TARPON SPRINGS)	F	PRP						
04	FLD010596013	STAUFFER CHEMICAL CO. (TARPON SPRINGS)	F			01	OPERABLE UNIT 1		ROD - 7/2/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0498103.pdf Missing a supplemental ROD document	On-site disposal (excavation, capping, covering, reveg)
04	FLD010596013	STAUFFER CHEMICAL CO. (TARPON SPRINGS)	F			01	OPERABLE UNIT 1		ROD - 7/2/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0498103.pdf Missing a supplemental ROD document	Solidification
04	FLD010596013	STAUFFER CHEMICAL CO. (TARPON SPRINGS)	F			01	OPERABLE UNIT 1		ROD - 7/2/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0498103.pdf Missing a supplemental ROD document	Institutional Controls
04	FLD010596013	STAUFFER CHEMICAL CO. (TARPON SPRINGS)	F			02	GROUNDWATER REMEDIATION		Not Available	
05	ILN000508170	ASARCO TAYLOR SPRINGS	F	PRP				X		
05	ILN000508170	ASARCO TAYLOR SPRINGS	F			01			Not Available	
05	ILN000508170	ASARCO TAYLOR SPRINGS	F			02	REMOVAL		Not Available	
05	ILD050231976	CIRCLE SMELTING CORP.	P	Mixed				X		
05	ILD050231976	CIRCLE SMELTING CORP.	P			01	01		Not Available	
05	ILD062340641	DEPUE/NEW JERSEY ZINC/MOBIL CHEMICAL CORP.	F	PRP						
05	ILD062340641	DEPUE/NEW JERSEY ZINC/MOBIL CHEMICAL CORP.	F			01	SOUTH DITCH		ROD - 10/3/2003: http://www.epa.state.il.us/community-relations/fact-sheets/new-jersey-zinc/record-of-decision.pdf 5yr - 6/25/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010050003462.pdf	Sediment dredging/ disposal
05	ILD062340641	DEPUE/NEW JERSEY ZINC/MOBIL CHEMICAL CORP.	F			02	GYPSUM STACK		Not Available	
05	ILD062340641	DEPUE/NEW JERSEY ZINC/MOBIL CHEMICAL CORP.	F			03	PLANT SITE		Not Available	
05	ILD062340641	DEPUE/NEW JERSEY ZINC/MOBIL CHEMICAL CORP.	F			04	OFF-SITE SOILS		Not Available	
05	ILD062340641	DEPUE/NEW JERSEY ZINC/MOBIL CHEMICAL CORP.	F			05	LAKE DEPUE		Not Available	
05	ILD980606941	EAGLE ZINC CO DIV T L DIAMOND	F	EPA						
05	ILD980606941	EAGLE ZINC CO DIV T L DIAMOND	F			01	BUILDING DEMOLITITION		ROD - 6/16/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009050003825.pdf	Deconstruction/ decontamination of buildings

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
05	ILD980606941	EAGLE ZINC CO DIV T L DIAMOND	F			01	BUILDING DEMOLITITION		ROD - 6/16/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009050003825.pdf	Off-site disposal
05	ILD980606941	EAGLE ZINC CO DIV T L DIAMOND	F			01	BUILDING DEMOLITITION		ROD - 6/16/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009050003825.pdf	On-site disposal (excavation, capping, covering, reveg)
05	ILD980606941	EAGLE ZINC CO DIV T L DIAMOND	F			02	SOIL & GROUNDWATER		Not Available	
05	ILN000508134	HEGELER ZINC	F	EPA				X		
05	ILN000508134	HEGELER ZINC	F			01	ZINC SMELTER		Not Available	
05	ILN000508134	HEGELER ZINC	F			02	UNNAMED CREEK		Not Available	
05	ILN000508134	HEGELER ZINC	F			03	RESIDENTIAL PROPERTIES		Not Available	
05	IL0000064782	MATTHIESSEN AND HEGELER ZINC COMPANY	F	EPA				X		
05	IL0000064782	MATTHIESSEN AND HEGELER ZINC COMPANY	F			01	1		Not Available	
05	IL0000064782	MATTHIESSEN AND HEGELER ZINC COMPANY	F			02	OU2		Not Available	
05	OHD004379970	ORMET CORP.	F	PRP	8/4/1998					
05	OHD004379970	ORMET CORP.	F			01	DESIGN		ROD - 9/12/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0594259.pdf, 5yr -5/6/2002: http://www.epa.gov/superfund/sites/fiveyear/f02-05002.pdf 5yr - 5/4/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007050001775.pdf Missing a supplemental ROD document	Chemical Oxidation
05	OHD004379970	ORMET CORP.	F			01	DESIGN		ROD - 9/12/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0594259.pdf, 5yr -5/6/2002: http://www.epa.gov/superfund/sites/fiveyear/f02-05002.pdf 5yr - 5/4/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007050001775.pdf Missing a supplemental ROD document	Other – Engineering/Containment
05	OHD004379970	ORMET CORP.	F			01	DESIGN		ROD - 9/12/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0594259.pdf, 5yr -5/6/2002: http://www.epa.gov/superfund/sites/fiveyear/f02-05002.pdf 5yr - 5/4/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007050001775.pdf Missing a supplemental ROD document	Other – Engineering/Containment
05	OHD004379970	ORMET CORP.	F			01	DESIGN		ROD - 9/12/1994: http://www.epa.gov/superfund/sites/rods/fullt	Soil flushing/washing

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ext/r0594259.pdf, 5yr -5/6/2002: http://www.epa.gov/superfund/sites/fiveyear/f 02-05002.pdf 5yr - 5/4/2007: http://www.epa.gov/superfund/sites/fiveyear/f 2007050001775.pdf Missing a supplemental ROD document	
05	OHD004379970	ORMET CORP.	F			01	DESIGN		ROD - 9/12/1994: http://www.epa.gov/superfund/sites/rods/fullt ext/r0594259.pdf, 5yr -5/6/2002: http://www.epa.gov/superfund/sites/fiveyear/f 02-05002.pdf 5yr - 5/4/2007: http://www.epa.gov/superfund/sites/fiveyear/f 2007050001775.pdf Missing a supplemental ROD document	On-site disposal (excavation, capping, covering, reveg)
05	OHD004379970	ORMET CORP.	F			01	DESIGN		ROD - 9/12/1994: http://www.epa.gov/superfund/sites/rods/fullt ext/r0594259.pdf, 5yr -5/6/2002: http://www.epa.gov/superfund/sites/fiveyear/f 02-05002.pdf 5yr - 5/4/2007: http://www.epa.gov/superfund/sites/fiveyear/f 2007050001775.pdf Missing a supplemental ROD document	Sediment dredging/ disposal
05	OHD004379970	ORMET CORP.	F			01	DESIGN		ROD - 9/12/1994: http://www.epa.gov/superfund/sites/rods/fullt ext/r0594259.pdf, 5yr -5/6/2002: http://www.epa.gov/superfund/sites/fiveyear/f 02-05002.pdf 5yr - 5/4/2007: http://www.epa.gov/superfund/sites/fiveyear/f 2007050001775.pdf Missing a supplemental ROD document	Institutional Controls
05	MID980901946	TORCH LAKE	F	Mixed	9/23/2005					
05	MID980901946	TORCH LAKE	F			01	TAILING PILES - TORCH LAKE		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fullt ext/r0592215.pdf Missing a supplemental ROD document	Institutional Controls
05	MID980901946	TORCH LAKE	F			01	TAILING PILES - TORCH LAKE		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fullt ext/r0592215.pdf Missing a supplemental ROD document	Off-site disposal
05	MID980901946	TORCH LAKE	F			01	TAILING PILES - TORCH LAKE		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fullt ext/r0592215.pdf Missing a supplemental ROD document	Other – Engineering/Contain ment
05	MID980901946	TORCH LAKE	F			02	SURFACE WATER		ROD - 3/31/1994: http://www.epa.gov/superfund/sites/rods/fullt ext/r0594264.pdf	No action

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05	MID980901946	TORCH LAKE	F			03	TAILING PILES OUTSIDE OU1		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0592215.pdf	Institutional Controls
05	MID980901946	TORCH LAKE	F			03	TAILING PILES OUTSIDE OU1		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0592215.pdf	Off-site disposal
05	MID980901946	TORCH LAKE	F			03	TAILING PILES OUTSIDE OU1		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0592215.pdf	Other – Engineering/Containment
05	MID980901946	TORCH LAKE	F			03	TAILING PILES OUTSIDE OU1		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0592215.pdf	Other – Engineering/Containment
05	MID980901946	TORCH LAKE	F			03	TAILING PILES OUTSIDE OU1		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0592215.pdf	Other – Engineering/Containment
05	MID980901946	TORCH LAKE	F			04	LAKE LINDEN		Not Available	
05	MID980901946	TORCH LAKE	F			05	QUINCY SMELTER		Not Available	
05	MID980901946	TORCH LAKE	F			06	MASON SAND		Not Available	
05	IND047030226	U.S. SMELTER AND LEAD REFINERY, INC.	F	EPA				X		
05	IND047030226	U.S. SMELTER AND LEAD REFINERY, INC.	F			01	COMBINED RI/FS		Not Available	
06	NMD002899094	CHEVRON QUESTA MINE	F	PRP						
06	NMD002899094	CHEVRON QUESTA MINE	F			00	SITEWIDE		ROD - 12/20/2010: http://www.amigosbravos.org/images/uploaded/fck/file/MOLYCORP%20ROD%20FINAL%2012-20-2010.pdf	Off-site disposal
06	NMD002899094	CHEVRON QUESTA MINE	F			00	SITEWIDE		ROD - 12/20/2010: http://www.amigosbravos.org/images/uploaded/fck/file/MOLYCORP%20ROD%20FINAL%2012-20-2010.pdf	On-site disposal (excavation, capping, covering, reveg)
06	NMD002899094	CHEVRON QUESTA MINE	F			00	SITEWIDE		ROD - 12/20/2010: http://www.amigosbravos.org/images/uploaded/fck/file/MOLYCORP%20ROD%20FINAL%2012-20-2010.pdf	Other – Engineering/Containment
06	NMD002899094	CHEVRON QUESTA MINE	F			00	SITEWIDE		ROD - 12/20/2010: http://www.amigosbravos.org/images/uploaded/fck/file/MOLYCORP%20ROD%20FINAL%2012-20-2010.pdf	Water treatment- lime
06	NMD002899094	CHEVRON QUESTA MINE	F			00	SITEWIDE		ROD - 12/20/2010: http://www.amigosbravos.org/images/uploaded/fck/file/MOLYCORP%20ROD%20FINAL%2012-20-2010.pdf	Sediment dredging/ disposal
06	NMD002899094	CHEVRON QUESTA MINE	F			00	SITEWIDE		ROD - 12/20/2010: http://www.amigosbravos.org/images/uploaded/fck/file/MOLYCORP%20ROD%20FINAL%2012-20-2010.pdf	Institutional Controls
06	NMD980749378	CIMARRON MINING CORP.	F	EPA	9/24/1992					

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
06	NMD980749378	CIMARRON MINING CORP.	F			01	Cimarron Mill Site		ROD - 9/21/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0690060.pdf	Water treatment-other
06	NMD980749378	CIMARRON MINING CORP.	F			01	Cimarron Mill Site		ROD - 9/21/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0690060.pdf	Institutional Controls
06	NMD980749378	CIMARRON MINING CORP.	F			02	Sierra Blanca Mill Site		ROD - 9/6/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0691067.pdf	Solidification
06	NMD980749378	CIMARRON MINING CORP.	F			02	Sierra Blanca Mill Site		ROD - 9/6/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0691067.pdf	On-site disposal (excavation, capping, covering, reveg)
06	NMD980749378	CIMARRON MINING CORP.	F			02	Sierra Blanca Mill Site		ROD - 9/6/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0691067.pdf	Institutional Controls
06	NMD981155930	CLEVELAND MILL	D	Mixed	9/23/1999					
06	NMD981155930	CLEVELAND MILL	D			01			ROD - 9/22/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0693078.pdf AMD - 9/20/1999: http://www.epa.gov/superfund/sites/rods/fulltext/a0699057.pdf 5yr - 8/20/2002: http://www.epa.gov/superfund/sites/rods/fulltext/a0699057.pdf 5yr - 8/20/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007060001807.pdf	No action
06	NMD981155930	CLEVELAND MILL	D			01			ROD - 9/22/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0693078.pdf AMD - 9/20/1999: http://www.epa.gov/superfund/sites/rods/fulltext/a0699057.pdf 5yr - 8/20/2002: http://www.epa.gov/superfund/sites/rods/fulltext/a0699057.pdf 5yr - 8/20/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007060001807.pdf	Institutional Controls
06	NMD007860935	HOMESTAKE MINING CO.	F	PRP	9/20/1996					
06	NMD007860935	HOMESTAKE MINING CO.	F			01	TAILINGS SEEPAGE CONTAMINATION OF GROUND WATER AQUIFERS		ROD - 9/27/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0689050.pdf 5yr - 9/27/2001: http://www.epa.gov/superfund/sites/fiveyear/f01-06003.pdf 5yr - 9/26/2006:	Water treatment-other

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/fiveyear/f2006060001202.pdf	
06	NMD007860935	HOMESTAKE MINING CO.	F			02	LONG-TERM TAILINGS STABILIZATION, SURFACE RECLAMATION, AND SITE CLOSURE		ROD - 9/27/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0689050.pdf 5yr - 9/27/2001: http://www.epa.gov/superfund/sites/fiveyear/f01-06003.pdf 5yr - 9/26/2006: http://www.epa.gov/superfund/sites/fiveyear/f2006060001202.pdf	Other – Engineering/Containment
06	NMD007860935	HOMESTAKE MINING CO.	F			03	Radon Operable Unit		ROD - 9/27/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0689050.pdf 5yr - 9/27/2001: http://www.epa.gov/superfund/sites/fiveyear/f01-06003.pdf 5yr - 9/26/2006: http://www.epa.gov/superfund/sites/fiveyear/f2006060001202.pdf	No action
06	OKD000829440	NATIONAL ZINC CORP.	P	Mixed						
06	OKD000829440	NATIONAL ZINC CORP.	P			01			ROD - 12/13/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0695098.pdf	Off-site disposal
06	OKD000829440	NATIONAL ZINC CORP.	P			01			ROD - 12/13/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0695098.pdf	Institutional Controls
06	OKD000829440	NATIONAL ZINC CORP.	P			02			ROD - 10/2/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0698507.pdf	Off-site disposal
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F	Mixed						
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			01			ROD - 6/6/1984: http://www.epa.gov/superfund/sites/rods/fulltext/r0684004.pdf	Other – Engineering/Containment
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			01			ROD - 6/6/1984: http://www.epa.gov/superfund/sites/rods/fulltext/r0684004.pdf	Surface water diversion
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			02	Residential areas		ROD - 8/27/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0697126.pdf ESD - 8/30/2007: http://www.epa.gov/superfund/sites/rods/fulltext/e2007060002082.pdf	On-site disposal (excavation, capping, covering, reveg)
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			02	Residential areas		ROD - 8/27/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0697126.pdf ESD - 8/30/2007: http://www.epa.gov/superfund/sites/rods/fulltext/e2007060002082.pdf	Institutional Controls

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			03	TAR CREEK E-P LAB CHEM.(OU-03)		Not Available	No action
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			04	MINING WASTES (NONRESIDENTIAL)		ROD - 2/20/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008060002755.pdf	Resident relocation
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			04	MINING WASTES (NONRESIDENTIAL)		ROD - 2/20/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008060002755.pdf	On-site disposal (excavation, capping, covering, reveg)
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			04	MINING WASTES (NONRESIDENTIAL)		ROD - 2/20/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008060002755.pdf	Alternative drinking water
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			04	MINING WASTES (NONRESIDENTIAL)		ROD - 2/20/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008060002755.pdf	Other – Engineering/Containment
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			04	MINING WASTES (NONRESIDENTIAL)		ROD - 2/20/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008060002755.pdf	Institutional Controls
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			04	MINING WASTES (NONRESIDENTIAL)		ROD - 2/20/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008060002755.pdf	Other – Engineering/Containment
06	OKD980629844	TAR CREEK (OTTAWA COUNTY)	F			05	TAR CREEK SEDIMENT		Not Available	
06	TXD062113329	TEX-TIN CORP.	F	Mixed	9/20/2004					
06	TXD062113329	TEX-TIN CORP.	F			01	TEX TIN FACILITY		ROD - 5/17/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0699093.pdf AMD - 9/28/2000: http://www.epa.gov/superfund/sites/rods/fulltext/a0600504.pdf	On-site disposal (excavation, capping, covering, reveg)
06	TXD062113329	TEX-TIN CORP.	F			01	TEX TIN FACILITY		ROD - 5/17/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0699093.pdf AMD - 9/28/2000: http://www.epa.gov/superfund/sites/rods/fulltext/a0600504.pdf	Off-site disposal
06	TXD062113329	TEX-TIN CORP.	F			01	TEX TIN FACILITY		ROD - 5/17/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0699093.pdf AMD - 9/28/2000: http://www.epa.gov/superfund/sites/rods/fulltext/a0600504.pdf	Other – Engineering/Containment
06	TXD062113329	TEX-TIN CORP.	F			01	TEX TIN FACILITY		ROD - 5/17/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0699093.pdf AMD - 9/28/2000: http://www.epa.gov/superfund/sites/rods/fulltext/a0600504.pdf	Institutional Controls
06	TXD062113329	TEX-TIN CORP.	F			02	AMOCO PARCEL H		ROD - 9/27/2001: http://www.epa.gov/superfund/sites/rods/fullt	No action

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ext/r0601519.pdf 5yr - 9/30/2003: http://www.epa.gov/superfund/sites/fiveyear/f03-06011.pdf	
06	TXD062113329	TEX-TIN CORP.	F			03	OFF-SITE RESIDENTIAL AREA		ROD - 9/29/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0600508.pdf	No action
06	TXD062113329	TEX-TIN CORP.	F			04	SWAN LAKE SALT MARSH		ROD - 9/27/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0601514.pdf	Other – Engineering/Containment
06	OKD987096195	TULSA FUEL AND MANUFACTURING	F	Mixed				X		
06	OKD987096195	TULSA FUEL AND MANUFACTURING	F			01	SOURCE		Not Available	
06	NMD030443303	UNITED NUCLEAR CORP.	F	Mixed	9/29/1998					
06	NMD030443303	UNITED NUCLEAR CORP.	F			01	OVERALL SITE		ROD - 9/30/1988: http://www.epa.gov/superfund/sites/rods/fulltext/r0688044.pdf 5yr - 9/24/1998: http://www.epa.gov/superfund/sites/fiveyear/f98-06002.pdf 5yr - 9/18/2003: http://www.epa.gov/superfund/sites/fiveyear/f03-06005.pdf 5yr - 9/17/2008:	Water treatment-other
07	MO0000958611	ANNAPOLIS LEAD MINE	F	EPA	9/25/2007					
07	MO0000958611	ANNAPOLIS LEAD MINE	F			01	MINING AREA		ROD - 9/29/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0705048.pdf ESD - 9/9/2008: http://www.epa.gov/superfund/sites/rods/fulltext/e2008070002442.pdf	On-site disposal (excavation, capping, covering, reveg)
07	MO0000958611	ANNAPOLIS LEAD MINE	F			01	MINING AREA		ROD - 9/29/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0705048.pdf ESD - 9/9/2008: http://www.epa.gov/superfund/sites/rods/fulltext/e2008070002442.pdf	Other – Engineering/Containment
07	MO0000958611	ANNAPOLIS LEAD MINE	F			01	MINING AREA		ROD - 9/29/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0705048.pdf ESD - 9/9/2008: http://www.epa.gov/superfund/sites/rods/fulltext/e2008070002442.pdf	Institutional Controls
07	MO0000958611	ANNAPOLIS LEAD MINE	F			02	BIG CREEK		ROD - 6/28/2007: http://www.epa.gov/superfund/sites/rods/fulltext/r2007070002038.pdf	No action
07	MO0000958611	ANNAPOLIS LEAD MINE	F			03	TOWN OF ANNAPOLIS		ROD - 6/29/2007: http://www.epa.gov/superfund/sites/rods/fulltext/r2007070002039.pdf	On-site disposal (excavation,

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
										capping, covering, reveg)
07	MOD981126899	BIG RIVER MINE TAILINGS/ST. JOE MINERALS CORP.	F	Mixed				X		
07	MOD981126899	BIG RIVER MINE TAILINGS/ST. JOE MINERALS CORP.	F			01	RESIDENTIAL ACT/SOURCE CONTROL		Not Available	
07	MOD981126899	BIG RIVER MINE TAILINGS/ST. JOE MINERALS CORP.	F			02	OFF-SOURCE AREAS		Not Available	
07	MOD981126899	BIG RIVER MINE TAILINGS/ST. JOE MINERALS CORP.	F			03	INTERIM PROGRAM		Not Available	
07	KSD980741862	CHEROKEE COUNTY	F	Mixed						
07	KSD980741862	CHEROKEE COUNTY	F			01	GALENA ALTERNATE WATER SUPPLY		ROD - 12/21/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0788010.pdf Missing a supplemental ROD document	Alternative drinking water
07	KSD980741862	CHEROKEE COUNTY	F			02	SPRING RIVER BASIN		Not Available	
07	KSD980741862	CHEROKEE COUNTY	F			03	BAXTER SPRINGS SUBSITE		ROD - 8/20/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0797073.pdf AMD - 9/29/2006: http://www.epa.gov/superfund/sites/rods/fulltext/a2006070001149.pdf	On-site disposal (excavation, capping, covering, reveg)
07	KSD980741862	CHEROKEE COUNTY	F			03	BAXTER SPRINGS SUBSITE		ROD - 8/20/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0797073.pdf AMD - 9/29/2006: http://www.epa.gov/superfund/sites/rods/fulltext/a2006070001149.pdf	Other – Engineering/Containment
07	KSD980741862	CHEROKEE COUNTY	F			03	BAXTER SPRINGS SUBSITE		ROD - 8/20/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0797073.pdf AMD - 9/29/2006: http://www.epa.gov/superfund/sites/rods/fulltext/a2006070001149.pdf	Institutional Controls
07	KSD980741862	CHEROKEE COUNTY	F			04	TREECE SUBSITE			
07	KSD980741862	CHEROKEE COUNTY	F			05	GALENA GROUNDWATER/SURFACEWATR		ROD 9/18/1989	On-site disposal (excavation, capping, covering, reveg)
07	KSD980741862	CHEROKEE COUNTY	F			05	GALENA GROUNDWATER/SURFACEWATR		FYR 9/30/2005	Deconstruction/ decontamination of buildings
07	KSD980741862	CHEROKEE COUNTY	F			05	GALENA GROUNDWATER/SURFACEWATR		ROD 9/18/1989	Surface water diversion

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
07	KSD980741862	CHEROKEE COUNTY	F			06	BADGER, LAWTON, WACO		ROD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0704654.pdf	On-site disposal (excavation, capping, covering, reveg)
07	KSD980741862	CHEROKEE COUNTY	F			06	BADGER, LAWTON, WACO		ROD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0704654.pdf	Other – Engineering/Containment
07	KSD980741862	CHEROKEE COUNTY	F			07	GALENA RESIDENTIAL SOILS		ROD - 7/29/1996: http://www.epa.gov/superfund/sites/rods/fulltext/r0796082.pdf	On-site disposal (excavation, capping, covering, reveg)
07	KSD980741862	CHEROKEE COUNTY	F			07	GALENA RESIDENTIAL SOILS		ROD - 7/29/1996: http://www.epa.gov/superfund/sites/rods/fulltext/r0796082.pdf	Institutional Controls
07	MOD098633415	MADISON COUNTY MINES	F	Mixed						
07	MOD098633415	MADISON COUNTY MINES	F			01	NORTHERN MADISON COUNTY UNIT		Not Available	
07	MOD098633415	MADISON COUNTY MINES	F			02	ANSCHUTZ SUB-SITE		Not Available	
07	MOD098633415	MADISON COUNTY MINES	F			03	MADWIDE RESIDENTIAL		ROD - 7/31/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008070002471.pdf	On-site disposal (excavation, capping, covering, reveg)
07	MOD098633415	MADISON COUNTY MINES	F			03	MADWIDE RESIDENTIAL		ROD - 7/31/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008070002471.pdf	Institutional Controls
07	MOD098633415	MADISON COUNTY MINES	F			04	CONRAD		Not Available	
07	MOD098633415	MADISON COUNTY MINES	F			05	CATHERINE/SKAGGS PILES		Not Available	
07	MOD098633415	MADISON COUNTY MINES	F			06	SILVER MINES		Not Available	
07	MOD981507585	NEWTON COUNTY MINE TAILINGS	F	Mixed						
07	MOD981507585	NEWTON COUNTY MINE TAILINGS	F			01	DIAMOND/SPRING CITY/GRANBY		ROD - 6/21/2010: http://www.epa.gov/superfund/sites/rods/fulltext/r2010070003517.pdf	On-site disposal (excavation, capping, covering, reveg)
07	MOD981507585	NEWTON COUNTY MINE TAILINGS	F			01	DIAMOND/SPRING CITY/GRANBY		ROD - 6/21/2010: http://www.epa.gov/superfund/sites/rods/fulltext/r2010070003517.pdf	Institutional Controls
07	MOD981507585	NEWTON COUNTY MINE TAILINGS	F			02	REMAINDER OF NEWTON COUNTY			
07	MOD981507585	NEWTON COUNTY MINE TAILINGS	F			03	SURFACE WATER AND GROUNDWATER		Not Available	
07	NESFN0703481	OMAHA LEAD	F	EPA						
07	NESFN0703481	OMAHA LEAD	F			01	CONTAMINATED SOILS		ROD 12/15/2004	Off-site disposal
07	NESFN0703481	OMAHA LEAD	F			02	FINAL REMEDIAL ACTION		ROD - 5/13/2009: http://www.epa.gov/region07/cleanup/npl_files/omaha_lead/record_of_decision.pdf	Off-site disposal

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
07	NESFN0703481	OMAHA LEAD	F			02	FINAL REMEDIAL ACTION		ROD - 5/13/2009: http://www.epa.gov/region07/cleanup/npl_files/omaha_lead/record_of_decision.pdf	Institutional Controls
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F	Mixed						
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F			01	MINE AND MILL WASTE		ROD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0704656.pdf	On-site disposal (excavation, capping, covering, reveg)
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F			01	MINE AND MILL WASTE		ROD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0704656.pdf	Institutional Controls
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F			02	RESIDENTIAL YARDS		ROD - 8/1/1996: http://www.epa.gov/superfund/sites/rods/fulltext/r0796086.pdf	On-site disposal (excavation, capping, covering, reveg)
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F			02	RESIDENTIAL YARDS		ROD - 8/1/1996: http://www.epa.gov/superfund/sites/rods/fulltext/r0796086.pdf	Institutional Controls
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F			03	MINE WASTE YARD SOILS			
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F			04	GROUND WATER		ROD 7/29/1998	Alternative drinking water
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F			04	GROUND WATER		ROD 7/29/1998	Water treatment-other
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F			04	GROUND WATER		ROD 7/29/1998	Institutional Controls
07	MOD980686281	ORONOGO-DUENWEG MINING BELT	F			05	SPRING RIVER BASIN		Not Available	
07	MON000705443	SOUTHWEST JEFFERSON COUNTY MINING	F	EPA				X		
07	MON000705443	SOUTHWEST JEFFERSON COUNTY MINING	F			01	HISTORIAL MINING-RESID. SOILS		Not Available	
07	MON000705443	SOUTHWEST JEFFERSON COUNTY MINING	F			02	LUBBERS-RESIDENTIAL SOILS		Not Available	
07	MON000705443	SOUTHWEST JEFFERSON COUNTY MINING	F			03	STEWART-RESIDENTIAL SOILS		Not Available	
07	MON000705443	SOUTHWEST JEFFERSON COUNTY MINING	F			04	UNCONSOLIDATED MINE WASTE		Not Available	
07	MON000705443	SOUTHWEST JEFFERSON COUNTY MINING	F			05	GROUNDWATER WELLS		Not Available	
07	MON000705443	SOUTHWEST JEFFERSON COUNTY MINING	F			06	VALLES MINES		Not Available	
07	MON000705842	WASHINGTON COUNTY LEAD DISTRICT - FURNACE CREEK	F	Mixed				X		
07	MON000705842	WASHINGTON COUNTY LEAD DISTRICT - FURNACE CREEK	F			01	SOIL		Not Available	

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07	MON000705842	WASHINGTON COUNTY LEAD DISTRICT - FURNACE CREEK	F			02	GROUNDWATER		Not Available	
07	MON000705842	WASHINGTON COUNTY LEAD DISTRICT - FURNACE CREEK	F			03	MINE WASTE		Not Available	
07	MON000705027	WASHINGTON COUNTY LEAD DISTRICT - OLD MINES	F	EPA				X		
07	MON000705027	WASHINGTON COUNTY LEAD DISTRICT - OLD MINES	F			01	RESIDENTIAL YARD REMOVAL		Not Available	
07	MON000705027	WASHINGTON COUNTY LEAD DISTRICT - OLD MINES	F			02	GROUNDWATER		Not Available	
07	MON000705027	WASHINGTON COUNTY LEAD DISTRICT - OLD MINES	F			03	MINE WASTE		Not Available	
07	MON000705027	WASHINGTON COUNTY LEAD DISTRICT - OLD MINES	F			04	SURFACE WATER AND SEDIMENT		Not Available	
07	MON000705023	WASHINGTON COUNTY LEAD DISTRICT - POTOSI	F	EPA				X		
07	MON000705023	WASHINGTON COUNTY LEAD DISTRICT - POTOSI	F			01	RESIDENTIAL YARD REMOVAL		Not Available	
07	MON000705023	WASHINGTON COUNTY LEAD DISTRICT - POTOSI	F			02	GROUNDWATER		Not Available	
07	MON000705023	WASHINGTON COUNTY LEAD DISTRICT - POTOSI	F			03	MINE WASTE		Not Available	
07	MON000705023	WASHINGTON COUNTY LEAD DISTRICT - POTOSI	F			04	SURFACE WATER AND SEDIMENT		Not Available	
07	MON000705032	WASHINGTON COUNTY LEAD DISTRICT - RICHWOODS	F	EPA				X		
07	MON000705032	WASHINGTON COUNTY LEAD DISTRICT - RICHWOODS	F			01	RESIDENTIAL YARD REMOVAL		Not Available	
07	MON000705032	WASHINGTON COUNTY LEAD DISTRICT - RICHWOODS	F			02	GROUNDWATER		Not Available	
07	MON000705032	WASHINGTON COUNTY LEAD DISTRICT - RICHWOODS	F			03	MINE WASTE		Not Available	
07	MON000705032	WASHINGTON COUNTY LEAD DISTRICT - RICHWOODS	F			04	SURFACE WATER AND SEDIMENT		Not Available	
08	MTD093291599	ACM SMELTER AND REFINERY	F	EPA				X		
08	MTD093291599	ACM SMELTER AND REFINERY	F			01	SITE WIDE		Not Available	

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08	MTD093291656	ANACONDA CO. SMELTER	F	Mixed						
08	MTD093291656	ANACONDA CO. SMELTER	F			01	SITE WIDE		Not Available	
08	MTD093291656	ANACONDA CO. SMELTER	F			03	SOILS			On-site disposal (excavation, capping, covering, reveg)
08	MTD093291656	ANACONDA CO. SMELTER	F			04	WATER, WASTE AND SOILS		ROD - 9/29/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898096.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MTD093291656	ANACONDA CO. SMELTER	F			04	WATER, WASTE AND SOILS		ROD - 9/29/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898096.pdf	Monitored natural attenuation/recovery
08	MTD093291656	ANACONDA CO. SMELTER	F			04	WATER, WASTE AND SOILS		ROD - 9/29/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898096.pdf	Institutional Controls
08	MTD093291656	ANACONDA CO. SMELTER	F			07	OLD WORKS/EAST ANACONDA		ROD - 3/8/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r1994080003804.pdf ESD - 11/6/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r1994080003804.pdf	Institutional Controls
08	MTD093291656	ANACONDA CO. SMELTER	F			07	OLD WORKS/EAST ANACONDA		ROD - 3/8/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r1994080003804.pdf ESD - 11/6/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r1994080003804.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MTD093291656	ANACONDA CO. SMELTER	F			07	OLD WORKS/EAST ANACONDA		ROD - 3/8/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r1994080003804.pdf ESD - 11/6/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r1994080003804.pdf	Surface water diversion
08	MTD093291656	ANACONDA CO. SMELTER	F			09	BERYLLIUM REMOVAL			On-site disposal (excavation, capping, covering, reveg)
08	MTD093291656	ANACONDA CO. SMELTER	F			11	FLUE DUST		ROD - 9/23/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0891053.pdf	Solidification
08	MTD093291656	ANACONDA CO. SMELTER	F			11	FLUE DUST		ROD - 9/23/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0891053.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MTD093291656	ANACONDA CO. SMELTER	F			11	FLUE DUST		ROD - 9/23/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0891053.pdf	Institutional Controls
08	MTD093291656	ANACONDA CO. SMELTER	F			12	ARBITER REMOVAL			On-site disposal (excavation,

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
										capping, covering, reveg)
08	MTD093291656	ANACONDA CO. SMELTER	F			14	SMELTER HILL		Not Available	
08	MTD093291656	ANACONDA CO. SMELTER	F			15	MILL CREEK		ROD - 10/2/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0888018.pdf AMD - 1/6/1988: http://www.epa.gov/superfund/sites/rods/fulltext/a0888500.pdf	Resident relocation
08	MTD093291656	ANACONDA CO. SMELTER	F			15	MILL CREEK		ROD - 10/2/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0888018.pdf AMD - 1/6/1988: http://www.epa.gov/superfund/sites/rods/fulltext/a0888500.pdf	Deconstruction/ decontamination of buildings
08	MTD093291656	ANACONDA CO. SMELTER	F			15	MILL CREEK		ROD - 10/2/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0888018.pdf AMD - 1/6/1988: http://www.epa.gov/superfund/sites/rods/fulltext/a0888500.pdf	Institutional Controls
08	MTD093291656	ANACONDA CO. SMELTER	F			15	MILL CREEK		ROD - 10/2/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0888018.pdf AMD - 1/6/1988: http://www.epa.gov/superfund/sites/rods/fulltext/a0888500.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MTD093291656	ANACONDA CO. SMELTER	F			16	COMMUNITY SOILS		ROD - 9/30/1996: http://www.epa.gov/superfund/sites/rods/fulltext/r0896127.pdf	Institutional Controls
08	MTD093291656	ANACONDA CO. SMELTER	F			16	COMMUNITY SOILS		ROD - 9/30/1996: http://www.epa.gov/superfund/sites/rods/fulltext/r0896127.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P	PRP						
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			01	FORMER NEUTRALIZATION POND			On-site disposal (excavation, capping, covering, reveg)
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			01	FORMER NEUTRALIZATION POND			Institutional Controls
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			02	GROUNDWATER			Other – Engineering/Containment
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			02	GROUNDWATER			On-site disposal (excavation, capping, covering, reveg)

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			02	GROUNDWATER			Institutional Controls
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			03	COMMUNITY SOILS		ROD - 2/18/1993: file was emailed, no link	On-site disposal (excavation, capping, covering, reveg)
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			03	COMMUNITY SOILS		ROD - 2/18/1993: file was emailed, no link	Institutional Controls
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			04	GLOBE PLANT SITE			Other – Treatment Technology
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			04	GLOBE PLANT SITE			On-site disposal (excavation, capping, covering, reveg)
08	COD007063530	ASARCO, INC. (GLOBE PLANT)	P			04	GLOBE PLANT SITE			Institutional Controls
08	MT6122307485	BARKER HUGHESVILLE MINING DISTRICT	F	Mixed				X		
08	MT6122307485	BARKER HUGHESVILLE MINING DISTRICT	F			01	WASTE ROCK AND TAILINGS		Not Available	
08	MT6122307485	BARKER HUGHESVILLE MINING DISTRICT	F			02	GW, SW & MINE DRAINAGE		Not Available	
08	MTD982572562	BASIN MINING AREA	F	Mixed						
08	MTD982572562	BASIN MINING AREA	F			01	TOWN OF BASIN		ROD - 3/30/2001: http://www.epa.gov/superfund/sites/fiveyear/f2008080002388.pdf	Off-site disposal
08	MTD982572562	BASIN MINING AREA	F			01	TOWN OF BASIN		ROD - 3/30/2001: http://www.epa.gov/superfund/sites/fiveyear/f2009080003053.pdf 5yr - 5/28/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008080002388.pdf	Institutional Controls
08	MTD982572562	BASIN MINING AREA	F			02	BASIN WATERSHED		Not Available	
08	MTD982572562	BASIN MINING AREA	F			03	LUTTRELL REPOSITORY		Not Available	
08	MTD982572562	BASIN MINING AREA	F			04	BUCKEYE/ENTERPRISE MINES		Not Available	
08	MTD982572562	BASIN MINING AREA	F			05	CRYSTAL MINE		Not Available	
08	MTD982572562	BASIN MINING AREA	F			06	BULLION MINE		Not Available	
08	COD980717938	CALIFORNIA GULCH	F	Mixed						
08	COD980717938	CALIFORNIA GULCH	F			01	YAK TUNNEL		ROD - 3/29/1988: http://www.epa.gov/superfund/sites/rods/fulltext/r0888020.pdf Missing multiple supplemental ROD documents	Other – Engineering/Containment
08	COD980717938	CALIFORNIA GULCH	F			01	YAK TUNNEL		ROD - 3/29/1988: http://www.epa.gov/superfund/sites/rods/fulltext/r0888020.pdf	Water treatment-other

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									Missing multiple supplemental ROD documents	
08	COD980717938	CALIFORNIA GULCH	F			02	HECLA TAILINGS		ROD - 9/30/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0899072.pdf	No action
08	COD980717938	CALIFORNIA GULCH	F			03	D & RG SLAG PILES		ROD - 5/6/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898076.pdf	No action
08	COD980717938	CALIFORNIA GULCH	F			04	UPPER CAL GULCH		ROD - 3/31/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898077.pdf ESD - 3/17/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e0804006.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980717938	CALIFORNIA GULCH	F			04	UPPER CAL GULCH		ROD - 3/31/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898077.pdf ESD - 3/17/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e0804006.pdf	Surface water diversion
08	COD980717938	CALIFORNIA GULCH	F			05	SMELTERS/MILL SITES		ROD - 10/31/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0801509.pdf	Institutional Controls
08	COD980717938	CALIFORNIA GULCH	F			06	HAMM'S TAILINGS/PENROSE DUMP		ROD - 9/25/2003: http://www.epa.gov/superfund/sites/rods/fulltext/r0803015.pdf AMD - 9/28/2010: ftp://ftp.epa.gov/r8/calgulch/OU6/RODFeasibiltyStudiesRIFS/CG_OU6RODAmendmentSep2010.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980717938	CALIFORNIA GULCH	F			06	HAMM'S TAILINGS/PENROSE DUMP		ROD - 9/25/2003: http://www.epa.gov/superfund/sites/rods/fulltext/r0803015.pdf AMD - 9/28/2010: ftp://ftp.epa.gov/r8/calgulch/OU6/RODFeasibiltyStudiesRIFS/CG_OU6RODAmendmentSep2010.pdf	Water treatment-other
08	COD980717938	CALIFORNIA GULCH	F			06	HAMM'S TAILINGS/PENROSE DUMP		ROD - 9/25/2003: http://www.epa.gov/superfund/sites/rods/fulltext/r0803015.pdf AMD - 9/28/2010: ftp://ftp.epa.gov/r8/calgulch/OU6/RODFeasibiltyStudiesRIFS/CG_OU6RODAmendmentSep2010.pdf	Institutional Controls
08	COD980717938	CALIFORNIA GULCH	F			06	HAMM'S TAILINGS/PENROSE DUMP		ROD - 9/25/2003: http://www.epa.gov/superfund/sites/rods/fulltext/r0803015.pdf AMD - 9/28/2010: ftp://ftp.epa.gov/r8/calgulch/OU6/RODFeasibiltyStudiesRIFS/CG_OU6RODAmendmentSep2010.pdf	Surface water diversion

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	COD980717938	CALIFORNIA GULCH	F			07	APACHE TAILINGS		ROD - 6/6/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0800512.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980717938	CALIFORNIA GULCH	F			07	APACHE TAILINGS		ROD - 6/6/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0800512.pdf	Surface water diversion
08	COD980717938	CALIFORNIA GULCH	F			07	APACHE TAILINGS		ROD - 6/6/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0800512.pdf	Institutional Controls
08	COD980717938	CALIFORNIA GULCH	F			08	LOWER CAL GULCH		ROD - 9/29/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0800149.pdf	Surface water diversion
08	COD980717938	CALIFORNIA GULCH	F			08	LOWER CAL GULCH		ROD - 9/29/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0800149.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980717938	CALIFORNIA GULCH	F			08	LOWER CAL GULCH		ROD - 9/29/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0800149.pdf	Institutional Controls
08	COD980717938	CALIFORNIA GULCH	F			09	RESIDENTIAL SOIL		ROD - 9/2/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0899055.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980717938	CALIFORNIA GULCH	F			09	RESIDENTIAL SOIL		ROD - 9/2/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0899055.pdf	Institutional Controls
08	COD980717938	CALIFORNIA GULCH	F			10	OREGON GULCH		ROD - 8/8/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0897145.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980717938	CALIFORNIA GULCH	F			10	OREGON GULCH		ROD - 8/8/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0897145.pdf	Other – Engineering/Containment
08	COD980717938	CALIFORNIA GULCH	F			11	ARKANSAS FLOOD PLAIN		ROD - 9/28/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0805045.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980717938	CALIFORNIA GULCH	F			11	ARKANSAS FLOOD PLAIN		ROD - 9/28/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0805045.pdf	Institutional Controls
08	COD980717938	CALIFORNIA GULCH	F			12	SITE-WIDE WATER QUALITY		ROD - 9/22/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009080003087.pdf	Institutional Controls
08	COD981551427	CAPTAIN JACK MILL	F	Mixed						
08	COD981551427	CAPTAIN JACK MILL	F			01	TBD		ROD - 9/29/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008080003370.pdf	Water treatment - Bioreactors (e.g., SRBs)

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	COD981551427	CAPTAIN JACK MILL	F			01	TBD		ROD - 9/29/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008080003370.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD981551427	CAPTAIN JACK MILL	F			01	TBD		ROD - 9/29/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008080003370.pdf	Institutional Controls
08	MT0001096353	CARPENTER SNOW CREEK MINING DISTRICT	F	EPA						
08	MT0001096353	CARPENTER SNOW CREEK MINING DISTRICT	F			01	TOWN OF NEIHART		ROD - 4/6/2009: ftp://ftp.epa.gov/r8/carpentersnowcreek/CarpenterCreekSAR_2010.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MT0001096353	CARPENTER SNOW CREEK MINING DISTRICT	F			01	TOWN OF NEIHART		ROD - 4/6/2009: ftp://ftp.epa.gov/r8/carpentersnowcreek/CarpenterCreekSAR_2010.pdf	Institutional Controls
08	MT0001096353	CARPENTER SNOW CREEK MINING DISTRICT	F			02	MINES AND WATERSHED		Not Available	
08	MT0001096353	CARPENTER SNOW CREEK MINING DISTRICT	F			03	SILVER DYKE MINING COMPLEX		Not Available	
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F	Mixed						
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			01	MINE DISCHARGE TREATMENT		ROD - 9/30/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0887016.pdf	Water treatment - Created Wetlands
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			02	TAILINGS/WASTEROCK/REMEDIATION		ROD - 3/31/1988: http://www.epa.gov/superfund/sites/rods/fulltext/r0888019.pdf ESD - 9/1/1999: http://www.epa.gov/region8/superfund/co/ccclearcreek/ccccreek.pdf	Surface water diversion
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			02	TAILINGS/WASTEROCK/REMEDIATION		ROD - 3/31/1988: http://www.epa.gov/superfund/sites/rods/fulltext/r0888019.pdf ESD - 9/1/1999: http://www.epa.gov/region8/superfund/co/ccclearcreek/ccccreek.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			03	DISCHARGE CONTROL/PHASE II		ROD - 9/30/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0891055.pdf AMD - 9/22/2003: http://www.epa.gov/superfund/sites/rods/fulltext/a0803016.pdf ESD - 6/6/2005: http://www.epa.gov/region8/superfund/co/ccclearcreek/2028765.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			03	DISCHARGE CONTROL/PHASE II		ROD - 9/30/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0891055.pdf AMD - 9/22/2003: http://www.epa.gov/superfund/sites/rods/fullt	Institutional Controls

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ext/a0803016.pdf ESD - 6/6/2005: http://www.epa.gov/region8/superfund/co/ccclearcreek/2028765.pdf	
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			03	DISCHARGE CONTROL/PHASE II		ROD - 9/30/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0891055.pdf AMD - 9/22/2003: http://www.epa.gov/superfund/sites/rods/fulltext/a0803016.pdf ESD - 6/6/2005: http://www.epa.gov/region8/superfund/co/ccclearcreek/2028765.pdf	Water treatment-other
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			03	DISCHARGE CONTROL/PHASE II		ROD - 9/30/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0891055.pdf AMD - 9/22/2003: http://www.epa.gov/superfund/sites/rods/fulltext/a0803016.pdf ESD - 6/6/2005: http://www.epa.gov/region8/superfund/co/ccclearcreek/2028765.pdf	Alternative drinking water
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			03	DISCHARGE CONTROL/PHASE II		ROD - 9/30/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0891055.pdf AMD - 9/22/2003: http://www.epa.gov/superfund/sites/rods/fulltext/a0803016.pdf ESD - 6/6/2005: http://www.epa.gov/region8/superfund/co/ccclearcreek/2028765.pdf	Water treatment - Created Wetlands
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			04	NORTH CLEAR CREEK		ROD - 9/29/2004: http://www.epa.gov/superfund/sites/rods/fulltext/a0803016.pdf AMD - 9/25/2006: http://www.epa.gov/superfund/sites/rods/fulltext/a2006080003372.pdf AMD - 4/29/2010: http://www.epa.gov/superfund/sites/rods/fulltext/a2010080003373.pdf	Water treatment - Bioreactors (e.g., SRBs)
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			04	NORTH CLEAR CREEK		ROD - 9/29/2004: http://www.epa.gov/superfund/sites/rods/fulltext/a0803016.pdf AMD - 9/25/2006: http://www.epa.gov/superfund/sites/rods/fulltext/a2006080003372.pdf AMD - 4/29/2010: http://www.epa.gov/superfund/sites/rods/fulltext/a2010080003373.pdf	Water treatment-other
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			04	NORTH CLEAR CREEK		ROD - 9/29/2004: http://www.epa.gov/superfund/sites/rods/fullt	On-site disposal (excavation,

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ext/a0803016.pdf AMD - 9/25/2006: http://www.epa.gov/superfund/sites/rods/fulltext/a2006080003372.pdf AMD - 4/29/2010: http://www.epa.gov/superfund/sites/rods/fulltext/a2010080003373.pdf	capping, covering, reveg)
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			04	NORTH CLEAR CREEK		ROD - 9/29/2004: http://www.epa.gov/superfund/sites/rods/fulltext/a0803016.pdf AMD - 9/25/2006: http://www.epa.gov/superfund/sites/rods/fulltext/a2006080003372.pdf AMD - 4/29/2010: http://www.epa.gov/superfund/sites/rods/fulltext/a2010080003373.pdf	Surface water diversion
08	COD980717557	CENTRAL CITY, CLEAR CREEK	F			04	NORTH CLEAR CREEK		ROD - 9/29/2004: http://www.epa.gov/superfund/sites/rods/fulltext/a0803016.pdf AMD - 9/25/2006: http://www.epa.gov/superfund/sites/rods/fulltext/a2006080003372.pdf AMD - 4/29/2010: http://www.epa.gov/superfund/sites/rods/fulltext/a2010080003373.pdf	Institutional Controls
08	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	F	Mixed						
08	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	F			01	RESIDENTIAL SOILS		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802055.pdf ESD - 11/15/2005: http://www.epa.gov/superfund/sites/rods/fulltext/e2006080001265.pdf	Off-site disposal
08	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	F			01	RESIDENTIAL SOILS		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802055.pdf ESD - 11/15/2005: http://www.epa.gov/superfund/sites/rods/fulltext/e2006080001265.pdf	Other – Engineering/Containment
08	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	F			01	RESIDENTIAL SOILS		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802055.pdf ESD - 11/15/2005: http://www.epa.gov/superfund/sites/rods/fulltext/e2006080001265.pdf	Institutional Controls
08	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	F			02	NON-RES. LITTLE COTTON CREEK		ROD - 9/16/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009080003244.pdf	Off-site disposal
08	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	F			02	NON-RES. LITTLE COTTON CREEK		ROD - 9/16/2009: http://www.epa.gov/superfund/sites/rods/fulltext/r2009080003244.pdf	Institutional Controls

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	F			03	DEVELOPERS RESIDENTIAL SOILS		ESD - 11/15/2005: http://www.epa.gov/superfund/sites/rods/fulltext/e2006080001265.pdf	Off-site disposal
08	COD980716955	DENVER RADIUM SITE	F	Mixed	9/27/2006					
08	COD980716955	DENVER RADIUM SITE	F			01	12TH & QUIVAS PROPERTIES		ROD - 9/29/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0887013.pdf	Off-site disposal
08	COD980716955	DENVER RADIUM SITE	F			02	DUWALD STEEL		ROD - 9/29/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0887015.pdf ESD - 9/17/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e0893089.pdf	Off-site disposal
08	COD980716955	DENVER RADIUM SITE	F			02	DUWALD STEEL		ROD - 9/29/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0887015.pdf ESD - 9/17/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e0893089.pdf	Institutional Controls
08	COD980716955	DENVER RADIUM SITE	F			03	1000 WEST LOUISIANA		ROD - 9/29/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0887017.pdf ESD - 12/13/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e0894093.pdf	Off-site disposal
08	COD980716955	DENVER RADIUM SITE	F			03	1000 WEST LOUISIANA		ROD - 9/29/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0887017.pdf ESD - 12/13/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e0894093.pdf	Institutional Controls
08	COD980716955	DENVER RADIUM SITE	F			04	ROBCO		ROD - 9/30/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0886009.pdf 5yr - 9/30/1993: http://www.epa.gov/superfund/sites/fiveyear/f93-08001.pdf ESD - 12/1/1994: http://www.epa.gov/superfund/sites/rods/fulltext/e0895101.pdf	Off-site disposal
08	COD980716955	DENVER RADIUM SITE	F			04	ROBCO		ROD - 9/30/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0886009.pdf 5yr - 9/30/1993: http://www.epa.gov/superfund/sites/fiveyear/f93-08001.pdf ESD - 12/1/1994: http://www.epa.gov/superfund/sites/rods/fulltext/e0895101.pdf	Institutional Controls
08	COD980716955	DENVER RADIUM SITE	F			05	ROBCO			

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	COD980716955	DENVER RADIUM SITE	F			06	OPEN LANDS		ROD, 9/29/1987	Off-site disposal
08	COD980716955	DENVER RADIUM SITE	F			06	OPEN LANDS		ROD, 9/29/1987	Institutional Controls
08	COD980716955	DENVER RADIUM SITE	F			07	STREETS		ROD - 3/24/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0886004.pdf ESD - 9/15/1992: http://www.epa.gov/superfund/sites/rods/fulltext/e0892094.pdf	Institutional Controls
08	COD980716955	DENVER RADIUM SITE	F			08	SHATTUCK		ROD - 1/28/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892063.pdf 5yr - 12/21/1999: http://www.epa.gov/superfund/sites/fiveyear/f00-08002.pdf AMD - 6/16/2000: http://www.epa.gov/superfund/sites/rods/fulltext/a0800561.pdf	Off-site disposal
08	COD980716955	DENVER RADIUM SITE	F			08	SHATTUCK		ROD - 1/28/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892063.pdf 5yr - 12/21/1999: http://www.epa.gov/superfund/sites/fiveyear/f00-08002.pdf AMD - 6/16/2000: http://www.epa.gov/superfund/sites/rods/fulltext/a0800561.pdf	Solidification
08	COD980716955	DENVER RADIUM SITE	F			08	SHATTUCK		ROD - 1/28/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892063.pdf 5yr - 12/21/1999: http://www.epa.gov/superfund/sites/fiveyear/f00-08002.pdf AMD - 6/16/2000: http://www.epa.gov/superfund/sites/rods/fulltext/a0800561.pdf	Institutional Controls
08	COD980716955	DENVER RADIUM SITE	F			09	IHOP		ESD - 12/23/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0892062.pdf ROD - 1/17/1995: http://www.epa.gov/superfund/sites/rods/fulltext/e0895099.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD980716955	DENVER RADIUM SITE	F			09	IHOP		ESD - 12/23/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0892062.pdf ROD - 1/17/1995: http://www.epa.gov/superfund/sites/rods/fulltext/e0895099.pdf	Institutional Controls
08	COD980716955	DENVER RADIUM SITE	F			10	1314 W. EVANS/CARD MENTOR		ROD - 6/30/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r0886009.pdf	Off-site disposal

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	COD980716955	DENVER RADIUM SITE	F			11	1295 S. SANTA FE DRIVE		ROD - 1/17/1995: http://www.epa.gov/superfund/sites/rods/fulltext/e0895099.pdf	Off-site disposal
08	COD980716955	DENVER RADIUM SITE	F			11	1295 S. SANTA FE DRIVE		ROD - 1/17/1995: http://www.epa.gov/superfund/sites/rods/fulltext/e0895099.pdf	Institutional Controls
08	COD081961518	EAGLE MINE	F	Mixed	9/17/2001					
08	COD081961518	EAGLE MINE	F			01			ROD - 3/29/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0893068.pdf Missing a supplemental ROD document	Water treatment-lime
08	COD081961518	EAGLE MINE	F			01			ROD - 3/29/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0893068.pdf Missing a supplemental ROD document	Surface water diversion
08	COD081961518	EAGLE MINE	F			01			ROD - 3/29/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0893068.pdf Missing a supplemental ROD document	On-site disposal (excavation, capping, covering, reveg)
08	COD081961518	EAGLE MINE	F			01			ROD - 3/29/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0893068.pdf Missing a supplemental ROD document	Alternative drinking water
08	COD081961518	EAGLE MINE	F			01			ROD - 3/29/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0893068.pdf Missing a supplemental ROD document	Institutional Controls
08	COD081961518	EAGLE MINE	F			02	SOILS		ROD - 9/3/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898079.pdf	Institutional Controls
08	COD081961518	EAGLE MINE	F			03	NORTH PROPERTY REDEVELOPMENT		Not Available	
08	COD081961518	EAGLE MINE	F			04	FOCUSED FEASIBILITY STUDY		Not Available	
08	MTD006230346	EAST HELENA SITE	F	Mixed						
08	MTD006230346	EAST HELENA SITE	F			01	PROCESS PONDS		ROD - 1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890027.pdf	Water treatment-other
08	MTD006230346	EAST HELENA SITE	F			01	PROCESS PONDS		ROD - 1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890027.pdf	Other – Treatment Technology
08	MTD006230346	EAST HELENA SITE	F			01	PROCESS PONDS		ROD - 1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890027.pdf	Other – Treatment Technology
08	MTD006230346	EAST HELENA SITE	F			02	RESIDENTIAL/AGRICULTURAL LANDS			Off-site disposal
08	MTD006230346	EAST HELENA SITE	F			02	RESIDENTIAL/AGRICULTURAL LANDS		RESIDENTIAL/AGRICULTURAL LANDS	Off-site disposal
08	MTD006230346	EAST HELENA SITE	F			02	RESIDENTIAL/AGRICULTURAL LANDS		RESIDENTIAL/AGRICULTURAL LANDS	Institutional Controls

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	UT0002240158	EUREKA MILLS	F	Mixed	9/21/2011					
08	UT0002240158	EUREKA MILLS	F			00	SITEWIDE		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802069.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UT0002240158	EUREKA MILLS	F			00	SITEWIDE		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802069.pdf	Institutional Controls
08	UT0002240158	EUREKA MILLS	F			01	EAST EUREKA (GODIVA)		Not Available	
08	UT0002240158	EUREKA MILLS	F			02	W EUREKA(BULLION BECK&GEMINI)		Not Available	
08	UT0002240158	EUREKA MILLS	F			03	CENTRAL EUREKA		Not Available	
08	UT0002240158	EUREKA MILLS	F			04	GROUNDWATER/ECO RISK & OTHER		Not Available	
08	MT0012694970	FLAT CREEK IMM	F	EPA				X		
08	MT0012694970	FLAT CREEK IMM	F			01	RESIDENTIAL SOILS		Not Available	
08	MT0012694970	FLAT CREEK IMM	F			02	MINE WATERSHED		Not Available	
08	MT0012694970	FLAT CREEK IMM	F			03	PERMANENT REPOSITORY		Not Available	
08	CO0001093392	FRENCH GULCH	S	Mixed				X		
08	CO0001093392	FRENCH GULCH	S			00	SITEWIDE		Not Available	
08	SDD987673985	GILT EDGE MINE	F	EPA						
08	SDD987673985	GILT EDGE MINE	F			01	SITEWIDE		ROD - 9/29/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008080003371.pdf	On-site disposal (excavation, capping, covering, reveg)
08	SDD987673985	GILT EDGE MINE	F			01	SITEWIDE		ROD - 9/29/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008080003371.pdf	Institutional Controls
08	SDD987673985	GILT EDGE MINE	F			01	SITEWIDE		ROD - 9/29/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008080003371.pdf	Other – Engineering/Containment
08	SDD987673985	GILT EDGE MINE	F			01	SITEWIDE		ROD - 9/29/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008080003371.pdf	Water treatment-lime
08	SDD987673985	GILT EDGE MINE	F			01	SITEWIDE		ROD - 9/29/2008: http://www.epa.gov/superfund/sites/rods/fulltext/r2008080003371.pdf	Monitoring (all media and as separate remedy)
08	SDD987673985	GILT EDGE MINE	F			02	WATER TREATMENT		ROD - 4/23/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801611.pdf Missing a supplemental ROD document	Water treatment-lime
08	SDD987673985	GILT EDGE MINE	F			02	WATER TREATMENT		ROD - 4/23/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801611.pdf Missing a supplemental ROD document	Impoundment
08	UTD093120921	INTERNATIONAL SMELTING AND REFINING	F	Mixed	9/27/2007					

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	UTD093120921	INTERNATIONAL SMELTING AND REFINING	F			01			ROD - 9/27/2007: http://www.epa.gov/region8/superfund/ut/intrntnlsmelt/ROD.pdf	Institutional Controls
08	UTD093120921	INTERNATIONAL SMELTING AND REFINING	F			01			ROD - 9/27/2007: http://www.epa.gov/region8/superfund/ut/intrntnlsmelt/ROD.pdf	Monitoring (all media and as separate remedy)
08	UT0002391472	JACOBS SMELTER	F	Mixed						
08	UT0002391472	JACOBS SMELTER	F			01	RESIDENTIAL SOILS		ROD - 7/29/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0899047.pdf	Institutional Controls
08	UT0002391472	JACOBS SMELTER	F			01	RESIDENTIAL SOILS		ROD - 7/29/1999: http://www.epa.gov/superfund/sites/rods/fulltext/r0899047.pdf	Off-site disposal
08	UT0002391472	JACOBS SMELTER	F			02	NON RESIDENTIAL PORTION		Not Available	
08	UT0002391472	JACOBS SMELTER	F			03	UNION PACIFIC		Not Available	
08	UT0002391472	JACOBS SMELTER	F			04	KENNECOTT WATERMAN AREA PARCEL		Not Available	
08	UT0002391472	JACOBS SMELTER	F			05	BLM PROPERTY		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P	Mixed						
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			01	ANTICIPATE LISTING 92/1		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			02	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			03	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			04	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			05	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			06	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			07	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			08	KENNECOTT (WWTP)		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			09	MAGNA SOILS		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	No action
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			10	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			11	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			12	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			13	SMELTER AND ACID PLANTS		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			13	SMELTER AND ACID PLANTS		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	Surface water diversion
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			13	SMELTER AND ACID PLANTS		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	Deconstruction/ decontamination of buildings
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			13	SMELTER AND ACID PLANTS		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	Off-site disposal
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			14	REFINERY		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			14	REFINERY		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	Deconstruction/ decontamination of buildings
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			15	MILLS AND TAILING PONDS		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			16	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			17	N/A SEE KENNECOTT (SOUTH ZONE)		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			18	N/A SEE KENNECOTT (SOUTH ZONE)		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			19	SMELTER FALLOUT		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			19	SMELTER FALLOUT		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	Other – Engineering/Containment
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			20	PINE CANYON		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			21	COBALT PONDS		Not Available	
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			22	GREAT SL/ASSOCIATED WETLANDS		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	On-site disposal (excavation, capping, covering, reveg)

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			22	GREAT SL/ASSOCIATED WETLANDS		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	Surface water diversion
08	UTD070926811	KENNECOTT (NORTH ZONE)	P			23	NORTH END GROUNDWATER		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	Water treatment - Bioreactors (e.g., SRBs)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R	Mixed						
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			01	BINGHAM CREEK		ROD - 11/3/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0899034.pdf; FYR 06/01/2004: http://www.epa.gov/superfund/sites/fiveyear/f04-08002.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			01	BINGHAM CREEK		ROD - 11/3/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0899034.pdf; FYR 06/01/2004: http://www.epa.gov/superfund/sites/fiveyear/f04-08002.pdf	Institutional Controls
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			02	SW JORDAN VALLEY GW PLUME		ROD - 12/13/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0801552.pdf; ESD - 6/23/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e0803003.pdf ESD - 6/12/2007: http://www.deq.utah.gov/Issues/nrd/docs/fdocs/Final_ESD_Response_Summary_to_0607ESD.pdf	Water treatment- lime
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			02	SW JORDAN VALLEY GW PLUME		ROD - 12/13/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0801552.pdf; ESD - 6/23/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e0803003.pdf ESD - 6/12/2007: http://www.deq.utah.gov/Issues/nrd/docs/fdocs/Final_ESD_Response_Summary_to_0607ESD.pdf	Water treatment- other
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			02	SW JORDAN VALLEY GW PLUME		ROD - 12/13/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0801552.pdf; ESD - 6/23/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e0803003.pdf ESD - 6/12/2007: http://www.deq.utah.gov/Issues/nrd/docs/fdocs/Final_ESD_Response_Summary_to_0607ESD.pdf	Monitored natural attenuation/recovery
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			02	SW JORDAN VALLEY GW PLUME		ROD - 12/13/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0801552.pdf;	Water treatment- other

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ESD - 6/23/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e0803003.pdf ESD - 6/12/2007: http://www.deq.utah.gov/Issues/nrd/docs/fdocs/Final_ESD_Response_Summary_to_0607ESD.pdf	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			02	SW JORDAN VALLEY GW PLUME		ROD - 12/13/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0801552.pdf; ESD - 6/23/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e0803003.pdf ESD - 6/12/2007: http://www.deq.utah.gov/Issues/nrd/docs/fdocs/Final_ESD_Response_Summary_to_0607ESD.pdf	Alternative drinking water
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			02	SW JORDAN VALLEY GW PLUME		ROD - 12/13/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r0801552.pdf; ESD - 6/23/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e0803003.pdf ESD - 6/12/2007: http://www.deq.utah.gov/Issues/nrd/docs/fdocs/Final_ESD_Response_Summary_to_0607ESD.pdf	Institutional Controls
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			03	BUTTERFIELD CREEK		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	Institutional Controls
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			03	BUTTERFIELD CREEK		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			03	BUTTERFIELD CREEK		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			04	LARGE BINGHAM RESERVOIR		ROD - 11/3/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0899034.pdf; FYR 06/01/2004: http://www.epa.gov/superfund/sites/fiveyear/f04-08002.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			04	LARGE BINGHAM RESERVOIR		ROD - 11/3/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0899034.pdf; FYR 06/01/2004:	Other – Engineering/Containment

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/fiveyear/f04-08002.pdf	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			05	ANACONDA/ARCO		ROD - 11/3/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0899034.pdf; FYR 06/01/2004: http://www.epa.gov/superfund/sites/fiveyear/f04-08002.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			06	LARK TAILINGS AND WASTE ROCK		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			06	LARK TAILINGS AND WASTE ROCK		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			06	LARK TAILINGS AND WASTE ROCK		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	Surface water diversion
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			06	LARK TAILINGS AND WASTE ROCK		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	Water treatment - Created Wetlands
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			06	LARK TAILINGS AND WASTE ROCK		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	Soil Amendments
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			06	LARK TAILINGS AND WASTE ROCK		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	Sediment dredging/ disposal
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			07	SOUTH JORDON EVAPORATION PONDS		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			07	SOUTH JORDON EVAPORATION PONDS		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801518.pdf ; FYR - 9/30/09: http://www.epa.gov/superfund/sites/fiveyear/f2009080003229.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			08	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			09	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			10	COPPERTON SOILS		ROD - 11/3/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0899034.pdf; FYR 06/01/2004: http://www.epa.gov/superfund/sites/fiveyear/f04-08002.pdf	Institutional Controls
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			11	BINGHAM CANYON HISTORIC FACILI		ROD - 11/3/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0899034.pdf; FYR 06/01/2004: http://www.epa.gov/superfund/sites/fiveyear/f04-08002.pdf; FYR 9/29/2010	Institutional Controls
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			12	EASTSIDE COLLECTION SYSTEM		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			13	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			14	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			15	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			16	BINGHAM CREEK UNDERFLOW		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			17	BASTIAN SINK		ROD - 11/3/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0899034.pdf; FYR 06/01/2004: http://www.epa.gov/superfund/sites/fiveyear/f04-08002.pdf; FYR 9/30/09	Institutional Controls
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			18	ACID MINE DRAINAGE		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			19	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			20	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			21	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			22	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			23	N/A SEE KENNECOTT (NORTH ZONE)		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			24	PRECIPITATION PLANT		Not Available	
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			24	PRECIPITATION PLANT		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	Deconstruction/ decontamination of buildings
08	UTD000826404	KENNECOTT (SOUTH ZONE)	R			24	PRECIPITATION PLANT		ROD - 9/26/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802610.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MT0009083840	LIBBY ASBESTOS SITE	F	Mixed						
08	MT0009083840	LIBBY ASBESTOS SITE	F			01	EXPORT PLANT		ROD - 5/2010: http://www.epa.gov/libby/LibbyOU1_ROD_May2010.pdf	On-site disposal (excavation,

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
										capping, covering, reveg)
08	MT0009083840	LIBBY ASBESTOS SITE	F			01	EXPORT PLANT		ROD - 5/2010: http://www.epa.gov/libby/LibbyOU1_ROD_May2010.pdf	Off-site disposal
08	MT0009083840	LIBBY ASBESTOS SITE	F			01	EXPORT PLANT		ROD - 5/2010: http://www.epa.gov/libby/LibbyOU1_ROD_May2010.pdf	Institutional Controls
08	MT0009083840	LIBBY ASBESTOS SITE	F			02	SCREENING PLANT		ROD - 5/2010: http://www.epa.gov/libby/LibbyOU2_ROD_May2010.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MT0009083840	LIBBY ASBESTOS SITE	F			02	SCREENING PLANT		ROD - 5/2010: http://www.epa.gov/libby/LibbyOU2_ROD_May2010.pdf	Off-site disposal
08	MT0009083840	LIBBY ASBESTOS SITE	F			02	SCREENING PLANT		ROD - 5/2010: http://www.epa.gov/libby/LibbyOU2_ROD_May2010.pdf	Institutional Controls
08	MT0009083840	LIBBY ASBESTOS SITE	F			03	MINE		Not Available	
08	MT0009083840	LIBBY ASBESTOS SITE	F			04	REMEDIAL SITEWIDE		Not Available	
08	MT0009083840	LIBBY ASBESTOS SITE	F			05	STIMSOM LUMBER		Not Available	
08	MT0009083840	LIBBY ASBESTOS SITE	F			06	BURLINGTON NORTHERN RR		Not Available	
08	MT0009083840	LIBBY ASBESTOS SITE	F			07	TROY		Not Available	
08	MT0009083840	LIBBY ASBESTOS SITE	F			08	STATE HIGHWAYS		Not Available	
08	COD042167858	LINCOLN PARK	F	Mixed						
08	COD042167858	LINCOLN PARK	F			01	SITEWIDE		Not Available	Impoundment
08	COD042167858	LINCOLN PARK	F			01	SITEWIDE		Not Available	Permeable Reactive Barrier
08	COD042167858	LINCOLN PARK	F			02	LINCOLN PARK STUDY AREA		ROD - 1/3/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802108.pdf 5yr - 9/27/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007080001836.pdf	Monitoring (all media and as separate remedy)
08	UTD081834277	MIDVALE SLAG	F	Mixed	9/29/2011					
08	UTD081834277	MIDVALE SLAG	F			01	NORTHERN ZONE		ROD - 4/28/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0895106.pdf ESD - 2/10/2006: http://www.epa.gov/superfund/sites/rods/fulltext/e2006080003369.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD081834277	MIDVALE SLAG	F			01	NORTHERN ZONE		ROD - 4/28/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0895106.pdf ESD - 2/10/2006: http://www.epa.gov/superfund/sites/rods/fulltext/e2006080003369.pdf	Monitoring (all media and as separate remedy)

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	UTD081834277	MIDVALE SLAG	F			01	NORTHERN ZONE		ROD - 4/28/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0895106.pdf ESD - 2/10/2006: http://www.epa.gov/superfund/sites/rods/fulltext/e2006080003369.pdf	Institutional Controls
08	UTD081834277	MIDVALE SLAG	F			02	SOUTHERN ZONE		ROD - 10/29/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0895106.pdf	Off-site disposal
08	UTD081834277	MIDVALE SLAG	F			02	SOUTHERN ZONE		ROD - 10/29/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0895106.pdf	Other – Engineering/Containment
08	UTD081834277	MIDVALE SLAG	F			02	SOUTHERN ZONE		ROD - 10/29/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0895106.pdf	Institutional Controls
08	UTD081834277	MIDVALE SLAG	F			02	SOUTHERN ZONE		ROD - 10/29/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0895106.pdf	Other – Engineering/Containment
08	UTD081834277	MIDVALE SLAG	F			02	SOUTHERN ZONE		ROD - 10/29/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0895106.pdf	Monitoring (all media and as separate remedy)
08	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	F	Mixed						
08	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	F			01			ROD - 4/14/1984: http://www.epa.gov/superfund/sites/rods/fulltext/r0884001.pdf AMD - 8/7/1985: http://www.epa.gov/superfund/sites/rods/fulltext/a0885002.pdf	Alternative drinking water
08	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	F			02	RESERVOIR		ROD - 12/20/2004: http://www.epa.gov/region8/superfund/mt/milltown/mrsrod.html ROD - 9/28/2004: www.lm.doe.gov/Monticello/InterimRemedialActionSW_GW.pdf ESD - 3/12/2009: www.lm.doe.gov/Monticello/ESD_document.pdf	Sediment dredging/ disposal
08	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	F			02	RESERVOIR		ROD - 12/20/2004: http://www.epa.gov/region8/superfund/mt/milltown/mrsrod.html ROD - 9/28/2004: www.lm.doe.gov/Monticello/InterimRemedialActionSW_GW.pdf ESD - 3/12/2009: www.lm.doe.gov/Monticello/ESD_document.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	F			03	MAINSTEM RIVER		Not Available	
08	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	F	FF	9/29/2004					

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	F			01	MILLSITE		ROD - 8/22/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890034.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	F			02	PERIPHERAL PROPERTIES		ROD - 8/22/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890034.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	F			02	PERIPHERAL PROPERTIES		ROD - 8/22/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890034.pdf	Institutional Controls
08	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	F			03	GROUNDWATER & SURFACE WATER		ROD - 9/29/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898106.pdf ROD - 6/2/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0804588.pdf	Monitoring (all media and as separate remedy)
08	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	F			03	GROUNDWATER & SURFACE WATER		ROD - 9/29/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898106.pdf ROD - 6/2/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0804588.pdf	Permeable Reactive Barrier
08	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	F			03	GROUNDWATER & SURFACE WATER		ROD - 9/29/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898106.pdf ROD - 6/2/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0804588.pdf	Institutional Controls
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D	Mixed	9/2/1999					
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			01	ORIGINAL PROPERTIES (OU A)		ROD - 9/27/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0889025.pdf	Off-site disposal
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			01	ORIGINAL PROPERTIES (OU A)		ROD - 9/27/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0889025.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			01	ORIGINAL PROPERTIES (OU A)		ROD - 9/27/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0889025.pdf	Deconstruction/ decontamination of buildings
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			02	INCLUSION PROPERTIES (OU B)		Not Available	
08	UTD980667208	MONTICELLO RADIOACTIVELY	D			03	DISPUTED PROPERTIES (OU C)		ROD - 9/28/2004: www.lm.doe.gov/Monticello/InterimRemedia	Monitored natural attenuation/recovery

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
		CONTAMINATED PROPERTIES							lActionSW_GW.pdf ESD - 3/12/2009: www.lm.doe.gov/Monticello/ESD_document.pdf	
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			03	DISPUTED PROPERTIES (OU C)		ROD - 9/28/2004: www.lm.doe.gov/Monticello/InterimRemedialActionSW_GW.pdf ESD - 3/12/2009: www.lm.doe.gov/Monticello/ESD_document.pdf	Institutional Controls
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			03	DISPUTED PROPERTIES (OU C)		ROD - 9/28/2004: www.lm.doe.gov/Monticello/InterimRemedialActionSW_GW.pdf ESD - 3/12/2009: www.lm.doe.gov/Monticello/ESD_document.pdf	Permeable Reactive Barrier
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			04	NON-RAD WASTE (OU D)		Not Available	
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			05	HALL'S DITCH PROPERTIES (OU E)		Not Available	
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			06	REFUSAL PROPERTIES (OU F)		Not Available	
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			07	SITE BOUNDARY PROP (OU G)		Not Available	
08	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	D			08	SUPPLEMENTAL STDS (OU H)		Not Available	
08	MTD021997689	MOUAT INDUSTRIES	F	Mixed	9/27/1996					
08	MTD021997689	MOUAT INDUSTRIES	F			01	LAGOONS/SOILS, GW, SW		5yr - 3/13/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008080002188.pdf	Monitored natural attenuation/recovery
08	MTD021997689	MOUAT INDUSTRIES	F			01	LAGOONS/SOILS, GW, SW		5yr - 3/13/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008080002188.pdf	Soil Amendments
08	MTD021997689	MOUAT INDUSTRIES	F			01	LAGOONS/SOILS, GW, SW		5yr - 3/13/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008080002188.pdf	Off-site disposal
08	MTD021997689	MOUAT INDUSTRIES	F			01	LAGOONS/SOILS, GW, SW		5yr - 3/13/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008080002188.pdf	Institutional Controls

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08	CON000802630	NELSON TUNNEL/COMMODORE WASTE ROCK	F	EPA				X		
08	CON000802630	NELSON TUNNEL/COMMODORE WASTE ROCK	F			01	COMMODORE WASTE ROCK		Not Available	
08	CON000802630	NELSON TUNNEL/COMMODORE WASTE ROCK	F			02	NELSON TUNNEL/DRAINING ADIT		Not Available	
08	UTD980952840	RICHARDSON FLAT TAILINGS	P	PRP						
08	UTD980952840	RICHARDSON FLAT TAILINGS	P			01	RICHARDSON FLAT		ROD - 7/6/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0805046.pdf	Impoundment
08	UTD980952840	RICHARDSON FLAT TAILINGS	P			01	RICHARDSON FLAT		ROD - 7/6/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0805046.pdf	Other – Engineering/Containment
08	UTD980952840	RICHARDSON FLAT TAILINGS	P			01	RICHARDSON FLAT		ROD - 7/6/2005: http://www.epa.gov/superfund/sites/rods/fulltext/r0805046.pdf	Institutional Controls
08	UTD980952840	RICHARDSON FLAT TAILINGS	P			02	LOWER SILVER CREEK		Not Available	
08	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	D	Mixed	5/12/1999					
08	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	D			01	MILL SITE AND GROUNDWATER		ROD - 12/9/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0894082.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	D			01	MILL SITE AND GROUNDWATER		ROD - 12/9/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0894082.pdf	Soil Amendments
08	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	D			01	MILL SITE AND GROUNDWATER		ROD - 12/9/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0894082.pdf	Sediment dredging/ disposal
08	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	D			01	MILL SITE AND GROUNDWATER		ROD - 12/9/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0894082.pdf	Institutional Controls
08	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	D			01	MILL SITE AND GROUNDWATER		ROD - 12/9/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0894082.pdf	Monitoring (all media and as separate remedy)
08	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	D			02	VICINITY PROPERTIES SOILS		ROD - 9/24/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890044.pdf ESD - 6/23/1994: http://www.epa.gov/superfund/sites/rods/fulltext/e0894090.pdf	On-site disposal (excavation, capping, covering, reveg)
08	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	D			02	VICINITY PROPERTIES SOILS		ROD - 9/24/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890044.pdf ESD - 6/23/1994:	Institutional Controls

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									http://www.epa.gov/superfund/sites/rods/fulltext/e0894090.pdf	
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F	Mixed						
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			01	STREAMSIDE TLNGS (SBC)		ROD - 11/29/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896112.pdf ESD - 8/31/1998: http://www.epa.gov/superfund/sites/rods/fulltext/e0898116.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			01	STREAMSIDE TLNGS (SBC)		ROD - 11/29/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896112.pdf ESD - 8/31/1998: http://www.epa.gov/superfund/sites/rods/fulltext/e0898116.pdf	Soil Amendments
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			01	STREAMSIDE TLNGS (SBC)		ROD - 11/29/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896112.pdf ESD - 8/31/1998: http://www.epa.gov/superfund/sites/rods/fulltext/e0898116.pdf	Sediment dredging/ disposal
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			01	STREAMSIDE TLNGS (SBC)		ROD - 11/29/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896112.pdf ESD - 8/31/1998: http://www.epa.gov/superfund/sites/rods/fulltext/e0898116.pdf	Institutional Controls
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			02	AREA I		Not Available	
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			03	BERKELEY PT/MINE FLDNG (BUTTE)		ROD - 9/29/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0894102.pdf ESD - 2002 MISSING	Water treatment-lime
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			03	BERKELEY PT/MINE FLDNG (BUTTE)		ROD - 9/29/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0894102.pdf ESD - 2002 MISSING	Institutional Controls
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			04	WARM SPRINGS PONDS (SBC)		ROD - 9/28/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890030.pdf ESD - 6/24/1991: http://www.epa.gov/superfund/sites/rods/fulltext/e0891091.pdf	Water treatment-lime
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			04	WARM SPRINGS PONDS (SBC)		ROD - 9/28/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890030.pdf ESD - 6/24/1991: http://www.epa.gov/superfund/sites/rods/fulltext/e0891091.pdf	On-site disposal (excavation, capping, covering, reveg)

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			04	WARM SPRINGS PONDS (SBC)		ROD - 9/28/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890030.pdf ESD - 6/24/1991: http://www.epa.gov/superfund/sites/rods/fulltext/e0891091.pdf	Other – Engineering/Containment
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			04	WARM SPRINGS PONDS (SBC)		ROD - 9/28/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890030.pdf ESD - 6/24/1991: http://www.epa.gov/superfund/sites/rods/fulltext/e0891091.pdf	Surface water diversion
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			04	WARM SPRINGS PONDS (SBC)		ROD - 9/28/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890030.pdf ESD - 6/24/1991: http://www.epa.gov/superfund/sites/rods/fulltext/e0891091.pdf	Institutional Controls
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			05	REDUCTION WORK TAILINGS (SBC)		Not Available	
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			06	TRAVONA MINE (BUTTE)		Not Available	
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			07	ROCKER (SBC)		ROD 12/22/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896110.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			07	ROCKER (SBC)		ROD 12/22/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896110.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Water treatment-other
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			07	ROCKER (SBC)		ROD 12/22/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896110.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Solidification
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			07	ROCKER (SBC)		ROD 12/22/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896110.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Off-site disposal

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			07	ROCKER (SBC)		ROD 12/22/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896110.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Alternative drinking water
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			07	ROCKER (SBC)		ROD 12/22/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896110.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Monitored natural attenuation/recovery
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			07	ROCKER (SBC)		ROD 12/22/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0896110.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Institutional Controls
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			08	SOILS (BUTTE)		Not Available	
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			09	CLARK FORK/DOWN STREAM		Not Available	
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			10	BUTTE RESIDENTIAL SOILS		Not Available	
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			11	LOWER AREA ONE		Not Available	
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			12	WSP/INACTIVE AREA		ROD 6/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892059.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			12	WSP/INACTIVE AREA		ROD 6/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892059.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Surface water diversion
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			12	WSP/INACTIVE AREA		ROD 6/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892059.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Other – Engineering/Containment

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			12	WSP/INACTIVE AREA		ROD 6/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892059.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Water treatment-lime
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			12	WSP/INACTIVE AREA		ROD 6/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892059.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Impoundment
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			12	WSP/INACTIVE AREA		ROD 6/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892059.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Monitoring (all media and as separate remedy)
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			12	WSP/INACTIVE AREA		ROD 6/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0892059.pdf; FYR - 3/24/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08009.pdf; FYR - 9/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08005.pdf	Institutional Controls
08	MTD980502777	SILVER BOW CREEK/BUTTE AREA	F			13	WEST SIDE SOILS		Not Available	
08	COD983769738	SMELTERTOWN SITE	P	Mixed						
08	COD983769738	SMELTERTOWN SITE	P			01	SMELTER		Not Available	On-site disposal (excavation, capping, covering, reveg)
08	COD983769738	SMELTERTOWN SITE	P			01	SMELTER		Not Available	Institutional Controls
08	COD983769738	SMELTERTOWN SITE	P			01	SMELTER		Not Available	Monitored natural attenuation/recovery
08	COD983769738	SMELTERTOWN SITE	P			02	WOOD TREATMENT		ROD - 6/4/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898080.pdf 5yr - 9/28/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08007.pdf	Institutional Controls
08	COD983769738	SMELTERTOWN SITE	P			02	WOOD TREATMENT		ROD - 6/4/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898080.pdf 5yr - 9/28/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08007.pdf	Monitored natural attenuation/recovery

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	COD983769738	SMELTERTOWN SITE	P			02	WOOD TREATMENT		ROD - 6/4/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r0898080.pdf 5yr - 9/28/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08007.pdf	Off-site disposal
08	COD983769738	SMELTERTOWN SITE	P			03	COZINCO		Not Available	Alternative drinking water
08	COD980806277	SMUGGLER MOUNTAIN	D	Mixed	9/26/1996					
08	COD980806277	SMUGGLER MOUNTAIN	D			01	RESIDENTIAL AREA		ROD - 9/26/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0886005.pdf ESD - 6/1/1993: nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=91001ITM.txt Missing multiple supplemental ROD documents	On-site disposal (excavation, capping, covering, reveg)
08	COD980806277	SMUGGLER MOUNTAIN	D			01	RESIDENTIAL AREA		ROD - 9/26/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0886005.pdf ESD - 6/1/1993: nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=91001ITM.txt Missing multiple supplemental ROD documents	On-site disposal (excavation, capping, covering, reveg)
08	COD980806277	SMUGGLER MOUNTAIN	D			01	RESIDENTIAL AREA		ROD - 9/26/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0886005.pdf ESD - 6/1/1993: nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=91001ITM.txt Missing multiple supplemental ROD documents	Monitoring (all media and as separate remedy)
08	COD980806277	SMUGGLER MOUNTAIN	D			01	RESIDENTIAL AREA		ROD - 9/26/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0886005.pdf ESD - 6/1/1993: nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=91001ITM.txt Missing multiple supplemental ROD documents	Alternative drinking water
08	COD980806277	SMUGGLER MOUNTAIN	D			01	RESIDENTIAL AREA		ROD - 9/26/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0886005.pdf ESD - 6/1/1993: nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=91001ITM.txt Missing multiple supplemental ROD documents	Institutional Controls
08	COD980806277	SMUGGLER MOUNTAIN	D			02	MINE AREA		Not Available	Surface water diversion

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
08	COD980806277	SMUGGLER MOUNTAIN	D			02	MINE AREA		Not Available	Other – Engineering/Containment
08	CO0002378230	STANDARD MINE	F	EPA				X		
08	CO0002378230	STANDARD MINE	F			00	SITEWIDE		Not Available	
08	COD983778432	SUMMITVILLE MINE	F	Mixed						
08	COD983778432	SUMMITVILLE MINE	F			00	SITEWIDE		5yr - 8/3/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08010.pdf 5yr - 9/27/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08006.pdf 5yr - 9/30/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010080003754.pdf	Water treatment-other
08	COD983778432	SUMMITVILLE MINE	F			00	SITEWIDE		5yr - 8/3/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08010.pdf 5yr - 9/27/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08006.pdf 5yr - 9/30/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010080003754.pdf	Other – Engineering/Containment
08	COD983778432	SUMMITVILLE MINE	F			01	HEAP LEACH PAD		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895096.pdf	Water treatment-other
08	COD983778432	SUMMITVILLE MINE	F			01	HEAP LEACH PAD		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895096.pdf	Other – Engineering/Containment
08	COD983778432	SUMMITVILLE MINE	F			01	HEAP LEACH PAD		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895096.pdf	Water treatment - Bioreactors (e.g., SRBs)
08	COD983778432	SUMMITVILLE MINE	F			01	HEAP LEACH PAD		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895096.pdf	Monitoring (all media and as separate remedy)
08	COD983778432	SUMMITVILLE MINE	F			02	CROPSY BEAVER MUD DUMP - CLEAV		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895097.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD983778432	SUMMITVILLE MINE	F			03	SOUTH MOUNTAIN REYNOLDS ADIT		Not Available	
08	COD983778432	SUMMITVILLE MINE	F			04	MINESITE RECLAMATION/REVEGETAT		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895098.pdf	Other – Engineering/Containment
08	COD983778432	SUMMITVILLE MINE	F			05	WATER TREATMENT/SITE WIDE		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895095.pdf ROD - 9/28/2001:	Impoundment

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/rods/fulltext/r0801538.pdf	
08	COD983778432	SUMMITVILLE MINE	F			05	WATER TREATMENT/SITE WIDE		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895095.pdf ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801538.pdf	Monitoring (all media and as separate remedy)
08	COD983778432	SUMMITVILLE MINE	F			05	WATER TREATMENT/SITE WIDE		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895095.pdf ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801538.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD983778432	SUMMITVILLE MINE	F			05	WATER TREATMENT/SITE WIDE		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895095.pdf ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801538.pdf	Surface water diversion
08	COD983778432	SUMMITVILLE MINE	F			05	WATER TREATMENT/SITE WIDE		ROD - 12/15/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r0895095.pdf ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r0801538.pdf	Water treatment-lime
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F	EPA						
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			01	RED MOUNTAIN MINE		Not Available	
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			02	BUNKER HILL MINE		Not Available	
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			03	LUTTRELL PIT		Not Available	
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			04	RIMINI/LANDMARK RES/LUTTRELL		ROD - 6/28/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802068.pdf 5yr - 7/30/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008080002511.pdf AMD - 9/29/2008: ftp://ftp.epa.gov/r8/uppertenmile/UpperTenmileCreekMiningSiteRODAmendment.pdf	On-site disposal (excavation, capping, covering, reveg)
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			04	RIMINI/LANDMARK RES/LUTTRELL		ROD - 6/28/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802068.pdf 5yr - 7/30/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008080002511.pdf AMD - 9/29/2008:	Other – Engineering/Containment

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ftp://ftp.epa.gov/r8/uppertenmile/UpperTenmileCreekMiningSiteRODAmendment.pdf	
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			04	RIMINI/LANDMARK RES/LUTTRELL		ROD - 6/28/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802068.pdf 5yr - 7/30/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008080002511.pdf AMD - 9/29/2008: ftp://ftp.epa.gov/r8/uppertenmile/UpperTenmileCreekMiningSiteRODAmendment.pdf	Water treatment-other
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			04	RIMINI/LANDMARK RES/LUTTRELL			Other – Engineering/Containment
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			04	RIMINI/LANDMARK RES/LUTTRELL			Alternative drinking water
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			04	RIMINI/LANDMARK RES/LUTTRELL		ROD - 6/28/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r0802068.pdf 5yr - 7/30/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008080002511.pdf AMD - 9/29/2008: ftp://ftp.epa.gov/r8/uppertenmile/UpperTenmileCreekMiningSiteRODAmendment.pdf	Institutional Controls
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			05	SUSIE MINE		Not Available	
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			06	NATIONAL EXTENSION MINE		Not Available	
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			07	PEERLESS AND QUEENSBURY MINES		Not Available	
08	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	F			08	UPPER VALLEY FORGE MINE		Not Available	
08	COD007063274	URAVAN URANIUM PROJECT (UNION CARBIDE CORP.)	F	PRP	9/29/2008					
08	COD007063274	URAVAN URANIUM PROJECT (UNION CARBIDE CORP.)	F			01	SITEWIDE		5yr - 9/4/1994: http://www.epa.gov/superfund/sites/fiveyear/f94-08003.pdf 5yr - 3/20/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08011.pdf 5yr - 9/28/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08008.pdf 5yr - 9/28/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010080003616.pdf	On-site disposal (excavation, capping, covering, reveg)
08	COD007063274	URAVAN URANIUM PROJECT (UNION CARBIDE CORP.)	F			01	SITEWIDE		5yr - 9/4/1994: http://www.epa.gov/superfund/sites/fiveyear/f94-08003.pdf	Impoundment

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									5yr - 3/20/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-08011.pdf 5yr - 9/28/2005: http://www.epa.gov/superfund/sites/fiveyear/f05-08008.pdf 5yr - 9/28/2010: http://www.epa.gov/superfund/sites/fiveyear/f2010080003616.pdf	
08	UTN000802704	US MAGNESIUM	F	EPA				X		
08	UTN000802704	US MAGNESIUM	F			01	TBD		Not Available	
08	CO0002259588	VASQUEZ BOULEVARD AND I-70	F	Mixed						
08	CO0002259588	VASQUEZ BOULEVARD AND I-70	F			01	SOILS		ROD - 9/25/2003: http://www.epa.gov/superfund/sites/rods/fulltext/r0803014.pdf 5yr - 9/30/2009: http://www.epa.gov/superfund/sites/fiveyear/f2009080003131.pdf	Off-site disposal
08	CO0002259588	VASQUEZ BOULEVARD AND I-70	F			02	OMAHA & GRANT SMELTER		Not Available	
08	CO0002259588	VASQUEZ BOULEVARD AND I-70	F			03	ARGO SMELTER		Not Available	
08	SDD980717136	WHITEWOOD CREEK	D	PRP	9/25/1992					
08	SDD980717136	WHITEWOOD CREEK	D			01	SITEWIDE		ROD - 3/30/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890028.pdf ESD - 6/19/2001: http://www.epa.gov/superfund/sites/rods/fulltext/e0801900.pdf 5yr - 7/17/2002: http://www.epa.gov/superfund/sites/fiveyear/f02-08002.pdf 5yr - 9/27/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007080001845.pdf	Institutional Controls
08	SDD980717136	WHITEWOOD CREEK	D			01	SITEWIDE		ROD - 3/30/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0890028.pdf ESD - 6/19/2001: http://www.epa.gov/superfund/sites/rods/fulltext/e0801900.pdf 5yr - 7/17/2002: http://www.epa.gov/superfund/sites/fiveyear/f02-08002.pdf 5yr - 9/27/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007080001845.pdf	On-site disposal (excavation, capping, covering, reveg)
09	AZD008397127	ASARCO HAYDEN PLANT	N	Mixed				X		
09	AZD008397127	ASARCO HAYDEN PLANT	N			01	OPERABLE UNIT 001		Not Available	

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
09	CAD980496863	ATLAS ASBESTOS MINE	F	Mixed	9/2/1999					
09	CAD980496863	ATLAS ASBESTOS MINE	F			01	ATLAS MINE SITE		ROD - 2/14/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0991056.pdf ESD - 9/15/2010: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/1007694f6e87e4f588257841006e6669/$FILE/Atlas%20-%20ESD%209-15-10.pdf	Other – Engineering/Containment
09	CAD980496863	ATLAS ASBESTOS MINE	F			01	ATLAS MINE SITE		ROD - 2/14/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0991056.pdf ESD - 9/15/2010: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/1007694f6e87e4f588257841006e6669/$FILE/Atlas%20-%20ESD%209-15-10.pdf	Surface water diversion
09	CAD980496863	ATLAS ASBESTOS MINE	F			01	ATLAS MINE SITE		ROD - 2/14/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0991056.pdf ESD - 9/15/2010: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/1007694f6e87e4f588257841006e6669/$FILE/Atlas%20-%20ESD%209-15-10.pdf	On-site disposal (excavation, capping, covering, reveg)
09	CAD980496863	ATLAS ASBESTOS MINE	F			01	ATLAS MINE SITE		ROD - 2/14/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r0991056.pdf ESD - 9/15/2010: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/1007694f6e87e4f588257841006e6669/$FILE/Atlas%20-%20ESD%209-15-10.pdf	Institutional Controls
09	CAD980496863	ATLAS ASBESTOS MINE	F			02	CITY OF COALINGA OUFS		ROD - 7/19/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0989035.pdf	On-site disposal (excavation, capping, covering, reveg)
09	NVD980813646	CARSON RIVER MERCURY SITE	F	Mixed						
09	NVD980813646	CARSON RIVER MERCURY SITE	F			01	OVERALL SITE		ROD - 3/30/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0995134.pdf	Off-site disposal
09	NVD980813646	CARSON RIVER MERCURY SITE	F			01	OVERALL SITE		ROD - 3/30/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r0995134.pdf	Institutional Controls
09	NVD980813646	CARSON RIVER MERCURY SITE	F			02			Not Available	
09	CAD980638860	CELTOR CHEMICAL WORKS	D	EPA	9/29/1989					

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
09	CAD980638860	CELTOR CHEMICAL WORKS	D			01	OVERALL SITE		ROD - 9/30/1985: http://www.epa.gov/superfund/sites/rods/fulltext/r0985009.pdf	Off-site disposal
09	CAD980638860	CELTOR CHEMICAL WORKS	D			02	POST, RA ACTIVITIES (O+M,..)		ROD - 10/4/1983: http://www.epa.gov/superfund/sites/rods/fulltext/r0984505.pdf	Off-site disposal
09	CAD980817217	COALINGA ASBESTOS MINE	D	Mixed	3/14/1995					
09	CAD980817217	COALINGA ASBESTOS MINE	D			01	COALINGA/OVERALL SOURCE REMEDY		ROD - 9/21/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0990049.pdf	On-site disposal (excavation, capping, covering, reveg)
09	CAD980817217	COALINGA ASBESTOS MINE	D			01	COALINGA/OVERALL SOURCE REMEDY		ROD - 9/21/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0990049.pdf	Surface water diversion
09	CAD980817217	COALINGA ASBESTOS MINE	D			01	COALINGA/OVERALL SOURCE REMEDY		ROD - 9/21/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0990049.pdf	Other – Engineering/Containment
09	CAD980817217	COALINGA ASBESTOS MINE	D			01	COALINGA/OVERALL SOURCE REMEDY		ROD - 9/21/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r0990049.pdf	Institutional Controls
09	CAD980817217	COALINGA ASBESTOS MINE	D			02	CITY OF COALINGA OUFS		ROD - 7/19/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r0989036.pdf	On-site disposal (excavation, capping, covering, reveg)
09	AZ0000309013	IRON KING MINE - HUMBOLDT SMELTER	F	Mixed				X		
09	AZ0000309013	IRON KING MINE - HUMBOLDT SMELTER	F			01	OPERABLE UNIT 001		Not Available	
09	CAD980498612	IRON MOUNTAIN MINE	F	Mixed						
09	CAD980498612	IRON MOUNTAIN MINE	F			01	WATER MANAGEMENT		ROD - 10/3/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0987504.pdf	On-site disposal (excavation, capping, covering, reveg)
09	CAD980498612	IRON MOUNTAIN MINE	F			01	WATER MANAGEMENT		ROD - 10/3/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0987504.pdf	Surface water diversion
09	CAD980498612	IRON MOUNTAIN MINE	F			01	WATER MANAGEMENT		ROD - 10/3/1986: http://www.epa.gov/superfund/sites/rods/fulltext/r0987504.pdf	Other – Engineering/Containment
09	CAD980498612	IRON MOUNTAIN MINE	F			02	SOURCE CONTROL		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0992083.pdf	Water treatment-lime
09	CAD980498612	IRON MOUNTAIN MINE	F			02	SOURCE CONTROL		ROD - 9/30/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r0992083.pdf	Water treatment-lime
09	CAD980498612	IRON MOUNTAIN MINE	F			03	OLD/NO. 8 MINE SEEP		ROD - 9/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0993101.pdf	Water treatment-lime

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
09	CAD980498612	IRON MOUNTAIN MINE	F			03	OLD/NO. 8 MINE SEEP		ROD - 9/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r0993101.pdf	Water treatment-lime
09	CAD980498612	IRON MOUNTAIN MINE	F			04	SLICKROCK CREEK AREA SOURCE		ROD - 9/30/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0997132.pdf	Other – Engineering/Containment
09	CAD980498612	IRON MOUNTAIN MINE	F			04	SLICKROCK CREEK AREA SOURCE		ROD - 9/30/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r0997132.pdf	Water treatment-lime
09	CAD980498612	IRON MOUNTAIN MINE	F			05	SEDIMENTS		ROD 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0904650.pdf	On-site disposal (excavation, capping, covering, reveg)
09	CAD980498612	IRON MOUNTAIN MINE	F			06	BOULDER CREEK AREA SOURCE		Not Available	
09	CA1141190578	KLAU/BUENA VISTA MINE	F	Mixed				X		
09	CA1141190578	KLAU/BUENA VISTA MINE	F			01	SITEWIDE		Not Available	
09	CA1141190578	KLAU/BUENA VISTA MINE	F			02	LAS TABLAS CK WATERSHED		Not Available	
09	CA1141190578	KLAU/BUENA VISTA MINE	F			03	LAKE NACIMIENTO		Not Available	
09	CAD983618893	LAVA CAP MINE	F	EPA						
09	CAD983618893	LAVA CAP MINE	F			01	TAILINGS SURFACE WTR MINE AREA		ROD - 9/28/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0904649.pdf ESD - 9/29/2006: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/c7e3a826ec8594648825760b0079f339/$FILE/Lava%20Cap%20Mine%20-%20ESD%20Final%209-29-06.pdf	Institutional Controls
09	CAD983618893	LAVA CAP MINE	F			01	TAILINGS SURFACE WTR MINE AREA		ROD - 9/28/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0904649.pdf ESD - 9/29/2006: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/c7e3a826ec8594648825760b0079f339/$FILE/Lava%20Cap%20Mine%20-%20ESD%20Final%209-29-06.pdf	Other – Engineering/Containment
09	CAD983618893	LAVA CAP MINE	F			01	TAILINGS SURFACE WTR MINE AREA		ROD - 9/28/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0904649.pdf ESD - 9/29/2006: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/c7e3a826ec8594648825760b0079f339/$FILE/Lava%20Cap%20Mine%20-%20ESD%20Final%209-29-06.pdf	Deconstruction/ decontamination of buildings
09	CAD983618893	LAVA CAP MINE	F			01	TAILINGS SURFACE WTR MINE AREA		ROD - 9/28/2004: http://www.epa.gov/superfund/sites/rods/fulltext	On-site disposal (excavation,

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ext/r0904649.pdf ESD - 9/29/2006: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/c7e3a826ec8594648825760b0079f339/$FILE/Lava%20Cap%20Mine%20-%20ESD%20Final%209-29-06.pdf	capping, covering, reveg)
09	CAD983618893	LAVA CAP MINE	F			01	TAILINGS SURFACE WTR MINE AREA		ROD - 9/28/2004: http://www.epa.gov/superfund/sites/rods/fulltext/r0904649.pdf ESD - 9/29/2006: http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/c7e3a826ec8594648825760b0079f339/$FILE/Lava%20Cap%20Mine%20-%20ESD%20Final%209-29-06.pdf	Water treatment-other
09	CAD983618893	LAVA CAP MINE	F			02	GROUNDWATER		ROD - 9/30/2008: no link - emailed	Alternative drinking water
09	CAD983618893	LAVA CAP MINE	F			02	GROUNDWATER		ROD - 9/30/2008: no link - emailed	Institutional Controls
09	CAD983618893	LAVA CAP MINE	F			03	TAILINGS SURFACE WTR LOST LAKE		Not Available	
09	CAD983618893	LAVA CAP MINE	F			04	MINE RESIDENCES		Not Available	
09	CAD980673685	LEVIATHAN MINE	F	Mixed				X		
09	CAD980673685	LEVIATHAN MINE	F			01	OVERALL SITE		Not Available	
09	CAD980893275	SULPHUR BANK MERCURY MINE	F	EPA				X		
09	CAD980893275	SULPHUR BANK MERCURY MINE	F			01	TERRESTRIAL MINE SITE		Not Available	
09	CAD980893275	SULPHUR BANK MERCURY MINE	F			02	LAKE SEDIMENTS		Not Available	
09	CAD980893275	SULPHUR BANK MERCURY MINE	F			03			Not Available	
10	WAD009045279	ALCOA (VANCOUVER SMELTER)	D	PRP	7/30/1996			X		
10	WAD009045279	ALCOA (VANCOUVER SMELTER)	D			01	REMEDIAL		Not Available	
10	OR0000515759	BLACK BUTTE MINE	F	EPA				X		
10	OR0000515759	BLACK BUTTE MINE	F			01	REMEDIAL		Not Available	
10	IDD980725832	BLACKBIRD MINE	P	PRP						
10	IDD980725832	BLACKBIRD MINE	P			01	REMEDIAL		ROD - 3/3/2003: http://www.epa.gov/superfund/sites/rods/fulltext/r1003132.pdf ESD - 7/27/2007: http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/Blackbird/$FILE/ESD-Blackbird-Mine.pdf 5yr - 8/25/2008:	Water treatment-lime

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/fiveyear/f2008100002602.pdf	
10	IDD980725832	BLACKBIRD MINE	P			01	REMEDIAL		ROD - 3/3/2003: http://www.epa.gov/superfund/sites/rods/fulltext/r1003132.pdf ESD - 7/27/2007: http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/Blackbird/$FILE/ESD-Blackbird-Mine.pdf 5yr - 8/25/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008100002602.pdf	On-site disposal (excavation, capping, covering, reveg)
10	IDD980725832	BLACKBIRD MINE	P			01	REMEDIAL		ROD - 3/3/2003: http://www.epa.gov/superfund/sites/rods/fulltext/r1003132.pdf ESD - 7/27/2007: http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/Blackbird/$FILE/ESD-Blackbird-Mine.pdf 5yr - 8/25/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008100002602.pdf	Monitored natural attenuation/recovery
10	IDD980725832	BLACKBIRD MINE	P			01	REMEDIAL		ROD - 3/3/2003: http://www.epa.gov/superfund/sites/rods/fulltext/r1003132.pdf ESD - 7/27/2007: http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/Blackbird/$FILE/ESD-Blackbird-Mine.pdf 5yr - 8/25/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008100002602.pdf	Institutional Controls
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F	Mixed						
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			01	POPULATED AREAS		ROD - 8/30/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r1091028.pdf 5yr - 9/27/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-10004.pdf	Off-site disposal
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			01	POPULATED AREAS		ROD - 8/30/1991: http://www.epa.gov/superfund/sites/rods/fulltext/r1091028.pdf 5yr - 9/27/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-10004.pdf	Institutional Controls
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			02	NON-POPULATED AREAS		ROD - 9/22/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r1092041.pdf AMD - 9/9/1996:	On-site disposal (excavation, capping, covering, reveg)

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/rods/fulltext/a1096146.pdf ESD - 4/8/1998: http://www.epa.gov/superfund/sites/rods/fulltext/e1098037.pdf AMD - 12/10/2001: http://www.epa.gov/superfund/sites/rods/fulltext/a1002604.pdf 5yr - 9/28/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-10003.pdf Missing a supplement ROD document	
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			02	NON-POPULATED AREAS		ROD - 9/22/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r1092041.pdf AMD - 9/9/1996: http://www.epa.gov/superfund/sites/rods/fulltext/a1096146.pdf ESD - 4/8/1998: http://www.epa.gov/superfund/sites/rods/fulltext/e1098037.pdf AMD - 12/10/2001: http://www.epa.gov/superfund/sites/rods/fulltext/a1002604.pdf 5yr - 9/28/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-10003.pdf Missing a supplement ROD document	Water treatment - Created Wetlands
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			02	NON-POPULATED AREAS		ROD - 9/22/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r1092041.pdf AMD - 9/9/1996: http://www.epa.gov/superfund/sites/rods/fulltext/a1096146.pdf ESD - 4/8/1998: http://www.epa.gov/superfund/sites/rods/fulltext/e1098037.pdf AMD - 12/10/2001: http://www.epa.gov/superfund/sites/rods/fulltext/a1002604.pdf 5yr - 9/28/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-10003.pdf Missing a supplement ROD document	Surface water diversion
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			02	NON-POPULATED AREAS		ROD - 9/22/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r1092041.pdf AMD - 9/9/1996: http://www.epa.gov/superfund/sites/rods/fulltext/a1096146.pdf ESD - 4/8/1998:	Alternative drinking water

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/rods/fulltext/e1098037.pdf AMD - 12/10/2001: http://www.epa.gov/superfund/sites/rods/fulltext/a1002604.pdf 5yr - 9/28/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-10003.pdf Missing a supplement ROD document	
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			02	NON-POPULATED AREAS		ROD - 9/22/1992: http://www.epa.gov/superfund/sites/rods/fulltext/r1092041.pdf AMD - 9/9/1996: http://www.epa.gov/superfund/sites/rods/fulltext/a1096146.pdf ESD - 4/8/1998: http://www.epa.gov/superfund/sites/rods/fulltext/e1098037.pdf AMD - 12/10/2001: http://www.epa.gov/superfund/sites/rods/fulltext/a1002604.pdf 5yr - 9/28/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-10003.pdf Missing a supplement ROD document	Institutional Controls
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			03	COEUR D'ALENE BASIN AREAWIDE		ROD - 9/12/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002032.pdf	On-site disposal (excavation, capping, covering, reveg)
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			03	COEUR D'ALENE BASIN AREAWIDE		ROD - 9/12/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002032.pdf	Alternative drinking water
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			03	COEUR D'ALENE BASIN AREAWIDE		ROD - 9/12/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002032.pdf	Institutional Controls
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			03	COEUR D'ALENE BASIN AREAWIDE		ROD - 9/12/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002032.pdf	On-site disposal (excavation, capping, covering, reveg)
10	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	F			03	COEUR D'ALENE BASIN AREAWIDE		ROD - 9/12/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002032.pdf	On-site disposal (excavation, capping, covering, reveg)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F	Mixed						
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			01	NS/TF AREAWIDE		ROD - 9/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r1089020.pdf ESD - 6/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1093900.pdf	Air Stripping

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ESD - 7/28/1997: http://www.epa.gov/superfund/sites/rods/fulltext/e1097059.pdf ESD - 8/3/2000: http://www.epa.gov/superfund/sites/rods/fulltext/e1000126.pdf ESD - 2/4/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e1002035.pdf ESD - 3/20/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e1003604.pdf ESD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e1004707.pdf ROD AMD - 10/2009: http://www.epa.gov/superfund/sites/rods/fulltext/a2010100003181.pdf	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			01	NS/TF AREAWIDE		ROD - 9/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r1089020.pdf ESD - 6/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1093900.pdf ESD - 7/28/1997: http://www.epa.gov/superfund/sites/rods/fulltext/e1097059.pdf ESD - 8/3/2000: http://www.epa.gov/superfund/sites/rods/fulltext/e1000126.pdf ESD - 2/4/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e1002035.pdf ESD - 3/20/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e1003604.pdf ESD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e1004707.pdf ROD AMD - 10/2009: http://www.epa.gov/superfund/sites/rods/fulltext/a2010100003181.pdf	Off-site disposal
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			01	NS/TF AREAWIDE		ROD - 9/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r1089020.pdf ESD - 6/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1093900.pdf ESD - 7/28/1997: http://www.epa.gov/superfund/sites/rods/fulltext/e1097059.pdf ESD - 8/3/2000: http://www.epa.gov/superfund/sites/rods/fullt	Other – Treatment Technology

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ext/e1000126.pdf ESD - 2/4/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e1002035.pdf ESD - 3/20/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e1003604.pdf ESD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e1004707.pdf ROD AMD - 10/2009: http://www.epa.gov/superfund/sites/rods/fulltext/a2010100003181.pdf	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			01	NS/TF AREAWIDE		ROD - 9/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r1089020.pdf ESD - 6/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1093900.pdf ESD - 7/28/1997: http://www.epa.gov/superfund/sites/rods/fulltext/e1097059.pdf ESD - 8/3/2000: http://www.epa.gov/superfund/sites/rods/fulltext/e1000126.pdf ESD - 2/4/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e1002035.pdf ESD - 3/20/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e1003604.pdf ROD AMD - 10/2009: http://www.epa.gov/superfund/sites/rods/fulltext/a2010100003181.pdf ESD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e1004707.pdf	Soil Vapor Extraction
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			01	NS/TF AREAWIDE		ROD - 9/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r1089020.pdf ESD - 6/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1093900.pdf ESD - 7/28/1997: http://www.epa.gov/superfund/sites/rods/fulltext/e1097059.pdf ESD - 8/3/2000: http://www.epa.gov/superfund/sites/rods/fulltext/e1000126.pdf ESD - 2/4/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e1002035.pdf ESD - 3/20/2003:	Thermal Treatment

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/rods/fulltext/e1003604.pdf ESD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e1004707.pdf ROD AMD - 10/2009: http://www.epa.gov/superfund/sites/rods/fulltext/a2010100003181.pdf	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			01	NS/TF AREAWIDE		ROD - 9/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r1089020.pdf ESD - 6/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1093900.pdf ESD - 7/28/1997: http://www.epa.gov/superfund/sites/rods/fulltext/e1097059.pdf ESD - 8/3/2000: http://www.epa.gov/superfund/sites/rods/fulltext/e1000126.pdf ESD - 2/4/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e1002035.pdf ESD - 3/20/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e1003604.pdf ESD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e1004707.pdf ROD AMD - 10/2009: http://www.epa.gov/superfund/sites/rods/fulltext/a2010100003181.pdf	Water treatment - Bioreactors (e.g., SRBs)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			01	NS/TF AREAWIDE		ROD - 9/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r1089020.pdf ESD - 6/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1093900.pdf ESD - 7/28/1997: http://www.epa.gov/superfund/sites/rods/fulltext/e1097059.pdf ESD - 8/3/2000: http://www.epa.gov/superfund/sites/rods/fulltext/e1000126.pdf ESD - 2/4/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e1002035.pdf ESD - 3/20/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e1003604.pdf ESD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e1004707.pdf	Institutional Controls

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			01	NS/TF AREAWIDE		ROD - 9/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r1089020.pdf ESD - 6/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1093900.pdf ESD - 7/28/1997: http://www.epa.gov/superfund/sites/rods/fulltext/e1097059.pdf ESD - 8/3/2000: http://www.epa.gov/superfund/sites/rods/fulltext/e1000126.pdf ESD - 2/4/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e1002035.pdf ESD - 3/20/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e1003604.pdf ESD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e1004707.pdf	Off-site disposal
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			01	NS/TF AREAWIDE		ROD - 9/30/1989: http://www.epa.gov/superfund/sites/rods/fulltext/r1089020.pdf ESD - 6/24/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1093900.pdf ESD - 7/28/1997: http://www.epa.gov/superfund/sites/rods/fulltext/e1097059.pdf ESD - 8/3/2000: http://www.epa.gov/superfund/sites/rods/fulltext/e1000126.pdf ESD - 2/4/2002: http://www.epa.gov/superfund/sites/rods/fulltext/e1002035.pdf ESD - 3/20/2003: http://www.epa.gov/superfund/sites/rods/fulltext/e1003604.pdf ESD - 9/30/2004: http://www.epa.gov/superfund/sites/rods/fulltext/e1004707.pdf	Sediment dredging/ disposal
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			02	ST. PAUL SRC CNTRL (DELETED)		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			03	SITCUM SOURCE CONTROL		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			04	MOUTH OF HYLEBOS SOURCE CNTRL		Not Mining/MP	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			05	HEAD OF HYLEBOS SOURCE CONTROL		Not Mining/MP	

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			06	WHEELER-OSGOOD SOURCE CONTROL		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			07	HEAD OF THEA FOSS SOURCE CNTRL		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			08	MOUTH OF THEA FOSS SOURCE CNTL		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			09	MIDDLE WATERWAY SOURCE CONTROL		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			10	ST. PAUL SEDIMENTS (DELETED)		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			11	SITCUM SEDIMENTS		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			12	MOUTH OF HYLEBOS SEDIMENTS		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			13	THEA FOSS/WHEELER OSGOOD CITY		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			14	HEAD OF THEA FOSS UTILITIES		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			16	MOUTH OF THEA FOSS SEDIMENTS		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			17	MOUTH OF MIDDLE WATERWAY SED.S		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			18	PUYALLUP LAND CLAIM		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			19	ASARCO SEDIMENTS & GROUNDWATER		ROD - 7/14/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r1000051.pdf	On-site disposal (excavation, capping, covering, reveg)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			19	ASARCO SEDIMENTS & GROUNDWATER		ROD - 7/14/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r1000051.pdf	Institutional Controls
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			19	ASARCO SEDIMENTS & GROUNDWATER		ROD - 7/14/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r1000051.pdf	On-site disposal (excavation, capping, covering, reveg)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			19	ASARCO SEDIMENTS & GROUNDWATER		ROD - 7/14/2000: http://www.epa.gov/superfund/sites/rods/fulltext/r1000051.pdf	Sediment dredging/ disposal
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			20	ASARCO SOIL & GROUNDWATER		ROD - 3/24/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r1095122.pdf ESD - 7/2/1996: http://www.epa.gov/superfund/sites/rods/fulltext/e1096127.pdf	On-site disposal (excavation, capping, covering, reveg)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			20	ASARCO SOIL & GROUNDWATER		ROD - 3/24/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r1095122.pdf ESD - 7/2/1996: http://www.epa.gov/superfund/sites/rods/fulltext/e1096127.pdf	Off-site disposal

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			20	ASARCO SOIL & GROUNDWATER		ROD - 3/24/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r1095122.pdf ESD - 7/2/1996: http://www.epa.gov/superfund/sites/rods/fulltext/e1096127.pdf	Institutional Controls
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			21	ASARCO SMELTER DEMOLITION		ROD - 12/31/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r1091027.pdf	Deconstruction/ decontamination of buildings
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			21	ASARCO SMELTER DEMOLITION		ROD - 12/31/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r1091027.pdf	On-site disposal (excavation, capping, covering, reveg)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			21	ASARCO SMELTER DEMOLITION		ROD - 12/31/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r1091027.pdf	Surface water diversion
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			22	RUSTON/NORTH TACOMA		ROD - 6/16/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r1093062.pdf ESD - 11/29/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1094900.pdf 5yr - 3/31/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-10007.pdf	Off-site disposal
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			22	RUSTON/NORTH TACOMA		ROD - 6/16/1993: http://www.epa.gov/superfund/sites/rods/fulltext/r1093062.pdf ESD - 11/29/1993: http://www.epa.gov/superfund/sites/rods/fulltext/e1094900.pdf 5yr - 3/31/2000: http://www.epa.gov/superfund/sites/fiveyear/f00-10007.pdf	Off-site disposal
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			23	TACOMA TAR PITS		ROD - 12/30/1987: http://www.epa.gov/superfund/sites/rods/fulltext/r1088011.pdf ESD - 11/1/1991: http://www.epa.gov/superfund/sites/rods/fulltext/e1092900.pdf ESD - 5/9/1995: http://www.epa.gov/superfund/sites/rods/fulltext/e1095117.pdf 5yr - 9/29/1998: http://www.epa.gov/superfund/sites/fiveyear/f98-10010.pdf 5yr - 9/25/2003: http://www.epa.gov/superfund/sites/fiveyear/f03-10016.pdf	On-site disposal (excavation, capping, covering, reveg)
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			23	TACOMA TAR PITS		ROD - 12/30/1987: http://www.epa.gov/superfund/sites/rods/fullt	Institutional Controls

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ext/r1088011.pdf ESD - 11/1/1991: http://www.epa.gov/superfund/sites/rods/fulltext/e1092900.pdf ESD - 5/9/1995: http://www.epa.gov/superfund/sites/rods/fulltext/e1095117.pdf 5yr - 9/29/1998: http://www.epa.gov/superfund/sites/fiveyear/f98-10010.pdf 5yr - 9/25/2003: http://www.epa.gov/superfund/sites/fiveyear/f03-10016.pdf	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			24	ASARCO GROUNDWATER		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			25	HEAD OF HYLEBOS SEDIMENTS		Not Available	
10	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	F			26	HEAD OF MIDDLE WATERWAY SED.S		Not Available	
10	IDD984666610	EASTERN MICHAUD FLATS CONTAMINATION	F	PRP						
10	IDD984666610	EASTERN MICHAUD FLATS CONTAMINATION	F			01	FMC GW & LANDFILLS		ROD - 6/8/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r1098034.pdf AMD - 1/20/2010: http://www.epa.gov/region10/pdf/sites/emichaud/simplot_iroda_01_2010.pdf	Other – Engineering/Containment
10	IDD984666610	EASTERN MICHAUD FLATS CONTAMINATION	F			01	FMC GW & LANDFILLS		ROD - 6/8/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r1098034.pdf AMD - 1/20/2010: http://www.epa.gov/region10/pdf/sites/emichaud/simplot_iroda_01_2010.pdf	On-site disposal (excavation, capping, covering, reveg)
10	IDD984666610	EASTERN MICHAUD FLATS CONTAMINATION	F			01	FMC GW & LANDFILLS		ROD - 6/8/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r1098034.pdf AMD - 1/20/2010: http://www.epa.gov/region10/pdf/sites/emichaud/simplot_iroda_01_2010.pdf	Institutional Controls
10	IDD984666610	EASTERN MICHAUD FLATS CONTAMINATION	F			01	FMC GW & LANDFILLS		ROD - 6/8/1998: http://www.epa.gov/superfund/sites/rods/fulltext/r1098034.pdf AMD - 1/20/2010: http://www.epa.gov/region10/pdf/sites/emichaud/simplot_iroda_01_2010.pdf	On-site disposal (excavation, capping, covering, reveg)
10	IDD984666610	EASTERN MICHAUD FLATS CONTAMINATION	F			03	SIMPLOT & FMC OFF-PLANT		Not Available	
10	IDD984666610	EASTERN MICHAUD FLATS CONTAMINATION	F			04	FMC PLANT NEW AREAS		Not Available	
10	ORN001002616	FORMOSA MINE	F	EPA				X		

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
10	ORN001002616	FORMOSA MINE	F			01	REMEDIAL		Not Available	
10	OR7122307658	FREMONT NATIONAL FOREST/WHITE KING AND LUCKY LASS URANIUM MINES (USDA)	F	FF	9/28/2006					
10	OR7122307658	FREMONT NATIONAL FOREST/WHITE KING AND LUCKY LASS URANIUM MINES (USDA)	F			01	TAILINGS		Not Available	
10	OR7122307658	FREMONT NATIONAL FOREST/WHITE KING AND LUCKY LASS URANIUM MINES (USDA)	F			02	WHITE KING		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r1001536.pdf ESD - 9/28/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/6ea33b02338c3a5e882567ca005d382f/8e2eef8a4cd8891b8825651a005885fa/$FILE/WkLL-Final-ESD-092806.pdf	On-site disposal (excavation, capping, covering, reveg)
10	OR7122307658	FREMONT NATIONAL FOREST/WHITE KING AND LUCKY LASS URANIUM MINES (USDA)	F			02	WHITE KING		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r1001536.pdf ESD - 9/28/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/6ea33b02338c3a5e882567ca005d382f/8e2eef8a4cd8891b8825651a005885fa/$FILE/WkLL-Final-ESD-092806.pdf	Water treatment-lime
10	OR7122307658	FREMONT NATIONAL FOREST/WHITE KING AND LUCKY LASS URANIUM MINES (USDA)	F			02	WHITE KING		ROD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/r1001536.pdf ESD - 9/28/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/6ea33b02338c3a5e882567ca005d382f/8e2eef8a4cd8891b8825651a005885fa/$FILE/WkLL-Final-ESD-092806.pdf	Institutional Controls
10	WAD000065508	KAISER ALUMINUM (MEAD WORKS)	F	PRP						
10	WAD000065508	KAISER ALUMINUM (MEAD WORKS)	F			01	REMEDIAL		ROD - 5/1/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002106.pdf	On-site disposal (excavation, capping, covering, reveg)
10	WAD000065508	KAISER ALUMINUM (MEAD WORKS)	F			01	REMEDIAL		ROD - 5/1/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002106.pdf	Water treatment-other
10	WAD000065508	KAISER ALUMINUM (MEAD WORKS)	F			01	REMEDIAL		ROD - 5/1/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002106.pdf	Institutional Controls
10	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	D	PRP	12/29/1994					
10	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	D			01	SITE CONTROL		ROD - 9/29/1988: http://www.epa.gov/superfund/sites/rods/fulltext/r1088017.pdf	On-site disposal (excavation,

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									ESD - 9/28/1994: http://www.epa.gov/superfund/sites/rods/fulltext/e1094090.pdf 5yr - 12/28/1994: http://www.epa.gov/superfund/sites/fiveyear/f95-10001.pdf 5yr - 12/29/1999: http://www.epa.gov/superfund/sites/fiveyear/f00-10012.pdf 5yr - 6/30/2005: http://www.epa.gov/superfund/sites/fiveyear/f2005100001057.pdf	capping, covering, reveg)
10	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	D			01	SITE CONTROL		ROD - 9/29/1988: http://www.epa.gov/superfund/sites/rods/fulltext/r1088017.pdf ESD - 9/28/1994: http://www.epa.gov/superfund/sites/rods/fulltext/e1094090.pdf 5yr - 12/28/1994: http://www.epa.gov/superfund/sites/fiveyear/f95-10001.pdf 5yr - 12/29/1999: http://www.epa.gov/superfund/sites/fiveyear/f00-10012.pdf 5yr - 6/30/2005: http://www.epa.gov/superfund/sites/fiveyear/f2005100001057.pdf	On-site disposal (excavation, capping, covering, reveg)
10	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	D			01	SITE CONTROL		ROD - 9/29/1988: http://www.epa.gov/superfund/sites/rods/fulltext/r1088017.pdf ESD - 9/28/1994: http://www.epa.gov/superfund/sites/rods/fulltext/e1094090.pdf 5yr - 12/28/1994: http://www.epa.gov/superfund/sites/fiveyear/f95-10001.pdf 5yr - 12/29/1999: http://www.epa.gov/superfund/sites/fiveyear/f00-10012.pdf 5yr - 6/30/2005: http://www.epa.gov/superfund/sites/fiveyear/f2005100001057.pdf	Water treatment-other
10	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	D			01	SITE CONTROL		ROD - 9/29/1988: http://www.epa.gov/superfund/sites/rods/fulltext/r1088017.pdf ESD - 9/28/1994: http://www.epa.gov/superfund/sites/rods/fulltext/e1094090.pdf 5yr - 12/28/1994: http://www.epa.gov/superfund/sites/fiveyear/f95-10001.pdf	Institutional Controls

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									5yr - 12/29/1999: http://www.epa.gov/superfund/sites/fiveyear/f00-10012.pdf 5yr - 6/30/2005: http://www.epa.gov/superfund/sites/fiveyear/f2005100001057.pdf	
10	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	D			02	CAP		Not Available	
10	WAD980978753	MIDNITE MINE	F	Mixed						
10	WAD980978753	MIDNITE MINE	F			01	REMEDIAL		ROD - 9/29/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/738cdf3a6d72acce88256feb0074f9f4/25f296f579940d8b88256744000327a5/$FILE/ROD-Midnite06.pdf	On-site disposal (excavation, capping, covering, reveg)
10	WAD980978753	MIDNITE MINE	F			01	REMEDIAL		ROD - 9/29/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/738cdf3a6d72acce88256feb0074f9f4/25f296f579940d8b88256744000327a5/$FILE/ROD-Midnite06.pdf	Water treatment-other
10	WAD980978753	MIDNITE MINE	F			01	REMEDIAL		ROD - 9/29/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/738cdf3a6d72acce88256feb0074f9f4/25f296f579940d8b88256744000327a5/$FILE/ROD-Midnite06.pdf	Off-site disposal
10	WAD980978753	MIDNITE MINE	F			01	REMEDIAL		ROD - 9/29/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/738cdf3a6d72acce88256feb0074f9f4/25f296f579940d8b88256744000327a5/$FILE/ROD-Midnite06.pdf	Surface water diversion
10	WAD980978753	MIDNITE MINE	F			01	REMEDIAL		ROD - 9/29/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/738cdf3a6d72acce88256feb0074f9f4/25f296f579940d8b88256744000327a5/$FILE/ROD-Midnite06.pdf	Institutional Controls
10	IDD081830994	MONSANTO CHEMICAL CO. (SODA SPRINGS PLANT)	F	PRP	9/20/2000					
10	IDD081830994	MONSANTO CHEMICAL CO. (SODA SPRINGS PLANT)	F			01	REMEDIAL		ROD - 4/30/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r1097049.pdf 5yr - 9/30/2003: http://www.epa.gov/superfund/sites/fiveyear/f03-10010.pdf 5yr - 9/18/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008100003002.pdf	Monitored natural attenuation/recovery
10	IDD081830994	MONSANTO CHEMICAL CO. (SODA SPRINGS PLANT)	F			01	REMEDIAL		ROD - 4/30/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r1097049.pdf 5yr - 9/30/2003: http://www.epa.gov/superfund/sites/fiveyear/f03-10010.pdf	Institutional Controls

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									5yr - 9/18/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008100003002.pdf	
10	IDD081830994	MONSANTO CHEMICAL CO. (SODA SPRINGS PLANT)	F			01	REMEDIAL		ROD - 4/30/1997: http://www.epa.gov/superfund/sites/rods/fulltext/r1097049.pdf 5yr - 9/30/2003: http://www.epa.gov/superfund/sites/fiveyear/f03-10010.pdf 5yr - 9/18/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008100003002.pdf	Institutional Controls
10	IDD081830994	MONSANTO CHEMICAL CO. (SODA SPRINGS PLANT)	F			01	REMEDIAL		5yr - 7/21/2008: http://www.epa.gov/superfund/sites/fiveyear/f2008100002518.pdf	On-site disposal (excavation, capping, covering, reveg)
10	ORD009412677	REYNOLDS METALS COMPANY	F	PRP	9/29/2006					
10	ORD009412677	REYNOLDS METALS COMPANY	F			01	SOURCE AREAS		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002042.pdf	Off-site disposal
10	ORD009412677	REYNOLDS METALS COMPANY	F			01	SOURCE AREAS		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002042.pdf	Off-site disposal
10	ORD009412677	REYNOLDS METALS COMPANY	F			01	SOURCE AREAS		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002042.pdf	On-site disposal (excavation, capping, covering, reveg)
10	ORD009412677	REYNOLDS METALS COMPANY	F			01	SOURCE AREAS		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002042.pdf	Water treatment-other
10	ORD009412677	REYNOLDS METALS COMPANY	F			01	SOURCE AREAS		ROD - 9/30/2002: http://www.epa.gov/superfund/sites/rods/fulltext/r1002042.pdf	Institutional Controls
10	ORD009412677	REYNOLDS METALS COMPANY	F			02	FINAL GROUNDWATER		ROD - 9/29/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/6ea33b02338c3a5e882567ca005d382f/c972bd5f5d92ff218825651c006797fd/$FILE/ReynoldsROD-new.pdf	Institutional Controls
10	ORD009412677	REYNOLDS METALS COMPANY	F			02	FINAL GROUNDWATER		ROD - 9/29/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/6ea33b02338c3a5e882567ca005d382f/c972bd5f5d92ff218825651c006797fd/$FILE/ReynoldsROD-new.pdf	Other – Engineering/Containment
10	ORD009412677	REYNOLDS METALS COMPANY	F			02	FINAL GROUNDWATER		ROD - 9/29/2006: http://yosemite.epa.gov/r10/CLEANUP.NSF/6ea33b02338c3a5e882567ca005d382f/c972bd5f5d92ff218825651c006797fd/$FILE/ReynoldsROD-new.pdf	On-site disposal (excavation, capping, covering, reveg)
10	AK0001897602	SALT CHUCK MINE	F	Mixed				X		

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
10	AK0001897602	SALT CHUCK MINE	F			01	REMEDIAL		Not Available	
10	WAD980722789	SILVER MOUNTAIN MINE	D	EPA	9/28/1992					
10	WAD980722789	SILVER MOUNTAIN MINE	D			01	REMEDIAL		ROD - 3/27/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r1090022.pdf ESD - 10/12/1994: http://www.epa.gov/superfund/sites/rods/fulltext/e1095116.pdf 5yr - 7/16/1997: http://www.epa.gov/superfund/sites/fiveyear/f97-10006.pdf 5yr - 9/23/2002: http://www.epa.gov/superfund/sites/fiveyear/f02-10001.pdf 5yr - 9/21/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007100001925.pdf	On-site disposal (excavation, capping, covering, reveg)
10	WAD980722789	SILVER MOUNTAIN MINE	D			01	REMEDIAL		ROD - 3/27/1990: http://www.epa.gov/superfund/sites/rods/fulltext/r1090022.pdf ESD - 10/12/1994: http://www.epa.gov/superfund/sites/rods/fulltext/e1095116.pdf 5yr - 7/16/1997: http://www.epa.gov/superfund/sites/fiveyear/f97-10006.pdf 5yr - 9/23/2002: http://www.epa.gov/superfund/sites/fiveyear/f02-10001.pdf 5yr - 9/21/2007: http://www.epa.gov/superfund/sites/fiveyear/f2007100001925.pdf	Institutional Controls
10	IDD980665459	STIBNITE/YELLOW PINE MINING AREA	P	Mixed				X		
10	IDD980665459	STIBNITE/YELLOW PINE MINING AREA	P			01	REMEDIAL		Not Available	
10	ORD050955848	TELEDYNE WAH CHANG	F	PRP	9/13/2002					
10	ORD050955848	TELEDYNE WAH CHANG	F			01	GROUNDWATER & SEDIMENTS		ROD - 6/10/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r1094078.pdf ESD - 10/8/1996: http://www.epa.gov/superfund/sites/rods/fulltext/e1097082.pdf ESD - 6/19/2009: http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/Teledyne/$FILE/teledyne_2nd_esd.pdf	Water treatment-other
10	ORD050955848	TELEDYNE WAH CHANG	F			01	GROUNDWATER & SEDIMENTS		ROD - 6/10/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r1094078.pdf ESD - 10/8/1996:	On-site disposal (excavation, capping, covering, reveg)

Region	EPA ID	Site Name	NPL Status	Site Lead	CC Date	OU	OU NAME	No RODs or FYRs	References	Selected Remedy (Q7)
									http://www.epa.gov/superfund/sites/rods/fulltext/e1097082.pdf ESD - 6/19/2009: http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/Teledyne/$FILE/teledyne_2nd_esd.pdf	
10	ORD050955848	TELEDYNE WAH CHANG	F			01	GROUNDWATER & SEDIMENTS		ROD - 6/10/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r1094078.pdf ESD - 10/8/1996: http://www.epa.gov/superfund/sites/rods/fulltext/e1097082.pdf ESD - 6/19/2009: http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/Teledyne/$FILE/teledyne_2nd_esd.pdf	Institutional Controls
10	ORD050955848	TELEDYNE WAH CHANG	F			02	SLUDGE		ROD - 6/10/1994: http://www.epa.gov/superfund/sites/rods/fulltext/r1094078.pdf ESD - 10/8/1996: http://www.epa.gov/superfund/sites/rods/fulltext/e1097082.pdf ESD - 6/19/2009: http://yosemite.epa.gov/r10/CLEANUP.NSF/sites/Teledyne/$FILE/teledyne_2nd_esd.pdf	Off-site disposal
10	ORD050955848	TELEDYNE WAH CHANG	F			03	SOILS/RAD		ROD - 9/27/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r1095125.pdf ESD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/e1001550.pdf	Off-site disposal
10	ORD050955848	TELEDYNE WAH CHANG	F			03	SOILS/RAD		ROD - 9/27/1995: http://www.epa.gov/superfund/sites/rods/fulltext/r1095125.pdf ESD - 9/28/2001: http://www.epa.gov/superfund/sites/rods/fulltext/e1001550.pdf	Institutional Controls
10	ORD050955848	TELEDYNE WAH CHANG	F			04	SOIL AMENDMENT AREA		Not Available	

Table C-2 – Site and Operating Unit Detail at the 126 Site Universe (Part 2)

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
MED980524128							
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Capping and SW diversion to address previous impoundment issues. Also includes constructed wetlands for SW diversion component.	2009 ROD, p2	Engineering/ Containment	Yes	2009 ROD, figure 14, 19
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Subaqueous disposal and capping on tailings impoundment	2010 ROD, p2	Engineering/ Containment	Yes	2009 ROD, figures 15, 19, 21
MED980524128	01	Off-site disposal		2011 ROD, p2	Engineering/ Containment	No	
MED980524128	01	Sediment dredging/ disposal		2011 ROD, p2	Engineering/ Containment	Yes	2009 ROD, figure 19, 22
MED980524128	01	Institutional Controls		2011 ROD, p2	Institutional Control	No	
MED980524128	02						
MED980524128	03						
VTD988366621							
VTD988366621	01	On-site disposal (excavation, capping, covering, reveg)		2006 ROD p2-3	Engineering/ Containment	Yes	2006 ROD Figure 22
VTD988366621	01	Surface water diversion		2007 ROD p2-3	Engineering/ Containment	Yes	2007 ROD Figure 22
VTD988366621	01	Monitored natural attenuation/recovery		2008 ROD p2-3	Treatment		
VTD988366621	01	Institutional Controls		2009 ROD p2-3	Institutional Control	Yes	2009 ROD Figure 22
VTD988366571							
VTD988366571	01						
VTD988366571	02						
VTD988366720							
VTD988366720	01						
NJD980785646							
NJD980785646	01	Off-site disposal		1989 ROD p2	Engineering/ Containment	No	
NJD980785646	01	Other – Engineering/Containment	Radon mitigation systems and/or shielding for gamma radiation in structures	1989 ROD p2	Engineering/ Containment	No	
NJD980785646	01	Institutional Controls		1989 ROD p2	Institutional Control	No	
NJD980785646	02	No action		2006 ROD p3			
NJD980785646	03	Off-site disposal		1990 ROD p15	Engineering/ Containment	No	
NYD986882660							
NYD986882660	01	Off-site disposal		1999 ROD p55	Engineering/ Containment	No	
NYD986882660	01	Institutional Controls		1999 ROD p55	Institutional Control	No	

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NYD986882660	02	Off-site disposal		1999 ROD p56	Engineering/ Containment	No	
NYD986882660	02	Institutional Controls	deed restrictions	2005 ESD p5	Institutional Control	No	
NYD986882660	03						
NYD986882660	04	Sediment dredging/ disposal		2005 ROD p3	Engineering/ Containment	No	
NJD980529762							
NJD980529762	01						
NJD980529762	02	Off-site disposal	Excavation /removal of the remaining soils and buried bulk waste with contamination above the RAOs	ROD, 9/22/2003, p.39	Engineering/ Containment		ROD, 9/22/2003, p.39
NJD980529762	02	Institutional Controls	The objectives of the ICs and land-use controls are to limit land use to commercial/ industrial, prohibit residential use and prohibit excavation in designated restricted areas.	ROD, 9/22/2003, p.39	Institutional Control	No	ROD, 9/22/2003, p.39
NJD980529762	02	Deconstruction/ decontamination of buildings	Remediation of contaminated buildings/ structures (or demolition and disposal as deemedappropriate at the time of work) in consultation with the property owners, as necessary to achieve the criteria of 15 mrem/yr.	ROD, 9/22/2003, p.39	Engineering/ Containment		ROD, 9/22/2003, p.39
NJD980529762	03						
NJD980785653							
NJD980785653	01	Off-site disposal	ROD is shared ROD with Glen Ridge Radium Site. Information is duplicated in Glen Ridge Radium 6/30/1989 ROD	1989 ROD p2	Engineering/ Containment	No	
NJD980785653	02	No action		2005 ROD p3			
NJD980785653	03	Off-site disposal		1990 ROD p2	Engineering/ Containment	No	
NJD002365930							
NJD002365930	01	Air Stripping		1996 ROD p17	Treatment	No	
NJD002365930	01	Water treatment-other	Electrochemical treatment	1996 ROD p18	Treatment	No	
NJD002365930	02						
NJD002365930	03						
NJD980654172							
NJD980654172	01	Off-site disposal		1993 ROD p3	Engineering/ Containment	No	
NJD980654172	02	Off-site disposal		1995 ROD p3	Engineering/ Containment	No	
NJD980654172	03	No action		2006 ROD p6			
NJ1891837980							
NJ1891837980	01	Off-site disposal		2000 ROD p48	Engineering/ Containment	No	
NJ1891837980	01	Water treatment-other	Water treated only during course of excavation if needed.	2000 ROD p48	Treatment	No	
NJ1891837980	01	Institutional Controls	IC not explicitly spelled out in ROD; but included in FYR	2008 FYR p16	Institutional Control	No	
PAD987341716							
PAD987341716	01	Off-site disposal	Off site disposal of building debris and contaminated soil.	ROD, 06/27/1994, p.2	Engineering/ Containment		ROD, 06/27/1994, p.2

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PAD987341716	01	Resident relocation	Temporary relocation of property residents during contamination removal and structural restoration or replacement.	ROD, 06/27/1994, p.2	Engineering/ Containment		ROD, 06/27/1994, p.2
PAD987341716	01	Institutional Controls	Provision of institutional controls in those instances where soils cannot be removed to a level where the property is available for unrestricted use and unlimited access.	ROD, 06/27/1994, p.2	Institutional Control	No	ROD, 06/27/1994, p.2
PAD987341716	02	No action	EPA has determined that no remedial action is necessary to ensure protection of human health and the environment. No five-year review pursuant to Section 121 (c) of CERCLA, 42 U.S.C. § 9621 (c), is required for this remedy since no hazardous substances or pollutants or contaminants remain at this Operable Unit above levels that allow for unlimited use and unrestricted exposure.	ROD, 9/27/1996, p.2			
PAD077087989							
PAD077087989	01	Off-site disposal	Excavation and off-site disposal of radiation contaminated soils at an appropriately permitted facility	ROD, 3/31/2006, p. 4, 33-35, 52-55	Engineering/ Containment	No	
PAD077087989	01	On-site disposal (excavation, capping, covering, reveg)	In-situ soil stabilization (waste shall be stabilized using cement and/or other additives that will be Mixed into the waste process tailings contained in the South Quarry to create overlapping solid columns of Mixed "soilcrete" within the surrounding bedrock of the South Quarry walls. The resulting stabilized mass of tailings is expected to be significantly less permeable than the tailings in their current condition causing an equivalent reduction in contamination leaving the waste)of the process tailing wastes located in the South Quarry. Excavation and consolidation of contaminated soils, waste materials and debris into the North and South Quarries to prevent direct contact threats. All contaminated soils, building foundations and debris from the Property will be consolidated in the Quarries.Capping of the North and South Quarries to contain and reduce contaminant migration from the waste in the Quarries to the groundwater. Alternative 2a was developed with asphalt as the capping material for the Quarries. Alternative 2b was developed with a multilayer geosynthetic cap. Other capping materials may also be considered during design and construction, however, any cap for the Quarries will comply with Pennsylvania's regulations for a Residual Waste Landfill Cap.	ROD, 3/31/2006, p. 4, 33-35, 52-55	Engineering/ Containment	No	
PAD077087989	01	Other – Treatment Technology	Removal of LNAPL from groundwater with a passive recovery device or oil-absorbent boom placed within the well. The recovered material will be analyzed and disposed of properly in accordance with the regulations determined to be appropriate to the results of the analysis. When recovery becomes impractical (i.e., low recovery efficiency), an oxygen release compound would be utilized to enhance biodegradation of any residual petroleum contamination in this area.	ROD, 3/31/2006, p. 4, 33-35, 52-55	Treatment	No	

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PAD077087989	01	Institutional Controls	Institutional controls shall be implemented to prevent residential use of impacted groundwater, to prevent residential use of the capped Quarry areas and to preserve the integrity of the remedy.	ROD, 3/31/2006, p. 4, 33-35, 52-55	Institutional Control	No	
PASFN0305549							
PASFN0305549	01						
PASFN0305549	02						
PAD980829493							
PAD980829493	01	Off-site disposal	All above surface debris, drums, and vats, must be disposed of off-site appropriately	ROD, 9/30/1997, p. 2, 19; ESD, 4/19/2001, p. 2	Engineering/ Containment	No	
PAD980829493	01	On-site disposal (excavation, capping, covering, reveg)	Waste pile materials and soils with lead concentrations between 1,000 and 40,000 ppm lead shall be excavated and then consolidated onsite. Sediments from depositional areas of Jacks Creek exceeding 110 ppm lead in the immediate vicinity of the Site shall be removed from the creek by vacuum dredging, and then consolidated with the waste piles and contaminated soils. Soils with lead concentrations above 40,000 parts per million (ppm), which are the principal threat wastes, shall be excavated and treated at an offsite hazardous waste treatment facility using a chemical stabilization process. All excavated areas shall be covered with clean fill to the original grade and then all of these areas, except for the scrap yard shall be revegetated. The consolidated soils, waste materials and sediments shall be covered with a layer of crushed limestone, and then covered with a multi layer cap (a barrier layer consisting of a HDPE geomembrane, a six inch sanddrainage layer, a one foot layer of protective soils and a six inch layer of topsoil with vegetation was placed over the 15-acre area on which contaminated soil, waste like material, and sediment were consolidated). All excavated areas shall be covered with clean fill to the original grade and then all of these areas, except for the scrap yard shall be revegetated.	ROD, 9/30/1997, p. 2, 19; ESD, 4/19/2001, p. 2; FYR, 4/28/2006, p. 13	Engineering/ Containment	No	
PAD980829493	01	Institutional Controls	Deed restrictions shall be developed and submitted to EPA for approval. Once approved these deed restrictions shall be placed in the deed to the Site by filing said restrictions with the Recorder of Deeds of Mifflin County, PA. The deed restrictions shall prohibit excavation or disturbance of any portion of the multi-layer cap. The deed restictions shall prohibit the installation of new onsite wells for use for domestic purposes, including drinking water. The deed restrictions shall be designed to allow for beneficial use of the property, providing that the beneficial use would not pose a risk to human health or the environment. The deed restrictions would prohibit the building of residential construction on the Site. The deed restrictions shall be valid and binding in the Townships, County and the Commonwealth in which the Site is located. The continued need for these restrictions shall be re-evaluated	ROD, 9/30/1997, p. 2, 19	Institutional Control	No	

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			during the five-year reviews which are conducted under CERCLA Section 121(c),42 U.S.C. º 9621(c).				
PAD002395887							
PAD002395887	01	Soil Amendments	CONSIST OF USING A MIXTURE OF SEWAGE SLUDGE AND FLY ASH TO REVEGETATE THE DEFOLIATED PORTIONS OF BLUE MOUNTAIN.	ROD, 9/4/1987, p. 2, 6, 8-9	Treatment	No	
PAD002395887	02	Water treatment-lime	Collect surface run off using surface water diversions to ponding areas where the water will be treated with lime	ROD, 6/29/1988, p. 15	Treatment	No	
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	A CAP CONSISTING OF A CAP CONSISTING OF A MINIMUM OF 18" OF SOILS AND 6" OF CLAY OR SOIL/BENTONITE MIXTURE WILL BE PLACED OVER THAT PORTION OF THE CINDER BANK CONTAINING RCRA LISTED WASTE AND STABILIZED WITH A VEGETATIVE COVER.	ROD, 6/29/1988, p. 15	Engineering/ Containment	No	
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	A CAP CONSISTING OF a cover system consisting of a 3 to 4 inch layer of Ecoloam (proprietary mixture of sewage sludge, flyash, limestone, and seed used as a substrate for establishing vegetation) WILL BE PLACED OVER THAT PORTION OF THE CINDER BANK CONTAINING RCRA LISTED WASTE AND STABILIZED WITH A VEGETATIVE COVER.	ROD, 6/29/1988, p. 15; ESD, 8/27/2002, p. 2	Engineering/ Containment	No	
PAD002395887	03	On-site disposal (excavation, capping, covering, reveg)	Residences within the OU# 3 area found to contain exterior soil with lead levels at or above 650 ppm will be eligible for remediation, the extent of which will be based upon residence-specific conditions determined through sampling. Property owners within the OU #3 area will be solicited to participate in sampling to determine eligibility for remedial action. An average risk-based goal of 950 ppm lead in soil, as determined through composite sampling, shall be applied for exterior soils only if any potential source of interior lead dust contamination from lead-based paint is identified and, if present, addressed appropriately, or lead-based paint is determined not to pose a risk, as determined by a licensed risk assessor. Eligibility for the cleanup of play areas only will be based on lead levels greater than 400 ppm. For in-situ treatment of soil, either pre-amended soil will be tilled into remaining soil or agricultural soil amendments, such as mushroom compost, limestone, fertilizer, and/or clean topsoil, will be tilled in. Re-vegetation would be accomplished by hydroseeding, mixing grass seed with soil amendments, or by use of sod, as appropriate. In the cleanup scenario where the 950 ppm exterior soil lead cleanup standard is appropriate, analysis for arsenic will be required as part of clearance sampling to ensure that average arsenic soil levels are below 79 ppm. Public educational materials would be distributed to assist all homeowners in maintaining existing or newly-grown vegetative cover. Appropriate air monitoring shall be conducted to identify the possible occurrence of contaminant migration during remedial activities.	ROD, 10/9/2001, p. 35-39	Engineering/ Containment	No	

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PAD002395887	03	Off-site disposal	Excavation, removal, and proper disposal of targeted soils until appropriate cleanup standards are attained. Removal of soil will include off- site disposal of that soil in a manner meeting applicable regulations. Excavated soil will be replaced with clean soil or a mixture of soil and amendments meeting landscaping specifications. Re-vegetation would be accomplished by hydroseeding, mixing grass seed with soil amendments, or by use of sod, as appropriate. Proper disposal of excavated soil or dust from Site remediation activities shall be determined by whether or not it passes the TCLP for lead, cadmium, and arsenic. If excavated materials pass the TCLP, they may be disposed of in a nonhazardous waste landfill. If excavated materials do not pass the TCLP, they must be disposed of at a Subtitle C hazardous waste landfill. Appropriate air monitoring shall be conducted to identify the possible occurrence of contaminant migration during remedial activities.	ROD, 10/9/2001, p. 37	Engineering/ Containment	No	
PAD002395887	03	Institutional Controls	If eligibility sampling finds that a property is eligible for remedial action and the property owner(s) chooses not to participate in the remedial action, some type of institutional control administered cooperatively by the State and local government will need to be implemented to ensure that future buyers of the property have notice of the sampling results for that property.	ROD, 10/9/2001, p. 39	Institutional Control	No	
PAD002395887	04						
VAD980705404							
VAD980705404	01	Water treatment-lime	Remediation of the buried copperas would be excavated from the burial pits and dissolved above ground and the leachate then transported to the WWTP for neutralization. Groundwater would be intercepted by a series of subsurface drains and/or trenches installed below the water table along the base of the hill containing Areas 1, 2, 3, and 4. Gravity flow would be used to feed the collected water to the groundwater treatment system. Uncontaminated surface water run-off would be diverted away from the collection system. Areas damaged by AMD would receive lime soil amendments and be revegetated. Then the oxidation/settling pond would be capable of complete removal of iron and sulfur elements from the collected groundwater. Its design would utilize existing knowledge of acid mine drainage treatment where the use of oxidation/settling ponds is a standard technique. Also dissolution of FeSO4 and treatment of the leachate, and then disharged to the wetland system	ROD, 11/21/1989, p. 22, 25-26, 27-28; ESD, 9/26/1990, p. 5	Treatment	No	
VAD980705404	01	Water treatment - Created Wetlands	Wetland vegetation works in conjunction with anaerobic bacteria to remove iron and sulfur species from the water; an increase in the pH can also be expected. The wetland would be protected from a 100-year flood by constructing a berm around it. Then the limestone bed would act as a final polishing step for pH adjustment before discharge of the effluent to the Piney River.	ROD, 11/21/1989, p. 22-23	Treatment	No	

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VAD980705404	01	Surface water diversion	Diverting surface water flow around this area, regrading the sediment, covering with two feet soil, and establishing a vegetative cover. Implementation would reduce infiltration of water through the waste with subsequent contamination groundwater by improving drainage and increasing evapotranspiration in the area. This alternative would also reduce the erosion of acidic sediment from this area into the Piney River which has been identified as a major cause of severe lowering of pH in the river.	ROD, 11/21/1989, p. 27-28	Engineering/ Containment	No	
VAD980705404	01	On-site disposal (excavation, capping, covering, reveg)	(1) excavation of acidified soil; (2) addition of a neutralizing agent (lime) under dry conditions; (3) compaction of the Mixed material; (4) placement of Mixed material around the wetland as a berm and (5) establishment of a vegetative cover. Surface water run-off would be diverted away from the area.	ROD, 11/21/1989, p. 31	Engineering/ Containment	No	
VAD980705404	01	Institutional Controls	The ROD calls for "Local Deed Restrictions" to prohibit excavation at any of the contaminated areas of the Site and the wetland to be constructed even after the remedial action is complete unless all residual contamination is known to have been eliminated. The deed restrictions referred to in the ROD are more accurately referred to as "institutional controls." Given that some residual contamination remains on-site, in order to protect human health and the environment and maintain the integrity of the selected remedy as described in the ROD, ESD 1 and ESD 2, EPA has determined that institutional controls are needed to insure that drinking water supply wells are not installed or used on Site, that on-site activities do not adversely affect or interfere with the selected remedy, and that public use of the Site is limited or restricted to areas that are considered safe and appropriate for general use. These institutional controls shall be implemented via easements, real covenants, title notices, a federal judicial consent decree, or a unilateral administrative order imposing such restrictions on use of the Site.	ESD, 9/25/2002, p. 5-6	Institutional Control	No	
SCN000407714							
SCN000407714	01						
SCD987577913							
SCD987577913	01	Water treatment-lime	Treating all the contaminated water with lime in an on-site wastewater treatment plant and discharging the treated water into the Northwest Trend Pit. 1) Pumping contaminated water from the collection ponds across the site; 2) Mixing treated water and lime to create a slurry, then adding the slurry to contaminated water to raise the pH and reduce metals concentrations; 3)Discharging treated water to the Northwest Trend Pit, where the treated water would undergo ex situ physical treatment through settling out of metals-laden sludge; 4) Pumping treated water from the Northwest Trend Pit to Little Fork Creek for discharge to the creek or to one of two on-site storage ponds and subsequent discharge to Little Fork Creek. Wastewater discharge would be	ROD, 9/25/2005, p. 3, 31-32	Treatment		

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			regulated through the existing valve station and discharge to Little Fork Creek would occur via the existing flume; 5) Managing water through manual control of valves and operating the discharge valve station; 6) On a weekly basis, monitoring effluent for general chemistry parameters and for total and dissolved Total Analyte List (TAL) metals. Modifying current analytical protocols so that detection limits are lower than water quality standards. Also on a weekly basis, estimating streamflow in Little Fork Creek and calculating contaminant loads allowable under the discharge limits established in the interim action goal; 7) Conducting annual macroinvertebrate surveys of Little Fork Creek immediately downstream of the discharge point, at the same location sampling was conducted in the 1990s; 8) Conducting routine maintenance of buildings, equipment, and vehicles; maintaining roads and trails; managing vegetation; 9) Managing sludge by periodically dredging from the Northwest Trend Pit, drying in constructed cells, and storing in piles.				
TND987768546							
TND987768546	01						
TN0001890839							
TN0001890839	01						
TN0001890839	02						
TN0001890839	03						
TN0001890839	04						
TN0001890839	05						
TN0001890839	06						
TN0001890839	07						
TN0001890839	08						
TN0001890839	09						
TN0001890839	10						
TN0001890839	11						
TN0001890839	12						
TN0001890839	13						
TN0001890839	14						
TN0001890839	15						
TN0001890839	16						
TN0001890839	17						
FLD001704741							
FLD001704741	01						
FLD001704741	02						
SCN000407376							
SCN000407376	01						
SCD003360476							

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SCD003360476	01	Water treatment-other	In-situ treatment by chemical reduction of shallow groundwater contaminated by hexavalent chromium; a mixture of ferrous sulfate and sodium dithionite quickly and effectively reduced chromium (VI) to chromium (III) in shallow groundwater. Potential delivery methods include grids of DPT points, temporary groundwater wells, a gallery of pipes, or surface impoundments to infiltrate the reductant. Chemical reductants would be applied using a plume-wide application followed by a strategic redosing to address residual contamination.	ROD, 8/21/2002, p. 11, 84	Treatment		
SCD003360476	01	Sediment dredging/ disposal	Excavation and on-site disposal of approximately 1,000 cubic yards of sediment contaminated by chromium, nickel and zinc from the 001 tidal creek which formerly received process water discharge from the facility. The top 18 inches of contaminated sediment in the tidal creek (approximately 1,000 cubic yards) would be removed using hydraulic dredging equipment and pumped to an onsite dewatering area, which drains to onsite storm water detention basins. Once dewatered, the removed sediment would be sampled for total metals and hexavalent chromium. Depending on the analytical results, dredged material would be left in place or managed with onsite contaminated soil, placed under a cap	ROD, 8/21/2002, p. 11, 93	Engineering/ Containment	No	
SCD003360476	01	Soil Amendments	Ex-situ treatment by mechanical mixing of approximately 115,000 cubic yards of soil contaminated by hexavalent chromium to prevent leaching to underlying groundwater	ROD, 8/21/2002, p. 11, 73-74	Treatment	No	
SCD003360476	01	Institutional Controls	Permit future industrial land-use. Institutional controls would be installed as part of the alternative to prohibit future residential use of the property: Covenant – provisions in any subsequent property transfer agreements to restrict use; Informational devices - tools (e.g., deed notices, state registries of hazardous waste sites, and advisories), which often rely on property record systems, used for providing public information about risks from contamination.	ROD, 8/21/2002, p. 11, 72	Institutional Control	No	
SCD003360476	01	Off-site disposal	Excavation and off-site disposal of an estimated 110 cubic yards of soil and debris with elevated levels of gamma radiation with depths to 18 inches. The area would be backfilled using onsite borrow materials.	ROD, 8/21/2002, p. 12, 80	Engineering/ Containment	No	
SCD003360476	01	Surface water diversion	The storm water management plan, in conjunction with selected soil and groundwater remedies, will be developed to achieve cleanup levels for chromium (VI) discharges from Macalloy to Shipyard Creek and will control sediment (total suspended solids) concentrations in the discharge, thereby reducing lead, arsenic, copper, and zinc to levels meeting remedial goals. Storm water runoff from disturbed areas will be collected and routed through detention basins or other sediment removal devices to decrease suspended solids in the discharge. Currently, offsite storm water runoff commingles with storm water from disturbed onsite areas, increasing the quantity of water that must be managed. This increase jeopardizes the effectiveness of the detention basins at removing solids. To address this concern, the proposed storm water management	ROD, 8/21/2002, p. 12, 94	Engineering/ Containment	No	

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			plan will include an upgradient offsite collection ditch to intercept offsite storm water before it commingles with onsite runoff.				
KYD049062375							
KYD049062375	00	Institutional Controls	Land-use and ground water use deed restrictions	ROD, 7/6/2000, p. 6-7, 117-130	Institutional Control	Yes	ROD, 7/6/2000, Figure L-1
KYD049062375	00	On-site disposal (excavation, capping, covering, reveg)	The management and containment of soils/sediments of low PCB contamination (PCB 1-10ppm) in certain areas on-site; contaminated soils may be placed in the Taylors Wash Landfill (on-site) and excavated areas will be capped with clean fill. At the close of remediation, the landfill with be capped and covered and contoured and graded to efficiently convey rainfall off of the cap. The Landfill will be fenced and signed.	ROD, 7/6/2000, p. 6-7, 117-130	Engineering/ Containment	Yes	ROD, 7/6/2000, Figure L-1, L-2, L-3, L-4
KYD049062375	00	Off-site disposal	Removal of hotspots (PCBs>10ppm) of PCB-contaminated soils (2-14 feet) to an off-site secure landfill and excavated areas will be backfilled with clean soil	ROD, 7/6/2000, p. 6-7, 117-130	Engineering/ Containment	Yes	ROD, 7/6/2000, Figure L-1
KYD049062375	01	Water treatment-other	1) Groundwater monitoring; 2) Implementing a multiple-well extraction and pump and treatment system to remediate two onsite contaminant plumes; 3) Installing and operating extraction wells in the unconsolidated aquifer in strategic positions to recover the maximum amounts of contaminated groundwater; 4) Utilizing intermittent pumping on a varying selection of the wells within each plume to manage the plumes and control contamination levels in groundwater influent to the treatment plant; 5)Treating groundwater onsite using a chemical coagulation/precipitation process, which includes clarification and dewatering processes specifically selected to remove cyanide, fluoride, and metals from the groundwater entering the system (The process removes complexed cyanide through precipitation with iron and clarification, and then removes excess iron through air sparging and a second stage clarification - Alkaline Chlorination); 6)Data evaluation/validation of information collected from the monitoring and GETS; 7)Monitoring and discharging the treated effluent water to surface water; and 8)Dewatering and disposing of approximately 2.5 tons of hazardous and non-hazardous sludge resulting from the treatment process offsite in an approved disposal facility.	ROD, 2/19/1993, p. 2, 26-27; FYR, 8/2/2001, p. 9	Treatment	No	
KYD049062375	02						
NCN000409895							
NCN000409895	01						
FLD010596013							
FLD010596013	01	On-site disposal (excavation, capping, covering, reveg)	Limited excavation of radiologically and chemically contaminated material/soil which exceed Residential Cleanup Standards. Consolidation of contaminated material/soil in the main pond area, slag area, and/or other areas on-site. Top Cover Caps which meet the Florida Administrative Code º 62-701.050 will be placed over the Consolidation Areas. The movement of	ROD, 7/2/1998, p. 3, 46-49	Engineering/ Containment	No	

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			contaminated soil/waste will be limited to minimize the generation of fugitive dust and to prevent the creation of additional threats to human health and the environment.				
FLD010596013	01	Solidification	In-situ Solidification/Stabilization of pond material and contaminated soil below the water table will be required in the consolidation areas on-site. The consolidation areas will be delineated in the Remedial Design Report.	ROD, 7/2/1998, p. 3, 46-49	Engineering/ Containment	No	
FLD010596013	01	Institutional Controls	Institutional Controls must be placed on the site. Institutional controls must include deed restrictions, land use ordinances, physical barriers, and water supply well permitting prohibitions. These restrictions will limit access to the site and prohibit the disturbance of the remedy.	ROD, 7/2/1998, p. 3, 46-49	Institutional Control	No	
FLD010596013	02						
ILN000508170							
ILN000508170	01						
ILN000508170	02						
ILD050231976							
ILD050231976	01						
ILD062340641							
ILD062340641	01	Sediment dredging/ disposal	ROD is an Interim Action ROD and is intended to address OU 01 partially.	ROD, 10/3/2001. p.17	Engineering/ Containment	No	
ILD062340641	02						
ILD062340641	03						
ILD062340641	04						
ILD062340641	05						
ILD980606941							
ILD980606941	01	Deconstruction/ decontamination of buildings	Demolition of all buildings onsite, including manufacturing bldgs, office bldgs, labs, above ground storage tanks; costs are all-inclusive for all listed remedies for OU01 include cost-recovery from recycling of steel, brick and concrete	ROD 6/16/2009, pp.4,23-24	Engineering/ Containment	No	
ILD980606941	01	Off-site disposal	Of asbestos contaminated material and putrescible wastes associated with buildings prior to demolition.	ROD 6/16/2009, pp.4,23-24	Engineering/ Containment	No	
ILD980606941	01	On-site disposal (excavation, capping, covering, reveg)	Remedy includes consolidation of demolition debris (from buildings and above ground storage tanks) in a 1.4 acre x 5 foot management cell with a 1-ft soil cover and vegetation.	ROD 6/16/2009, p. 24	Engineering/ Containment	No	
ILD980606941	02						
ILN000508134							
ILN000508134	01						
ILN000508134	02						
ILN000508134	03						
IL0000064782							
IL0000064782	01						
IL0000064782	02						
OHD004379970							

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
OHD004379970	01	Chemical Oxidation	GW pump and treat with ferrous salt at Ormet Ranney and existing interceptor wells followed by discharge to Ohio River. Sources of gw contamination are potliner areas, disposal ponds.	ROD 9/12/1994 pp. 2,3, 23, 36; FYR 5/6/2002 p. 7	Treatment		
OHD004379970	01	Other – Engineering/Containment	Install seep trench drains to intercept/extract all leachate seeping from Construction Materials Scrap Dump (CMSD), then pumped to an oil/water seperator; if effluent from seperator meets NPDES standards, route to Ohio River, else to a carbon adsorption treatment system to remove PCBs. Sources of contamination are CMSD fill materials, contaminated soils, seeps, and sediments from other sources.	ROD 9/12/1994 pp. 2,3, 19	Engineering/ Containment	Yes	FYR 5/42007 p. 21
OHD004379970	01	Other – Engineering/Containment	Re-contour CMSD and cover with dual-barrier cap to create CMSD landfill; create a TSCA cell within CMSD (inferred from FYRs as ESD is missing); remove conduit north of CMSD that discharges directly to Ohio River. Sources of contamination are CMSD fill materials, contaminated soils, seeps, and sediments from other sources.	ROD 9/12/1994 pp. 2,3, 20; FYR 5/6/2002 p. 7	Engineering/ Containment	Yes	FYR 5/42007 p. 21
OHD004379970	01	Soil flushing/washing	In-situ soil flushing in Former Spent Potliner Storage Area (FSPSA)	ROD 9/12/1994 pp. 2,3	Treatment		
OHD004379970	01	On-site disposal (excavation, capping, covering, reveg)	Soil excavation from the Carbon Runoff and Deposition Area (CRDA) and trench drains followed by consolidation under the CMSD cap if PCB <50 ppb and disposal to TSCA cell if PCB >=50 ppb.	ROD 9/12/1994 pp. 2,3; FYR 5/6/2002 p. 7	Engineering/ Containment	Yes	FYR 5/42007 p. 21
OHD004379970	01	Sediment dredging/ disposal	Sediment dredging from Outfall 4 stream backwater area; solidification and disposal under CMSD cap if PCB < 50 ppm; disposal in TSCA cell onsite if PCB > 50 ppm. 3 main sources are Outfall 4 (process water and storm run-off), CMSD, and CRDA.	ROD 9/12/1994 pp. 2,3, 23, 36; FYR 5/6/2002 p. 7	Engineering/ Containment	Yes	FYR 5/42007 p. 21
OHD004379970	01	Institutional Controls	ICs (such as deed restrictions that there be no installation of drinking water wells and no construction for residential purposes) to limit groundwater and land use	ROD 9/12/1994 pp. 2,3; FYR 5/62002, p.7	Institutional Control	No	
MID980901946							
MID980901946	01	Institutional Controls	Deed restrictions to control use of tailing piles	ROD 9/30/1992, p. 2; FYR 3/27/2008 p. 23, 55	Institutional Control	No	
MID980901946	01	Off-site disposal	Removal of debris (wood, empty drums, othe garbage) in tailing piles and offsite disposal	ROD 9/30/1992, p. 2; FYR 3/27/2008 p. 23, 55	Engineering/ Containment	No	
MID980901946	01	Other – Engineering/Containment	Soil cover with vegetation; locations 11 and 12 in OU1 along Lake Superior excluded. 12-31-2002 memo added vegetation at Gull Island (see FYR 2008, p. 25)	ROD 9/30/1992, pp. 2-3; FYR 3/27/2008 pp. 23-25, 55	Engineering/ Containment	No	

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
MID980901946	02	No action	Remedy relies upon reduction of tailing loading to sw as a result of remedies at OU1 and OU3; ongoing natural sedimentation and detoxification of sw bodies; county and state-level gw Ics; and long-term monitoring and FYR monitoring of the OU1 and OU3 remedies.	ROD 3/31/1994 p. 2		No	
MID980901946	03	Institutional Controls	Deed restrictions to control use of tailing piles	ROD 9/30/1992, p. 2; FYR 3/27/2008 p. 23, 55	Institutional Control	Yes	FYR 3/27/2008 p. 56
MID980901946	03	Off-site disposal	Removal of debris (wood, empty drums, othe garbage) in tailing piles and offsite disposal	ROD 9/30/1992, p. 2; FYR 3/27/2008 p. 23, 55	Engineering/ Containment	No	
MID980901946	03	Other – Engineering/Containment	Soil cover with vegetation; specific areas excluded are described in pp. 2-3 of ROD 9/30/1992, including Location 4 (North Entry).	ROD 9/30/1992, pp. 2-3; FYR 3/27/2008 pp. 24-25, 55	Engineering/ Containment	No	
MID980901946	03	Other – Engineering/Containment	Shoreline protection in the form of rip-rap and lake access ramps (Point Mills location)	FYR 3/27/2008 p. 25, 55	Engineering/ Containment	No	
MID980901946	03	Other – Engineering/Containment	Installation of compacted gravel cover (Dollar Bay location)	FYR 3/27/2008 p. 25, 55	Engineering/ Containment	No	
MID980901946	04						
MID980901946	05						
MID980901946	06						
IND047030226							
IND047030226	01						
NMD002899094							
NMD002899094	00	Off-site disposal	Soil removal (high concentrations of PCBs > 25 mg/kg) from Mill Area, off-site treatment and disposal (low occupancy – commercial/industrial); regrade, cover, apply amendments, and vegetate after mill decommissioning	ROD 12/20/2010 pp. 1-4, 1-5	Engineering/ Containment	No	
NMD002899094	00	On-site disposal (excavation, capping, covering, reveg)	1. Waste rock pile source containment at Mine Site Area by regrading and re-contouring waste rock piles to achieve a minimum interbench slope of 3h:1v or 2h:1v, including partial to complete removal of waste rock to onsite repository (to be constructed) to accommodate slope requirements, followed by cover, amendment application and revegetation. 2. Removal of molybdenum contaminated soil and tailing spill deposits at Red River and Riparian and South of Tailing Facility Area followed by on-site disposal (only direct exposure to eco-receptors; no human health risk, see p. 2-599)	ROD 12/20/2010 pp. 1-5 to 1-7, 1-9, 2-681 to 2-683	Engineering/ Containment	No	
NMD002899094	00	Other – Engineering/Containment	Source containment by regrade, cover and revegetation of tailing impoundments at Tailing Faciity Area. The cover for the tailing facility must have a minimum thickness of 36 inches (three feet) to be effective as a store and release/ET cover and protect vegetation and wildlife.	ROD 12/20/2010 pp. 1-7, 1-8, 2-629 to 631, 2-668 to 670	Engineering/ Containment	No	

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NMD002899094	00	Water treatment-lime	Mine Site Area: construction of a WTP at Year 0; lime neutralization/chemical precipitation/HDS with secondary treatment (i.e., reverse osmosis/ultrafiltration or other membrane/filtration technology); preliminary location for the treatment plant is at the mill; WTP will treat all contaminated water collected by the remedy. Continue operating existing seepage interception and gw withdrawal well systems, dewater underground mine, pipe water to mill and treat water; pH adjust water until WTP available to treat water. Continue collection and conveyance of waste rock pile seepage to subsidence area on interim basis until piping and collection systems constructed, at which time water will be piped to mill area for treatment; Install new seepage collection systems near the base of Capulin and Goathill North waste rock piles to enhance seepage capture, pipe seepage to mill area and treat water; decommission Capulin leachate collection system ; Install and operate new gw extraction well systems in lower portion of tributary drainages, pipe water to mill area and treat water. An engineered repository will be constructed at the mine site for placement of water treatment residuals (sludge and filter cake).Tailing Facility Area: Perform gw characterization in bedrock aquifer beneath and west of tailing impoundments, and in bedrock and/or alluvial aquifer downgradient of Dam no. 1; Replace the lower 002 seepage barrier with extraction wells and replace the upper 003 seepage barrier with a deeper barrier; treat water; Pipe unused irrigation water in the eastern diversion channel to prevent infiltration through historic buried tailing; install and operate ground water extraction well system in alluvial aquifer southeast of dam no. 1 and downgradient of historic buried tailing; treat water; Refurbish existing ion exchange plant and/or construct new WTP at year 0 construction of the remedial action and operate to treat water; provide temporary alternate water supply if necessary, and temporary well drilling restrictions. (At this site, there is a hydrologic connection between bedrock gw and Red River) (Also, Other Sources of gw contamination are hydrothermal scar materials, debris fans).	ROD 12/20/2010 pp. 2-638 to 2-680	Treatment	No	
NMD002899094	00	Sediment dredging/ disposal	Sediment dredging from Eagle Rock Lake and on-site disposal.	ROD 12/20/2010 p. 1-10	Engineering/ Containment	No	
NMD002899094	00	Institutional Controls	Temporary well drilling restrictions at Tailing Facility Area.	ROD 12/20/2010 pp. 2-708, 2-740	Institutional Control	No	
NMD980749378							
NMD980749378	01	Water treatment-other	Pump and treat of shallow ground water – pump from extraction wells to a POTW with a pretreatment standard of 5 mg/l cyanide; biological activity with the existing treatment lagoons at the POTW, coupled with effluent chlorination and photodecomposition. Source 1 is cinder block trenches with	ROD 9/21/1990 p. 21	Treatment	No	

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			cracked, leaky bottoms; Source 2 tailings piles I, C, and K; and Source 3 dicharge pit (unlined impoundment). Continued monitoring of gw.				
NMD98074937 8	01	Institutional Controls	ICs were recommended in the ROD to be implemented (as a contingency plan if pump and treat goals are determined to be technically impracticable) to restrict access to those portions of the aquifer that remain above health-based goals (of 200 ug/l cyanide), should the aquifer be proposed for use as a drinking water source. The IC at OU-1 consists of a "Prohibition Against Disturbance" executed by Timothy Means, the property owner. on 25 April. 2006. and registered with the Lincoln County Clerk on September 29, 2006; and a "Restrictive Covenant"' executed by Timothy Means on 10July, 2006. These documents prohibit disturbances or breaching of any monitoring wells and installation of any water supply well screened within 100 feet of ground surface on the OU-I property.	ROD 9/21/1990 pp. 21-22; FYR 7/31/2008 p. 16	Institutional Control	No	
NMD98074937 8	02	Solidification	The selected remedial action for OU-2 is excavation. cement solidification and stabilization, and onsite disposal of 225 cubic yards of contaminated material piles and tank sediments, which failed the TCLP test, including the cinder block trench sediments. Solidification of excavated materials is to be conducted in a cement mixer, where the material would be Mixed with portland cement, water, and any supplemental sand or aggregate required. Sources 1-3 are tank sediments (43 cyd), material pile soils and rock (182 cyd), and discharge pit sediments and soils (345 cyd).	ROD 9/6/1991 p. 10, 16; FYR 7/31/2008, p. 10	Engineering/ Containment	No	
NMD98074937 8	02	On-site disposal (excavation, capping, covering, reveg)	The selected remedial action for OU-2 is excavation. cement solidification and stabilization, and onsite disposal in a discharge pit of 225 cubic yards of contaminated material piles and tank sediments, which failed the TCLP test, including the cinder block trench sediments; excavation and on-site disposal in a discharge pit of 345 cubic yards of contaminated surface soils and sludge that did not fail the TCLP test. The disposal areas were capped with clean fill and vegetated. Additional remedy components included removal of process chemical drums and tanks; installation of two additional monitoring wells, long term monitoring of the ground water.	ROD 9/6/1991 pp. 10-11; FYR 7/7/2003. p. 7; FYR 7/31/2008, p. 10	Engineering/ Containment	No	
NMD98074937 8	02	Institutional Controls	On April 25. 2006, an IC was signed by the Mayor of Carrizozo and registered in County Court requiring that no excavation is to occur in the soil repository areas or in any manner that could potentially breach or disturb the repository cell. ICs included deed restrictions and site access restrictions.	FYR 7/31/2008, pp. EX-2, 10	Institutional Control	No	
NMD98115593 0							
NMD98115593 0	01	No action	The 1993 ROD remedy of 'Excavation, Off-Site Reprocessing, Reclamation and Beneficial Reuse and Disposal of Residual' had to be abandoned as by 1996 it became clear that no reprocessing facility or an alternative offsite disposal facility could be found. The environmental threat at the Site was	AMD 9/20/1999 pp. 2, 8-9; ROD 9/27/1993 pp. 48-53		No	

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			addressed by an EPA time-critical removal action (Disposal of the neutralized tailings and sediment in an on-site containrnent cell) through which the waste material in the mill area and in the stream was excavated, the waste material was treated with limestone to neutralize its acidity, the treated material was disposed of in a limestone cell constructed at the Site, and the cell was covered by a multi-layered cap. Long-term groundwater and surfacewater monitoring are part of O&M. 1999 AMD remedy is no action.				
NMD981155930	01	Institutional Controls	ICs already in place on onsite disposal cell (which is 2.8 acres) and groundwater; ICs have been placed on the ground water below the disposal cell restricting future residents from using that water. Ground water use has been limited in the cell area and in the mill area through the filing of restrictive covenants.	AMD 9/20/1999 p. 12-13	Institutional Control	No	
NMD007860935							
NMD007860935	01	Water treatment-other	OU1 is restoration of ground water contaminated by tailings seepage; remedy is ground water collection and injection system followed by piping either to the RO plant for treatment and subsequent re-injection into the aquifer or to one of two lined evaporation ponds for disposal. There has been no ROD for OU1; all information is from FYRs.	FYR 9/27/2001 ES-2	Treatment	No	
NMD007860935	02	Other – Engineering/Containment	OU2 remedy is long-term stabilization of the tailings, surface reclamation, and the decommissioning and closure of the mill all conducted under NRC oversight. There has been no ROD for OU2; all information is from FYRs.	FYR 9/27/2001 pp. ES-2, ES-3	Engineering/ Containment	Yes	FYR 9/26/2006 Attachment 2
NMD007860935	03	No action	Eight (8) residences in the adjacent (neighboring) subdivisions had annual average indoor radon concentrations above epa's radon guideline of 4 pci/l. It was determined that there was no definitive correlation between the radon concentrations and the proximity of each of those homes to the mill site. The source of the elevated radon levels was determined by the EPA to be local soil. EPA determined that it does not have the authority under CERCLA section 104 to address radon concentrations identified in the subdivisions and therefore has selected no further action. EPA will continue to review outdoor radon monitoring and particulates data collected at the facility boundary pursuant to NRC license requirements; should an increasing trend in either radon or particulates levels be noted, EPA and NRC will require monitoring or corrective action in the subdivisions, whichever is appropriate.	ROD 9/27/1989 p2. 2,6-7; FYR 9/27/2001 p. 9	Engineering/ Containment	No	
OKD000829440							
OKD000829440	01	Off-site disposal	For residential/recreational lands: removal and disposal of contaminated soils followed by restoration of yards in residential areas; and capping of unpaved alleyways; for commercial/industrial: removal, tilling, capping, and/or treatment of contaminated soils (phosphate treatment). Offsite disposal to Osage County Landfill south of City of Bartlesville. Also, implementation of a medical monitoring program to	ROD 12/13/1994 pp. 2, 4, 15-18; FYR 10/15/2001 pp. 10-11	Engineering/ Containment	No	

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			monitor blood lead levels throughout and after the remedial action in the affected community.				
OKD000829440	01	Institutional Controls	The ICP covers all areas within the OUI boundary, including both public and private lands, but excluding the ZCA facility. The ICP components include the following: 1) Regulation of future development within the NZS - planning and zoning requirements, subdivision regulations, building permits, and inspections during future construction.2) Permitting - for future excavations by the public or private sector resulting in over a five CY of excavation with excavation and transportation of fill to be authorized through a permit from the City Engineer.3) Information and Education Programs - to keep the community informed of project scope and objectives, the purpose of the sampling and RA's, potential risks, health precautions, and a schedule for activities.4) Database - developed to include information on property sampling and remediation.5) As outlined in the CAFO, the City of Bartlesville is responsible for the implementation and upkeep of the ICP upon completion of the NZS RA.	FYR 11/22/2006 pp. 21, 27	Institutional Control	No	
OKD000829440	02	Off-site disposal	Complete removal of all impacted materials from the unnamed creek extending south of ZCA and verification sampling to document complete removal of OU2 impacted materials. Clean fill imported to replace the excavated material. Excavated sediment transported to an approved offsite disposal facility	ROD 10/02/1997 p. 11; FYR 11/22/2006 p. 10	Engineering/ Containment	No	
OKD980629844							
OKD980629844	01	Other – Engineering/Containment	Well plugging of 66 abandoned Roubidoux wells to prevent migration from shallow Boone to deep Roubidoux aquifers; long-term gw monitoring.	ROD 6/6/1984 p. 11	Engineering/ Containment	Yes	FYR 9/29/2010 Figure 4
OKD980629844	01	Surface water diversion	A sw diversion program that will constitute rerouting surface flows away from mine shafts, subsidence areas, and open boreholes; gw monitoring for 2 yrs subsequently to determine efficacy of remedy.	ROD 6/6/1984 p. 11	Engineering/ Containment	Yes	FYR 9/29/2010 Figure 5
OKD980629844	02	On-site disposal (excavation, capping, covering, reveg)	Cleanup of 2089 residential properties; excavation of lead-contaminated surface soil in residential areas;1) Replacement of excavated soil with clean soil and restoration of the remediated areas; 2) Disposal of excavated soil on-Site in dry mining waste areas remote from the residential areas or, in the event of inability to dispose of excavated materials on-Site, disposal off-Site in an approved landfill; 3) Covering or replacement of mining waste in traffic areas located near residences; 4) Restriction of access to mining waste areas located near residences by use of physical barriers (e.g., fences and warning signs); the remedy also included blood lead testing health education, and dust reduction activities. ("Residential areas" includes single-family residences, other residential properties (e.g., apartments, and condominiums) and high access areas (HAAs) which are places frequented by children such as day-care centers, playgrounds, and schoolyards.)	ESD 8/30/1997 pp. 1, 3-5	Engineering/ Containment	No	

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OKD980629844	02	Institutional Controls	County-wide implementation of institutional controls, including community protective measures, to supplement engineering response actions.	ESD 8/30/1997 pp. 4-5	Institutional Control	No	
OKD980629844	03	No action	In March and May 2000, EPA conducted a a time-critical removal action at the Eagle-Picher Office Complex – Abandoned Mining Chemicals. The laboratory chemicals were removed from the site and transported to facilities appropriate for their disposal. Based on this action, EPA determined that no further action was required at OU3.	FYR 7/28/2005 p. 9			
OKD980629844	04	Resident relocation	Voluntary relocation will remove a limited populace from areas with concentrated sources of potential exposure. Ultimately, risk will remain as will the exposure pathway for anyone who visits the source materials, until such time as the remedial actions are completed. Members of the community who elect not to participate in the voluntary relocation would remain in the area near sources of potential exposure. A total of 422 residential and 47 commercial properties remain to be relocated under the ROD; in addition, an estimated 100 residential properties that are located within the LICRAT buyout boundary, but do not meet state buyout criteria, may need to be relocated (see ROD 2/20/08 p. 45 for details).	ROD 2/20/2008 pp. 2-3, 45	Engineering/ Containment	Yes	ROD 02/20/2008 Figure 9
OKD980629844	04	On-site disposal (excavation, capping, covering, reveg)	Excavation/disposal of source materials (chat, chat bases from distal areas, unmarketable chat piles and bases, abandoned chat haul roads and non-operating railroad grades, fine tailings, overburden, development rock, smelter wastes, rural residential soils) in onsite repository; Environmental monitoring to test for contamination in ambient and near source air, surface water, ground water, and sediment during remediation activities. The OU4 ROD stated that the remedy would be implemented in two phases over a period of 30 years.	ROD 2/20/2008 pp. 2-3, 49-52	Engineering/ Containment	Yes	ROD 02/20/2008 Figures 5, 6, 8, 11
OKD980629844	04	Alternative drinking water	Alternate water supply to any household where mining-related contaminants in water drawn from rural residential wells exceed 0.015 mg/L for lead for rural households. Rural households that are within the area that has been designated for relocation under the Lead Impacted Communities Relocation Assistance Trust (LICRAT) relocation program, but which do not elect to participate in the relocation program, would be included in the households eligible for an alternative water supply (estimated 2 residences).	ROD 2/20/2008 pp. 2, 51	Engineering/ Containment		
OKD980629844	04	Other – Engineering/Containment	Chat sales; FYR of chat sales; chat piles and bases remaining after 10 years will be evaluated for commercial viability (determination will be made using input from the chat/land owners, appropriate tribal representatives, and the commercial operators).	ROD 2/20/2008 pp. 3, 45-49	Engineering/ Containment	Yes	ROD 02/20/2008 Figures 2,3,5,6,8
OKD980629844	04	Institutional Controls	Ics and maintenance activities will be implemented, as needed as determined by EPA, at repositories and covered, fine tailings ponds. Also, ICs shall be placed on the relocation target properties to enhance the protectiveness sought through the voluntary relocation.	ROD 2/20/2008 p. 3, 45	Institutional Control	Yes	ROD 02/20/2008 Figures 7, 8

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OKD980629844	04	Other – Engineering/Containment	Seepage control; source material in Tar, Lytle, Elm or Beaver Creek or other Site waterways, will be addressed on a priority basis through either excavation and/or the installation of a flexible membrane liner, as needed as determined by EPA. As an interim measure, sheet piling, berms, constructed wetlands, or other engineering controls will be installed for near-stream source materials to help prevent contamination from migrating to surface water.	ROD 2/20/2008 p. 3	Engineering/ Containment	Yes	ROD 02/20/2008 Figure 10
OKD980629844	05						
TXD062113329							
TXD062113329	01	On-site disposal (excavation, capping, covering, reveg)	Preventing future site releases will be accomplished through stabilization of the principal threat waste materials, containment in an onsite consolidation cell, and covering the hazardous materials with a RCRA Type C or equivalent cap. Liquid principal threat waste materials will be neutralized and treated to National Pollution Discharge Elimination System (NPDES) levels prior to onsite disposal (engg/containment and treatment). This remedy addresses the following sources/wastes: Acid Pond liquids, Wah Chang Ditch sediments and liquid from Wastewater Ponds (AMD p. 16 - Source 1 Impoundments), drummed inorganic materials (AMD p. 18), NORM slag (AMD p. 19), non-NORM slag (AMD pp. 19-20), surface and subsurface soils (AMD p. 18), building debris (asbestos containing materials) (AMD p. 20), inorganic materials from ASTs (AMD p. 18), low level radioactive landfill (AMD pp. 20-21)	AMD 9/28/2000 pp. 4, 32-42	Engineering/ Containment		
TXD062113329	01	Off-site disposal	Offsite disposal of organic contents of Aboveground Storage Tanks, organic drummed materials, friable ACM	AMD 9/28/2000 pp. 5, 31, 37-38; FYR 9/21/2010 p. 26	Engineering/ Containment		
TXD062113329	01	Other – Engineering/Containment	Install slurry wall barrier along the western property boundary; install an enhanced evapotranspiration system along the southern boundary. Cover Pond 7 with an impermeable cap, and conduct long-term ground water monitoring (gw control and monitoring); Sources are: Ponds 4,5,6,24,25	AMD 9/28/2000 p. 5	Engineering/ Containment		
TXD062113329	01	Institutional Controls	ICs required for wastewater Ponds 1 through 5; deed recordations to prevent onsite use of the shallow, medium, and deep ground water; ICs and deed restrictions for drummed materials, inorganics from ASTs, non-NORM slag and building debris (as part of ICs for Pond 2); deed recordation of the Low-level Radioactive Landfill area will be required to prevent disturbance of the landfill that could result in exposure to radioactive materials; deed restriction or deed notice after placement of the cover system on disposal cell for NORM slag adjacent to the Low-level Radioactive Landfill. The custodial trustee for the OU1 property will record a deed restriction and/or deed notice i) identifying the location of on-site landfills and the areal extent of capping and/or clay cover on OU1, to notify future purchasers or users of the property that excavation	AMD 9/28/2000 pp.33, 34, 37-42	Institutional Control	No	

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			in these areas may cause a release of hazardous substances to the environment, ii) prohibiting construction or excavation on the property that may affect the efficacy of the remedial action, iii) prohibiting use of the Shallow, Medium, and Deep Transmissive Zone groundwater under OU1, iv) restricting future use of the OU1 property to industrial uses or other use consistent with the level of protectiveness achieved by the Remedial Action.				
TXD062113329	02	No action	EPA determined that no further action is necessary under CERCLA for OU No. 2 of the Tex Tin Site because the Amoco Response Action abated the threat of release of hazardous substances from contaminants related to the former smelter facility. The threat was eliminated by placement of a protective 2 ft soil cap over the contaminated areas that exceeded human health risk levels. The remedy also included a gw monitoring program to ensure that the contaminated shallow gw plume was not migrating off-site (OU2 is adjacent to OU1); construction of a bentonite/soil (slurry) cutoff wall located along the Amoco - Tex Tin property boundary (to prevent further movement of the contaminated shallow ground water from OU No. 1 to OU No. 2); placement of deed restrictions on the property to prevent use of the ground water for purposes other than monitoring and remediation; filing deed restrictions (to restrict site use for industrial purposes only and to notify potential users of the remaining site contaminants. Concentrations of all detected constituents were recorded on the property deed.	ROD 9/27/2001 p. 1; FYR 9/30/2003 pp.6- 7		No	
TXD062113329	03	No action	A previous response action, specifically a Time-Critical Removal Action, performed in 1999 in which contaminated soil and debris were excavated from OU No. 3 properties and taken offsite for disposal, permanently addressed the threat to human health and the environment from smelter-related contamination.	ROD 9/29/2000 pp. 1-2			
TXD062113329	04	Other – Engineering/Containment	Remedy includes shore protection through the installation of segmented wave barriers at the eastern edge of Swan Lake. Segmented wave barriers totaling approximately 5,200 ft (final length and location tbd during the remedial design phase); wave barrier core would consist of quarry rock, concrete rubble, or other stable construction materials. Construction would include a filter fabric and uniformly graded rip-rap along the top and sides of the barrier core; typical wave barrier section has a crown width of approx. 8 ft and a 3h to 1v slope; O&M	ROD 9/27/2001 p. 2	Engineering/ Containment		
OKD987096195							
OKD987096195	01						
NMD030443303							
NMD030443303	01	Water treatment-other	The EPA selected extraction of contaminated water and spray evaporation treatment of the extracted water; the selected remedy consists of 1) Implementation of a monitoring program to detect any increases in the areal extent or concentration of ground water contamination outside the tailings disposal area; 2) Operation of the existing seepage extraction system in the	ROD 9/30/1988 pp. 15-17; FYR 9/24/1998 pp. 7-8	Treatment		

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
			Upper Gallup Sandstone Unit (Zone 1, and Zone 3); 3) Containment and removal of contaminated ground water in Zone 3 of the Upper Gallup Sandstone utilizing existing and additional wells; 4) Containment and removal of contaminated ground water in the Southwest Alluvium utilizing existing and additional wells; 5) Evaporation of extracted ground water using evaporation ponds supplemented with mist or spray systems to enhance the rate of evaporation; and, 6) Implementation of a performance monitoring and evaluation program to determine water levels and contaminant reductions in each aquifer, and the extent and duration of pumping actually required outside the tailings disposal area. A spray evaporation system is used to treat groundwater.				
MO0000958611							
MO0000958611	01	On-site disposal (excavation, capping, covering, reveg)	Excavation of sediments from Sutton Branch Creek in depositional areas; onsite disposal; cap and revegetation. Sources of contamination are mill and mine surficial wastes and contaminated soils.	ROD 9/29/2005 p. 19	Engineering/ Containment	No	
MO0000958611	01	Other – Engineering/Containment	In-stream physical stabilization of Sutton Branch Creek channel. Sources of contamination are mill and mine surficial wastes and contaminated soils; contaminated sediments act as secondary sources.	ROD 9/29/2005 p. 19	Engineering/ Containment	No	
MO0000958611	01	Institutional Controls	Restrictive covenant or easement on the respective properties within OU1. Sources of contamination are mill and mine surficial wastes and contmanated soils.	ROD 9/29/2005 pp.13-14, 19	Institutional Control	No	
MO0000958611	02	No action		ROD 6/8/2007, p.1		No	
MO0000958611	03	On-site disposal (excavation, capping, covering, reveg)	Removal of the driveway of a residence (with lead >400 ppm) and disposal to the existing lead contaminated material repository at OU-1; replace with uncontaminated gravel.	ROD 6/29/2007, p. 1	Engineering/ Containment	Yes	ROD 6/29/2007, p. 17
MOD98112689 9							
MOD98112689 9	01						
MOD98112689 9	02						
MOD98112689 9	03						
KSD980741862							
KSD980741862	01	Alternative drinking water	Two rural deep aquifer water wells constructed to approx 1,500 feet below the surface; approx 60 miles of pipeline placed to serve nearly 500 households outside of Galena; construction of a water district building; and fenced work area. No lCs required.	ROD 9/28/1995 p. 7; FYR 9/30/2010 p. 7	Engineering/ Containment		
KSD980741862	02						
KSD980741862	03	On-site disposal (excavation, capping, covering, reveg)	Excavation of surficial mine wastes and/or consolidation and multi-layer capping of excavated mine waste; wastes could also be disposed in collapses, shafts or pits (subaqueous disposal) and capped.	AMD 9/29/2006 p. 14	Engineering/ Containment	Yes	AMD 9/29/2006 pp. 37-40

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KSD980741862	03	Other – Engineering/Containment	Chat sales	AMD 9/29/2006 p. 14	Engineering/ Containment	No	
KSD980741862	03	Institutional Controls	Restrictions on new residential development in mine areas, on drilling/installation of new domestic wells, encourage use of existing water districts for domestic needs, and casing integrity standards and oversight for the design and construction of new deep aquifer supply wells.	AMD 9/29/2006 pp. 14-15	Institutional Control	No	
KSD980741862	04		Addressed as part of another OU	ROD 8/20/1997, AMD 9/29/2006, FYRs 9/28/2000, 9/30/2005, and 9/30/2010		No	
KSD980741862	05	On-site disposal (excavation, capping, covering, reveg)	Removal, consolidation, and onsite placement in mine pits, shafts, and subsidences of surface mine wastes. (ROD 9/18/1989 is missing key pages describing the selected remedy; also, page numbering is off, so sometimes the pdf viewing page no. is referenced and at other times, the actual page no. within the document). Also not identified in original ROD but identified in FYR 2005, excavate, grade, and consolidate wastes surrounding the smelter followed by capping and revegetating; excavate impacted sediments from the stream near the smelter.	ROD 9/18/1989, p. 3; FYR 9/30/2010 p. 12	Engineering/ Containment	No	
KSD980741862	05	Deconstruction/ decontamination of buildings	Decontaminate former smelter buildings and remove hazards (e.g., underground tanks, transformers, chemicals). This was not identified in original ROD.	FYR 9/30/2005 p. 14; FYR 9/30/2010 p. 12 (ROD is missing pages, limited info available in FYR)	Engineering/ Containment	No	
KSD980741862	05	Surface water diversion	Diversion and channelization of surface streams with recontouring and vegetation of land surface	ROD 9/18/1989, p. 3	Engineering/ Containment	No	
KSD980741862	06	On-site disposal (excavation, capping, covering, reveg)	Excavation, consolidation, subaqueous disposal, capping, capping in place, and re-vegetation of all surficial mine waste accumulations, in conjunction with the excavation of impacted sediments. Total volume of wastes at all 4 subsites is approx. 2 million cyd. County-wide ICs to be adopted from OU3 and OU4 RODs.	ROD 9/30/2004 pp. 1-2, 13, 16	Engineering/ Containment	No	
KSD980741862	06	Other – Engineering/Containment	Characterization of groundwater conditions, plugging of deep wells, and assessment of non-stream (ponds, pits, collapses) sediments followed by potential capping. County-wide ICs to be adopted from OU3 and OU4 RODs.	ROD 9/30/2004 p. 13	Engineering/ Containment	No	
KSD980741862	07	On-site disposal (excavation, capping, covering, reveg)	Excavation and disposal of contaminated soils will begin at the most impacted residential yards and progress to lesser impacted areas. Phosphate treatability studies will be conducted concurrently in order to determine if phosphate treatment is a future viable option.	ROD 7/29/1996 p. 5	Engineering/ Containment	No	

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
KSD980741862	07	Institutional Controls	Includes land use controls, building permits, and testing requirements for development in mining impacted areas; also includes health education regarding all aspects of lead exposure;blood-lead testing; physician education on the awareness and symptoms of lead poisoning; in home lead assessments; provision of a high efficiency particulate vacuum upon request; and quarterly reporting of all aspects of the ICs program.	ROD 7/29/1996 p. 5; FYR 9/28/2000 p. 7	Institutional Control	No	
MOD098633415							
MOD098633415	01						
MOD098633415	02						
MOD098633415	03	On-site disposal (excavation, capping, covering, reveg)	Excavation, backfilling, and revegetation of lead-contaminated residential soil >400 ppm lead at an estimated 1,100 residential properties. If at 12 inches bgs the lead concentration is > 1,200 ppm, EPA will excavate to 24 inches bgs if it can be determined that a lead concentration of less than 1,200 ppm can be achieved. Otherwise, a barrier will be placed at 12 inches bgs. This is an Interim ROD.	ROD 7/31/2008 p. 2, 32	Engineering/ Containment	Yes	ROD 7/31/2008 Figures 3 &4
MOD098633415	03	Institutional Controls	ICs pilot project with interested citizens and local, county, state, and federal government officials to discuss and evaluate future ICs to safeguard future residential development and protect remediated residential properties. Health education, community-wide blood-lead monitoring, increase awareness.The IC pilot project can be extended up to 3 years or until the finish of the pilot project. This is an Interim ROD.	ROD 7/31/2008 p. 2, 32	Institutional Control	No	
MOD098633415	04						
MOD098633415	05						
MOD098633415	06						
MOD981507585							
MOD981507585	01	On-site disposal (excavation, capping, covering, reveg)	Removal of metals contaminated mining and milling wastes, soils, and intermittent tributary stream sediments; disposal in a central repository to be constructed onsite; capping of repository with an 18-inch soil cover; re-contouring the excavated areas to promote drainage; re-vegetation of the excavated areas and the repository with native grasses; monitoring site streams for assessing the effect of cleanup. Table 11 of ROD provides cost estimate for excavation/consolidation of 1,425,000 cyd of source materials.	ROD 6/21/2010 pp.25-27	Engineering/ Containment	No	
MOD981507585	01	Institutional Controls	Restrict future use of the disposal areas	ROD 6/21/2010 pp.26-27	Institutional Control	No	
MOD981507585	02		Addressed as part of OU 1				

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MOD981507585	03						
NESFN0703481							
NESFN0703481	01	Off-site disposal	This is an Interim ROD for an interim remedial response strategy - Excavation, backfilling, and revegetation of lead-contaminated residential soils (exceeding specified criteria on 5,600 properties); offsite disposal assumed for costing purposed but final management of excavated materials tbd. Remedy also includes stabilization of loose and flaking exterior lead-based paint conducted on a voluntary basis prior to soil removal and replacement at homes where soil cleanup actions are conducted; also, removal of interior dust where contaminated soils contribute to interior lead dust loadings, on a voluntary basis for willing residents, after the soil cleanup is completed in the yard. Also included are health education for the Omaha community and further characterization of lead sources.	ROD 12/15/2004 pp. 29-33, 41	Engineering/ Containment	No	
NESFN0703481	02	Off-site disposal	Excavation and replacement of soils exceeding 400 ppm lead at 9,966 properties; health education.	ROD 5/13/2009 pp. 27, 39-47	Engineering/ Containment	No	
NESFN0703481	02	Institutional Controls	ICs will include a local lead hazard registry providing online access to lead hazard information at individual properties, including status of EPA investigations and response actions, and HUD-funded lead hazard control and abatement activities. Need for additional ICs will be assessed during implementation of final remedy.	ROD 5/13/2009 pp. 46-47	Institutional Control	No	
MOD980686281							
MOD980686281	01	On-site disposal (excavation, capping, covering, reveg)	Removal of mine/mill wastes, contaminated soil, and selected stream sediments; subaqueous disposal of excavated source material in mine subsidence pits; recontouring and revegetating excavated areas, soil amendments and stablizations; selection and capping of disposal pits; shaft plugging and surface water diversion from mine openings	ROD 9/30/2004 pp.25-30	Engineering/ Containment	No	
MOD980686281	01	Institutional Controls	1. Institutional controls (site wide building permit ordinance) to regulate future residential development in contaminated areas and the use of the disposal areas. 2. ICs (restrictions or easements) on the property deeds for the areas where the disposal or containment occurs (disposal and capped areas) as a result of excavation/disposal remedy. 3. Continuation of the Health Education Program established under OU 2/3. 4. A monitoring program for assessing the effect of cleanup on Site streams.	ROD 9/30/2004 p. 31-32	Institutional Control	No	
MOD980686281	02	On-site disposal (excavation, capping, covering, reveg)	Excavation and replacement of smelter zone residential yard soils exceeding 75 ppm cadmium and 500 ppm lead at properties where at least one soil sample result exceeded 800 ppm; construction of a repository for excavated soil; sampling of additional residential yard in mining and smelter areas. Also, conducting a phosphate stabilization treatability study (that will take 10-12 months); phosphate stabilization of yard	ROD 8/1/1996 pp. 2, 13-14	Engineering/ Containment	No	

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
			soils if treatability study results are positive (excavation/replacement will be abandoned).				
MOD980686281	02	Institutional Controls	Establishing institutional controls for residential and day care center development; ICs required to prevent exposure of children to unacceptable levels of lead in the soil in future residential developments; may include zoning restrictions, long term zoning plans, special building codes, health ordinances covering construction of residential homes, or deed restrictions depending on the desires of the community and local authorities; continuation of the ongoing health education program.	ROD 8/1/1996 pp. 2, 13, 16	Institutional Control	No	
MOD980686281	03		Addressed as part of OU 2				
MOD980686281	04	Alternative drinking water	Implementing the Public Water Supply District #3 in the Oronogo/Duenweg Designated Area (DA); extension of existing public water lines in the Oronogo/Duenweg and the Irons Gates Extension DAs; approx.. 348 affected and threatened homes will be connected to a public supply;a monitoring program to periodically sample homes with shallow water wells that are threatened with exceedances but are not currently exceeding action levels and not hooked up to a public water supply.	ROD 7/29/1998 pp. 18-19	Engineering/ Containment		
MOD980686281	04	Water treatment-other	Installation of point-of-use treatment units (consisting of a sodium chloride charged residential water softener) to (5) homes not accessible to public water; a maintenance program for the point-of-use treatment units.	ROD 7/29/1998 pp. 18-19	Treatment	No	
MOD980686281	04	Institutional Controls	ICs to regulate future uses of the contaminated shallow aquifer.	ROD 7/29/1998 pp. 18-19	Institutional Control	No	
MOD980686281	05						
MON000705443							
MON000705443	01						
MON000705443	02						
MON000705443	03						
MON000705443	04						
MON000705443	05						
MON000705443	06						
MON000705842							
MON000705842	01						

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
MON000705842	02						
MON000705842	03						
MON000705027							
MON000705027	01						
MON000705027	02						
MON000705027	03						
MON000705027	04						
MON000705023							
MON000705023	01						
MON000705023	02						
MON000705023	03						
MON000705023	04						
MON000705032							
MON000705032	01						
MON000705032	02						
MON000705032	03						
MON000705032	04						
MTD093291599							
MTD093291599	01						
MTD093291656							
MTD093291656	01						
MTD093291656	03	On-site disposal (excavation, capping, covering, reveg)	Work on residential soils consisted of removing 18 inches of contaminated soil from the targeted area and replacing it with 2 inches of limerock overlain by 16 inches of clean soil.	FYR, 11/24/1994, p.16	Engineering/ Containment	No	
MTD093291656	04	On-site disposal (excavation, capping, covering, reveg)	Remove wastes (slag, tailings, red sands, contaminated soil and sediments) and place in on-sites waste management area (excavation), soil cover, stream bank stabilizing, revegetative covers	ROD, 9/29/1998, p.4-5, 22-26	Engineering/ Containment	No	
MTD093291656	04	Monitored natural attenuation/recovery	Groundwater and surface water	ROD, 9/29/1998, p.5, 22-26	Treatment	No	

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MTD093291656	04	Institutional Controls	Preserve engineering controls, control land and water use, education, local permitting required	ROD, 9/29/1998, p.5, 22-26	Institutional Control	No	
MTD093291656	07	Institutional Controls	protect engineering controls and future land use	ROD, 3/8/1994, p.4-5, 38	Institutional Control	No	
MTD093291656	07	On-site disposal (excavation, capping, covering, reveg)	innovative revegetation	ROD, 3/8/1994, p.4-5, 37-38	Engineering/ Containment	No	
MTD093291656	07	Surface water diversion	surface controls managing run-off, upgrade levees, replace culverts and bridges	ROD, 3/8/1994, p.4-5, 37-38	Engineering/ Containment	No	
MTD093291656	09	On-site disposal (excavation, capping, covering, reveg)	Excavation and disposal in an on-site repository	FYR, 11/24/1994, p.14	Engineering/ Containment	No	
MTD093291656	11	Solidification	Cement/silicate process	ROD, 9/23/1991, p.13	Engineering/ Containment	No	
MTD093291656	11	On-site disposal (excavation, capping, covering, reveg)	waste repository with a liner, leachate collective system, and protective institutional controls	ROD, 9/23/1991, p.13	Engineering/ Containment	No	
MTD093291656	11	Institutional Controls	site access and land use restrictions	ROD, 9/23/1991, p.13	Institutional Control	No	
MTD093291656	12	On-site disposal (excavation, capping, covering, reveg)	Excavation and disposal in an on-site repository	FYR, 11/24/1994, p.14	Engineering/ Containment	No	
MTD093291656	14						
MTD093291656	15	Resident relocation	Permanent relocation 14 households, children had high levels or arsenic in urine	ROD, 10/2/1987, p.5-6, 14-15	Engineering/ Containment		
MTD093291656	15	Deconstruction/ decontamination of buildings	Demolition/stabilization (vegetative cover) of those structures	ROD, 10/2/1987, p.14-15	Engineering/ Containment	No	
MTD093291656	15	Institutional Controls	Condemnation of the community by the federal or state governemnt, area to be fenced and posted	ROD, 10/2/1987, p.14-15	Institutional Control	No	
MTD093291656	15	On-site disposal (excavation, capping, covering, reveg)	Removal of contaminated soils	ROD, 10/2/1987, p.11	Engineering/ Containment	No	
MTD093291656	16	Institutional Controls	Educate the potential risks and restrict access	ROD, 9/30/1996, p.5, 36-37	Institutional Control	No	
MTD093291656	16	On-site disposal (excavation, capping, covering, reveg)	Soil removal/deep tilling with soil ammendments, backfill, revegetation; work on residential soils consisted of removing 18 inches of contaminated soil from the targeted area and replacing it with 2 inches of limerock overlain by 16 inches of clean soil.	ROD, 9/30/1996, p.5, 36-38	Engineering/ Containment	No	
COD007063530							
COD007063530	01	On-site disposal (excavation, capping, covering, reveg)	close pond in place, slurry wall installation with leachate collection system	ROD, 2/18/1983, p. 87	Engineering/ Containment	No	

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COD007063530	01	Institutional Controls	deed restrictiion, groundwater use restrictions	ROD, 2/18/1983, p. 89	Institutional Control	No	
COD007063530	02	Other – Engineering/Containment	drain system installed along the length of the Globe Plant terrace that intercepts and collects the contaminated ground water and transported to the existing WWTP	ROD, 2/18/1983, p. 90	Engineering/ Containment	Yes	ROD, 2/18/1983, Figure 6 and 7
COD007063530	02	On-site disposal (excavation, capping, covering, reveg)	sediment removal from IDD and retention ponds and disposed of in a landfill	ROD, 2/18/1983, p. 93	Engineering/ Containment	No	
COD007063530	02	Institutional Controls	prevention of groundwater use	ROD, 2/18/1983, p. 93	Institutional Control	No	
COD007063530	03	On-site disposal (excavation, capping, covering, reveg)	excavation, capping (reveg), and soil borrowing or deep tilling; remediation will be upon request from residents after soil sampling completed	ROD, 2/18/1983, p. 96	Engineering/ Containment	Yes	ROD, 2/18/1983, Figure 8
COD007063530	03	Institutional Controls	community education	ROD, 2/18/1983, p. 97	Institutional Control	No	
COD007063530	04	Other – Treatment Technology	HEPA filter installation	ROD, 2/18/1983, p. 100	Treatment		
COD007063530	04	On-site disposal (excavation, capping, covering, reveg)	capping of soils, soil borrowing, soil ammendments, revegetation	ROD, 2/18/1983, p. 103	Engineering/ Containment	No	
COD007063530	04	Institutional Controls	land use restrictions	ROD, 2/18/1983, p. 104	Institutional Control	No	
MT6122307485							
MT6122307485	01						
MT6122307485	02						
MTD982572562							
MTD982572562	01	Off-site disposal		ROD 2001, p 4	Engineering/ Containment	No	
MTD982572562	01	Institutional Controls		ROD 2001, p 4	Institutional Control	No	
MTD982572562	02						
MTD982572562	03						
MTD982572562	04						
MTD982572562	05						
MTD982572562	06						
COD980717938							
COD980717938	01	Other – Engineering/Containment	Tunnel plugs, seal shafts, and monitor groundwater because altering the groundwater system	ROD, 3/29/1988, p.17-20	Engineering/ Containment	No	
COD980717938	01	Water treatment-other	Surge collection ponds and water collection and treatment system; alum and polyelectrolytes is added to the treatment system	ROD, 3/29/1988, p.17-20; FYR 2/2/1996, p. 8	Treatment	No	

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COD980717938	02	No action	Cleanup actions taken previously warrented a no further action declaration unless zoning/land use changes; but continued monitoring of the previous remedial actions are on-going.	ROD, 9/30/1999, p. 3, 50-51		No	
COD980717938	03	No action	Considered effective because 1) no complete human or ecological exposure pathways were identified for the stockpiled fine slag and 2) the potential for release of metals in leachate from the stockpiled fine slag is minimal.	ROD, 5/6/1998, p. 4, 18		No	
COD980717938	04	On-site disposal (excavation, capping, covering, reveg)	waste rock removal, regrading, revegetation, soil ammendments	ROD, 3/31/1998, p. 31-39	Engineering/ Containment	No	
COD980717938	04	Surface water diversion	with a groundwater diversion too that will re-route surface water runon around waste rock piles and collection in a sediment rentention pond; stream reconstruction, install sediment dams, recreate wetlands	ROD, 3/31/1998, p. 31-39	Engineering/ Containment	No	
COD980717938	05	Institutional Controls	consists of measures to provide information to current and/or future land owners regarding the environmental conditions at the site through a zoning “overlay district,” and to ensure that if the site is developed any necessary special precautions or requirements are followed. Any sampling or response actions will be conducted or funded by ASARCO Inc., consistent with the development plans.	ROD, 10/31/2000, p. 5, 35-36	Institutional Control	No	
COD980717938	06	On-site disposal (excavation, capping, covering, reveg)	Waste pile relocation to an on-site repository, stabilization of a crib wall, and maintenance and monitoring of capped waste piles. It was later decided to construct a Site-wide repository in 0U6 for contaminated soils and sedimets from the remedial systems in place.	ROD, 9/25/2003, p. 43-44; AMD, 9/28/2010, p. 3, 9	Engineering/ Containment	No	
COD980717938	06	Water treatment-other	Bulkhead cap of mine tunnel with pumping to a water treatment plant (may need upgrades to BOR WWTP to accommodate pumping up to 3,000 gpm), construction of ponds/mine pools and piping system. It was later decided to not include bulkheads within the remedy due to disagreements in its effectiveness by the EPA, the State, and U.S. Bureau of Reclamation.	ROD, 9/25/2003, p. 44; AMD, 9/28/2010, p. 3, 9	Treatment	No	
COD980717938	06	Institutional Controls	Controls on land use would be implemented as part of this remedy. Land Use Controls would limit access to or use of the areas remediated through prior Response Actions. These include capped and consolidated waste piles, areas with clean water diversion and ARD collection structures. Permanent measures to be considered would include legal or institutional mechanisms to provide notification that a Superfund remedy is in place and establish restrictions/ requirements for future activities to maintain the integrity and effectiveness of the remedies. Modifications to county and/ or city zoning ordinances would involve the creation of an "overlay district" to provide a screening process to identify properties where special precautions or requirements may be needed.	ROD, 9/25/2003, p. 44-45	Institutional Control	No	
COD980717938	06	Surface water diversion	Exapnd the systems that are already in place	AMD, 9/28/2010, p. 17	Engineering/ Containment	No	

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COD980717938	07	On-site disposal (excavation, capping, covering, reveg)	18 inches of clean borrow soil, placed over a geotextile drainage net and geosynthetic barrier	ROD, 6/6/2000, p. 42, 54-55	Engineering/ Containment	Yes	ROD, 6/6/2000, Figure 5
COD980717938	07	Surface water diversion	channelization of California Gulch through the Main Impoundment	ROD, 6/6/2000, p. 42, 54-55, 58-60	Engineering/ Containment	Yes	ROD, 6/6/2000, Figure 9
COD980717938	07	Institutional Controls	Limit access to or use of the property (current and future use scenarios) or warn of potential hazards. provide notification that a barrier is in place and establish restrictions/ requirements for future activities to maintain the integrity and effectiveness of the cover system and other control features. Modifications to County and/or city zoning ordinances would involve the creation of the “overlay district” to provide a screening process to identify properties where special precautions or requirements may be needed.	ROD, 6/6/2000, p. 43, 54-55, 58-60	Institutional Control	No	
COD980717938	08	Surface water diversion	riprap or erosion-control matting in erosion-prone areas of fluvial tailing	ROD, 9/29/2000, p. 7, 20, 59	Engineering/ Containment	No	
COD980717938	08	On-site disposal (excavation, capping, covering, reveg)	Regrading and revegeting with soil ammendments	ROD, 9/29/2000, p. 58	Engineering/ Containment	No	
COD980717938	08	Institutional Controls	designed to provide notification that a barrier is in place and to restrict land use to protect the integrity of the remedy. Modifications to County and/or City zoning ordinances that involve the creation of a zoning “overlay district” to provide a screening process to identify properties where special precautions or requirements will be necessary.	ROD, 9/29/2000, p. 7, 20, 58	Institutional Control	No	
COD980717938	09	On-site disposal (excavation, capping, covering, reveg)	Create run-off diversion ditch, cover contamination with sod, borrowed soil, ashpalt, or concrete dependent upon resident's needs. May also entail sealing houses and/or vacuuming with HEPA filter to remove lead dust	ROD, 9/2/1999, p. 35-36	Engineering/ Containment	No	
COD980717938	09	Institutional Controls	Excavation restrictions, educational program	ROD, 9/2/1999, p. 33-34	Institutional Control	No	
COD980717938	10	On-site disposal (excavation, capping, covering, reveg)	regrade existing impoundments, install mulit-layer rock and soil cover with a geosynthetic cover and catchment ditches	ROD, 8/8/1997, p. 4-5, 31-32	Engineering/ Containment	No	
COD980717938	10	Other – Engineering/Containment	Groundwater cutoff trench in paleochannel upstream	ROD, 8/8/1997, p. 4-5, 31-32	Engineering/ Containment	No	
COD980717938	11	On-site disposal (excavation, capping, covering, reveg)	Addition of lime and other soil ammendments with deep tilling of soils and application of a vegetative cover	ROD, 9/28/2005, p. 7, 34-37, 46-49	Engineering/ Containment	Yes	ROD, 9/28/2005, Figure 3, 4a, 5a
COD980717938	11	Institutional Controls	Apply land use controls and prevent land use changes	ROD, 9/28/2005, p. 7, 34-37, 46-49	Institutional Control	No	
COD980717938	12	Institutional Controls	ICs will be implemented to restrict the use of surface and alluvial groundwater within the NPL Site boundaries (Restricted Area). This will minimize the likelihood of adverse human health effects from the consumption of contaminated	ROD, 9/22/2009, p. 4, 42, 56-57	Institutional Control	No	

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			Site water. Because Arkansas River water meets drinking water standards, the ICs will not apply to the River. Institutional controls will be implemented as environmental covenants on specific parcels, a Lake County Ordinance, Parkville Water District Rules and Regulations, or Colorado State Engineer notice. It is expected that the final ICs will be a combination of one or more of these specific ICs. A technical impracticability (TI) waiver is needed for shallow groundwater.				
COD981551427							
COD981551427	01	Water treatment - Bioreactors (e.g., SRBs)	Bulkhead and Internal Mine-Pool Mitigation with Phased Successive Biochemical Reactor Treatment Outside of Adit	ROD, 9/29/2008, p. 94, 125-141	Treatment		
COD981551427	01	On-site disposal (excavation, capping, covering, reveg)	On-Site Consolidation & Capped-Cells for All Contaminated Soils	ROD, 9/29/2008, p. 95-96, 120-125	Engineering/ Containment	Yes	ROD, 9/29/2008, p. 95-96, 121
COD981551427	01	Institutional Controls	A fence, or other appropriate access-barriers, would likely remain around any consolidation cells; restricting future well drilling within the boundaries of the CJM Site	ROD, 9/29/2008, p. 99	Institutional Control	No	
MT0001096353							
MT0001096353	01	On-site disposal (excavation, capping, covering, reveg)	exvacation, backfill, disposal on-site (lower Carpenter Creek tailing deposit), cover, vegetate	ROD, 4/26/2009, p. 16-17, 80, 91-94	Engineering/ Containment	No	
MT0001096353	01	Institutional Controls	ICs include such components as education programs; child blood-lead testing; water quality testing for well and spring water use; provisions to inspect, sample, and dispose of potentially contaminated soils excavated during future construction activities; restricting access to waste material so it is not used as fill; property purchase notifications; and developing a program for conducting and managing future sampling activities after the remedial action is completed.	ROD, 4/26/2009, p. 16-17, 80, 94-98	Institutional Control	No	
MT0001096353	02						
MT0001096353	03						
COD980717557							
COD980717557	01	Water treatment - Created Wetlands	Treatment of the acid discharges from five mine tunnels using an innovative technology, man-made wetlands, to emulate or enhance natural metal ion removal and acidity reduction processes. If this selected remedy fails, the replacement remedy is an active treatment system, a chemical and/or elctrochemical precipitaion system.	ROD, 9/30/1987, p. 9-10	Treatment	No	
COD980717557	02	Surface water diversion	runon controls upgradient of the waste roock and tailings piles	ROD, 3/31/1998, p. 14-15	Engineering/ Containment	No	
COD980717557	02	On-site disposal (excavation, capping, covering, reveg)	Slope stabiliization of waste piles and capping/revegetating two of the file piles	ROD, 3/31/1998, p. 14-15; ESD, 9/1/1999, p. 6	Engineering/ Containment	No	

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COD980717557	03	On-site disposal (excavation, capping, covering, reveg)	capping of waste piles; according to the ROD AMD, some of the waste products will now be sent to an on-site waste repository	ROD, 9/20/1991, p. 17-18; AMD, 9/25/2006, p. 8	Engineering/ Containment	No	
COD980717557	03	Institutional Controls	Institutional controls (IC) implemented at several priority areas in the Site include deed notification requirements, prohibition of drilling for water wells, and residential zoning restrictions. The IC's are defined in Prospective Purchaser Agreements (Chase Gulch #1, Big Five waste pile), Administrative Orders on Consent (Clay County), Unilateral Administrative Orders (Black Eagle, Gregory Gulch #1) and three-party agreements (McClelland).	ROD, 9/20/1991, p. 17-18; FYR, 9/29/2004, p. 39	Institutional Control	No	
COD980717557	03	Water treatment-other	Pump and treat, ammendment to OU 1, no design details given, in the Idaho Springs area to address non-point source metals loading to surface water; installation of a pipeline system to carry the acid mine drainage from the National and Quartz Hill tunnels and the Gregory Incline to a point below the Black Hawk sewage treatment plant for potential future treatment. WWTP by-products (solids) will now be sent to an on-site repository.	ROD, 9/20/1991, p. 17-18; AMD, 9/25/2006, p. 8	Treatment	No	
COD980717557	03	Alternative drinking water	Four drinking water wells were contaminated	FYR, 3/1999, p. 15	Engineering/ Containment		
COD980717557	03	Water treatment - Created Wetlands	Passive treatment for Burleigh Tunnel	ROD, 9/20/1991, p. 17-18	Treatment	No	
COD980717557	04	Water treatment - Bioreactors (e.g., SRBs)	A gravity pipeline configured as full-pipe flow conveying the National Tunnel discharge downstream to the passive treatment system location; a passive treatment system that consists of Sulfate Reducing Bioreactor (SRBR) cells. The effluent from the SRBR cells would flow to a Free Water System (FWS) cell for polishing prior to discharge to the North Fork of Clear Creek.	ROD, 9/29/2004, p. 4	Treatment	No	
COD980717557	04	Water treatment-other	An interceptor trench at the base of the Gregory Gulch alluvium near the upstream entrance of the Gregory Gulch box culvert; a sump and pump station on the up gradient side of the Gregory Gulch interceptor trench, and a pipeline connecting to the Bates Hunter Mine Water Treatment Plant; a pump station and pipeline connecting the Gregory Incline discharge to the Bates Hunter Mine Water Treatment Plant. Now, a new WWTP is to be contructed and all by-products will be sent to an on-site repository.	ROD, 9/29/2004, p. 4; AMD, 9/25/2006. p. 8; AMD, 4/29/2010, p. 3	Treatment		
COD980717557	04	On-site disposal (excavation, capping, covering, reveg)	Waste materials would be trucked to an on-site mine waste repository ; excavation, capping, or stabilization of the following mine waste piles and adjacent areas: Argo, Pittsburgh, Mattie May, Baltimore, Iroquois, Anchor, Hazeltine, Druid, and Upper Nevada Gulch piles. (Soil Cap and Revegetate on the south side of Nevada Gulch and cap with rock on the north side); stabilization of stream channels adjacent to capped waste piles.	ROD, 9/29/2004, p. 4; AMD, 4/29/2010, p. 3	Engineering/ Containment	Yes	ROD, 9/29/2004, Figure 9-5, 9-6

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COD980717557	04	Surface water diversion	Construction of run-on ditches upslope of the Mattie May, Baltimore, Hazeltine, Pittsburgh, Upper Nevada Gulch Piles, Iroquois, Anchor, Druid, and Argo. Construct sediment dams	ROD, 9/29/2004, p. 4	Engineering/ Containment	No	
COD980717557	04	Institutional Controls	Will be established in areas in which waste will remain in place once the remedy has been fully implemented	ROD, 9/29/2004, p. 4	Institutional Control	No	
UTD988075719							
UTD988075719	01	Off-site disposal	Excavation of lead and arsenic contaminated soils, backfill with clean soil, and off-site landfill treatment and disposal of contaminated soil classified as hazardous waste	ROD, 9/30/2002, p. 4-5, 34, 40-43	Engineering/ Containment	Yes	ROD, 9/30/2002, Figure 5-12
UTD988075719	01	Other – Engineering/Containment	Interior cleaning of affected homes to remove any contaminated dust.	ROD, 9/30/2002, p. 4-5, 34, 40-43	Engineering/ Containment	No	
UTD988075719	01	Institutional Controls	Institutional controls will be used to restrict access and exposure to contaminated soil left in-place. A program to monitor the soil cover and compliance with institutional controls would also be implemented.	ROD, 9/30/2002, p. 4-5, 34, 40-43	Institutional Control	No	
UTD988075719	02	Off-site disposal	Commercial Areas of OU2 is excavation and off-Site disposal of all soils in excess of 1,000 mg/kg lead and undeveloped areas of OU2 is the excavation and off-Site disposal of all soils in excess of 3,000 mg/kg lead, ex-situ treatment and off-Site disposal of principal threat waste, followed by the replacement of excavated soil with clean soil, and re-vegetation.	ROD, 9/16/2009, p. 4, 46-54	Engineering/ Containment	Yes	ROD, 9/16/2009, p. Figure 8.1
UTD988075719	02	Institutional Controls	Institutional Controls (ICs), such as environmental covenants under the State of Utah's Environmental Covenants Act, conservation easements and/or land use controls established through Salt Lake County Zoning Authorities, and/or notification services, to ensure the remedy remains protective.	ROD, 9/16/2009, p. 4, 46-54	Institutional Control	No	
UTD988075719	03	Off-site disposal	Allow on-site treatment of soil exhibiting a characteristic of hazardous waste. This treatment involves mixing a chemical stabilizing agent with the contaminated soil either in-situ or in staging piles. Treated wastes can be transported to an off-site solid waste landfill for disposal if the material no longer exhibits a characteristic and it complies with land disposal restrictions found within 40 CFR 268 and UAC R315-13. Any hazardous remediation wastes transported off-site for disposal will be taken to a RCRA Subtitle C facility as required by the ROD.	ESD, 11/15/2005, p. 7	Engineering/ Containment	No	
COD980716955							
COD980716955	01	Off-site disposal	1) excavation of radium-contaminated soils to meet standards established in 40 CFR Part 192; 2) the analysis of the contaminated materials to be disposed of to ensure compliance with transportation and disposal regulations; and 3) shipment of contaminated materials to the permanent off-site disposal facility.	ROD, 9/29/1987, p. 11	Engineering/ Containment	No	
COD980716955	02	Off-site disposal	1) excavation of radium contaminated soils in open areas to meet standards established in 40 CFR Part 192, 2) analysis of the contaminated materials to be disposed of to ensure compliance with transportation and disposal regulations, 3)	ROD, 9/29/1987, p. 11-12; ESD, 9/17/1993, p. 2;	Engineering/ Containment	No	

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			soils containing commingled radium and lead were solidified in a cement matrix prior to being shipped to the permanent off-site disposal facility, and 4) shipment of contaminated materials to the permanent off-site disposal facility.	FYR, 9/12/1994, p.7			
COD980716955	02	Institutional Controls	Institutional controls will be placed on this property to assure that interested parties are aware of the presence of radiological contamination left on-site under buildings, by right-of-way railroad tracks, and by a high voltage powerline on the Du-Wald site. Institutional controls may include deed restrictions and special zoning.	ESD, 9/17/1993, p. 2	Institutional Control	No	
COD980716955	03	Off-site disposal	1) excavation of radium-contaminated soils to meet standards established in 40 CFR Part 192; 2) the demolition of certain radium-contaminated buildings; 3) the analysis of the contaminated materials to be disposed of to ensure compliance with transportation and disposal regulations; and 4) shipment of contaminated materials to the permanent off-site disposal facility.	ROD, 9/29/1987, p. 11-12; FYR, 9/12/1994, p.15	Engineering/ Containment	No	
COD980716955	03	Institutional Controls	There was no excavation of contaminated soils below ground water, near water lines, or under South Jason Street, Platte River Drive and the PCA building.	ESD, 12/13/1993, p. 5	Institutional Control	No	
COD980716955	04	Off-site disposal	1) excavation of radium-contaminated soils to meet target residual levels established in 40 Code of Federal Regulations (CFR), Part 192; 2) the demolition of certain radium-contaminated buildings; 3) the analysis of the contaminated materials to be disposed of to ensure compliance with transportation regulations; and 4) load-out and shipment of contaminated materials to the permanent off-site facility.	FYR, 9/30/1993, p. 5, 15	Engineering/ Containment	No	
COD980716955	04	Institutional Controls	The primary health risk posed by the radium (and thorium when it degrades to radium) contamination is from the accumulation of radon gas in overlying structures. Any radon gas emanating from the contaminated soil below the ground water will rise to the ground water and will tend to stay in solution. Since the radon will stay in solution, there will be little risk of the radon accumulating in overlying structures. Therefore, residual radioactive material that was left in place at the OU IV meets the criteria for the application of supplemental standards. Institutional controls will be placed on the OU IV property to assure that interested parties are aware of the presence of radiological contamination. Institutional controls may include deed restrictions and special zoning.	ESD, 12/1/1994, p. 5, 7	Institutional Control	No	
COD980716955	05		Addressed as part of OU 4				
COD980716955	06	Off-site disposal	1) excavation of radium-contaminated soils to meet standards established in 40 CFR Part 192; 2) the analysis of the contaminated materials to be disposed of to ensure compliance with transportation and disposal regulations; and 3) shipment of contaminated materials to the permanent off-site disposal facility.	ROD, 9/29/1987, p. 16-18; FYR, 9/12/1994, p. 21	Engineering/ Containment	No	
COD980716955	06	Institutional Controls	THAT THE CITY AND COUNTY OF DENVER IMPROVE EXISTING INSTITUTIONAL CONTROLS SO THAT ALL ROUTINE MAINTENANCE, REPAIR, OR	ROD, 9/29/1987, p. 3;	Institutional Control	Yes	FYR, 9/12/1994, Figure 8

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			CONSTRUCTION ACTIVITIES IN THE ALLEY CARRIED OUT BY GOVERNMENT AGENCIES, UTILITY COMPANIES, CONTRACTING COMPANIES, PRIVATE INDIVIDUALS, ETC., WILL BE MONITORED; AND THAT THE CITY AND COUNTY OF DENVER CONSIDER REMOVING OR REQUIRING THE REMOVAL OF ANY CONTAMINATED MATERIAL EXCAVATED DURING ROUTINE MAINTENANCE, REPAIR, OR CONSTRUCTION ACTIVITIES IN THE ALLEY TO A FACILITY APPROVED FOR THE STORAGE OR DISPOSAL OF SUCH CONTAMINATED MATERIAL.	ESD, 1/17/1995 , p.4			
COD980716955	07	Institutional Controls	INSTITUTIONAL CONTROLS WHICH WOULD MONITOR ALL CONSTRUCTION AND UTILITY WORK IN THE AFFECTED STREETS.	ROD, 3/24/1986, p.10;	Institutional Control	Yes	ROD, 3/24/1986, p.10;
COD980716955	08	Off-site disposal	Demolition and off-site disposal of existing facilities on the 1805 South Bannock property.	ROD, 1/28/1992, p. 2, 30-40	Engineering/ Containment	No	
COD980716955	08	Solidification	Excavation, consolidation, application of a monolith, stabilization, and on-site disposal of an estimated 50,000 cubic yards of contaminated soils. Stabilization of the contaminated soils entails mixing the soils with a cement additive resulting in a concrete-like material which physically and chemically stabilizes the contaminated soils. Stabilization will reduce the mobility of contaminants and radon emanation. A cap will be placed over the stabilized materials to protect the materialsfrom erosion and weathering, and to shield gamma radiation.	ROD, 1/28/1992, p. 2, 30-40; AMD, 6/16/2000, p. 3	Engineering/ Containment	No	
COD980716955	08	Institutional Controls	Institutional controls, maintenance, and monitoring will be used to supplement the remedy and to assure the protectiveness of the selected remedy is maintained into the future.	ROD, 1/28/1992, p. 2, 30-40	Institutional Control	No	
COD980716955	09	On-site disposal (excavation, capping, covering, reveg)	Make use of the existing concrete floor of the brick plant, asphalt parking lot and a cap of backfilled soil	ROD, 12/23/1991, p. 11; FYR, 9/12/1994, p. 21	Engineering/ Containment	No	
COD980716955	09	Institutional Controls	1) limit use of groundwater at the Site, and 2) maintain the integrity of the cap.	ROD, 12/23/1991, p. 2, 11	Institutional Control	No	
COD980716955	10	Off-site disposal	Temporary Onsite Land Storage, Permanent Offsite Disposal; excavation of all contaminated material, placement of the material in the bags, placement of the bags in the True Truss building, and maintenance and monitoring of the bags and building for 5 years.	ROD, 6/30/1987, p. 2, 28,32-33	Engineering/ Containment	No	
COD980716955	11	Off-site disposal	1) excavation of radium-contaminated soils to meet standards established in 40 CFR Part 192; 2) the analysis of the contaminated materials to be disposed of to ensure compliance with transportation and disposal regulations; and 3) shipment of contaminated materials to the permanent off-site disposal facility.	FYR, 9/12/1994, p. 21	Engineering/ Containment	No	
COD980716955	11	Institutional Controls	THAT THE CITY AND COUNTY OF DENVER IMPROVE EXISTING INSTITUTIONAL CONTROLS SO THAT ALL	ROD, 9/29/1987, p. 3;	Institutional Control	No	

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			ROUTINE MAINTENANCE, REPAIR, OR CONSTRUCTION ACTIVITIES IN THE ALLEY CARRIED OUT BY GOVERNMENT AGENCIES, UTILITY COMPANIES, CONTRACTING COMPANIES, PRIVATE INDIVIDUALS, ETC., WILL BE MONITORED; AND THAT THE CITY AND COUNTY OF DENVER CONSIDER REMOVING OR REQUIRING THE REMOVAL OF ANY CONTAMINATED MATERIAL EXCAVATED DURING ROUTINE MAINTENANCE, REPAIR, OR CONSTRUCTION ACTIVITIES IN THE ALLEY TO A FACILITY APPROVED FOR THE STORAGE OR DISPOSAL OF SUCH CONTAMINATED MATERIAL.	ESD, 1/17/1995 , p.4			
COD081961518							
COD081961518	01	Water treatment-lime	Installation of seep collection system, ammend existing WWTP with sludge dewatering system	ROD, 3/29/1993, p. 3-4, 32-36	Treatment	No	
COD081961518	01	Surface water diversion	Diversion of Rock Creek upgradient of contaminated mine seepage	ROD, 3/29/1993, p. 3-4, 32-36	Engineering/ Containment	No	
COD081961518	01	On-site disposal (excavation, capping, covering, reveg)	Expediting revegetation in the area of Roaster Pile 1 and associated drainage, and monitoring of seep water quality below the Roaster Pile 1 area Remove the contaminated soils and sediments from the Maloit Park Wetlands, control seepage from the CTP, and rapidly add topsoil and revegetate Drain and cap the historic pond	ROD, 3/29/1993, p. 3-4, 32-36	Engineering/ Containment	No	
COD081961518	01	Alternative drinking water	Relocate the Town of Minturn drinking water wells	ROD, 3/29/1993, p. 3-4, 32-36	Engineering/ Containment		
COD081961518	01	Institutional Controls	Implementation of use restrictions for ground water at the Rex Flats and OTP and accelerated revegetation at Rex Flats	ROD, 3/29/1993, p. 3-4, 32-36	Institutional Control	No	
COD081961518	02	Institutional Controls	To accomplish this remedy, local institutional controls will be modified or developed, such as zoning regulations and/or building permit code restrictions. In addition, a contingency strategy will be developed to maintain the integrity of the established site remedy and to inform EPA and the State of Colorado of any proposed change in land use. If land uses change, additional remediation may be required. EPA and the State of Colorado will review any developer-generated plans to assure that they are protective of human health and the environment.	ROD, 9/3/1998, p. 3, 8	Institutional Control	No	
COD081961518	03						
COD081961518	04						
MTD006230346							
MTD006230346	01	Water treatment-other	Surface water from Lower and Former Thornock Lakes will be stored in large steel tanks and treated through the coprecipitation of metals and arsenic.	ROD 11/22/1989, p.13	Treatment		

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MTD006230346	01	Other – Treatment Technology	Excavate contaminated sediments by smelting.	ROD 11/22/1989, p.13	Treatment		
MTD006230346	01	Other – Treatment Technology	Excavate and treat soils from granulating pit and water treatment facility by smelting	ROD 11/22/1989, p.13	Treatment		
MTD006230346	02	Off-site disposal	Residential soils	ROD 9/17/2009, p.5	Engineering/ Containment		
MTD006230346	02	Off-site disposal	Irrigation ditch and railroad right-of-way soils	ROD 9/17/2009, p.5	Engineering/ Containment		
MTD006230346	02	Institutional Controls	Zoning regulations, deed restrictions, easements, and public education	ROD 9/17/2009, p.152	Institutional Control	No	
UT0002240158							
UT0002240158	00	On-site disposal (excavation, capping, covering, reveg)	Cleanup of lead contaminated soils in yards (lead>231ppm residential and lead>750ppm for non-residential, excavate to 18 in, backfill, and revegetate);Disposal of contaminated soils in a repository and both on-site repositories will be capped following completion of the residential cleanup; Monitor public health; Regrade all mine waste piles and cover with either a rock or vegetative cover to prevent dust blowing or surface water runoff (surface run-on and run-off controls will be incorporated into the design) and surround with a fence;	ROD, 9/30/2002, p. 3, 72-76	Engineering/ Containment		
UT0002240158	00	Institutional Controls	Public health actions until the remedial action is completed; Institutional controls to ensure the long-term protectiveness of the remedy; Institutional controls (e.g.; zoning and/or building ordinances) will be developed jointly with State, City and County officials to control the handling and disposal of contaminated soils that may be excavated during future construction activities. The most likely mechanism would be through building permits issued by local government; Set-up health educational programs; As part of developing and implementing institutional controls, a plan will be created for operating an open cell at a repository in Eureka for the sole purpose of disposal of contaminated soils. Because the City and County have limited financial resources, the plan will also address the provision of financial resources to operate and maintain the open cell.	ROD, 9/30/2002, p. 3, 72-76	Institutional Control	No	
UT0002240158	01						
UT0002240158	02						
UT0002240158	03						
UT0002240158	04						
MT0012694970							
MT0012694970	01						
MT0012694970	02						
MT0012694970	03						
CO0001093392							

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CO0001093392	00						
SDD987673985							
SDD987673985	01	On-site disposal (excavation, capping, covering, reveg)		ROD, 9/29/2008, Sect 12	Engineering/ Containment	Yes	ROD, 9/29/2008, Sect 12
SDD987673985	01	Institutional Controls		ROD, 9/29/2008, Sect 12	Institutional Control	No	
SDD987673985	01	Other – Engineering/Containment		ROD, 9/29/2008, Sect 12	Engineering/ Containment	Yes	ROD, 9/29/2008, Sect 12
SDD987673985	01	Water treatment-lime		ROD, 9/29/2008, Sect 12	Treatment		
SDD987673985	01	Monitoring (all media and as separate remedy)		ROD, 9/29/2008, Sect 12	Treatment	No	
SDD987673985	02	Water treatment-lime		ROD, 4/23/2001, with ferric iron addition, 2-21, 22	Treatment		
SDD987673985	02	Impoundment		ROD, 4/23/2001, sludge staging, 2-22	Engineering/ Containment	No	
UTD093120921							
UTD093120921	01	Institutional Controls	Institutional controls (ICs) are needed to supplement the easement and to ensure it specifically addresses and protects the existing remedial features. Examples include further deed restrictions or modification of the conservation easement. ICs through the Tooele County building and health departments are also expected to apply to existing development where soil contaminants in excess of cleanup levels might be disturbed during property modifications. Undeveloped lands are being developed and proposed for development in the vicinity of Pine Canyon. As these lands become developed, particularly for residential purposes, the levels of lead and arsenic may become a matter of concern. Some of the land may require remedial action prior to being developed for residential purposes. Properties with existing development that will undergo modifications may also require remedial measures to avoid unacceptable human exposures to soil contaminants. The Tooele County building and health departments will have a process for developers and landowners to follow. Atlantic Richfield, developers, or landowners seeking to change the use of undeveloped land, such as from agricultural to residential, recreational visitor, or commercial uses, will be required to meet all requirements and specifications for the new use. The	ROD, 9/27/2007, p. 3-4, 62-64, 72-75	Institutional Control	No	

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
			Tooele County health and building departments, with assistance as necessary from EPA and UDEQ, are expected to enforce the ICs for soils in these developable areas.				
UTD093120921	01	Monitoring (all media and as separate remedy)	Remedual actions were completed prior to the ROD. To mainitain the integrity of the caps and covers, all media are being monitored on-site. Monitoring by Atlantic Richfield will consist of checking the integrity of the caps and covers and storm water controls on a regular basis. Atlantic Richfield will monitor and maintain the conservation area because it is owned by the company, and the TVRR grade capped areas. Maintenance of caps and covers, vegetation, storm water controls, erosion controls and fencing will be conducted as required to preserve the integrity of the selected remedy. Groundwater will be monitored at the conservation area to ensure that the former smelter area does not become a source of groundwater contamination in the future. Atlantic Richfield will fund the cost of the ICs and long-term monitoring. In addition, EPA and UDEQ will monitor the ICs to ensure they remain in place and serve their intended purpose.	ROD, 9/27/2007, p. 3-4, 62-64, 72-75	Treatment	No	
UT0002391472							
UT0002391472	01	Institutional Controls	Implementation of formal institutional controls to prevent exposure to any contamination remaining below eighteen inches or below existing structure.	ROD, 7/29/1999, p. 4, 38, 53-55	Institutional Control	Yes	ROD, 7/29/1999, Figure 6-6
UT0002391472	01	Off-site disposal	Excavation of soils within OU1 exhibiting (1) mean surface lead concentrations greater than 500 ppm, (2) mean subsurface lead concentrations greater than 800 ppm, or (3) mean surface arsenic concentrations greater than 100 ppm - to a maximum depth of eighteen inches. Pretreatment and off-site landfill disposal of contaminated soil classified as hazardous waste in accordance with Resource Conservation and Recovery Act (RCRA) Subtitle C. Off-site landfill disposal of contaminated soil not classified as hazardous waste in accordance with RCRA Subtitle D. Record of Decision - Declaration Jacobs Smelter Superfund Site Operable Unit 1. Replacement of up to twelve inches of clean backfill, six inches of topsoil, and relandscaping of affected properties. Properties will be returned to as close to original condition as possible. Interior cleaning of affected homes to remove any contaminated dust from the soils on-site.	ROD, 7/29/1999, p. 4, 38, 53-55	Engineering/ Containment	Yes	ROD, 7/29/1999, Figure 6-6
UT0002391472	02						
UT0002391472	03						
UT0002391472	04						
UT0002391472	05						
UTD070926811							
UTD070926811	01						
UTD070926811	02						
UTD070926811	03						

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
UTD070926811	04						
UTD070926811	05						
UTD070926811	06						
UTD070926811	07						
UTD070926811	08	On-site disposal (excavation, capping, covering, reveg)	Sludges inside removed, Mixed with contaminated soils, dried, and placed in Arthur Stepback Repository. The depression left was filled with tailings, covered with top soil and biosolids, and revegetated or restored back to a wetland in some pond areas.	ROD, 9/26/2002, p. 135	Engineering/ Containment	No	ROD, 9/26/2002, p. 135
UTD070926811	09	No action	No action is needed. The levels of contaminants present in the soils of Magna were not higenough to present a risk to Magna residents.	ROD, 9/26/2002, p. 75		No	ROD, 9/26/2002, p. 75
UTD070926811	10						
UTD070926811	11						
UTD070926811	12						
UTD070926811	13	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils exacavated and area were restored with clean fill and revegetated. However, for most of the soils, there is no discussion of what was done with the contaminated soils that were excavated. Some are taken to the Arthur Stepback Repository. Tailings capped in place with topsoil.	ROD, 9/26/2002, p. 108-111	Engineering/ Containment	No	ROD, 9/26/2002, p. 108-111
UTD070926811	13	Surface water diversion	Runon controls upgradient of process waste	ROD, 9/26/2002, p. 108-111	Engineering/ Containment	No	ROD, 9/26/2002, p. 108-111
UTD070926811	13	Deconstruction/ decontamination of buildings	Smelters and process areas demolished; construction debris decontaminated by washing.	ROD, 9/26/2002, p. 108-111	Engineering/ Containment	No	ROD, 9/26/2002, p. 108-111
UTD070926811	13	Off-site disposal	As-generated RCRA wastes must be recycled or removed to approved off-site facility.	ROD, 9/26/2002, p. 108-111	Engineering/ Containment	No	ROD, 9/26/2002, p. 108-111
UTD070926811	14	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils exacavated and area were restored with 18" of clean fill and revegetated. Soils were taken to the Arthur Stepback Repository or capped in place.	ROD, 9/26/2002, p. 120, 124-126	Engineering/ Containment	No	ROD, 9/26/2002, p. 120, 124-126
UTD070926811	14	Deconstruction/ decontamination of buildings	Buildings were demolished and recycled if possible	ROD, 9/26/2002, p. 124-126	Engineering/ Containment	No	ROD, 9/26/2002, p. 124-126
UTD070926811	15	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils exacavated, transported to the Arthur Repository, and area were restored with clean fill and revegetated	ROD, 9/26/2002, p. 65-68	Engineering/ Containment	No	ROD, 9/26/2002, p. 65-68
UTD070926811	16						
UTD070926811	17						
UTD070926811	18	On-site disposal (excavation, capping, covering, reveg)	Stabilize the waste dumps by constructed various structures on top of the dump and along the toe of the dump to stabilized the dump faces and prevent further erosion and impact to the main drainage of Middle Canyon. removed waste rock from areas where the material had encroached into the main drainage of Middle Canyon. A berm was place between the toe of the waste rock dump and the drainage to prevent continued encroachment. Additionally, a layer of rocks was placed in the drainage to prevent undercutting of the waste rock slope.	ROD, 9/26/2002, p. 211	Engineering/ Containment	No	ROD, 9/26/2002, p. 211

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
			Kennecott has also capped and revegetated the old sediment ponds associated with the Pine Canyon Tunnel discharges. Two ditches in conjunction with a retaining berm were placed along the top of the dump to collect drainage water. Drainage water is routed via a pipe and ditch to the Middle Canyon drainage.				
UTD070926811	19	On-site disposal (excavation, capping, covering, reveg)	Revegetation - plant species, which can concentrate the chemicals of concern and pose a risk to herbivorous and omnivorous species, will not be used during revegetation efforts in the canyons.	ROD, 9/26/2002, p. 203-204	Engineering/ Containment	No	ROD, 9/26/2002, p. 203-204
UTD070926811	19	Other – Engineering/Containment	Mapping where concentrations of chemicals of concern exceed developed land use standards or pose an increased risk of observable effects to either ecological or human receptors, will be performed. Areas that are currently capped will be delineated from areas that pose a threat but are not capped.	ROD, 9/26/2002, p. 203-204	Engineering/ Containment	No	ROD, 9/26/2002, p. 203-204
UTD070926811	20	On-site disposal (excavation, capping, covering, reveg)	Stabilize the waste dumps by constructed various structures on top of the dump and along the toe of the dump to stabilized the dump faces and prevent further erosion and impact to the main drainage of Middle Canyon. removed waste rock from areas where the material had encroached into the main drainage of Middle Canyon. A berm was place between the toe of the waste rock dump and the drainage to prevent continued encroachment. Additionally, a layer of rocks was placed in the drainage to prevent undercutting of the waste rock slope. Kennecott has also capped and revegetated the old sediment ponds associated with the Pine Canyon Tunnel discharges. Two ditches in conjunction with a retaining berm were placed along the top of the dump to collect drainage water. Drainage water is routed via a pipe and ditch to the Middle Canyon drainage.	ROD, 9/26/2002, p. 211	Engineering/ Containment	No	ROD, 9/26/2002, p. 211
UTD070926811	21						
UTD070926811	22	On-site disposal (excavation, capping, covering, reveg)	Removal of accumulated contaminated sediments in the wetlands and assuming disposal of the sediments in the RCRA repository	ROD, 9/26/2002, p. 160	Engineering/ Containment	No	ROD, 9/26/2002, p. 160
UTD070926811	22	Surface water diversion	Rerouting of Garfield Well No 5 and Kessler Springs discharges to the process water circuit	ROD, 9/26/2002, p. 160	Engineering/ Containment	No	ROD, 9/26/2002, p. 160
UTD070926811	23	Water treatment - Bioreactors (e.g., SRBs)	The injections of the selenate reducing microbes occur in the upgradient half of the plume, the selenate there never reaches the springs and wells. If the natural attenuation of the selenium over time requires 30 years to reach action levels, then the active remediation might take only half of the time, or 15 years to achieve. The second advantage is that the faster remediation time might allow this aquifer to achieve the action level for selenium before the mining and milling activities close. If this is the case, then it will not ever be necessary to build a separate treatment system for the springs, seeps, and wells. It allows maximum utilization of the process water circuit infrastructure. Monitor and the plumes and make appropriate changes as need to injection operations. The performance standard for the	ROD, 9/26/2002, p. 187- 189	Treatment	No	ROD, 9/26/2002, p. 187- 189

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			treated waters is 27 ug/L selenium for discharge directly into the Great Salt Lake. As an interim goal treated water may be discharged into the wetlands only if the concentration of selenium is 5 ug/L selenium or less, until a site-specific water quality goal can be established.				
UTD000826404							
UTD000826404	01	On-site disposal (excavation, capping, covering, reveg)		ROD 11/3/1998, pp. 7-8	Engineering/ Containment	No	
UTD000826404	01	Institutional Controls		ROD 11/3/1998, p. 9	Institutional Control	No	
UTD000826404	02	Water treatment-lime		ESD 6/23/2003, p. 3	Treatment	No	
UTD000826404	02	Water treatment-other		ESD 6/23/2003, p. 3; ROD 12/13/00, p. 82	Treatment	No	
UTD000826404	02	Monitored natural attenuation/recovery		ESD 6/23/2003, p. 4; ROD 12/13/00, p. 82	Treatment	No	
UTD000826404	02	Water treatment-other	Reverse osmosis plant.	ESD 6/23/2003, p. 3; ROD 12/13/00, p. 81	Treatment	No	
UTD000826404	02	Alternative drinking water		ESD 6/23/2003, pp. 2-3; ROD 12/13/00, pp.2-3	Engineering/ Containment		
UTD000826404	02	Institutional Controls		ESD 6/23/2003, p. 1; ROD 12/13/00, p. 2	Institutional Control	No	
UTD000826404	03	Institutional Controls		ROD - 9/28/2001, page 6.	Institutional Control	No	
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	ROD did not address this remedy since it was in place and functioning. Remedy optomizations were included in FYR however.	ROD - 9/28/2001, page 46	Engineering/ Containment	No	
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	ROD did not address this remedy since it was in place and functioning. Remedy optomizations were included in FYR however.	ROD - 9/28/2001, page 46	Engineering/ Containment	No	
UTD000826404	04	On-site disposal (excavation, capping, covering, reveg)		ROD 11/3/1998, pp. 9-10	Engineering/ Containment	No	
UTD000826404	04	Other – Engineering/Containment		ROD 11/3/1998, pp. 9-10	Engineering/ Containment	No	

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
UTD000826404	05	On-site disposal (excavation, capping, covering, reveg)		ROD 11/3/1998, pp. 10-11	Engineering/ Containment	No	
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)		ROD - 9/28/2001: page 26	Engineering/ Containment	No	
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)		ROD - 9/28/2001: page 26	Engineering/ Containment	No	
UTD000826404	06	Surface water diversion		ROD - 9/28/2001: page 27	Engineering/ Containment	No	
UTD000826404	06	Water treatment - Created Wetlands		ROD - 9/28/2001: page 27	Treatment	No	
UTD000826404	06	Soil Amendments		ROD - 9/28/2001: page 27	Treatment	No	
UTD000826404	06	Sediment dredging/ disposal		ROD - 9/28/2001: page 27	Engineering/ Containment	No	
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)		ROD - 9/28/2001: page 32	Engineering/ Containment	No	
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)		ROD - 9/28/2001: page 32	Engineering/ Containment	No	
UTD000826404	08						
UTD000826404	09						
UTD000826404	10	Institutional Controls		ROD 11/3/1998, p. 28	Institutional Control	No	
UTD000826404	11	Institutional Controls		ROD 11/3/1998, p. 34	Institutional Control	No	
UTD000826404	12						
UTD000826404	13						
UTD000826404	14						
UTD000826404	15						
UTD000826404	16						
UTD000826404	17	Institutional Controls		ROD 11/3/1998, p. 15	Institutional Control	No	
UTD000826404	18						
UTD000826404	19						
UTD000826404	20						
UTD000826404	21						

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
UTD000826404	22						
UTD000826404	23						
UTD000826404	24						
UTD000826404	24	Deconstruction/ decontamination of buildings	Demolish unneeded buildings and infrastructure and decontaminate construction debris, as needed prior to disposal.	ROD, 9/26/2002, p. 219-220	Engineering/ Containment	No	ROD, 9/26/2002, p. 219-220
UTD000826404	24	On-site disposal (excavation, capping, covering, reveg)	At a minimum, remove contaminated materials to an appropriate repository or landfill or down to a depth of 18 inches, whichever comes first. The wastes may go to the Arthur Stepback Repository, if appropriate. Cap any remaining wastes and revegetate, to minimize infiltration of rain water into underlying wastes. Provide run-off and run-on controls to minimize erosion to capped surfaces and prevent migration of wastes downstream. Any waste capped in place must be mapped for use by future land use managers and planners.	ROD, 9/26/2002, p. 219-220	Engineering/ Containment	No	ROD, 9/26/2002, p. 219-220
MT0009083840							
MT0009083840	01	On-site disposal (excavation, capping, covering, reveg)	soil cap over contaminated areas (surface)	2010 ROD p12-3	Engineering/ Containment	No	
MT0009083840	01	Off-site disposal		2010 ROD p12-3	Engineering/ Containment	No	
MT0009083840	01	Institutional Controls	EPA anticipates that ICs will include governmental and/or proprietary land use restrictions, and informational devices	2010 ROD p12-4	Institutional Control	No	
MT0009083840	02	On-site disposal (excavation, capping, covering, reveg)		2010 ROD p12-1	Engineering/ Containment	No	
MT0009083840	02	Off-site disposal		2011 ROD p12-1	Engineering/ Containment	No	
MT0009083840	02	Institutional Controls	IC at OU2 could involve (1) an agreement with a onecall utility locate service such as U-Dig; (2) informational devices including EPA Information, ad, handouts, and contractor training classes; (3) Proprietary restrictions environmental covenant, easement, or deed notice.	2012 ROD p12-1	Institutional Control	No	
MT0009083840	03						
MT0009083840	04						
MT0009083840	05						
MT0009083840	06						
MT0009083840	07						
MT0009083840	08						
COD042167858							
COD042167858	01	Impoundment	2.5 million cubic yards (cy) of tailing from unlined impoundments was excavated and disposed in the main (lined) impoundment	5yr - 9/27/2007, p. 7	Engineering/ Containment	Yes	FYR, 9/2007, Appendix A
COD042167858	01	Permeable Reactive Barrier	Permeable Reactive Treatment Wall (PRTW) was installed down-stream of the SCS Dam	5yr - 9/27/2007, p. 78	Treatment		
COD042167858	02	Monitoring (all media and as separate remedy)	Ground water quality in OU2 monitoring and domestic wells	5yr - 9/27/2007, p. 78	Treatment		

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
UTD081834277							
UTD081834277	01	On-site disposal (excavation, capping, covering, reveg)	excavation of surface soils and disposal at OU2	FYR, 10/2003, p. 4-2	Engineering/ Containment	No	
UTD081834277	01	Monitoring (all media and as separate remedy)	groundwater monitoring semi-annually	FYR, 10/2003, p. 4-2	Treatment	No	
UTD081834277	01	Institutional Controls	deed restrictions	FYR, 10/2003, p. 4-2	Institutional Control	No	
UTD081834277	02	Off-site disposal	excavation of highly contaminated smelter waste	FYR, 12/2008, p. 6	Engineering/ Containment	No	
UTD081834277	02	Other – Engineering/Containment	Constructing and maintaining various barriers over smelter waste and contaminated soils	FYR, 12/2008, p. 6	Engineering/ Containment	No	
UTD081834277	02	Institutional Controls		FYR, 12/2008, p. 6	Institutional Control	No	
UTD081834277	02	Other – Engineering/Containment	Stabilizing the banks of the Jordan River and/or possible revegegtation to minimize Site contamination from sloughing off into the Jordan River	FYR, 12/2008, p. 7	Engineering/ Containment	No	
UTD081834277	02	Monitoring (all media and as separate remedy)	groundwater monitoriing (Associated with OU1)	FYR, 12/2008, p. 7	Treatment	No	
MTD980717565							
MTD980717565	01	Alternative drinking water	150-FOOT DEEP WELL, PUMP, WELL HOUSE, PIPING, APPURTENANCES AND CONTROLS; CONNECTED TO A DISTRIBUTION SYSTEM	ROD, 4/14/1984, p. 5	Engineering/ Containment		
MTD980717565	02	Sediment dredging/ disposal	Offsite Disposal	ROD, 12/2004 PT41, p.11	Engineering/ Containment	Yes	ROD, 12/2004 PT4, p.15
MTD980717565	02	On-site disposal (excavation, capping, covering, reveg)	Sediment	ROD, 12/2004 PT41, p.12	Engineering/ Containment	Yes	ROD, 12/2004 PT4, p.15
MTD980717565	03						
UT3890090035							
UT3890090035	01	On-site disposal (excavation, capping, covering, reveg)	tailings, ore, and process-related material (by-product material, contaminated building materials, and mill equipment	ROD OU 1/2, 08/22/1990, p. 2	Engineering/ Containment		
UT3890090035	02	On-site disposal (excavation, capping, covering, reveg)	tailings from peripheral properties and eventual disposal in the same repository as described for operable unit I	ROD OU 1/2, 08/22/1990, p. 2	Engineering/ Containment		
UT3890090035	02	Institutional Controls		ROD OU 1/2, 08/22/1990, p. 2	Institutional Control	No	
UT3890090035	03	Monitoring (all media and as separate remedy)	groundwater monitoring semi-annually	ROD Interim OU3, 9/2004, p. 17 (pdf)	Treatment		
UT3890090035	03	Permeable Reactive Barrier	Permeable Reactive Treatment Wall (PRTW)	ROD OU3, 9/1998, p. 27 (pdf)	Treatment	No	
UT3890090035	03	Institutional Controls		ROD Interim OU3, 9/2004, p. 17 (pdf)	Institutional Control	Yes	ROD Interim OU3, 9/2004, p. 17 (pdf)
UTD980667208							

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
UTD980667208	01	Off-site disposal		ROD, OU1, 1989, p.8	Engineering/ Containment	No	
UTD980667208	01	On-site disposal (excavation, capping, covering, reveg)		FYR, OU1, 2002, p. 8	Engineering/ Containment		
UTD980667208	01	Deconstruction/ decontamination of buildings	demolition of sidewalks, patios, sheds, and other improvements which used mill tailings for construction	ROD, OU1, 1989, p.8	Engineering/ Containment	No	
UTD980667208	02						
UTD980667208	03	Monitored natural attenuation/recovery		IRAR, OU3, 2004, p. 12	Treatment		
UTD980667208	03	Institutional Controls	Two land use ICs (a Ground Water Management Area and a Quitclaim Deed) prohibit consumption of contaminated ground water from the alluvial aquifer. Third IC is a restrictive easement that prohibits the removal of contaminated soils and sediments.	IRAR, OU3, 2004, p. 12	Institutional Control	Yes	IRAR, OU3, 2004, p. 18
UTD980667208	03	Permeable Reactive Barrier		IRAR, OU3, 2004, p. 12	Treatment		
UTD980667208	04						
UTD980667208	05						
UTD980667208	06						
UTD980667208	07						
UTD980667208	08						
MTD021997689							
MTD021997689	01	Monitored natural attenuation/recovery		FYR, 2008, p. 6	Treatment		
MTD021997689	01	Soil Amendments	Contaminated soils were either treated by a proprietary chemical/physical stabilization process (utilizing sulfuric acid, ferrous sulfate and Portland cement reagents) and returned to the excavation as solidified treated soil blocks or disposed off-Site.	FYR, 2008, p. 6	Treatment		
MTD021997689	01	Off-site disposal	Contaminated soils were either treated by a proprietary chemical/physical stabilization process (utilizing sulfuric acid, ferrous sulfate and Portland cement reagents) and returned to the excavation as solidified treated soil blocks or disposed off-Site.	FYR, 2008, p. 6	Engineering/ Containment		
MTD021997689	01	Institutional Controls	Town adopted Superfund Overlay District (SOD) with groundwater & land use restrictions as the IC	FYR, 2008, p. 14	Institutional Control	No	
CON000802630							
CON000802630	01						
CON000802630	02						
UTD980952840							
UTD980952840	01	Impoundment	tailings and contaminated soils will be excavated and relocated to low-lying area within the impoundment - excavated areas and areas where waste is left in place will be covered with 12 inches of soil	ROD OU1, 7/2005, p. 51	Engineering/ Containment	No	

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UTD980952840	01	Other – Engineering/Containment	A wedge buttress will be installed along the over-steepened portion of the embankment (for about 400 feet of the total embankment length of 800 feet).	ROD OU1, 7/2005, p. 51	Engineering/ Containment	No	
UTD980952840	01	Institutional Controls	1. Ground water use restrictions (deed restriction) 2. Land use restrictions (environmental covenant)	ROD OU1, 7/2005, p. 52	Institutional Control	No	
UTD980952840	02						
UTD980951388							
UTD980951388	01	On-site disposal (excavation, capping, covering, reveg)	tailings from multiple site locations will be excavated and placed on the tailings pile. A five-foot, multi-layer vegetated soil cap (or design-based equivalent) is to be constructed over the entire tailings pile.	ROD OU1, 12/1993, p. 29	Engineering/ Containment	No	
UTD980951388	01	Soil Amendments	Soil contaminated above action levels will be excavated to a depth of two feet in the former mill area and placed on the tailings pile. The excavated soil will be replaced with clean fill, and the excavated area revegetated.	ROD OU1, 12/1993, p. 29	Treatment	No	
UTD980951388	01	Sediment dredging/ disposal	contaminated wetlands sediments will be dredged and this soil will be placed on the pile. The wetlands area will be reconstructed to its natural state. This excavation will also prevent surface water contamination and exposure of organisms to contaminated sediments	ROD OU1, 12/1993, p. 30	Engineering/ Containment	No	
UTD980951388	01	Institutional Controls	The use of groundwater on the site will be prohibited through deed restrictions, thereby eliminating potential onsite exposure.	ROD OU1, 12/1993, p. 30	Institutional Control	No	
UTD980951388	01	Monitoring (all media and as separate remedy)	A shallow groundwater monitoring system is to be installed along the northern and western peripheries of the tailings. These wells will function as points of compliance for the shallow groundwater migrating westward, to the Jordan River, and potentially northward, offsite in the upper sand and gravel aquifer. These wells will be designed to also function as extraction wells should ARARs be exceeded in them, necessitating pumping and treatment of groundwater	ROD OU1, 12/1993, p. 30	Treatment	No	
UTD980951388	02	On-site disposal (excavation, capping, covering, reveg)	REMOVAL OF CONTAMINATED SOILS/GARDENS, NOT COVERED BY PAVEMENT OR STRUCTURES, CONTAINING CONCENTRATIONS GREATER THAN 500 PPM PB AND 70 PPM AS. TEMPORARY STORAGE OF CONTAMINATED SOILS AT OU1, SEPARATE FROM THE TAILINGS AND WHERE THEY WILL BE INCLUDED IN THE FINAL REMEDY FOR OU1.	ROD OU2, 9/1990, p.12	Engineering/ Containment	No	
UTD980951388	02	Institutional Controls	TO REQUIRE BUILDING PERMITS PRIOR TO CONSTRUCTION DURING REMOVAL OR REPLACEMENT OF PAVEMENTS OR FOUNDATIONS. INSTITUTIONAL CONTROLS WILL BE EMPLOYED TO	ROD OU2, 9/1990, p.12	Institutional Control	No	

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			REGULATE THE INSTALLATION OF NEW GARDENS.				
MTD980502777							
MTD980502777	01	On-site disposal (excavation, capping, covering, reveg)	Disposal on site of tailings, contaminated soil, and sediment from 24 mile stretch of Silver Bow Creek	ROD, 11/29/1995, pp. 63-66	Engineering/ Containment	No	
MTD980502777	01	Soil Amendments	In-Situ soil/tailings treatment using lime and soil amendments	ROD, 11/29/1995, pp. 63-66	Treatment	No	
MTD980502777	01	Sediment dredging/ disposal	Dredged and disposed of stream sediment and re-aligned stream channel and used a temporary stream diversion to remove sediment	ROD, 11/29/1995, pp. 63-66	Engineering/ Containment	No	
MTD980502777	01	Institutional Controls	Variety, including monitoring of surface water and groundwater, land use restrictions	ROD, 11/29/1995, pp. 63-66	Institutional Control	No	
MTD980502777	02						
MTD980502777	03	Water treatment-lime	The HSB WTP is a two-stage high density sludge (HDS) lime precipitation water treatment system consisting of two primary treatment units and five ancillary process systems. The primary treatment units include first and second stage pH adjustment reactors and first and second stage clarifiers. The four ancillary processes include the influent control system, effluent control system, lime feed system and the polymer feed system.	FYR, 6/28/2011, p. 4-1	Treatment	No	
MTD980502777	03	Institutional Controls	Restrict use of contaminated groundwater using land and water use restrictions, along with access controls	FYR, 6/28/2011, p. 4-1	Institutional Control	No	
MTD980502777	04	Water treatment-lime	Same lime treatment remedy is also included as part of OU12	1991 ESD p3	Treatment	No	
MTD980502777	04	On-site disposal (excavation, capping, covering, reveg)		1991 ESD p3	Engineering/ Containment	No	
MTD980502777	04	Other – Engineering/Containment	strengthen all pond berms	1991 ESD p3	Engineering/ Containment	No	
MTD980502777	04	Surface water diversion		1991 ESD p3	Engineering/ Containment	No	
MTD980502777	04	Institutional Controls	1. Renewal of the lease agreement between ARCO and the State of Montana Department of Fish, Wildlife, and Parks, for continuation of use of major portions of the area as a wildlife refuge. 2. Implementation of a conservation easement with restrictive covenants by ARCO for the Site, to ensure that future development will not include residential use, and will not cause disruption of disposal areas or waste ponds. 3. Implementation of a permit development system, in cooperation with Anaconda and Deer Lodge Counties and ARCO, which will prevent residential development at the Site. The permit system includes the development of a master plan, which will designate the ponds as a wildlife refuge. 4. Implementation of a	ESD, 6/24/1991, p. 9	Institutional Control	No	

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			water well ban in the area. The well ban shall prohibit water wells within the waste ponds at the Site permanently, and shall temporarily prohibit water wells within the Site in areas outside of the waste ponds, until such time as ARARs are achieved for the ground water at the Site. 5. Implementation of a ban on swimming in the Ponds at the Site, to be accomplished through the posting of appropriate signs at the Site.				
MTD980502777	05						
MTD980502777	06						
MTD980502777	07	On-site disposal (excavation, capping, covering, reveg)	highly contaminated soil will be treated prior to disposal utilizing iron sulfate and lime	1995 ROD p33-35; 2005 FYR p4-7	Engineering/ Containment		
MTD980502777	07	Water treatment-other	in-situ; treated in open excavation trenches using iron sulfate, lime, and potassium permanganate amendments	1995 ROD p33-35; 2005 FYR p4-7	Treatment		
MTD980502777	07	Solidification		1995 ROD p33-35	Engineering/ Containment		
MTD980502777	07	Off-site disposal	Offsite disposal of oversize materials that are unsuitable for chemical fixation and backfilling.	1995 ROD p33	Engineering/ Containment		
MTD980502777	07	Alternative drinking water		1995 ROD p33	Engineering/ Containment		
MTD980502777	07	Monitored natural attenuation/recovery	Noted in FYR as component of remedy	2005 FYR p4-6	Treatment		
MTD980502777	07	Institutional Controls	IC to maintain soil cover and vegetative communities, and limit land uses. Also designate the area for continued railroad/industrial use and exclude residential development as a future use. Ban on groundwater well drilling.	1995 ROD p33-35; 2000 FYR p21	Institutional Control		
MTD980502777	08						
MTD980502777	09						
MTD980502777	10						
MTD980502777	11						
MTD980502777	12	On-site disposal (excavation, capping, covering, reveg)		1992 ROD p6	Engineering/ Containment	No	
MTD980502777	12	Surface water diversion		1992 ROD p6-8	Engineering/ Containment	No	
MTD980502777	12	Other – Engineering/Containment	Strengthen pond/dam berms and repair toe drain	1992 ROD p6-8	Engineering/ Containment	No	
MTD980502777	12	Water treatment-lime	Lime treatment remedy is also included as part of OU4	1992 ROD p7, 9	Treatment	No	
MTD980502777	12	Impoundment	wet-closure berms to enclose submerged and partially submerged tailings; chemically fix tailings and contaminated soils with lime/lime slurry in berms	1992 ROD p7	Engineering/ Containment	No	
MTD980502777	12	Monitoring (all media and as separate remedy)	long-term ecological monitoring	1992 ROD p8	Treatment	No	
MTD980502777	12	Institutional Controls	institutional controls to prevent residential development, domestic well construction, disruption of dry-closure caps, and swimming	1992 ROD p8	Institutional Control	No	
MTD980502777	13						

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COD983769738							
COD983769738	01	On-site disposal (excavation, capping, covering, reveg)	cover system associated with the consolidation area	FYR, 9/2005, p. 25	Engineering/ Containment	No	
COD983769738	01	Institutional Controls	covenants, conditions and restrictions (CCRs)	FYR, 9/2005, p. 25	Institutional Control	No	
COD983769738	01	Monitored natural attenuation/recovery	groundwater	FYR, 9/2005, p. 25	Treatment	No	
COD983769738	02	Institutional Controls	Engineering controls include a fence and warning signs around Spring No. 5. Access and land use restrictions impacted soils. Restrict water usage and prohibit well drilling	ROD OU2, 6/1998, p. 46	Institutional Control	No	
COD983769738	02	Monitored natural attenuation/recovery	A groundwater monitoring plan to determine the effectiveness of the remedy over the long-term and to ensure no further migration of dissolved PAHs or DNAPL.	ROD OU2, 6/1998, p. 46	Treatment	No	
COD983769738	02	Off-site disposal	creosote impacted sods were removed from the Site	ROD OU2, 6/1998, p. 17	Engineering/ Containment	No	
COD983769738	03	Alternative drinking water	provide alternative water supplies to residences affected by the spread of zinc in the groundwater from the CoZinCo facility	ROD OU2, 6/1998, p. 16	Engineering/ Containment		
COD980806277							
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Isolate soils and tailings in onsite repository; cap with clean soil and revegetate Conduct health screening	ROD OU1, 9/1986, p. 13	Engineering/ Containment	No	
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	CONFINE SOILS WITH LEVELS OF LEAD BELOW 1,000 PPM	ROD OU1, 9/1986, p. 13	Engineering/ Containment	No	
COD980806277	01	Monitoring (all media and as separate remedy)	groundwater monitoring, quarterly for five years	ROD OU1, 9/1986, p. 13	Treatment	No	
COD980806277	01	Alternative drinking water	domestic wells will receive alternative hookup to city water	ROD OU1, 9/1986, p. 14	Engineering/ Containment		
COD980806277	01	Institutional Controls	Site disturbance, dust surpression, and garden bed usage	FYR 11/1997, p. 6	Institutional Control	No	
COD980806277	02	Surface water diversion	Regrading	FYR, 11,/1997, p. 6	Engineering/ Containment	No	
COD980806277	02	Other – Engineering/Containment	Controlling dust emissions from dirt roads and the parking area by periodic spraying of a magnesium chloride dust suppressant solution. Extending the existing fence to restrict entry to the lower portion of the mine site.	FYR, 11,/1997, p. 6	Engineering/ Containment	No	
CO0002378230							
CO0002378230	00						
COD983778432							
COD983778432	00	Water treatment-other		1994 ROD, p 36-37	Treatment	No	
COD983778432	00	Other – Engineering/Containment		1994 ROD, p 36-37	Engineering/ Containment	No	
COD983778432	01	Water treatment-other	Injection wells with pump and treat	1994 ROD, p 31	Treatment	No	

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COD983778432	01	Other – Engineering/Containment	Grading, recontouring	1994 ROD, p 31	Engineering/ Containment	No	
COD983778432	01	Water treatment - Bioreactors (e.g., SRBs)	Sulfate-reducing bacteria	1994 ROD, p 31	Treatment	No	
COD983778432	01	Monitoring (all media and as separate remedy)	Groundwater	1994 ROD, p 31	Treatment	No	
COD983778432	02	On-site disposal (excavation, capping, covering, reveg)		1994 ROD, p. 31	Engineering/ Containment	No	
COD983778432	03						
COD983778432	04	Other – Engineering/Containment	Regrading	1994 ROD p 38	Engineering/ Containment	No	
COD983778432	05	Impoundment	Store contaminated runoff water, adit flows, seepage, and re-routed groundwater	2001 ROD, p. 71	Engineering/ Containment	Yes	2001 ROD, Figure 7
COD983778432	05	Monitoring (all media and as separate remedy)	Groundwater, sediments, surface water, engineered structures, instrumentation	2001 ROD, p. 72	Treatment		
COD983778432	05	On-site disposal (excavation, capping, covering, reveg)	Sludge repository	2001 ROD, p. 71	Engineering/ Containment	Yes	2001 ROD, Figure 7
COD983778432	05	Surface water diversion	Wightman Fork Diversion and HW Ditch, road relocation	2001 ROD, p. 71	Engineering/ Containment	Yes	2001 ROD, Figure 7
COD983778432	05	Water treatment-lime	replace existing WTP with a gravity-driven plant, inlcudes pipelines and sludge repository	2001 ROD, p. 71	Treatment		
MTSFN757801 2							
MTSFN757801 2	01						
MTSFN757801 2	02						
MTSFN757801 2	03						
MTSFN757801 2	04	On-site disposal (excavation, capping, covering, reveg)	Excavate and dispose in the Luttrell repository, mine site waste/rock and tailings, contaminated residential yard soils, and Rimini roadway materials.	ROD OU4, 6/2002, p. 5, 6	Engineering/ Containment	Yes	ROD OU4, 6/2002, p. 20, Figures 9-1 to 9-7
MTSFN757801 2	04	Other – Engineering/Containment	Construct drainage features to prevent or reduce storm water and snowmelt from entering mine workings	ROD OU4, 6/2002, p. 5	Engineering/ Containment	Yes	ROD OU4, 6/2002, p. 20, Figures 9-1 to 9-7
MTSFN757801 2	04	Water treatment-other	Biological treatment systems (probably utilizing enhanced sulfate- reducing bacteria, oxidation, and constructed wetlands, with additional treatment polishing components) or other in-situ treatment systems.	ROD OU4, 6/2002, p. 5	Treatment		
MTSFN757801 2	04	Other – Engineering/Containment	Unspecified ground water source controls.	ROD OU4, 6/2002, p. 5	Engineering/ Containment	Yes	ROD OU4, 6/2002, p. 20, Figures 9-1 to 9-7
MTSFN757801 2	04	Alternative drinking water	Construct wells to serve as the community water supply for Rimini.	ROD OU4, 6/2002, p. 110	Engineering/ Containment	Yes	ROD OU4, 6/2002, p. 20, Figures 9-1 to 9-7
MTSFN757801 2	04	Institutional Controls	Groundwater well use restrictions	ROD OU4, 6/2002, p. 5	Institutional Control	No	

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MTSFN7578012	05						
MTSFN7578012	06						
MTSFN7578012	07						
MTSFN7578012	08						
COD007063274							
COD007063274	01	On-site disposal (excavation, capping, covering, reveg)	This constitutes a compilation of approximately 10 different removal, stabilization, demolition, and on-site disposal remedial actions throughout the site. Three sources include: tailings capping and stabilization on site and along the San Miguel River is 22,000,000 yd3; contaminated wastes and soils were removed from an area of approximately 400 acres; and raffinate crystals total 1,100,000 yd3.	2010 FYR, pp 22-27	Engineering/ Containment	No	
COD007063274	01	Impoundment	This remedy includes capturing seepage and contaminated ground water and pumping it to several lined evaporation ponds where the water is evaporated.	2000 FYR, pp. i, ii	Engineering/ Containment	No	
UTN000802704							
UTN000802704	01						
CO0002259588							
CO0002259588	01	Off-site disposal		2003 ROD, p. 55	Engineering/ Containment	No	
CO0002259588	02						
CO0002259588	03						
SDD980717136							
SDD980717136	01	Institutional Controls		1990 ROD, p. 29	Institutional Control	No	
SDD980717136	01	On-site disposal (excavation, capping, covering, reveg)		1990 ROD, p. 29	Engineering/ Containment	No	
AZD008397127							
AZD008397127	01						
CAD980496863							
CAD980496863	01	Other – Engineering/Containment	Sediment trapping, fencing	ROD 2/14/1991, p.20	Engineering/ Containment	No	
CAD980496863	01	Surface water diversion		ROD 2/14/1991, p.20	Engineering/ Containment	No	
CAD980496863	01	On-site disposal (excavation, capping, covering, reveg)	Revegetate, Mill dismantling and disposal	ROD 2/14/1991, p.21	Engineering/ Containment	No	
CAD980496863	01	Institutional Controls	Deed restriction	ROD 2/14/1991, p.21	Institutional Control	No	
CAD980496863	02	On-site disposal (excavation, capping, covering, reveg)		ROD 7/19/98, p.17	Engineering/ Containment	No	
NVD980813646							
NVD980813646	01	Off-site disposal		ROD 3/30/1995, p.39	Engineering/ Containment	No	

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NVD980813646	01	Institutional Controls		ROD 3/30/1995, p.41	Institutional Control	No	
NVD980813646	02						
CAD980638860							
CAD980638860	01	Off-site disposal	Excavation and off-ste removal of all soil contaminated above site-specific action levels	ROD 9/30/1985, p.16	Engineering/ Containment	No	
CAD980638860	02	Off-site disposal	Excavation, transport, and off-site disposal of hazardous substances	ROD 10/3/1983, p.12	Engineering/ Containment	No	
CAD980817217							
CAD980817217	01	On-site disposal (excavation, capping, covering, reveg)		ROD 9/21/1990, p.18	Engineering/ Containment	No	
CAD980817217	01	Surface water diversion		ROD 9/21/1990, p.18	Engineering/ Containment	No	
CAD980817217	01	Other – Engineering/Containment	Sediment trapping	ROD 9/21/1990, p.18	Engineering/ Containment	No	
CAD980817217	01	Institutional Controls	Deed restriction	ROD 9/21/1990, p.18	Institutional Control	No	
CAD980817217	02	On-site disposal (excavation, capping, covering, reveg)	On-site waste management unit	ROD 7/19/1989, p.17	Engineering/ Containment	No	
AZ0000309013							
AZ0000309013	01						
CAD980498612							
CAD980498612	01	On-site disposal (excavation, capping, covering, reveg)	Cap	ROD 10/3/1986, p.30	Engineering/ Containment	No	
CAD980498612	01	Surface water diversion	1050 cubic feet per second to be diverted	ROD 10/3/1986, p.30	Engineering/ Containment	No	
CAD980498612	01	Other – Engineering/Containment	Fencing, signage	ROD 10/3/1986, p.31	Engineering/ Containment	No	
CAD980498612	02	Water treatment-lime	Treatment facilities to perform chemical neutralization/precipitation treatment of the Richmond and Lawson AMD flows.	ROD 9/30/92, p. 40	Engineering/ Containment	No	
CAD980498612	02	Water treatment-lime	Sludge will be treated with lime/sulfide	ROD 9/30/92, p. 41	Treatment	No	
CAD980498612	03	Water treatment-lime	Sludge will be treated with lime/sulfide	ROD 9/24/1993, p.31	Treatment	No	
CAD980498612	03	Water treatment-lime	Disposal of treatment residuals onsite in the inactive open pit mine	ROD 9/24/1993, p.31	Engineering/ Containment	No	
CAD980498612	04	Other – Engineering/Containment	Retention dam	ROD 9/30/1997, p.93	Engineering/ Containment	No	
CAD980498612	04	Water treatment-lime	Lime neturalization treatment	ROD 9/30/1997, p.93	Treatment	No	
CAD980498612	05	On-site disposal (excavation, capping, covering, reveg)	Sediment removal, dredging, and on-site disposal.	ROD 9/30/2004, p.76	Engineering/ Containment	No	
CAD980498612	06						
CA1141190578							
CA1141190578	01						
CA1141190578	02						

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CA1141190578	03						
CAD983618893							
CAD983618893	01	Institutional Controls	Deed restrictions	ROD 9/28/2004, p. 101	Institutional Control	No	
CAD983618893	01	Other – Engineering/Containment	Fencing	ROD 9/28/2004, p. 101	Engineering/ Containment	No	
CAD983618893	01	Deconstruction/ decontamination of buildings		ROD 9/28/2004, p. 101	Engineering/ Containment	No	
CAD983618893	01	On-site disposal (excavation, capping, covering, reveg)		ROD 9/28/2004, p. 101	Engineering/ Containment	No	
CAD983618893	01	Water treatment-other	Ferric chloride coagulation/filtration process	ROD 9/28/2004, p. 103	Treatment	No	
CAD983618893	02	Alternative drinking water		ROD 9/30/2008, p. 57	Engineering/ Containment	No	
CAD983618893	02	Institutional Controls	Land-use notification requirement	ROD 9/30/2008, p. 57	Institutional Control	No	
CAD983618893	03						
CAD983618893	04						
CAD980673685							
CAD980673685	01						
CAD980893275							
CAD980893275	01						
CAD980893275	02						
CAD980893275	03						
WAD009045279							
WAD009045279	01						
OR0000515759							
OR0000515759	01						
IDD980725832							
IDD980725832	01	Water treatment-lime		ROD 2003, p. 12-6	Treatment		
IDD980725832	01	On-site disposal (excavation, capping, covering, reveg)		ROD 2003, p. 12-2	Engineering/ Containment	No	
IDD980725832	01	Monitored natural attenuation/recovery		ROD 2003, p. 12-1, 12-2	Treatment	No	
IDD980725832	01	Institutional Controls		ROD 2003, p. 12-1, 12-2	Institutional Control	No	

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IDD048340921							
IDD048340921	01	Off-site disposal	Removal of sod from residential yards.	ROD 08/30/1991, p. 30	Engineering/ Containment	No	
IDD048340921	01	Institutional Controls	Undefined ICs	ROD 08/30/1991, p. 31	Institutional Control	No	
IDD048340921	02	On-site disposal (excavation, capping, covering, reveg)		ROD 9/22/1992, p.52	Engineering/ Containment	No	
IDD048340921	02	Water treatment - Created Wetlands	Water captured and sent into wetlands	ROD 9/22/1992, p.52	Treatment	No	
IDD048340921	02	Surface water diversion		ROD 9/22/1992, p.54	Engineering/ Containment	No	
IDD048340921	02	Alternative drinking water		ROD 9/22/1992, p.60	Engineering/ Containment	No	
IDD048340921	02	Institutional Controls	Land-use restrictions	ROD 9/22/1992, p.61	Institutional Control	No	
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Residential Areas	ROD 9/12/2002, p.276	Engineering/ Containment	No	
IDD048340921	03	Alternative drinking water	Residential Areas	ROD 9/12/2002, p.280	Engineering/ Containment	No	
IDD048340921	03	Institutional Controls	Residential Areas	ROD 9/12/2002, p.281	Institutional Control	No	
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Upper and Lower Basin	ROD 9/12/2002, p.375-376	Engineering/ Containment	Yes	ROD 9/12/2002, p.12-13
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Spokane River	ROD 9/12/2002, p.396	Engineering/ Containment	Yes	ROD 9/12/2002, p.14
WAD98072636 8							
WAD98072636 8	01	Air Stripping	Air stripping treatment on well, treated water discharged to bay or city water system.	ROD Amend 10/26/2009, p.14	Treatment		
WAD98072636 8	01	Off-site disposal	Contaminted soils around and east of Time Oil Building and Railroad right-of-way	ROD Amend 10/26/2009, p.15	Engineering/ Containment	Yes	ROD Amend 10/26/2009, p.56
WAD98072636 8	01	Other – Treatment Technology	GW Extraction & Treatment around Time Oil Building - Method not specified	ROD Amend 10/26/2009, p.15	Treatment		
WAD98072636 8	01	Soil Vapor Extraction	Applied to filter cake	ROD Amend 10/26/2009, p.15	Treatment		
WAD98072636 8	01	Thermal Treatment	In situ thermal remediation of soil and groundwater	ROD Amend 10/26/2009, p.16	Treatment		

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WAD980726368	01	Water treatment - Bioreactors (e.g., SRBs)	Anaerobic bioremediation of GW	ROD Amend 10/26/2009, p.16	Treatment		
WAD980726368	01	Institutional Controls	Use restrictions and zoning controls	ROD Amend 10/26/2009, p.16	Institutional Control	No	
WAD980726368	01	Off-site disposal	In-place sediment capping	FYR 12/23/2009, p. 41	Engineering/ Containment		
WAD980726368	01	Sediment dredging/ disposal	Sediment Dredging and disposal	FYR 12/23/2009, p. 41	Engineering/ Containment		
WAD980726368	02						
WAD980726368	03						
WAD980726368	04						
WAD980726368	05						
WAD980726368	06						
WAD980726368	07						
WAD980726368	08						
WAD980726368	09						
WAD980726368	10						
WAD980726368	11						
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WAD980726368	16						
WAD980726368	17						
WAD980726368	18						
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	Capping to prevent run off and infiltration into shallow aquifer. Runoff will be captured in treated as part of OU2 remedy	ROD 7/14/2000, p.47	Engineering/ Containment		
WAD980726368	19	Institutional Controls	GW use and well restrictions	ROD 7/14/2000, p.48	Institutional Control	No	

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	Nearshore/Offshore and Northshore areas	ROD 7/14/2000, p.52	Engineering/ Containment		
WAD980726368	19	Sediment dredging/ disposal	Yacht basin area	ROD 7/14/2000, p.52	Engineering/ Containment		
WAD980726368	20	On-site disposal (excavation, capping, covering, reveg)	Excavate and cap soil and granular slag	ROD 3/24/1995, p.45	Engineering/ Containment		
WAD980726368	20	Off-site disposal	Off-site disposal of all smelter building debris	ROD 3/24/1995, p.47	Engineering/ Containment		
WAD980726368	20	Institutional Controls	Deed restrictions to prohibit ground water use	ROD 3/24/1995, p.48	Institutional Control	No	
WAD980726368	21	Deconstruction/ decontamination of buildings	remedy also includes basic soil containment measures during demolition	1990 ROD p15, 22	Engineering/ Containment	No	
WAD980726368	21	On-site disposal (excavation, capping, covering, reveg)	includes incineration and temporary disposal on-site until permanent disposal; ROD also discusses possibility of off-site disposal if needed; remedy also includes soil containment during demolition and disposal	1990 ROD p15, 17, 22	Engineering/ Containment	No	
WAD980726368	21	Surface water diversion		1990 ROD p16, 18	Engineering/ Containment	No	
WAD980726368	22	Off-site disposal	Excavation of soils from properties or areas that exceed EPA's action levels for arsenic and lead. Removal of slag driveways. Soil would be disposed at an appropriate facility outside of the residential Study Area	ROD 6/16/1993, p.23	Engineering/ Containment		
WAD980726368	22	Off-site disposal	Asphalt capping of contaminated alleys and right-of-ways	ROD 6/16/1993, p.23	Engineering/ Containment		
WAD980726368	23	On-site disposal (excavation, capping, covering, reveg)	Soil and sediments will be excavated, stabilized, and then returned to excavation area and capped.	ROD 12/30/1987, p.12	Engineering/ Containment		
WAD980726368	23	Institutional Controls	Land-use restrictions	ROD 12/30/1987, p.13	Institutional Control	No	
WAD980726368	24						
WAD980726368	25						
WAD980726368	26						
IDD984666610							
IDD984666610	01	Other – Engineering/Containment	"Simplot" portion of the site. Decanting system to reduce the volume of water on top of gypsum stack through increasing the flow rate of water returned to the plant from the stack.	ROD 6/8/1998, p.61	Engineering/ Containment		
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	"Simplot" portion of the site. On-site disposal of phosphate ore; "FMC" portion of the site. Old phossy ponds	ROD 6/8/1998, p.61, p.66	Engineering/ Containment		
IDD984666610	01	Institutional Controls	Land-use controls at "Simplot," "FMC," and "Off-Plant" portions of the site.	ROD 6/8/1998, p.61, p.66	Institutional Control	No	
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	"FMC" portion of the site. Synthetic liner over railroad area to prevent SW infiltration.	ROD 6/8/1998, p.66	Engineering/ Containment		
IDD984666610	03						
IDD984666610	04						

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
ORN001002616							
ORN001002616	01						
OR7122307658							
OR7122307658	01						
OR7122307658	02	On-site disposal (excavation, capping, covering, reveg)	Consolidation and on-site disposal of White King and Lucky Lass soil stockpiles	ROD 9/21/2001, p.105, 115	Engineering/ Containment		
OR7122307658	02	Water treatment-lime	White King Pond	ROD 9/21/2001, p.97	Treatment		
OR7122307658	02	Institutional Controls	Land-use restrictions at White King and Lucky Lass stockpiles and at White King Pond	ROD 9/21/2001, p.107 - 116	Institutional Control	No	
WAD000065508							
WAD000065508	01	On-site disposal (excavation, capping, covering, reveg)	Consolidation of three waste piles and capping	ROD, 5/1/1992, p.38	Engineering/ Containment		
WAD000065508	01	Water treatment-other	GW to be pumped and treated using chemical precipitation	ROD, 5/1/1992, p.43	Treatment		
WAD000065508	01	Institutional Controls	Restrictive Covenant and Deed Restrictions	ROD, 5/1/1992, p.45	Institutional Control	No	
ORD052221025							
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	Consolidate and cap cathode and fill material	ROD, 9/29/1988, p.24	Engineering/ Containment		
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	Soil cap over sludge ponds	ROD, 9/29/1988, p.24	Engineering/ Containment		
ORD052221025	01	Water treatment-other	Leachate treated by "cyanide destruct" system	ESD, 9/28/1994, p.6	Treatment		
ORD052221025	01	Institutional Controls	Deed restrictions	ROD, 9/29/1988, p.26	Institutional Control	No	
ORD052221025	02						
WAD980978753							
WAD980978753	01	On-site disposal (excavation, capping, covering, reveg)	Excavation of waste rock into on-site consolidation area	ROD 9/29/2006, p.13	Engineering/ Containment		
WAD980978753	01	Water treatment-other	Following containment, removal of water that enters Pit 3, Pit 4, and the Backfilled Pit Area using pumping wells.	ROD 9/29/2006, p.13	Treatment		
WAD980978753	01	Off-site disposal	Following mill closure, disposal of water treatment sludge at a licensed off-site facility	ROD 9/29/2006, p.13	Engineering/ Containment		
WAD980978753	01	Surface water diversion	Surface water management in the drainage basin to divert clean water away from waste containment areas while minimizing erosion	ROD 9/29/2006, p.13	Engineering/ Containment		
WAD980978753	01	Institutional Controls	Fencing, ground water use restrictions, signage, community outreach	ROD 9/29/2006, p.14	Institutional Control		
IDD081830994							
IDD081830994	01	Monitored natural attenuation/recovery	Ground water	ROD 4/30/1997, p.44	Treatment		
IDD081830994	01	Institutional Controls	Ground water well restrictions	ROD 4/30/1997, p.44	Institutional Control	No	

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
IDD081830994	01	Institutional Controls	Land-use restrictions - contaminated soil	ROD 4/30/1997, p.45	Institutional Control	No	
IDD081830994	01	On-site disposal (excavation, capping, covering, reveg)	Soil from off-site residences disposed of on-site	ROD 4/30/1997, p.45	Engineering/ Containment	No	
ORD009412677							
ORD009412677	01	Off-site disposal	Dewarting of Company Lake and excavation of process residue material	ROD 9/30/2002, p.25	Engineering/ Containment		
ORD009412677	01	Off-site disposal	Excavation of waste and soil from South landfill and eastern portion of North landfill	ROD 9/30/2002, p.25	Engineering/ Containment		
ORD009412677	01	On-site disposal (excavation, capping, covering, reveg)	A riprap cover will be installed over the western portion of the landfill to protect the landfill contents from washout	ROD 9/30/2002, p.25	Engineering/ Containment		
ORD009412677	01	Water treatment-other	Ground water will be extracted and combined with production well water and discharged to the Columbia River via the existing NPDES permitted outfall.	ROD 9/30/2002, p.26	Treatment		
ORD009412677	01	Institutional Controls	Groundwater use restrictions	ROD 9/30/2002, p.27	Institutional Control	No	ROD 9/30/2002, p.27
ORD009412677	02	Institutional Controls	ICs to ensure groundwater use is compatible with the cleanup levels achieved. ICs are necessary to restrict residential use of the Site, restrict the use of groundwater that exceeds MCLs as a drinking water source, and protect the integrity of the cap.	ROD 9/29/2006, p.35	Institutional Control	No	
ORD009412677	02	Other – Engineering/Containment	Ground water extraction	ROD 9/29/2006, p.35	Engineering/ Containment		
ORD009412677	02	On-site disposal (excavation, capping, covering, reveg)	Removal and capping of waste rock and soil from Company Lake, North and South Landfills.	ROD 9/29/2006, p.10	Engineering/ Containment		
AK0001897602							
AK0001897602	01						
WAD980722789							
WAD980722789	01	On-site disposal (excavation, capping, covering, reveg)	Consolidation and covering of soils, mine dump materials, and leach heap waste.	ROD 3/27/1990, p.14	Engineering/ Containment		
WAD980722789	01	Institutional Controls	Deed restrictions	ROD 3/27/1990, p.15	Institutional Control	No	
IDD980665459							
IDD980665459	01						
ORD050955848							
ORD050955848	01	Water treatment-other	Ground water extracted and discharged to wastewater treament plant. Treatment method not specified. Note the 6/10/1994 ROD is labeled as OU2 but it addresses Groundwater and Sediment areas that are affilited with OU1.	ROD 6/10/1994, p.60 (Note ROD is mislabeled. 6/10/1994 ROD corresponds to OU1 rather than OU2).	Treatment		
ORD050955848	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments. Note the 6/10/1994 ROD is labeled as OU2 but it addresses Groundwater and Sediment areas that are affilited with OU1.	ROD 6/10/1994, p.60 (Note ROD is mislabeled.	Engineering/ Containment		

2EPA ID	OU	Selected Remedy (Q7)	Remedy Comments (Q7a)	Ref (Q7)	Is Remedy Primarily Treatment, Engineering Control, or Institutional Control? (Q9/Q10)	Map of Engineering/ Institutional Controls Available? (9a/10a)	Ref (Q9/10)
				6/10/1994 ROD corresponds to OU1 rather than OU2).			
ORD050955848	01	Institutional Controls	Deed Restrictions. Note the 6/10/1994 ROD is labeled as OU2 but it addresses Groundwater and Sediment areas that are affilited with OU1.	ROD 6/10/1994, p.60 (Note ROD is mislabeled. 6/10/1994 ROD corresponds to OU1 rather than OU2).	Institutional Control	No	
ORD050955848	02	Off-site disposal	Removal, solidification, off-site disposal of lake sludge	ROD 12/28/1989, p.13	Engineering/ Containment		
ORD050955848	03	Off-site disposal	Excevate and remove to an off-site facility, material exceeding gamma radiation background levels	ROD 9/27/1995, p.71	Engineering/ Containment		
ORD050955848	03	Institutional Controls	Building requirements, land-use controls	ROD 9/27/1995, p.72	Institutional Control	No	
ORD050955848	04						

Table C-3 – Site and Operating Unit Detail at the 126 Site Universe (Part 3)

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
MED980524128								
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Manganese	Cadmium, copper, zinc, lead	2009 ROD, p19-20	No		
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Lead	Cadmium, copper, zinc, arsenic	2009 ROD p13, 18, 19	No		
MED980524128	01	Off-site disposal	PCBs	Arsenic, cadmium, copper, zinc	2009 ROD p16-17	No		
MED980524128	01	Sediment dredging/ disposal	copper	Lead, zinc	2011 ROD, p2	No		
MED980524128	01	Institutional Controls	copper	Lead, zinc	2011 ROD, p2	No		
MED980524128	02							
MED980524128	03							
VTD988366621								
VTD988366621	01	On-site disposal (excavation, capping, covering, reveg)	Lead		2006 ROD p 21	No		
VTD988366621	01	Surface water diversion	Aluminum	Cd, Cu, Zn	2006 ROD p 21	No		
VTD988366621	01	Monitored natural attenuation/recovery	Aluminum	Cd, Cu, Zn	2006 ROD p 21	No		
VTD988366621	01	Institutional Controls	Aluminum	Cd, Cu, Zn	2006 ROD p 21	No		
VTD988366571								
VTD988366571	01							
VTD988366571	02							
VTD988366720								
VTD988366720	01							
NJD980785646								
NJD980785646	01	Off-site disposal	Radium		1989 ROD p2	No		
NJD980785646	01	Other – Engineering/Containment	Radium	Radon	1989 ROD p2	No		
NJD980785646	01	Institutional Controls	Radium		1989 ROD p2	No		
NJD980785646	02	No action	Radium			No		
NJD980785646	03	Off-site disposal	Radium		1990 ROD p5-6	No		
NYD986882660								
NYD986882660	01	Off-site disposal	Arsenic	lead, radium, thorium	1999 ROD p2, 204	No		
NYD986882660	01	Institutional Controls	Arsenic	lead, radium, thorium	2000 ROD p2, 204	No		
NYD986882660	02	Off-site disposal	Arsenic	thorium, lead, radium	1999 ROD p2, 204	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
NYD986882660	02	Institutional Controls	Arsenic	thorium, lead, radium	1999 ROD p2, 204	No		
NYD986882660	03							
NYD986882660	04	Sediment dredging/ disposal	Radium	thorium	2005 ROD p17-18	No		
NJD980529762								
NJD980529762	01							
NJD980529762	02	Off-site disposal	Radium	Thorium, Uranium	ROD, 9/22/2003, p.27	No		ROD, 9/22/2003, p.39
NJD980529762	02	Institutional Controls	Radium	Thorium, Uranium	ROD, 9/22/2003, p.27	No		ROD, 9/22/2003, p.39
NJD980529762	02	Deconstruction/ decontamination of buildings	Radium	Thorium, Uranium	ROD, 9/22/2003, p.27	No		ROD, 9/22/2003, p.39
NJD980529762	03							
NJD980785653								
NJD980785653	01	Off-site disposal	Radium		1989 ROD p2	No		
NJD980785653	02	No action	Radium			No		
NJD980785653	03	Off-site disposal	Radium		1990 ROD p5-6	No		
NJD002365930								
NJD002365930	01	Air Stripping	Other	TCE	1996 ROD p10	Yes	400	1996 ROD p16
NJD002365930	01	Water treatment-other	Chromium		1997 ROD p10	Yes	400	1996 ROD p16
NJD002365930	02							
NJD002365930	03							
NJD980654172								
NJD980654172	01	Off-site disposal	Radium		1993 ROD	No		
NJD980654172	02	Off-site disposal	Radium		1995 ROD	No		
NJD980654172	03	No action	Radium			No		
NJ1891837980								
NJ1891837980	01	Off-site disposal	Radium	Thorium	2000 ROD p48	No		
NJ1891837980	01	Water treatment-other	Radium		2000 ROD p48	Yes		GPM not stated; total wastewater treated=20 million gallons (2008 FYR p10)
NJ1891837980	01	Institutional Controls	Radium		2000 ROD p48	No		
PAD987341716								

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
PAD987341716	01	Off-site disposal	Radium	Thorium	ROD, 06/27/1994, p.4	No		ROD, 06/27/1994, p.2
PAD987341716	01	Resident relocation	Radium	Thorium	ROD, 06/27/1994, p.4	No		ROD, 06/27/1994, p.2
PAD987341716	01	Institutional Controls	Radium	Thorium	ROD, 06/27/1994, p.4	No		ROD, 06/27/1994, p.2
PAD987341716	02	No action	Radium			No		
PAD077087989								
PAD077087989	01	Off-site disposal	Lithium	Boron, bromate, chromium, volatile organic compounds	ROD, 3/31/2006, p. 8,	No		ROD, 3/31/2006, p. 4, 33-35, 52-55
PAD077087989	01	On-site disposal (excavation, capping, covering, reveg)	Lithium	Boron, bromate, chromium, volatile organic compounds	ROD, 3/31/2006, p. 8,	No		ROD, 3/31/2006, p. 4, 33-35, 52-55
PAD077087989	01	Other – Treatment Technology	Lithium	Boron, bromate, chromium, volatile organic compounds	ROD, 3/31/2006, p. 8,	Yes		ROD, 3/31/2006, p. 4, 33-35, 52-55
PAD077087989	01	Institutional Controls	Lithium	Boron, bromate, chromium, volatile organic compounds	ROD, 3/31/2006, p. 8,	No		ROD, 3/31/2006, p. 4, 33-35, 52-55
PASFN0305549								
PASFN0305549	01							
PASFN0305549	02							
PAD980829493								
PAD980829493	01	Off-site disposal	Lead	Aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, cyanide, iron, manganese, mercury, nickel, PCBs, PAHs, selenium, silver, sodium, vanadium, and zinc	ROD, 9/30/1997, p. 7-9	No		ROD, 9/30/1997, p. 7-9
PAD980829493	01	On-site disposal (excavation, capping, covering, reveg)	Lead	Aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, cyanide, iron, manganese, mercury, nickel, PCBs, PAHs, selenium, silver, sodium, vanadium, and zinc	ROD, 9/30/1997, p. 7-9	No		ROD, 9/30/1997, p. 7-9
PAD980829493	01	Institutional Controls	Lead	Aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, cyanide, iron, manganese, mercury, nickel, PCBs, PAHs, selenium, silver, sodium, vanadium, and zinc	ROD, 9/30/1997, p. 7-9	No		ROD, 9/30/1997, p. 7-9
PAD002395887								
PAD002395887	01	Soil Amendments	Cadmium	Lead, zinc	ROD, 9/4/1987, p. 2	No		ROD, 9/4/1987, p. 2, 6, 8-9

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
PAD002395887	02	Water treatment-lime	Cadmium	Copper, lead, manganese, zinc	ROD, 6/29/1988, p. 2, 9	Yes		ROD, 6/29/1988, p. 2, 9
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	Cadmium	Copper, lead, manganese, zinc	ROD, 6/29/1988, p. 2, 9	No		ROD, 6/29/1988, p. 2, 9
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	Cadmium	Copper, lead, manganese, zinc	ROD, 6/29/1988, p. 2, 9	No		ROD, 6/29/1988, p. 2, 9
PAD002395887	03	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, cadmium, zinc	ROD, 10/9/2001, p. 8, 16	No		ROD, 10/9/2001, p. 35-39
PAD002395887	03	Off-site disposal	Lead	Arsenic, cadmium, zinc	ROD, 10/9/2001, p. 8, 16	No		ROD, 10/9/2001, p. 37
PAD002395887	03	Institutional Controls	Lead	Arsenic, cadmium, zinc	ROD, 10/9/2001, p. 8, 16	No		ROD, 10/9/2001, p. 39
PAD002395887	04							
VAD980705404								
VAD980705404	01	Water treatment-lime	Other	Iron	Iron is the primary COC, ROD, 11/21/1989, p. 21, ESD, 9/26/1990, p. 3	Yes	1332	FYR, 3/17/2000, p. 9
VAD980705404	01	Water treatment - Created Wetlands	Other	Iron	Iron is the primary COC, ROD, 11/21/1989, p. 21, ESD, 9/26/1990, p. 3	Yes		ROD, 11/21/1989, p. 22-23
VAD980705404	01	Surface water diversion	Other	Iron	Iron is the primary COC, ROD, 11/21/1989, p. 21, ESD, 9/26/1990, p. 3	No		
VAD980705404	01	On-site disposal (excavation, capping, covering, reveg)	Other	Iron	Iron is the primary COC, ROD, 11/21/1989, p. 21, ESD, 9/26/1990, p. 3	No		
VAD980705404	01	Institutional Controls	Other	Iron	Iron is the primary COC,	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
					ROD, 11/21/1989, p. 21, ESD, 9/26/1990, p. 3			
SCN000407714								
SCN000407714	01							
SCD987577913								
SCD987577913	01	Water treatment-lime	Mercury	Copper	ROD, 9/25/2005, p. 25, 27	Yes	100-1400	ROD, 9/25/2005, p. 18
TND987768546								
TND987768546	01							
TN0001890839								
TN0001890839	01							
TN0001890839	02							
TN0001890839	03							
TN0001890839	04							
TN0001890839	05							
TN0001890839	06							
TN0001890839	07							
TN0001890839	08							
TN0001890839	09							
TN0001890839	10							
TN0001890839	11							
TN0001890839	12							
TN0001890839	13							
TN0001890839	14							
TN0001890839	15							
TN0001890839	16							
TN0001890839	17							
FLD001704741								
FLD001704741	01							
FLD001704741	02							
SCN000407376								
SCN000407376	01							
SCD003360476								
SCD003360476	01	Water treatment-other	Chromium	Antimony, arsenic, iron, manganese	ROD, 8/21/2002, p. 11, 49	Yes		ROD, 8/21/2002, p. 11, 84
SCD003360476	01	Sediment dredging/ disposal	Chromium	Nickel, zinc	ROD, 8/21/2002, p. 11, 38, 52	No		ROD, 8/21/2002, p. 11, 93

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
SCD003360476	01	Soil Amendments	Chromium	Antimony, arsenic	ROD, 8/21/2002, p. 11, 39	No		ROD, 8/21/2002, p. 11, 73-74
SCD003360476	01	Institutional Controls	Chromium	Antimony, arsenic	ROD, 8/21/2002, p. 11	No		ROD, 8/21/2002, p. 11, 72
SCD003360476	01	Off-site disposal	Radium	Thorium-232, potassium-40, uranium-235	ROD, 8/21/2002, p. 36	No		ROD, 8/21/2002, p. 12, 80
SCD003360476	01	Surface water diversion	Chromium	Arsenic, copper, lead, and zinc	ROD, 8/21/2002, p. 39	No		ROD, 8/21/2002, p. 12, 94
KYD049062375								
KYD049062375	00	Institutional Controls	Cyanide	Fluoride (F), arsenic (As), copper (Cu), iron (Fe), manganese (Mn), magnesium (Mg), nickel (Ni), zinc (Zn), beryllium (Be), titanium (Ti), vanadium (V), sodium (Na), gallium (Ga), and cadmium (Cd)	ROD, 7/6/2000, p. 12	No		ROD, 7/6/2000, p. 6-7, 117-130
KYD049062375	00	On-site disposal (excavation, capping, covering, reveg)	Cyanide	Fluoride (F), arsenic (As), copper (Cu), iron (Fe), manganese (Mn), magnesium (Mg), nickel (Ni), zinc (Zn), beryllium (Be), titanium (Ti), vanadium (V), sodium (Na), gallium (Ga), and cadmium (Cd)	ROD, 7/6/2000, p. 12	No		ROD, 7/6/2000, p. 6-7, 117-130
KYD049062375	00	Off-site disposal	PCBs	Cyanide, fluoride (F), arsenic (As), copper (Cu), iron (Fe), manganese (Mn), magnesium (Mg), nickel (Ni), zinc (Zn), beryllium (Be), titanium (Ti), vanadium (V), sodium (Na), gallium (Ga), and cadmium (Cd)	ROD, 7/6/2000, p. 12	No		ROD, 7/6/2000, p. 6-7, 117-130
KYD049062375	01	Water treatment-other	Cyanide	Arsenic, chromium, fluoride, lead, manganese, nickel, PCBs	ROD, 2/19/1993, p. 20	Yes	350	FYR, 8/2/2001, p. 12
KYD049062375	02							
NCN000409895								
NCN000409895	01							
FLD010596013								
FLD010596013	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Antimony, beryllium, cadmium, chromium, fluoride, lead, mercury, nickel, PAHs, silver, total phosphorus, thallium, zinc, Gross Alpha, Gross Beta, Radium-226, Radon-222, Polonium-210	ROD, 7/2/1998, p. 13-14	No		
FLD010596013	01	Solidification	Arsenic	Antimony, beryllium, cadmium, chromium, fluoride, lead, mercury, nickel, PAHs, silver, total phosphorus, thallium, zinc, Gross Alpha, Gross Beta, Radium-226, Radon-222, Polonium-210	ROD, 7/2/1998, p. 13-14	No		
FLD010596013	01	Institutional Controls	Arsenic	Antimony, beryllium, cadmium, chromium, fluoride, lead, mercury, nickel, PAHs, silver, total phosphorus, thallium, zinc, Gross Alpha, Gross Beta, Radium-226, Radon-222, Polonium-210	ROD, 7/2/1998, p. 13-14	No		
FLD010596013	02							
ILN000508170								
ILN000508170	01							
ILN000508170	02							

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
ILD050231976								
ILD050231976	01							
ILD062340641								
ILD062340641	01	Sediment dredging/ disposal	Copper	arsenic, cadmium, zinc, lead, cobalt, manganese, mercury, nickel, silver	ROD, 10/3/2001. pp. 5. 8	No		
ILD062340641	02							
ILD062340641	03							
ILD062340641	04							
ILD062340641	05							
ILD980606941								
ILD980606941	01	Deconstruction/ decontamination of buildings	Lead	zinc, arsenic, iron, cadmium, managanese	ROD, 6/16/2009, pp. 4, 33	No		
ILD980606941	01	Off-site disposal	Asbestos		ROD, 6/16/2009, pp. 23	No		
ILD980606941	01	On-site disposal (excavation, capping, covering, reveg)	Lead	zinc, arsenic, iron, cadmium, managanese	ROD, 6/16/2009, pp. 4, 33	No		
ILD980606941	02							
ILN000508134								
ILN000508134	01							
ILN000508134	02							
ILN000508134	03							
IL0000064782								
IL0000064782	01							
IL0000064782	02							
OHD004379970								
OHD004379970	01	Chemical Oxidation	Arsenic	Manganese, beryllium, cyanide, tetrachloroethylene, vanadium, fluoride	ROD 9/12/1994, p. 32	Yes		ROD 9/12/1994 pp. 2,3, 23, 36; FYR 5/6/2002 p. 7
OHD004379970	01	Other – Engineering/Containment	Cyanide	PCBs, PAHs	ROD 9/12/1994 p. 8, 19	No		
OHD004379970	01	Other – Engineering/Containment	Cyanide	PCBs, PAHs	ROD 9/12/1994 p. 8, 19	No		
OHD004379970	01	Soil flushing/washing	Cyanide	fluoride, PAH, arsenic	ROD 9/12/1994 p. 8	No		
OHD004379970	01	On-site disposal (excavation, capping, covering, reveg)	Cyanide	PAHs, PCBs, arsenic	ROD 9/12/1994 p. 8	No		
OHD004379970	01	Sediment dredging/ disposal	PCBs	PAHs	ROD 9/12/1994 p. 21, 23	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
OHD004379970	01	Institutional Controls	Cyanide		ROD 9/12/1994 p. 8	No		
MID980901946								
MID980901946	01	Institutional Controls	Copper	aluminum, antimony, arsenic, barium, beryllium, boron, chromium, cobalt, lead, manganese, mercury, nickel, silver, titanium, vanadium, bis(2-ethylyhexyl)phthalate, PAHs, naphthalene, 2-methylnaphthalene, acenaphthalene, phenanthrene, fluoranthene, pyrene, benzo(a)-, benzo(b), and benzo(k)fluoranthene, chrysene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene	ROD 9/30/1992 p.12	No		
MID980901946	01	Off-site disposal	Copper	aluminum, antimony, arsenic, barium, beryllium, boron, chromium, cobalt, lead, manganese, mercury, nickel, silver, titanium, vanadium, bis(2-ethylyhexyl)phthalate, PAHs, naphthalene, 2-methylnaphthalene, acenaphthalene, phenanthrene, fluoranthene, pyrene, benzo(a)-, benzo(b), and benzo(k)fluoranthene, chrysene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene	ROD 9/30/1992 p.12	No		
MID980901946	01	Other – Engineering/Containment	Copper	aluminum, antimony, arsenic, barium, beryllium, boron, chromium, cobalt, lead, manganese, mercury, nickel, silver, titanium, vanadium, bis(2-ethylyhexyl)phthalate, PAHs, naphthalene, 2-methylnaphthalene, acenaphthalene, phenanthrene, fluoranthene, pyrene, benzo(a)-, benzo(b), and benzo(k)fluoranthene, chrysene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene	ROD 9/30/1992 p.12	No		
MID980901946	02	No action	Copper		ROD 3/31/1994 p. 2	No		
MID980901946	03	Institutional Controls	Copper	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, silver, vanadium, bis(2-ethylyhexyl)phthalate, fluoranthene, pyrene, benzo(b)- and benzo(k)fluoranthene, chrysene, diethylphthalate, and butylbenzylphthalate	ROD 9/30/1992 p.12	No		
MID980901946	03	Off-site disposal	Copper	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, silver, vanadium, bis(2-ethylyhexyl)phthalate, fluoranthene, pyrene, benzo(b)- and benzo(k)fluoranthene, chrysene, diethylphthalate, and butylbenzylphthalate	ROD 9/30/1992 p.12	No		
MID980901946	03	Other – Engineering/Containment	Copper	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, silver, vanadium, bis(2-ethylyhexyl)phthalate, fluoranthene, pyrene, benzo(b)- and benzo(k)fluoranthene, chrysene, diethylphthalate, and butylbenzylphthalate	ROD 9/30/1992 p.12	No		
MID980901946	03	Other – Engineering/Containment	Copper	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, silver, vanadium, bis(2-ethylyhexyl)phthalate, fluoranthene, pyrene, benzo(b)- and	ROD 9/30/1992 p.12	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
				benzo(k)fluoranthene, chrysene, diethylphthalate, and butylbenzylphthalate				
MID980901946	03	Other – Engineering/Containment	Copper	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, silver, vanadium, bis(2-ethylyhexyl)phthalate, fluoranthene, pyrene, benzo(b)- and benzo(k)fluoranthene, chrysene, diethylphthalate, and butylbenzylphthalate	ROD 9/30/1992 p.12	No		
MID980901946	04							
MID980901946	05							
MID980901946	06							
IND047030226								
IND047030226	01							
NMD002899094								
NMD002899094	00	Off-site disposal	PCBs	molybdenum	ROD 12/20/2010 pp. 1-4, 1-5, 2-178, 2-179	No		
NMD002899094	00	On-site disposal (excavation, capping, covering, reveg)	Molybdenum	aluminum, copper, iron, manganese, zinc, selenium, lead	ROD 12/20/2010 pp. 2-191, 192, 194, 197, 199, 201, 202, 204, 2-302	No		
NMD002899094	00	Other – Engineering/Containment	Molybdenum	cadmium, copper, lead, manganese, nickel, silver, zinc	ROD 12/20/2010 pp. 2-278, 279	No		
NMD002899094	00	Water treatment-lime	Molybdenum	aluminum, antimony, copper, cadmium, iron, fluoride, sulfate, manganese, zinc, TDS, uranium	ROD 12/20/2010 p. 2-211, 2-262, 2-286	Yes	1070	ROD 12/20/2010 p. 2-261, 2-262
NMD002899094	00	Sediment dredging/ disposal	nickel	zinc, aluminum, cadmium, manganese, copper	ROD 12/20/2010 p. 2-348	No		
NMD002899094	00	Institutional Controls	Molybdenum	iron, fluoride, sulfate, manganese, sulfate, TDS, uranium	ROD 12/20/2010 p. 2-286	No		
NMD980749378								
NMD980749378	01	Water treatment-other	Cyanide		ROD 9/21/1990 p. 21	Yes	6	ROD 9/21/1990 p. 21
NMD980749378	01	Institutional Controls	Cyanide		ROD 9/21/1990 p. 21	No		
NMD980749378	02	Solidification	Lead	arsenic, barium, beryllium, copper, lead, manganese, mercury, silver, and zinc	ROD 9/6/1991 p. 5, 17, Table 4	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
NMD980749378	02	On-site disposal (excavation, capping, covering, reveg)	Lead	arsenic, barium, beryllium, copper, lead, manganese, mercury, silver, and zinc	ROD 9/6/1991 p. 5, 17, Table 4	No		
NMD980749378	02	Institutional Controls	Lead	arsenic, barium, beryllium, copper, lead, manganese, mercury, silver, and zinc	ROD 9/6/1991 p. 5, 17, Table 4	No		
NMD981155930								
NMD981155930	01	No action	Arsenic	beryllium, cadmium, lead, zinc	AMD 9/20/1999 p. 6	No		
NMD981155930	01	Institutional Controls	Arsenic	beryllium, cadmium, lead, zinc	AMD 9/20/1999 p. 6	No		
NMD007860935								
NMD007860935	01	Water treatment-other	Uranium	selenium, molybdenum, vanadium, radium-226, radium-228, thorium-230, sulfate, chloride, TDS, nitrate, chromium	FYR 9/27/2001 p. 11	Yes	600	FYR 9/27/2001 p. 34
NMD007860935	02	Other – Engineering/Containment	Uranium	selenium, molybdenum, vanadium, radium-226, radium-228, thorium-230, sulfate, chloride, TDS, nitrate, chromium	FYR 9/27/2001 p. 11	No		
NMD007860935	03	No action	Other	radon	ROD 9/27/1989 p2. 2,6-7; FYR 9/27/2001 p. 9	No		
OKD000829440								
OKD000829440	01	Off-site disposal	Lead	cadmium, arsenic	ROD 12/13/1994 pp. 4, 8	No		
OKD000829440	01	Institutional Controls	Lead	cadmium, arsenic	ROD 12/13/1994 pp. 4, 8	No		
OKD000829440	02	Off-site disposal	Zinc	cadmium, lead, selenium	ROD 10/02/1997 p. 7; FYR 11/22/2006 p. 17	No		
OKD980629844								
OKD980629844	01	Other – Engineering/Containment	Zinc	cadmium, lead, iron	ROD 6/6/1984 pp. 4, 44	No		
OKD980629844	01	Surface water diversion	Zinc	cadmium, lead, iron	ROD 6/6/1984 pp. 4, 44	No		
OKD980629844	02	On-site disposal (excavation, capping, covering, reveg)	Lead		ROD 8/27/1997 p. 15	No		
OKD980629844	02	Institutional Controls	Lead		ROD 8/27/1997 p. 15	No		
OKD980629844	03	No action	Cadmium			No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
OKD980629844	04	Resident relocation	Lead	cadmium, zinc	ROD 02/20/2008 pp. 19-24	No		
OKD980629844	04	On-site disposal (excavation, capping, covering, reveg)	Lead	cadmium, zinc	ROD 02/20/2008 pp. 19-24	No		
OKD980629844	04	Alternative drinking water	Lead	cadmium, zinc	ROD 02/20/2008 pp. 19-24	No		
OKD980629844	04	Other – Engineering/Containment	Lead	cadmium, zinc	ROD 02/20/2008 pp. 19-24	No		
OKD980629844	04	Institutional Controls	Lead	cadmium, zinc	ROD 02/20/2008 pp. 19-24	No		
OKD980629844	04	Other – Engineering/Containment	Lead	cadmium, zinc	ROD 02/20/2008 pp. 19-24	No		
OKD980629844	05							
TXD062113329								
TXD062113329	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	antimony, cadmium, chromium (total), copper, lead, mercury, nickel, zinc, radium 226, radium 228, thorium 228, thorium 230, thorium 232, uranium 238, bismuth 214	AMD 9/28/2000 pp. 14, 17	No		
TXD062113329	01	Off-site disposal	Other	organics	ROD 5/17/1999 pp. 6, 101, 108	No		
TXD062113329	01	Other – Engineering/Containment	Arsenic	antimony, barium, beryllium, cadmium, chromium, copper, mercury, nickel, selenium, benzene, VOCs, chloroform, 1,2-dichloroethane, radionuclides, radium 226, radium 228, gross alpha	AMD 9/28/2000 pp. 36-37	No		
TXD062113329	01	Institutional Controls	Arsenic	antimony, cadmium, chromium (total), copper, lead, mercury, nickel, zinc, radium 226, radium 228, thorium 228, thorium 230, thorium 232, uranium 238, bismuth 214	AMD 9/28/2000 pp. 14, 17	No		
TXD062113329	02	No action	Arsenic	lead	FYR 9/30/2003 pp. 4-5	No		
TXD062113329	03	No action	Other	organics	ROD 5/17/1999 pp. 6, 101, 108	No		
TXD062113329	04	Other – Engineering/Containment	Chromium	aluminum, cadmium, cobalt, copper, iron, lead, manganese, mercury, nickel, tin, zinc, and total PAHs.	ROD 9/27/2001 pp. 11, 14	No		
OKD987096195								
OKD987096195	01							
NMD030443303								

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
NMD030443303	01	Water treatment-other	aluminum	antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, manganese, iron, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc, radium 226, radium 228, uranium, thorium 230, gross alpha, chloride, sulfate, nitrate, TDS, ammonia	ROD 9/30/1988 p. 5; FYR 9/18/2003 pp. 13-14	Yes	0.75	FYR 9/24/1998 p. 25
MO0000958611								
MO0000958611	01	On-site disposal (excavation, capping, covering, reveg)	lead	arsenic, cadmium, zinc	ROD 9/29/2005 p. 4	No		
MO0000958611	01	Other – Engineering/Containment	lead	arsenic, cadmium, zinc	ROD 9/29/2005 p. 4	No		
MO0000958611	01	Institutional Controls	lead	arsenic, cadmium, zinc	ROD 9/29/2005 p. 4	No		
MO0000958611	02	No action	Lead	zinc	ROD 6/8/2007, pp. 18-19	No		
MO0000958611	03	On-site disposal (excavation, capping, covering, reveg)	Lead		ROD 6/29/2007, pp. 9,20	No		
MOD981126899								
MOD981126899	01							
MOD981126899	02							
MOD981126899	03							
KSD980741862								
KSD980741862	01	Alternative drinking water	Lead	cadmium, chromium, nickel, zinc, manganese	FYR 9/28/1995 p. 3	No		
KSD980741862	02							
KSD980741862	03	On-site disposal (excavation, capping, covering, reveg)	Zinc	lead, cadmium	AMD 9/29/2006 p. 12	No		
KSD980741862	03	Other – Engineering/Containment	Zinc	lead, cadmium	AMD 9/29/2006 p. 12	No		
KSD980741862	03	Institutional Controls	Zinc	lead, cadmium	AMD 9/29/2006 p. 12	No		
KSD980741862	04							
KSD980741862	05	On-site disposal (excavation, capping, covering, reveg)	Lead	cadmium, zinc, chromium, nickel, selenium	ROD 9/18/1989, pp. 2, 8-9	No		
KSD980741862	05	Deconstruction/ decontamination of buildings	Cadmium	Chromium, Lead, Nickel, Selenium	ROD 89/18/1989, p.12	No		
KSD980741862	05	Surface water diversion	Lead	cadmium, zinc, chromium, nickel, selenium	ROD 9/18/1989, pp. 2, 8-9	No		
KSD980741862	06	On-site disposal (excavation, capping, covering, reveg)	Lead	zinc, cadmium	ROD 9/30/2004 p. 16	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
KSD980741862	06	Other – Engineering/Containment	Lead	zinc, cadmium	ROD 9/30/2004 p. 16	No		
KSD980741862	07	On-site disposal (excavation, capping, covering, reveg)	Lead	zinc, cadmium	ROD 7/29/1996 p. 1	No		
KSD980741862	07	Institutional Controls	Lead	zinc, cadmium	ROD 7/29/1996 p. 1	No		
MOD098633415								
MOD098633415	01							
MOD098633415	02							
MOD098633415	03	On-site disposal (excavation, capping, covering, reveg)	Lead		ROD 7/31/2008 p. 25	No		
MOD098633415	03	Institutional Controls	Lead		ROD 7/31/2008 p. 25	No		
MOD098633415	04							
MOD098633415	05							
MOD098633415	06							
MOD981507585								
MOD981507585	01	On-site disposal (excavation, capping, covering, reveg)	Lead	cadmium, zinc	ROD 6/21/2010 p. 6	No		
MOD981507585	01	Institutional Controls	Lead	cadmium, zinc	ROD 6/21/2010 p. 6	No		
MOD981507585	02							
MOD981507585	03							
NESFN0703481								
NESFN0703481	01	Off-site disposal	lead		ROD 12/15/2004 p. 11	No		
NESFN0703481	02	Off-site disposal	lead	arsenic	ROD 5/13/2009 p. 20	No		
NESFN0703481	02	Institutional Controls	lead	arsenic	ROD 5/13/2009 p. 20	No		
MOD980686281								
MOD980686281	01	On-site disposal (excavation, capping, covering, reveg)	lead	cadmium, zinc	ROD 9/30/2004 pp.7,9	No		
MOD980686281	01	Institutional Controls	lead	cadmium, zinc	ROD 9/30/2004 pp.7,9	No		
MOD980686281	02	On-site disposal (excavation, capping, covering, reveg)	lead	cadmium	ROD 8/1/1996 p. 9	No		
MOD980686281	02	Institutional Controls	lead	cadmium	ROD 8/1/1996 p. 9	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
MOD980686281	03							ROD, 9/20/1991, p. 17-18; FYR, 9/29/2004, p. 39
MOD980686281	04	Alternative drinking water	Lead	cadmium, manganese, nickel, zinc	ROD 7/29/1998 p. 10	No		
MOD980686281	04	Water treatment-other	Lead	cadmium, manganese, nickel, zinc	ROD 7/29/1998 p. 10	Yes		ROD 9/21/1990, p.18
MOD980686281	04	Institutional Controls	Lead	cadmium, manganese, nickel, zinc	ROD 7/29/1998 p. 10	No		
MOD980686281	05							
MON000705443								
MON000705443	01							
MON000705443	02							
MON000705443	03							
MON000705443	04							
MON000705443	05							
MON000705443	06							
MON000705842								
MON000705842	01							
MON000705842	02							
MON000705842	03							
MON000705027								
MON000705027	01							
MON000705027	02							
MON000705027	03							
MON000705027	04							
MON000705023								
MON000705023	01							
MON000705023	02							
MON000705023	03							
MON000705023	04							
MON000705032								
MON000705032	01							
MON000705032	02							
MON000705032	03							
MON000705032	04							
MTD093291599								
MTD093291599	01							
MTD093291656								

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
MTD093291656	01							ROD 9/28/2004, p. 101
MTD093291656	03	On-site disposal (excavation, capping, covering, reveg)	Arsenic		FYR, 11/24/1994, p.16	No		
MTD093291656	04	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Beryllium, cadmium, copper, lead, and zinc	ROD, 9/29/1998, p.22-26, 29, 32-40	No		
MTD093291656	04	Monitored natural attenuation/recovery	Arsenic	Beryllium, cadmium, copper, lead, and zinc	ROD, 9/29/1998, p.22-26, 29, 32-40	No		ROD 9/28/2004, p. 103
MTD093291656	04	Institutional Controls	Arsenic	Beryllium, cadmium, copper, lead, and zinc	ROD, 9/29/1998, p.22-26, 29, 32-40	No		
MTD093291656	07	Institutional Controls	Arsenic	Cadmium, copper, lead, zinc	ROD, 3/8/1994, p.14-15	No		
MTD093291656	07	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, copper, lead, zinc	ROD, 3/8/1994, p.14-15	No		
MTD093291656	07	Surface water diversion	Arsenic	Cadmium, copper, lead, zinc	ROD, 3/8/1994, p.14-15	No		
MTD093291656	09	On-site disposal (excavation, capping, covering, reveg)	Beryllium	Arsenic, cadmium, lead, zinc	FYR, 11/24/1994, p.14	No		
MTD093291656	11	Solidification	Arsenic	Cadmium, copper, lead, zinc	ROD, 9/23/1991, p. 7-8	No		
MTD093291656	11	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, copper, lead, zinc	ROD, 9/23/1991, p. 7-8	No		
MTD093291656	11	Institutional Controls	Arsenic	Cadmium, copper, lead, zinc	ROD, 9/23/1991, p. 7-8	No		
MTD093291656	12	On-site disposal (excavation, capping, covering, reveg)	Beryllium	Arsenic, cadmium, lead, zinc	FYR, 11/24/1994, p.14	No		
MTD093291656	14							
MTD093291656	15	Resident relocation	Arsenic	Cadmium, copper, lead, zinc	ROD, 10/2/1987, p.3, 4, 5	No		
MTD093291656	15	Deconstruction/ decontamination of buildings	Arsenic	Cadmium, copper, lead, zinc	ROD, 10/2/1987, p.3, 4, 5	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
MTD093291656	15	Institutional Controls	Arsenic	Cadmium, copper, lead, zinc	ROD, 10/2/1987, p.3, 4, 5	No		
MTD093291656	15	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, copper, lead, zinc	ROD, 10/2/1987, p.3, 4, 5	No		
MTD093291656	16	Institutional Controls	Arsenic	Lead	ROD, 9/30/1996, p.21-22	No		
MTD093291656	16	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Lead	ROD, 9/30/1996, p.21-22	No		
COD007063530								
COD007063530	01	On-site disposal (excavation, capping, covering, reveg)	Cadmium	antimony, arsenic, barium, cobalt, nickel, copper, lead, manganese, selenium, thallium, zinc	ROD, 2/18/1983, p.15-16	No		
COD007063530	01	Institutional Controls	Cadmium	antimony, arsenic, barium, cobalt, nickel, copper, lead, manganese, selenium, thallium, zinc	ROD, 2/18/1983, p.15-16	No		
COD007063530	02	Other – Engineering/Containment	Cadmium	Arsenic, lead, zinc	ROD, 2/18/1983, p. 16-18	No		
COD007063530	02	On-site disposal (excavation, capping, covering, reveg)	Cadmium	Arsenic, lead, zinc	ROD, 2/18/1983, p. 16-18	No		
COD007063530	02	Institutional Controls	Cadmium	Arsenic, lead, zinc	ROD, 2/18/1983, p. 16-18	No		
COD007063530	03	On-site disposal (excavation, capping, covering, reveg)	Cadmium	Arsenic, lead, zinc	ROD, 2/18/1983, p. 18-26	No		
COD007063530	03	Institutional Controls	Cadmium	Arsenic, lead, zinc	ROD, 2/18/1983, p. 18-26	No		
COD007063530	04	Other – Treatment Technology	Cadmium	Arsenic, lead, zinc	ROD, 2/18/1983, p. 18-26	No		
COD007063530	04	On-site disposal (excavation, capping, covering, reveg)	Cadmium	Arsenic, lead, zinc	ROD, 2/18/1983, p. 18-26	No		
COD007063530	04	Institutional Controls	Cadmium	Arsenic, lead, zinc	ROD, 2/18/1983, p. 18-26	No		
MT6122307485								
MT6122307485	01							
MT6122307485	02							
MTD982572562								
MTD982572562	01	Off-site disposal	Arsenic	Lead	ROD 2001, p 33	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
MTD982572562	01	Institutional Controls	Arsenic	Lead	ROD 2001, p 33	No		
MTD982572562	02							
MTD982572562	03							
MTD982572562	04							
MTD982572562	05							
MTD982572562	06							
COD980717938								
COD980717938	01	Other – Engineering/Containment	Cadmium	Coppper, lead, zinc	ROD, 3/29/1988, p. 4, 6	No		
COD980717938	01	Water treatment-other	Cadmium	Coppper, lead, zinc	ROD, 3/29/1988, p. 4, 6	Yes	225	ROD, 3/29/1988, p.17-20
COD980717938	02	No action	Lead	Aresenic, cadmium, copper, cynanide, mercury, silver, sulfate, zinc	ROD, 9/30/1999, p. 3, 14, 45	No		
COD980717938	03	No action	Arsenic	Cadmium, lead, zinc	ROD, 5/6/1998, p. 11	No		
COD980717938	04	On-site disposal (excavation, capping, covering, reveg)	Arsenic	pH, cadmium, copper, lead, magnesium, mercury, selenium, silver, and zinc	ROD, 5/6/1998, p.17-27	No		
COD980717938	04	Surface water diversion	Arsenic	pH, cadmium, copper, lead, magnesium, mercury, selenium, silver, and zinc	ROD, 5/6/1998, p.17-27	No		
COD980717938	05	Institutional Controls	Lead	Arsenic, cadmium, copper, zinc	ROD, 10/31/200, p. 6, 24, 26	No		
COD980717938	06	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, antimony, barium, beryllium, cadmium, chromium, copper, lead, nickel, manganese, mercury, silver, thallium, zinc	ROD, 9/25/2003, p. 28; FYR, 9/29/2001, p. 58	No		
COD980717938	06	Water treatment-other	Lead	Arsenic, antimony, barium, beryllium, cadmium, chromium, copper, lead, nickel, manganese, mercury, silver, thallium, zinc	ROD, 9/25/2003, p. 28; FYR, 9/29/2001, p. 58	Yes	3000	ROD, 9/25/2003, p. 44, 45; Note: actual pumping rate will be determined during remedial design. This value is the waste-stream flow rate.
COD980717938	06	Institutional Controls	Lead	Arsenic, antimony, barium, beryllium, cadmium, chromium, copper, lead, nickel, manganese, mercury,	ROD, 9/25/2003, p.	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
				silver, thallium, zinc	28; FYR, 9/29/2001, p. 58			
COD980717938	06	Surface water diversion	Lead	Arsenic, antimony, barium, beryllium, cadmium, chromium, copper, lead, nickel, manganese, mercury, silver, thallium, zinc	ROD, 9/25/2003, p. 28; FYR, 9/29/2001, p. 58	No		
COD980717938	07	On-site disposal (excavation, capping, covering, reveg)	Arsenic	antimony, barium, beryllium, cadmium, chromium, copper, lead, nickel, manganese, mercury, silver, thallium, zinc	ROD, 6/6/2000, p.17, 32, 39	No		
COD980717938	07	Surface water diversion	Arsenic	antimony, barium, beryllium, cadmium, chromium, copper, lead, nickel, manganese, mercury, silver, thallium, zinc	ROD, 6/6/2000, p.17, 32, 39	No		
COD980717938	07	Institutional Controls	Arsenic	antimony, barium, beryllium, cadmium, chromium, copper, lead, nickel, manganese, mercury, silver, thallium, zinc	ROD, 6/6/2000, p.17, 32, 39	No		
COD980717938	08	Surface water diversion	Arsenic	Beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, and sulfates	ROD, 9/29/2000, p. 20, 37	No		
COD980717938	08	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, and sulfates	ROD, 9/29/2000, p. 20, 37	No		
COD980717938	08	Institutional Controls	Arsenic	Beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, and sulfates	ROD, 9/29/2000, p. 20, 37	No		
COD980717938	09	On-site disposal (excavation, capping, covering, reveg)	Lead		ROD, 9/2/1999, p. 7, 23-25	No		
COD980717938	09	Institutional Controls	Lead		ROD, 9/2/1999, p. 7, 23-25	No		
COD980717938	10	On-site disposal (excavation, capping, covering, reveg)	Cadmium	Arsenic, copper, lead, silver, sulfate, and zinc	ROD, 8/8/1997, p. 16	No		
COD980717938	10	Other – Engineering/Containment	Cadmium	Arsenic, copper, lead, silver, sulfate, and zinc	ROD, 8/8/1997, p. 16	No		
COD980717938	11	On-site disposal (excavation, capping, covering, reveg)	Arsenic	antimony, barium, beryllium, cadmium, chromium, copper, lead, manganese, mercury, nickel, thallium, zinc	ROD, 9/28/2005, p. 24	No		
COD980717938	11	Institutional Controls	Arsenic	antimony, barium, beryllium, cadmium, chromium, copper, lead, manganese, mercury, nickel, thallium, zinc	ROD, 9/28/2005, p. 24	No		
COD980717938	12	Institutional Controls	Zinc	arsenic, cadmium, copper, iron, lead, manganese, sulfate	ROD, 9/22/2009, p. 39-40	No		ROD, 9/22/2009, p. 4, 42, 56-57
COD981551427								

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
COD981551427	01	Water treatment - Bioreactors (e.g., SRBs)	Arsenic	antimony, cadmium, copper, lead, manganese, thallium, and zinc	ROD, 9/29/2008, p. 51, 55-56	Yes	25	ROD, 9/29/2008, p. 94, 125-141, 130
COD981551427	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	antimony, cadmium, copper, lead, manganese, thallium, and zinc	ROD, 9/29/2008, p. 51, 55-56	No		
COD981551427	01	Institutional Controls	Arsenic	antimony, cadmium, copper, lead, manganese, thallium, and zinc	ROD, 9/29/2008, p. 51, 55-56	No		
MT0001096353								
MT0001096353	01	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, antimony, manganese, mercury, cadmium, chromium, iron, and zinc	ROD, 4/26/2009, p. 17, 66	No		
MT0001096353	01	Institutional Controls	Lead	Arsenic, antimony, manganese, mercury, cadmium, chromium, iron, and zinc	ROD, 4/26/2009, p. 17, 66	No		
MT0001096353	02							
MT0001096353	03							
COD980717557								
COD980717557	01	Water treatment - Created Wetlands	Arsenic	ALUMINUM, CADMIUM, CHROMIUM, COPPER, FLUORIDE, LEAD, MANGANESE, NICKEL, SILVER, AND ZINC	ROD, 9/30/1987, p. 2	Yes		ROD, 9/30/1987, p. 9-10
COD980717557	02	Surface water diversion	Zinc	ALUMINUM, ARSENIC, CADMIUM, CHROMIUM, COPPER, FLUORIDE, LEAD, MANGANESE, NICKEL, SILVER, AND ZINC	ROD, 3/31/1988, p. 2	No		
COD980717557	02	On-site disposal (excavation, capping, covering, reveg)	Zinc	ALUMINUM, ARSENIC, CADMIUM, CHROMIUM, COPPER, FLUORIDE, LEAD, MANGANESE, NICKEL, SILVER, AND ZINC	ROD, 3/31/1988, p. 2	No		
COD980717557	03	On-site disposal (excavation, capping, covering, reveg)	Arsenic	ALUMINUM, BERYLLIUM, CADMIUM, CHROMIUM, COPPER, FLUORIDE, LEAD, MANGANESE, MERCURY, NICKEL, SILVER, ZINC, THE INDICATOR PH.	ROD, 9/30/1991, p. 5	No		
COD980717557	03	Institutional Controls	Arsenic	ALUMINUM, BERYLLIUM, CADMIUM, CHROMIUM, COPPER, FLUORIDE, LEAD, MANGANESE, MERCURY, NICKEL, SILVER, ZINC, THE INDICATOR PH.	ROD, 9/30/1991, p. 5	No		
COD980717557	03	Water treatment-other	Arsenic	ALUMINUM, BERYLLIUM, CADMIUM, CHROMIUM, COPPER, FLUORIDE, LEAD, MANGANESE, MERCURY, NICKEL, SILVER, ZINC, THE INDICATOR PH.	ROD, 9/30/1991, p. 5	Yes		ROD, 9/20/1991, p. 17-18
COD980717557	03	Alternative drinking water	Arsenic	ALUMINUM, BERYLLIUM, CADMIUM, CHROMIUM, COPPER, FLUORIDE, LEAD, MANGANESE, MERCURY, NICKEL, SILVER, ZINC, THE INDICATOR PH.	ROD, 9/30/1991, p. 5	No		FYR, 3/1999, p. 15
COD980717557	03	Water treatment - Created Wetlands	Zinc	ALUMINUM, ARSENIC, BERYLLIUM, CADMIUM, CHROMIUM, COPPER, FLUORIDE, LEAD, MANGANESE, MERCURY, NICKEL, SILVER, THE INDICATOR PH.	ROD, 9/30/1991, p. 5	Yes		FYR, 3/1999, p. 15

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
COD980717557	04	Water treatment - Bioreactors (e.g., SRBs)	Zinc	arsenic, copper, cadmium, lead, manganese	ROD, 9/24/2004, p. 20	Yes		ROD, 9/29/2004, p. 4
COD980717557	04	Water treatment-other	Zinc	arsenic, copper, cadmium, lead, manganese	ROD, 9/24/2004, p. 20	Yes	140	ROD, 9/29/2004, p. 4; AMD, 4/29/2010, p. 12
COD980717557	04	On-site disposal (excavation, capping, covering, reveg)	Zinc	arsenic, copper, cadmium, lead, manganese	ROD, 9/24/2004, p. 20	No		
COD980717557	04	Surface water diversion	Zinc	arsenic, copper, cadmium, lead, manganese	ROD, 9/24/2004, p. 20	No		
COD980717557	04	Institutional Controls	Zinc	arsenic, copper, cadmium, lead, manganese	ROD, 9/24/2004, p. 20	No		
UTD988075719								
UTD988075719	01	Off-site disposal	Lead	Arsenic	ROD, 9/30/2002, p. 4, 18	No		
UTD988075719	01	Other – Engineering/Containment	Lead	Arsenic	ROD, 9/30/2002, p. 4, 18	No		
UTD988075719	01	Institutional Controls	Lead	Arsenic	ROD, 9/30/2002, p. 4, 18	No		
UTD988075719	02	Off-site disposal	Lead	Arsenic	ROD, 9/16/2009, p. 4, 19	No		
UTD988075719	02	Institutional Controls	Lead	Arsenic	ROD, 9/16/2009, p. 4, 19	No		
UTD988075719	03	Off-site disposal	Lead	Arsenic	ROD, 9/30/2002, p. 4, 18	No		
COD980716955								
COD980716955	01	Off-site disposal	Radium	Thorium, uranium	ROD, 9/29/1987, p. 2	No		
COD980716955	02	Off-site disposal	Radium	Thorium, uranium	ROD, 9/29/1987, p. 3	No		
COD980716955	02	Institutional Controls	Radium	Thorium, uranium	ROD, 9/29/1987, p. 3	No		
COD980716955	03	Off-site disposal	Radium	Uranium, vanadium	ROD, 9/29/1987, p.2	No		
COD980716955	03	Institutional Controls	Radium	Uranium, vanadium	ROD, 9/29/1987, p.2	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
COD980716955	04	Off-site disposal	Radium	Lead, thorium, uranium	ROD, 9/30/1986, p. 5, 7; ESD, 9/17/1993	No		
COD980716955	04	Institutional Controls	Radium	Thorium, uranium	ROD, 9/30/1986, p. 5, 7	No		
COD980716955	05							
COD980716955	06	Off-site disposal	Radium	Uranium	ROD, 9/29/1987, p. 7	No		
COD980716955	06	Institutional Controls	Radium	Uranium	ROD, 9/29/1987, p. 7	No		
COD980716955	07	Institutional Controls	Radium	Uranium	ROD, 3/24/1986, p. 5	No		
COD980716955	08	Off-site disposal	Radium	Arenic, lead, molybdenum, rhenium, selenium, thorium, uranium, vanadium	ROD, 1/28/1992, p. 2; FYR, 9/12/1994, p. 27	No		
COD980716955	08	Solidification	Radium	Arenic, lead, molybdenum, rhenium, selenium, thorium, uranium, vanadium	ROD, 1/28/1992, p. 2; FYR, 9/12/1994, p. 27	No		
COD980716955	08	Institutional Controls	Radium	Arenic, lead, molybdenum, rhenium, selenium, thorium, uranium, vanadium	ROD, 1/28/1992, p. 2; FYR, 9/12/1994, p. 27	No		
COD980716955	09	On-site disposal (excavation, capping, covering, reveg)	Radium	Arsenic, cadmium, lead, uranium, zinc	ROD, 12/23/1991, p. 5	No		
COD980716955	09	Institutional Controls	Radium	Arsenic, cadmium, lead, uranium, zinc	ROD, 12/23/1991, p. 5	No		
COD980716955	10	Off-site disposal	Radium	vanadium	ROD, 6/30/1987, p. 8	No		
COD980716955	11	Off-site disposal	Radium	Uranium	ROD, 9/29/1987, p. 7	No		
COD980716955	11	Institutional Controls	Radium	Uranium	ROD, 9/29/1987, p. 7	No		
COD081961518								

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COD081961518	01	Water treatment-lime	Zinc	arsenic, cadmium, copper, lead	ROD, 3/29/1993, p.12, 15	Yes		ROD, 3/29/1993, p. 35
COD081961518	01	Surface water diversion	Zinc	arsenic, cadmium, copper, lead	ROD, 3/29/1993, p.12	No		
COD081961518	01	On-site disposal (excavation, capping, covering, reveg)	Zinc	arsenic, cadmium, copper, lead	ROD, 3/29/1993, p.12	No		
COD081961518	01	Alternative drinking water	Zinc	arsenic, cadmium, copper, lead	ROD, 3/29/1993, p.12	No		
COD081961518	01	Institutional Controls	Zinc	arsenic, cadmium, copper, lead	ROD, 3/29/1993, p.12	No		
COD081961518	02	Institutional Controls	Arsenic	cadmium, chromium, lead, manganese	ROD, 9/3/1998, p. 6	No		
COD081961518	03							
COD081961518	04							
MTD006230346								
MTD006230346	01	Water treatment-other	Arsenic	Cadmium, Lead, Copper, Zinc	ROD 11/22/1989, p.19	Yes	60	ROD 11/22/1989, p.80
MTD006230346	01	Other – Treatment Technology	Arsenic	Cadmium, Lead, Copper, Zinc	ROD 11/22/1989, p.19	No		ROD 11/22/1989, p.13
MTD006230346	01	Other – Treatment Technology	Arsenic	Cadmium, Lead, Copper, Zinc	ROD 11/22/1989, p.19	No		ROD 11/22/1989, p.13
MTD006230346	02	Off-site disposal	Lead	Arsenic	ROD 9/17/2009, p.82	No		
MTD006230346	02	Off-site disposal	Lead	Arsenic	ROD 9/17/2009, p.82	No		
MTD006230346	02	Institutional Controls	Lead	Arsenic	ROD 9/17/2009, p.82	No		
UT0002240158								
UT0002240158	00	On-site disposal (excavation, capping, covering, reveg)	Lead	Antimony, arsenic, cadmium, iron, manganese, mercury, silver, thallium	ROD, 9/30/2002, p. 12, 26	No		
UT0002240158	00	Institutional Controls	Lead	Antimony, arsenic, cadmium, iron, manganese, mercury, silver, thallium	ROD, 9/30/2002, p. 12, 26	No		
UT0002240158	01							
UT0002240158	02							
UT0002240158	03							
UT0002240158	04							

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
MT0012694970								
MT0012694970	01							
MT0012694970	02							
MT0012694970	03							
CO0001093392								
CO0001093392	00							
SDD987673985								
SDD987673985	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Aluminum, antimony, cadmium, copper, chromium, iron, lead, manganese, thallium, and zinc	ROD, 9/29/2008, 7-4	No		
SDD987673985	01	Institutional Controls	Arsenic	Aluminum, antimony, cadmium, copper, chromium, iron, lead, manganese, thallium, and zinc	ROD, 9/29/2008, 7-4	No		
SDD987673985	01	Other – Engineering/Containment	Arsenic	Aluminum, antimony, cadmium, copper, chromium, iron, lead, manganese, thallium, and zinc	ROD, 9/29/2008, 7-4	No		
SDD987673985	01	Water treatment-lime	Arsenic	Aluminum, antimony, cadmium, copper, chromium, iron, lead, manganese, thallium, selenium, and zinc	ROD, 9/29/2008, 7-4	Yes	250	ROD, 9/29/2008, 1-4,12
SDD987673985	01	Monitoring (all media and as separate remedy)	Arsenic	Aluminum, antimony, cadmium, copper, chromium, iron, lead, manganese, selenium, thallium, zinc, and TDS	ROD, 9/29/2008, 7-4	No		
SDD987673985	02	Water treatment-lime	Copper	Arsenic, cadmium, chromium, cyanide, lead, mercury, nickel, selenium, silver, zinc, TDS	ROD, 4/23/2001, 2-14	Yes	250	ROD, 4/23/2001, 2-15
SDD987673985	02	Impoundment	Copper	Arsenic, cadmium, chromium, cyanide, lead, mercury, nickel, selenium, silver, zinc	ROD, 4/23/2001, 2-14	No		
UTD093120921								
UTD093120921	01	Institutional Controls	Lead	Aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc	ROD, 9/27/2007, p. 20-21	No		ROD, 9/27/2007, p. 3-4, 62-64, 72-75
UTD093120921	01	Monitoring (all media and as separate remedy)	Lead	Aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc	ROD, 9/27/2007, p. 20-21	No		ROD, 9/27/2007, p. 3-4, 62-64, 72-75
UT0002391472								
UT0002391472	01	Institutional Controls	Lead	arsenic	ROD, 7/29/1999, p. 10, 22	No		ROD, 7/29/1999, p. 4, 38, 53-55
UT0002391472	01	Off-site disposal	Lead	arsenic	ROD, 7/29/1999, p. 10, 22	No		ROD, 7/29/1999, p. 4, 38, 53-55
UT0002391472	02							
UT0002391472	03							
UT0002391472	04							
UT0002391472	05							

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
UTD070926811								
UTD070926811	01							
UTD070926811	02							
UTD070926811	03							
UTD070926811	04							
UTD070926811	05							
UTD070926811	06							
UTD070926811	07							
UTD070926811	08	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, selenium	ROD, 9/26/2002, p. 22, 133	No		ROD, 9/26/2002, p. 135
UTD070926811	09	No action	Lead	Arsenic, copper	ROD, 9/26/2002, p. 22, 71	No		ROD, 9/26/2002, p. 75
UTD070926811	10							
UTD070926811	11							
UTD070926811	12							
UTD070926811	13	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, cadmium	ROD, 9/26/2002, p. 22, 104	No		ROD, 9/26/2002, p. 108-111
UTD070926811	13	Surface water diversion	Lead	Arsenic, cadmium	ROD, 9/26/2002, p. 22, 104	No		ROD, 9/26/2002, p. 108-111
UTD070926811	13	Deconstruction/ decontamination of buildings	Lead	Arsenic, cadmium	ROD, 9/26/2002, p. 22, 104	No		ROD, 9/26/2002, p. 108-111
UTD070926811	13	Off-site disposal	Lead	Arsenic, cadmium	ROD, 9/26/2002, p. 22, 104	No		ROD, 9/26/2002, p. 108-111
UTD070926811	14	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, selenium	ROD, 9/26/2002, p. 22, 123	No		ROD, 9/26/2002, p. 120, 124-126
UTD070926811	14	Deconstruction/ decontamination of buildings	Lead	Arsenic, selenium	ROD, 9/26/2002, p. 22, 123	No		ROD, 9/26/2002, p. 124-126
UTD070926811	15	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, selenium	ROD, 9/26/2002, p. 22	No		ROD, 9/26/2002, p. 65-68
UTD070926811	16							
UTD070926811	17							
UTD070926811	18	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, selenium	ROD, 9/26/2002, p. 22	No		
UTD070926811	19	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, cadmium, selenium, zinc	ROD, 9/26/2002, p. 197	No		

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UTD070926811	19	Other – Engineering/Containment	Lead	Arsenic, cadmium, selenium, zinc	ROD, 9/26/2002, p. 197	No		
UTD070926811	20	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, selenium	ROD, 9/26/2002, p. 22	No		
UTD070926811	21							
UTD070926811	22	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, selenium	ROD, 9/26/2002, p. 22, 154	No		
UTD070926811	22	Surface water diversion	Lead	Arsenic, selenium	ROD, 9/26/2002, p. 22, 154	No		ROD, 9/26/2002, p. 160
UTD070926811	23	Water treatment - Bioreactors (e.g., SRBs)	Selenium	Arsenic, lead	ROD, 9/26/2002, p. 22, 170	Yes		ROD, 9/26/2002, p. 187- 189
UTD000826404								
UTD000826404	01	On-site disposal (excavation, capping, covering, reveg)	Lead	arsenic	ROD 11/3/1998, pp. 7-8, 26	No		
UTD000826404	01	Institutional Controls	Lead	arsenic	ROD 11/3/1998, pp. 7-8, 26	No		
UTD000826404	02	Water treatment-lime	Other	Sulfate, arsenic, barium, cadmium, copper, fluoride, lead, nitrate, selenium, nickel, aluminum, chloride, manganese, silver, TDS, zinc	12/13/00 ROD, pp. 88-89 (Primary COC Sulfate)	Yes	750	ESD 6/23/2003, p. 3; ROD 12/13/100, p. 85
UTD000826404	02	Water treatment-other	Other	Sulfate, arsenic, barium, cadmium, copper, fluoride, lead, nitrate, selenium, nickel, aluminum, chloride, manganese, silver, TDS, zinc	12/13/00 ROD, pp. 88-89 (Primary COC Sulfate)	Yes	2750	ESD 6/23/2003, p. 3; ROD 12/13/100, p. 85
UTD000826404	02	Monitored natural attenuation/recovery	Other	Sulfate, arsenic, barium, cadmium, copper, fluoride, lead, nitrate, selenium, nickel, aluminum, chloride, manganese, silver, TDS, zinc	12/13/00 ROD, pp. 88-89 (Primary COC Sulfate)	No		ESD 6/23/2003, p. 4; ROD 12/13/100, p. 82
UTD000826404	02	Water treatment-other	Other	Sulfate, arsenic, barium, cadmium, copper, fluoride, lead, nitrate, selenium, nickel, aluminum, chloride, manganese, silver, TDS, zinc	12/13/00 ROD, pp. 88-89 (Primary COC Sulfate)	Yes	3500	ESD 6/23/2003, p. 4; ROD 12/13/100, p. 74
UTD000826404	02	Alternative drinking water	Other	Sulfate, arsenic, barium, cadmium, copper, fluoride, lead, nitrate, selenium, nickel, aluminum, chloride, manganese, silver, TDS, zinc	12/13/00 ROD, pp. 88-89 (Primary COC Sulfate)	No		ESD 6/23/2003, p. 4; ROD 12/13/100, p. 82

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
UTD000826404	02	Institutional Controls	Other	Sulfate, arsenic, barium, cadmium, copper, fluoride, lead, nitrate, selenium, nickel, aluminum, chloride, manganese, silver, TDS, zinc	12/13/00 ROD, pp. 88-89 (Primary COC Sulfate)	No		ESD 6/23/2003, p. 4; ROD 12/13/100, p. 82
UTD000826404	03	Institutional Controls	Lead	Arsenic	ROD - 9/28/2001, pages 6, 25.	No		ROD - 9/28/2001
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic	ROD - 9/28/2001, page 46	No		ROD - 9/28/2001, page 46
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic	ROD - 9/28/2001, page 46	No		ROD - 9/28/2001, page 46
UTD000826404	04	On-site disposal (excavation, capping, covering, reveg)	Lead	arsenic	ROD 11/3/1998, p. 28	No		
UTD000826404	04	Other – Engineering/Containment	Lead	arsenic	ROD 11/3/1998, p. 28	No		
UTD000826404	05	On-site disposal (excavation, capping, covering, reveg)	Lead	arsenic, zinc, silver	ROD 11/3/1998, p. 5	No		
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic	ROD - 9/28/2001, page 25	No		ROD - 9/28/2001: page 26
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic	ROD - 9/28/2001, page 25	No		ROD - 9/28/2001: page 26
UTD000826404	06	Surface water diversion	Lead	Arsenic	ROD - 9/28/2001, page 25	No		ROD - 9/28/2001, page 25
UTD000826404	06	Water treatment - Created Wetlands	Lead	Arsenic	ROD - 9/28/2001, page 25	Yes		ROD - 9/28/2001, page 25
UTD000826404	06	Soil Amendments	Lead	Arsenic	ROD - 9/28/2001, page 25	No		ROD - 9/28/2001, page 25
UTD000826404	06	Sediment dredging/ disposal	Lead	Arsenic	ROD - 9/28/2001, page 25	No		ROD - 9/28/2001, page 25
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic	ROD - 9/28/2001: page 31	No		ROD - 9/28/2001: page 31
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic	ROD - 9/28/2001: page 31	No		ROD - 9/28/2001: page 31
UTD000826404	08							
UTD000826404	09							

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UTD000826404	10	Institutional Controls	Lead		ROD 11/3/1998, p. 28	No		
UTD000826404	11	Institutional Controls	Lead	Arsenic	ROD 11/3/1998, p. 28	No		
UTD000826404	12							
UTD000826404	13							
UTD000826404	14							
UTD000826404	15							
UTD000826404	16							
UTD000826404	17	Institutional Controls	Lead	arsenic	ROD 11/3/1998, p. 15	No		
UTD000826404	18							
UTD000826404	19							
UTD000826404	20							
UTD000826404	21							
UTD000826404	22							
UTD000826404	23							
UTD000826404	24							
UTD000826404	24	Deconstruction/ decontamination of buildings	Lead	Arsenic, copper, selenium	ROD, 9/26/2002, p. 22, 217, 219	No		ROD, 9/26/2002, p. 219-220
UTD000826404	24	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, copper, selenium	ROD, 9/26/2002, p. 22, 217, 219	No		ROD, 9/26/2002, p. 219-220
MT0009083840								
MT0009083840	01	On-site disposal (excavation, capping, covering, reveg)	Asbestos		2010 ROD p5-5	No		
MT0009083840	01	Off-site disposal	Asbestos		2010 ROD p5-5	No		
MT0009083840	01	Institutional Controls	Asbestos		2010 ROD p5-5	No		
MT0009083840	02	On-site disposal (excavation, capping, covering, reveg)	Asbestos		2010 ROD p5-5	No		
MT0009083840	02	Off-site disposal	Asbestos		2010 ROD p5-5	No		
MT0009083840	02	Institutional Controls	Asbestos		2010 ROD p5-5	No		
MT0009083840	03							
MT0009083840	04							
MT0009083840	05							
MT0009083840	06							
MT0009083840	07							
MT0009083840	08							

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COD042167858								
COD042167858	01	Impoundment	Uranium	Molybdenum, Nickel, Lead, Selenium, Sulfate	ROD, 1/3/2002, 7-6	No		
COD042167858	01	Permeable Reactive Barrier	Uranium	Molybdenum, Nickel, Lead, Selenium, Sulfate	ROD, 1/3/2002, 7-6	Yes		
COD042167858	02	Monitoring (all media and as separate remedy)	Uranium	Molybdenum, Nickel, Lead, Selenium, Sulfate	ROD, 1/3/2002, 7-6	No		
UTD081834277								
UTD081834277	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium Lead	FYR, 10/2003, p.4-1	No		
UTD081834277	01	Monitoring (all media and as separate remedy)	Arsenic	Cadmium Lead	FYR, 10/2003, p.4-1	No		
UTD081834277	01	Institutional Controls	Arsenic	Cadmium Lead	FYR, 10/2003, p.4-1	No		
UTD081834277	02	Off-site disposal	Arsenic	barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc	FYR, 12/2008, p. 7	No		
UTD081834277	02	Other – Engineering/Containment	Arsenic	barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc	FYR, 12/2008, p. 7	No		
UTD081834277	02	Institutional Controls	Arsenic	barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc	FYR, 12/2008, p. 7	No		
UTD081834277	02	Other – Engineering/Containment	Arsenic	barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc	FYR, 12/2008, p. 7	No		
UTD081834277	02	Monitoring (all media and as separate remedy)	Arsenic	barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc	FYR, 12/2008, p. 7	No		
MTD980717565								
MTD980717565	01	Alternative drinking water	Arsenic		ROD, 4/14/1984, p. 3	No		
MTD980717565	02	Sediment dredging/ disposal	Arsenic	Cadmium, Copper, Lead, Zinc	ROD, 12/2004 PT2, p.11	No		
MTD980717565	02	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, Copper, Lead, Zinc	ROD, 12/2004 PT2, p.11	No		
MTD980717565	03							
UT3890090035								
UT3890090035	01	On-site disposal (excavation, capping, covering, reveg)	Radium	uranium, arsenic, beryllium, cadmium, chromium, copper, lead, molybdenum, nickel, selenium, vanadium, zinc	ROD OU 1/2, 08/22/1990, p. 7	No		
UT3890090035	02	On-site disposal (excavation, capping, covering, reveg)	Radium		ROD OU 1/2, 08/22/1990, p. 2	No		
UT3890090035	02	Institutional Controls	Radium		ROD OU 1/2, 08/22/1990, p. 2	No		

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UT3890090035	03	Monitoring (all media and as separate remedy)	Radium	Arsenic, Manganese, Molybdeium, Nitrate, Selenium, Uranium, Vanadium, Uranium	ROD Interim OU3, 9/2004, p. 21 (pdf)	No		
UT3890090035	03	Permeable Reactive Barrier	Radium	Arsenic, Manganese, Molybdeium, Nitrate, Selenium, Uranium, Vanadium, Uranium	ROD Interim OU3, 9/2004, p. 21 (pdf)	Yes		
UT3890090035	03	Institutional Controls	Radium	Arsenic, Manganese, Molybdeium, Nitrate, Selenium, Uranium, Vanadium, Uranium	ROD Interim OU3, 9/2004, p. 21 (pdf)	No		
UTD980667208								
UTD980667208	01	Off-site disposal	Radium	THORIUM RADON	ROD, OU1, 1989, p.5	No		
UTD980667208	01	On-site disposal (excavation, capping, covering, reveg)	Radium	THORIUM RADON	ROD, OU1, 1989, p.5	No		
UTD980667208	01	Deconstruction/ decontamination of buildings	Radium	THORIUM RADON	ROD, OU1, 1989, p.5	No		
UTD980667208	02							
UTD980667208	03	Monitored natural attenuation/recovery	Radium	Arsenic, Manganese, Molybdenum, Nitrate, Selenium, Uranium, Vanadium, Uranium	IRAR, OU3, 2004, p. 12	No		
UTD980667208	03	Institutional Controls	Radium	Arsenic, Manganese, Molybdenum, Nitrate, Selenium, Uranium, Vanadium, Uranium	IRAR, OU3, 2004, p. 12	No		
UTD980667208	03	Permeable Reactive Barrier	Radium	Arsenic, Manganese, Molybdenum, Nitrate, Selenium, Uranium, Vanadium, Uranium	IRAR, OU3, 2004, p. 12	Yes		
UTD980667208	04							
UTD980667208	05							
UTD980667208	06							
UTD980667208	07							
UTD980667208	08							
MTD021997689								
MTD021997689	01	Monitored natural attenuation/recovery	Chromium		FYR 2008, p. 5	No		
MTD021997689	01	Soil Amendments	Chromium		FYR 2008, p. 5	No		
MTD021997689	01	Off-site disposal	Chromium		FYR 2008, p. 5	No		
MTD021997689	01	Institutional Controls	Chromium		FYR 2008, p. 5	No		
CON000802630								
CON000802630	01							
CON000802630	02							
UTD980952840								
UTD980952840	01	Impoundment	Lead	Arsenic, Zinc, Cadmium	ROD OU1, 7/2005, p. 26	No		
UTD980952840	01	Other – Engineering/Containment	Lead	Arsenic, Zinc, Cadmium	ROD OU1, 7/2005, p. 26	No		
UTD980952840	01	Institutional Controls	Lead	Arsenic, Zinc, Cadmium	ROD OU1, 7/2005, p. 26	No		

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UTD980952840	02							
UTD980951388								
UTD980951388	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Lead, Cadmium	ROD OU1, 12/1993, p. 24	No		
UTD980951388	01	Soil Amendments	Arsenic	Lead, Cadmium	ROD OU1, 12/1993, p. 24	No		
UTD980951388	01	Sediment dredging/ disposal	Arsenic	Lead, Cadmium	ROD OU1, 12/1993, p. 24	No		
UTD980951388	01	Institutional Controls	Arsenic	Lead, Cadmium	ROD OU1, 12/1993, p. 24	No		
UTD980951388	01	Monitoring (all media and as separate remedy)	Arsenic	Lead, Cadmium	ROD OU1, 12/1993, p. 24	No		
UTD980951388	02	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic	ROD OU2, 9/1990, p.12	No		
UTD980951388	02	Institutional Controls	Lead	Arsenic	ROD OU2, 9/1990, p.12	No		
MTD980502777								
MTD980502777	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, copper, lead, mercury, zinc	ESD, 8/31/1998. p. 5	No		
MTD980502777	01	Soil Amendments	Arsenic	Cadmium, copper, lead, mercury, zinc	ESD, 8/31/1998. p. 5	No		
MTD980502777	01	Sediment dredging/ disposal	Arsenic	Cadmium, copper, lead, mercury, zinc	ESD, 8/31/1998. p. 5	No		
MTD980502777	01	Institutional Controls	Arsenic	Cadmium, copper, lead, mercury, zinc	ESD, 8/31/1998. p. 5	No		
MTD980502777	02							
MTD980502777	03	Water treatment-lime	Arsenic	cadmium, lead, sulfate, and zinc	ROD, 9/29/1994, p. 18	Yes	3200	FYR, 6/28/2011, p. 6-6
MTD980502777	03	Institutional Controls	Arsenic	cadmium, lead, sulfate, and zinc	ROD, 9/29/1994, p. 18	No		
MTD980502777	04	Water treatment-lime	Arsenic	cadmium, lead, sulfate, and zinc		Yes	3300	1991 ESD p3
MTD980502777	04	On-site disposal (excavation, capping, covering, reveg)	Arsenic	copper, iron, zinc, cadmium		No		
MTD980502777	04	Other – Engineering/Containment	Arsenic	copper, iron, zinc, cadmium		No		
MTD980502777	04	Surface water diversion	Arsenic	copper, iron, zinc, cadmium		No		
MTD980502777	04	Institutional Controls	Arsenic	copper, iron, zinc, cadmium		No		
MTD980502777	05							
MTD980502777	06							
MTD980502777	07	On-site disposal (excavation, capping, covering, reveg)	Arsenic		1995 ROD p3, 15-16	No		

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MTD980502777	07	Water treatment-other	Arsenic		1995 ROD p3, 15-16	Yes		
MTD980502777	07	Solidification	Arsenic		1995 ROD p3, 15-16	No		
MTD980502777	07	Off-site disposal	Arsenic		1995 ROD p3, 15-16	No		
MTD980502777	07	Alternative drinking water	Arsenic		1995 ROD p3, 15-16	No		
MTD980502777	07	Monitored natural attenuation/recovery	Arsenic		1995 ROD p3, 15-16	No		
MTD980502777	07	Institutional Controls	Arsenic		1995 ROD p3, 15-16	No		
MTD980502777	08							
MTD980502777	09							
MTD980502777	10							
MTD980502777	11							
MTD980502777	12	On-site disposal (excavation, capping, covering, reveg)	arsenic	cadmium, copper, lead, zinc	1992 ROD p10	No		
MTD980502777	12	Surface water diversion	arsenic	cadmium, copper, lead, zinc	1992 ROD p10	No		
MTD980502777	12	Other – Engineering/Containment	arsenic	cadmium, copper, lead, zinc	1992 ROD p10	No		
MTD980502777	12	Water treatment-lime	arsenic	cadmium, copper, lead, zinc	1992 ROD p10	Yes		
MTD980502777	12	Impoundment	arsenic	cadmium, copper, lead, zinc	1992 ROD p10	No		
MTD980502777	12	Monitoring (all media and as separate remedy)	arsenic	cadmium, copper, lead, zinc	1992 ROD p10	No		
MTD980502777	12	Institutional Controls	arsenic	cadmium, copper, lead, zinc	1992 ROD p10	No		
MTD980502777	13							
COD983769738								
COD983769738	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Lead	FYR 9/2010, p. 18	No		
COD983769738	01	Institutional Controls	Arsenic	Lead	FYR 9/2010, p. 18	No		
COD983769738	01	Monitored natural attenuation/recovery	Arsenic	Lead	FYR 9/2010, p. 18	No		
COD983769738	02	Institutional Controls	Other	PAHs, Arsenic, Lead, Manganese, Antimony	ROD OU2, 6/1998, p. 48	No		
COD983769738	02	Monitored natural attenuation/recovery	Other	PAHs, Arsenic, Lead, Manganese, Antimony	ROD OU2, 6/1998, p. 48	No		
COD983769738	02	Off-site disposal	Other	PAHs, Arsenic, Lead, Manganese, Antimony	ROD OU2, 6/1998, p. 48	No		
COD983769738	03	Alternative drinking water	Other	PAHs, Arsenic, Lead, Manganese, Antimony	ROD OU2, 6/1998, p. 48	No		
COD980806277								
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Lead		FYR, 11,/1997, p. 2	No		

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COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Lead		FYR, 11,/1997, p. 2	No		
COD980806277	01	Monitoring (all media and as separate remedy)	Lead		FYR, 11,/1997, p. 2	No		
COD980806277	01	Alternative drinking water	Lead		FYR, 11,/1997, p. 2	No		
COD980806277	01	Institutional Controls	Lead		FYR, 11,/1997, p. 2	No		
COD980806277	02	Surface water diversion	Lead		FYR, 11,/1997, p. 2	No		
COD980806277	02	Other – Engineering/Containment	Lead		FYR, 11,/1997, p. 2	No		
CO0002378230								
CO0002378230	00							
COD983778432								
COD983778432	00	Water treatment-other	Cyanide	Copper, zinc	1994 ROD, p 36-37	Yes	500	1994 ROD, p 36-37
COD983778432	00	Other – Engineering/Containment	Cyanide	Copper, zinc	1994 ROD, p 36-37	No		
COD983778432	01	Water treatment-other	Cyanide	Copper, cadmium, chromium VI, lead, silver, zinc, arsenic, aluminum, iron, mercury, manganese	1994 ROD, p 14	Yes		1994 ROD, p 31
COD983778432	01	Other – Engineering/Containment	Cyanide	Copper, cadmium, chromium VI, lead, silver, zinc, arsenic, aluminum, iron, mercury, manganese	1994 ROD, p 14	No		
COD983778432	01	Water treatment - Bioreactors (e.g., SRBs)	Cyanide	Copper, cadmium, chromium VI, lead, silver, zinc, arsenic, aluminum, iron, mercury, manganese	1994 ROD, p 14	Yes		1994 ROD, p 31
COD983778432	01	Monitoring (all media and as separate remedy)	Cyanide	Copper, cadmium, chromium VI, lead, silver, zinc, arsenic, aluminum, iron, mercury, manganese	1994 ROD, p 14	No		
COD983778432	02	On-site disposal (excavation, capping, covering, reveg)	Copper	Cyanide	1994 ROD, p 16, 59-62	No		
COD983778432	03							
COD983778432	04	Other – Engineering/Containment	Cyanide	Copper, cadmium, chromium VI, lead, silver, zinc, arsenic, aluminum, iron, mercury, manganese	1994 ROD, p 16	No		1994 ROD p 38
COD983778432	05	Impoundment	Copper	Aluminum, cyanide, cadmium, chromium VI, lead, silver, zinc, arsenic, iron, mercury, manganese	2001 ROD, p. 72	No		2001 ROD, p. 71
COD983778432	05	Monitoring (all media and as separate remedy)	Copper	Aluminum, cyanide, cadmium, chromium VI, lead, silver, zinc, arsenic, iron, mercury, manganese	2001 ROD, p. 71	No		2001 ROD, p. 72
COD983778432	05	On-site disposal (excavation, capping, covering, reveg)	Copper	Aluminum, cyanide, cadmium, chromium VI, lead, silver, zinc, arsenic, iron, mercury, manganese	2001 ROD, p. 71	No		2001 ROD, p. 71
COD983778432	05	Surface water diversion	Copper	Aluminum, cyanide, cadmium, chromium VI, lead, silver, zinc, arsenic, iron, mercury, manganese	2001 ROD, p. 71	No		2001 ROD, p. 71
COD983778432	05	Water treatment-lime	Copper	Aluminum, cyanide, cadmium, chromium VI, lead, silver, zinc, arsenic, iron, mercury, manganese	2001 ROD, p. 71	Yes	1000	2001 ROD, p. 71
MTSFN7578012								
MTSFN7578012	01							
MTSFN7578012	02							
MTSFN7578012	03							
MTSFN7578012	04	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, Lead, Zinc	ROD OU4, 6/2002, p.53	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
MTSFN7578012	04	Other – Engineering/Containment	Arsenic	Cadmium, Lead, Zinc	ROD OU4, 6/2002, p.53	No		
MTSFN7578012	04	Water treatment-other	Arsenic	Cadmium, Lead, Zinc	ROD OU4, 6/2002, p.53	Yes	42	ROD OU4, 6/2002, p. 92
MTSFN7578012	04	Other – Engineering/Containment	Arsenic	Cadmium, Lead, Zinc	ROD OU4, 6/2002, p.53	No		
MTSFN7578012	04	Alternative drinking water	Arsenic	Cadmium, Lead, Zinc	ROD OU4, 6/2002, p.53	No		
MTSFN7578012	04	Institutional Controls	Arsenic	Cadmium, Lead, Zinc	ROD OU4, 6/2002, p.53	No		
MTSFN7578012	05							
MTSFN7578012	06							
MTSFN7578012	07							
MTSFN7578012	08							
COD007063274								
COD007063274	01	On-site disposal (excavation, capping, covering, reveg)	Radium	Uranium, thorium, arsenic, cadmium, lead, molybdenum, nickel, selenium, vanadium, zinc	2010 FYR, p. 28	No		
COD007063274	01	Impoundment	Radium	Uranium, thorium, arsenic, cadmium, lead, molybdenum, nickel, selenium, vanadium, zinc	2010 FYR, p. 28	No		
UTN000802704								
UTN000802704	01							
CO0002259588								
CO0002259588	01	Off-site disposal	Arsenic	Lead	2003 ROD, p. 19	No		
CO0002259588	02							
CO0002259588	03							
SDD980717136								
SDD980717136	01	Institutional Controls	Arsenic	Cadmium, copper, zinc, mercury	1990 ROD p. 11; 2002 FYR, p. 3-9	No		
SDD980717136	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, copper, zinc, mercury	1990 ROD p. 11; 2002 FYR, p. 3-9	No		
AZD008397127								
AZD008397127	01							
CAD980496863								
CAD980496863	01	Other – Engineering/Containment	Asbestos		ROD 2/14/1991, p.8	No		
CAD980496863	01	Surface water diversion	Asbestos		ROD 2/14/1991, p.8	No		
CAD980496863	01	On-site disposal (excavation, capping, covering, reveg)	Asbestos		ROD 2/14/1991, p.8	No		
CAD980496863	01	Institutional Controls	Asbestos		ROD 2/14/1991, p.8	No		
CAD980496863	02	On-site disposal (excavation, capping, covering, reveg)	Asbestos	Nickel	ROD 7/19/98, p.17	No		
NVD980813646								

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
NVD980813646	01	Off-site disposal	Mercury	Arsenic, Lead	ROD 3/30/1995, p.26	No		
NVD980813646	01	Institutional Controls	Mercury	Arsenic, Lead	ROD 3/30/1995, p.26	No		
NVD980813646	02							
CAD980638860								
CAD980638860	01	Off-site disposal	Arsenic	Cadmium, Copper, Lead, Zinc	ROD 9/30/1985, p.6	No		
CAD980638860	02	Off-site disposal	Cadmium	Copper, Zinc	ROD 10/3/1983, p.7	No		
CAD980817217								
CAD980817217	01	On-site disposal (excavation, capping, covering, reveg)	Asbestos		ROD 9/21/1990, p.7	No		
CAD980817217	01	Surface water diversion	Asbestos		ROD 9/21/1990, p.7	No		
CAD980817217	01	Other – Engineering/Containment	Asbestos		ROD 9/21/1990, p.7	No		
CAD980817217	01	Institutional Controls	Asbestos		ROD 9/21/1990, p.7	No		
CAD980817217	02	On-site disposal (excavation, capping, covering, reveg)	Asbestos	Nickel	ROD 7/19/1989, p.7	No		
AZ0000309013								
AZ0000309013	01							
CAD980498612								
CAD980498612	01	On-site disposal (excavation, capping, covering, reveg)	Copper	Cadmium, Zinc	ROD 10/3/1986, p.16	No		
CAD980498612	01	Surface water diversion	Copper	Cadmium, Zinc	ROD 10/3/1986, p.16	No		
CAD980498612	01	Other – Engineering/Containment	Copper	Cadmium, Zinc	ROD 10/3/1986, p.16	No		
CAD980498612	02	Water treatment-lime	Cadmium	Copper, Zinc, Aluminum, Arsenic	ROD 9/30/92, p. 23	No		
CAD980498612	02	Water treatment-lime	Cadmium	Copper, Zinc, Aluminum, Arsenic	ROD 9/30/1992, p. 23	Yes	1050	ROD 9/30/1992, p. 29
CAD980498612	03	Water treatment-lime	Cadmium	Copper, Zinc , Aluminum, Arsenic	ROD 9/24/1993, p.18	Yes	1250	ROD 9/24/1993, p.24
CAD980498612	03	Water treatment-lime	Cadmium	Copper, Zinc , Aluminum, Arsenic	ROD 9/24/1993, p.18	No		
CAD980498612	04	Other – Engineering/Containment	Cadmium	Copper, Zinc , Aluminum, Arsenic	ROD 9/30/1997, p.33	No		

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CAD980498612	04	Water treatment-lime	Cadmium	Copper, Zinc , Aluminum, Arsenic	ROD 9/30/1997, p.33	Yes		ROD 9/30/1997, p.93
CAD980498612	05	On-site disposal (excavation, capping, covering, reveg)	Cadmium	Antimony, Arsenic, Chromium, Copper, Iron, Lead, Nickel, Silver, Zinc	ROD 9/30/2004, p.44	No		
CAD980498612	06							
CA1141190578								
CA1141190578	01							
CA1141190578	02							
CA1141190578	03							
CAD983618893								
CAD983618893	01	Institutional Controls	Arsenic	Antimony, Barium, Beryllium, Cadmium, Cobalt, Copper, Cyanide, Lead, Manganese, Mercury, Nickel, Silver, Zinc	ROD 9/28/2004, p.35	No		
CAD983618893	01	Other – Engineering/Containment	Arsenic	Antimony, Barium, Beryllium, Cadmium, Cobalt, Copper, Cyanide, Lead, Manganese, Mercury, Nickel, Silver, Zinc	ROD 9/28/2004, p.35	No		
CAD983618893	01	Deconstruction/ decontamination of buildings	Arsenic	Antimony, Barium, Beryllium, Cadmium, Cobalt, Copper, Cyanide, Lead, Manganese, Mercury, Nickel, Silver, Zinc	ROD 9/28/2004, p.35	No		
CAD983618893	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Antimony, Barium, Beryllium, Cadmium, Cobalt, Copper, Cyanide, Lead, Manganese, Mercury, Nickel, Silver, Zinc	ROD 9/28/2004, p.35	No		
CAD983618893	01	Water treatment-other	Arsenic	Antimony, Barium, Beryllium, Cadmium, Cobalt, Copper, Cyanide, Lead, Manganese, Mercury, Nickel, Silver, Zinc	ROD 9/28/2004, p.35	Yes		ROD 9/28/2004, p. 103
CAD983618893	02	Alternative drinking water	Arsenic	Iron, Lead	ROD 9/30/2008, p.31	No		
CAD983618893	02	Institutional Controls	Arsenic	Iron, Lead	ROD 9/30/2008, p.31	No		
CAD983618893	03							
CAD983618893	04							
CAD980673685								
CAD980673685	01							
CAD980893275								
CAD980893275	01							
CAD980893275	02							
CAD980893275	03							
WAD009045279								
WAD009045279	01							
OR0000515759								
OR0000515759	01							
IDD980725832								

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
IDD980725832	01	Water treatment-lime	Arsenic	Copper, Cobalt, Iron, Manganese	ROD 2003, p. 7-1	Yes	800	ROD 2003, p. 2-4
IDD980725832	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Copper, Cobalt, Iron, Manganese	ROD 2003, p. 7-1	No		
IDD980725832	01	Monitored natural attenuation/recovery	Arsenic	Copper, Cobalt, Iron, Manganese	ROD 2003, p. 7-1	No		
IDD980725832	01	Institutional Controls	Arsenic	Copper, Cobalt, Iron, Manganese	ROD 2003, p. 7-1	No		
IDD048340921								
IDD048340921	01	Off-site disposal	Lead	Antimony, Arsenic, Cadmium, Copper, Mercury, Zinc	ROD 08/30/1991, p.13	No		
IDD048340921	01	Institutional Controls	Lead	Antimony, Arsenic, Cadmium, Copper, Mercury, Zinc	ROD 08/30/1991, p.13	No		
IDD048340921	02	On-site disposal (excavation, capping, covering, reveg)	Mercury	Antimony, Arsenic, Cadmium, Copper, Lead, Zinc	ROD 9/22/1992, p.38	No		
IDD048340921	02	Water treatment - Created Wetlands	Mercury	Antimony, Arsenic, Cadmium, Copper, Lead, Zinc	ROD 9/22/1992, p.38	Yes		ROD 9/22/1992, p.52
IDD048340921	02	Surface water diversion	Mercury	Antimony, Arsenic, Cadmium, Copper, Lead, Zinc	ROD 9/22/1992, p.38	No		ROD 9/21/2001, p.97
IDD048340921	02	Alternative drinking water	Mercury	Antimony, Arsenic, Cadmium, Copper, Lead, Zinc	ROD 9/22/1992, p.38	No		ESD, 9/28/1994, p.6
IDD048340921	02	Institutional Controls	Mercury	Antimony, Arsenic, Cadmium, Copper, Lead, Zinc	ROD 9/22/1992, p.38	No		ROD 4/30/1997, p.46
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, Cadmium	ROD 9/12/2002, p.100	No		ROD 9/27/1993, p.24
IDD048340921	03	Alternative drinking water	Lead	Arsenic, Cadmium	ROD 9/12/2002, p.100	No		ROD 6/10/1994, p.60
IDD048340921	03	Institutional Controls	Lead	Arsenic, Cadmium	ROD 9/12/2002, p.100	No		
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, Cadmium	ROD 9/12/2002, p.100	No		
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Lead	Arsenic, Cadmium	ROD 9/12/2002, p.100	No		
WAD980726368								
WAD980726368	01	Air Stripping	Other	TCE	ROD Amend 10/26/2009, p.11	Yes	3500	ROD Amend 10/26/2009, p.14

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WAD980726368	01	Off-site disposal	Other	TCE	ROD Amend 10/26/2009, p.11	No		
WAD980726368	01	Other – Treatment Technology	Other	TCE	ROD Amend 10/26/2009, p.11	Yes		ROD Amend 10/26/2009, p.15
WAD980726368	01	Soil Vapor Extraction	Other	TCE	ROD Amend 10/26/2009, p.11	No		
WAD980726368	01	Thermal Treatment	Other	TCE	ROD Amend 10/26/2009, p.11	Yes		ROD Amend 10/26/2009, p.16
WAD980726368	01	Water treatment - Bioreactors (e.g., SRBs)	Other	TCE	ROD Amend 10/26/2009, p.11	Yes		ROD Amend 10/26/2009, p.16
WAD980726368	01	Institutional Controls	Other	TCE	ROD Amend 10/26/2009, p.11	No		
WAD980726368	01	Off-site disposal	Other	TCE	ROD Amend 10/26/2009, p.11	No		
WAD980726368	01	Sediment dredging/ disposal	Other	TCE	ROD Amend 10/26/2009, p.11	No		
WAD980726368	02							
WAD980726368	03							
WAD980726368	04							
WAD980726368	05							
WAD980726368	06							
WAD980726368	07							
WAD980726368	08							
WAD980726368	09							
WAD980726368	10							
WAD980726368	11							
WAD980726368	12							
WAD980726368	13							
WAD980726368	14							
WAD980726368	16							
WAD980726368	17							
WAD980726368	18							
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, Copper, Lead, Nickel, and Zinc.	ROD 7/14/2000, p.22	No		
WAD980726368	19	Institutional Controls	Arsenic	Cadmium, Copper, Lead, Nickel, and Zinc.	ROD 7/14/2000, p.22	No		

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WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, Copper, Lead, Nickel, and Zinc.	ROD 7/14/2000, p.22	No		
WAD980726368	19	Sediment dredging/ disposal	Arsenic	Cadmium, Copper, Lead, Nickel, and Zinc.	ROD 7/14/2000, p.22	No		
WAD980726368	20	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Antimony, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Thallium, Zinc, Polycyclic Aromatic Hydrocarbons, Polychlorinated Biphenyls	ROD 3/24/1995, p.17	No		
WAD980726368	20	Off-site disposal	Arsenic	Antimony, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Thallium, Zinc, Polycyclic Aromatic Hydrocarbons, Polychlorinated Biphenyls	ROD 3/24/1995, p.17	No		
WAD980726368	20	Institutional Controls	Arsenic	Antimony, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Thallium, Zinc, Polycyclic Aromatic Hydrocarbons, Polychlorinated Biphenyls	ROD 3/24/1995, p.17	No		
WAD980726368	21	Deconstruction/ decontamination of buildings	Arsenic	Cadmium, Copper, Lead, Zinc	ROD 12/31/1990, p.4	No		
WAD980726368	21	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Cadmium, Copper, Lead, Zinc	ROD 12/31/1990, p.4	No		
WAD980726368	21	Surface water diversion	Arsenic	Cadmium, Copper, Lead, Zinc	ROD 12/31/1990, p.4	No		
WAD980726368	22	Off-site disposal	Arsenic	Lead	ROD 6/16/1993, p.15	No		
WAD980726368	22	Off-site disposal	Arsenic	Lead	ROD 6/16/1993, p.15	No		
WAD980726368	23	On-site disposal (excavation, capping, covering, reveg)	PCBs	Lead	ROD 12/30/1987, p.6	No		
WAD980726368	23	Institutional Controls	PCBs	Lead	ROD 12/30/1987, p.6	No		
WAD980726368	24							
WAD980726368	25							
WAD980726368	26							
IDD984666610								
IDD984666610	01	Other – Engineering/Containment	Radium	Aluminum, Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Fluoride, Lead, Manganese, Mercury, Nitrate, Phosphorous, PM 10, Polonium-10, Potassium-40, Radium-226, Selenium, Silver, Tetrachloroethene, Thallium, Thorium-230, Trichloroethene, Uranium-234, Uranium-238, Vandium, Zinc	ROD 6/8/1998, p.38	No		

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IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	Radium	Aluminum, Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Fluoride, Lead, Manganese, Mercury, Nitrate, Phosphorous, PM 10, Polonium-10, Potassium-40, Radium-226, Selenium, Silver, Tetrachloroethene, Thallium, Thorium-230, Trichloroethene, Uranium-234, Uranium-238, Vandium, Zinc	ROD 6/8/1998, p.38	No		
IDD984666610	01	Institutional Controls	Radium	Aluminum, Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Fluoride, Lead, Manganese, Mercury, Nitrate, Phosphorous, PM 10, Polonium-10, Potassium-40, Radium-226, Selenium, Silver, Tetrachloroethene, Thallium, Thorium-230, Trichloroethene, Uranium-234, Uranium-238, Vandium, Zinc	ROD 6/8/1998, p.38	No		
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	Radium	Aluminum, Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Fluoride, Lead, Manganese, Mercury, Nitrate, Phosphorous, PM 10, Polonium-10, Potassium-40, Radium-226, Selenium, Silver, Tetrachloroethene, Thallium, Thorium-230, Trichloroethene, Uranium-234, Uranium-238, Vandium, Zinc	ROD 6/8/1998, p.38	No		
IDD984666610	03							
IDD984666610	04							
ORN001002616								
ORN001002616	01							
OR7122307658								
OR7122307658	01							
OR7122307658	02	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Radium-226, Aluminum, Manganese, Mercury, Antimony, Selenium	ROD 9/21/2001, p.41, p.52	No		
OR7122307658	02	Water treatment-lime	Arsenic	Radium-226, Aluminum, Manganese, Mercury, Antimony, Selenium	ROD 9/21/2001, p.41, p.52	Yes		ROD 9/21/2001, p.97
OR7122307658	02	Institutional Controls	Arsenic	Radium-226, Aluminum, Manganese, Mercury, Antimony, Selenium	ROD 9/21/2001, p.41, p.52	No		
WAD000065508								
WAD000065508	01	On-site disposal (excavation, capping, covering, reveg)	Cyanide	Fluoride	ROD, 5/1/1992, p.16	No		
WAD000065508	01	Water treatment-other	Cyanide	Fluoride	ROD, 5/1/1992, p.16	Yes	25	ROD, 5/1/1992, p.16
WAD000065508	01	Institutional Controls	Cyanide	Fluoride	ROD, 5/1/1992, p.16	No		
ORD052221025								
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	Cyanide	Fluoride	ROD, 9/29/1988, p.9	No		
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	Cyanide	Fluoride	ROD, 9/29/1988, p.9	No		

EPA ID	OU	Selected Remedy (Q7)	Primary COC Driving Selected Remedy (2)	Other COCs Driving Selected Remedy (2)	Ref (Q2)	Is this a Water Treatment Remedy? (Q11)	If Yes, what is the Flow Rate (GPM) (Q11a)	Ref (Q11)
ORD052221025	01	Water treatment-other	Cyanide	Fluoride	ROD, 9/29/1988, p.9	Yes		ESD, 9/28/1994, p.6
ORD052221025	01	Institutional Controls	Cyanide	Fluoride	ROD, 9/29/1988, p.9	No		
ORD052221025	02							
WAD980978753								
WAD980978753	01	On-site disposal (excavation, capping, covering, reveg)	Uranium	Lead, Radium	ROD 9/29/2006, p.54	No		
WAD980978753	01	Water treatment-other	Uranium	Manganese, Lead, Radium	ROD 9/29/2006, p.54	Yes		ROD 9/29/2006, p.13
WAD980978753	01	Off-site disposal	Uranium	Lead, Radium	ROD 9/29/2006, p.54	No		
WAD980978753	01	Surface water diversion	Uranium	Manganese, Lead, Radium	ROD 9/29/2006, p.54	No		
WAD980978753	01	Institutional Controls	Uranium	Manganese	ROD 9/29/2006, p.54	No		
IDD081830994								
IDD081830994	01	Monitored natural attenuation/recovery	Arsenic	Beryllium, Radionuclides, Fluorides, Cadmium, Selenium, Nitrate, Manganese	ROD 4/30/1997, p.31	No		
IDD081830994	01	Institutional Controls	Arsenic	Beryllium, Radionuclides, Fluorides, Cadmium, Selenium, Nitrate, Manganese	ROD 4/30/1997, p.31	No		
IDD081830994	01	Institutional Controls	Arsenic	Beryllium, Radionuclides, Fluorides, Cadmium, Selenium, Nitrate, Manganese	ROD 4/30/1997, p.31	No		
IDD081830994	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Beryllium, Radionuclides, Fluorides, Cadmium, Selenium, Nitrate, Manganese	ROD 4/30/1997, p.31	No		
ORD009412677								
ORD009412677	01	Off-site disposal	Fluoride	PAHs	ROD 9/30/2002, p.12	No		
ORD009412677	01	Off-site disposal	Fluoride	PAHs	ROD 9/30/2002, p.12	No		
ORD009412677	01	On-site disposal (excavation, capping, covering, reveg)	Fluoride	PAHs	ROD 9/30/2002, p.12	No		
ORD009412677	01	Water treatment-other	Fluoride	PAHs	ROD 9/30/2002, p.12	Yes	20	ROD 9/30/2002, p.25

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ORD009412677	01	Institutional Controls	Fluoride	PAHs	ROD 9/30/2002, p.12	No		
ORD009412677	02	Institutional Controls	Fluoride		ROD 9/29/2006, p.27	No		
ORD009412677	02	Other – Engineering/Containment	Fluoride		ROD 9/29/2006, p.27	No		
ORD009412677	02	On-site disposal (excavation, capping, covering, reveg)	Fluoride		ROD 9/29/2006, p.27	No		
AK0001897602								
AK0001897602	01							
WAD980722789								
WAD980722789	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	Antimony, Barium, Beryllium, Cadmium, Chromium, Copper, Cyanide, Fluoride, Lead, Manganese, Mercury, Nickel, Nitrate, Selenium, Silver, Thallium, Tin, Vanadium, Zinc	ROD 3/27/1990, p.5, 7	No		
WAD980722789	01	Institutional Controls	Arsenic	Antimony, Barium, Beryllium, Cadmium, Chromium, Copper, Cyanide, Fluoride, Lead, Manganese, Mercury, Nickel, Nitrate, Selenium, Silver, Thallium, Tin, Vanadium, Zinc	ROD 3/27/1990, p.5, 7	No		
IDD980665459								
IDD980665459	01							
ORD050955848								
ORD050955848	01	Water treatment-other	Arsenic	VOCs	FYR, 7/8/08	Yes		ROD 6/10/1994, p.60
ORD050955848	01	On-site disposal (excavation, capping, covering, reveg)	Arsenic	VOCs	FYR, 7/8/08	No		
ORD050955848	01	Institutional Controls	Arsenic	VOCs	FYR, 7/8/08	No		
ORD050955848	02	Off-site disposal	Chromium	Arsenic, Nickel, Uranium, Thorium, Radium, Antimony, Barium, Zirconium,	ROD 12/28/1989, p.5	No		
ORD050955848	03	Off-site disposal	Radium	Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Crysene, Dibenz[a,h]anthracene, Hexachlorobenzene , Indeno[1,2,3-cd]pyrene, PCBs, Chromium, Fluorium, Zirconium, Radionuclides, Radium 226, Radium 228	ROD 9/27/1995, p. 39	No		
ORD050955848	03	Institutional Controls	Radium	Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Crysene, Dibenz[a,h]anthracene, Hexachlorobenzene , Indeno[1,2,3-cd]pyrene, PCBs, Chromium, Fluorium, Zirconium, Radionuclides, Radium 226, Radium 228	ROD 9/27/1995, p. 39	No		
ORD050955848	04							

Table C-4 – Site and Operating Unit Detail at the 126 Site Universe (Part 4)

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
MED980524128									
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Impoundments	21.0	716,000.0				2009 ROD p9
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	1.7	5,000.0				2009 ROD p9
MED980524128	01	Off-site disposal	Contaminated soils		2,797.0				2009 ROD p99
MED980524128	01	Sediment dredging/ disposal	Contaminated sediments						2011 ROD, p2
MED980524128	01	Institutional Controls	Contaminated soils						2011 ROD, p2
MED980524128	02								
MED980524128	03								
VTD988366621									
VTD988366621	01	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						2006 ROD p2-3
VTD988366621	01	Surface water diversion	Waste rock or overburden	7.1	119,000.0				2006 ROD p19-20 (amount=total of South Mine, South Open Cut, TP-4)
VTD988366621	01	Monitored natural attenuation/recovery	Contaminated sediments						2008 ROD p2-3
VTD988366621	01	Institutional Controls	Waste rock or overburden						2009 ROD p2-3
VTD988366571									
VTD988366571	01								
VTD988366571	02								
VTD988366720									
VTD988366720	01								
NJD980785646									
NJD980785646	01	Off-site disposal	Contaminated soils		48,500.0				1989 ROD p11-12 (total=all possible excavations from category I and II properties)
NJD980785646	01	Other – Engineering/Containment	Contaminated soils						1989 ROD p2
NJD980785646	01	Institutional Controls	Contaminated soils						1989 ROD p2
NJD980785646	02	No action							
NJD980785646	03	Off-site disposal	Contaminated soils						1990 ROD p15
NYD986882660									
NYD986882660	01	Off-site disposal	Contaminated soils						1999 ROD p55
NYD986882660	01	Institutional Controls	Contaminated soils						1999 ROD p55
NYD986882660	02	Off-site disposal	Contaminated soils						1999 ROD p56

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
NYD986882660	02	Institutional Controls	Contaminated soils						1999 ROD p56
NYD986882660	03								
NYD986882660	04	Sediment dredging/ disposal	Slag						2005 ROD p3
NJD980529762									
NJD980529762	01								
NJD980529762	02	Off-site disposal	Contaminated soils		281,288.0				ROD, 9/22/2003, p.84
NJD980529762	02	Institutional Controls	Contaminated soils						
NJD980529762	02	Deconstruction/ decontamination of buildings	Demolition debris						
NJD980529762	03								
NJD980785653									
NJD980785653	01	Off-site disposal	Contaminated soils		48,500.0				1989 ROD p11-12 (total=all possible excavations from category I and II properties)
NJD980785653	02	No action							
NJD980785653	03	Off-site disposal	Contaminated soils						1990 ROD p2
NJD002365930									
NJD002365930	01	Air Stripping	Other Process Area Wastes						1996 ROD p8
NJD002365930	01	Water treatment-other	Other Process Area Wastes						1996 ROD p8
NJD002365930	02								
NJD002365930	03								
NJD980654172									
NJD980654172	01	Off-site disposal	Contaminated soils		10,000.0				1993 ROD p2
NJD980654172	02	Off-site disposal	Contaminated soils		18,400.0				1995 ROD p11 (total volume of Street and Adjacent Properties defined areas)
NJD980654172	03	No action							
NJ1891837980									
NJ1891837980	01	Off-site disposal	Contaminated soils						2000 ROD p48
NJ1891837980	01	Water treatment-other	Contaminated soils						2000 ROD p48
NJ1891837980	01	Institutional Controls	Contaminated soils						2008 FYR p16
PAD987341716									
PAD987341716	01	Off-site disposal	Demolition debris						ROD, 06/27/1994, p.4 (debris from various on-site buildings and nearby residences)
PAD987341716	01	Resident relocation	Contaminated soils						
PAD987341716	01	Institutional Controls	Contaminated soils						
PAD987341716	02	No action							
PAD077087989									

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
PAD077087989	01	Off-site disposal	Other Process Area Wastes						Radionuclides, ROD, 3/31/2006, p. 16
PAD077087989	01	On-site disposal (excavation, capping, covering, reveg)			43,000.0				Pits containing process wastes, contaminated waste water, municipal waste, demolition debris; ROD, 3/31/2006, p. 8
PAD077087989	01	Other – Treatment Technology	Open Pits/ Pit Lakes		43,000.0				Pits containing process wastes, contaminated waste water, municipal waste, demolition debris, LNAPL; ROD, 3/31/2006, p. 8, 16-17
PAD077087989	01	Institutional Controls	Open Pits/ Pit Lakes		43,000.0				Pits containing process wastes, contaminated waste water, municipal waste, demolition debris; ROD, 3/31/2006, p. 8
PASFN0305549									
PASFN0305549	01								
PASFN0305549	02								
PAD980829493									
PAD980829493	01	Off-site disposal	Contaminated soils		200,000.0				ROD, 9/30/1997, p. 7; FYR, 4/28.2006, p. 13
PAD980829493	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		200,000.0				ROD, 9/30/1997, p. 7; FYR, 4/28.2006, p. 13
PAD980829493	01	Institutional Controls	Contaminated soils		200,000.0				ROD, 9/30/1997, p. 7; FYR, 4/28.2006, p. 13
PAD002395887									
PAD002395887	01	Soil Amendments	Slag			33,000,000.0			ROD, 9/4/1987, p. 2
PAD002395887	02	Water treatment-lime	Acid Mine/Rock Drainage						Acidic surface runoff, ROD, 6/29/1988, p. 4; FYR, 7/1/2002, p. 14
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes	200.0		27,500,000.0			briquettes and municipal waste, ROD, 6/29/1988, p. 4; FYR, 7/1/2002, p. 14
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes	200.0		27,500,000.0			briquettes and municipal waste, ROD, 6/29/1988, p. 4; FYR, 7/1/2002, p. 14
PAD002395887	03	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD, 10/9/2001, p. 13
PAD002395887	03	Off-site disposal	Contaminated soils						ROD, 10/9/2001, p. 13
PAD002395887	03	Institutional Controls	Contaminated soils						ROD, 10/9/2001, p. 13
PAD002395887	04								

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
VAD980705404									
VAD980705404	01	Water treatment-lime	Other Process Area Wastes	16.0	16,000.0				Sedimentation ponds, FeSO4 and ore wastepiles, ROD, 11/21/1989, p. 11
VAD980705404	01	Water treatment - Created Wetlands	Other Process Area Wastes	16.0	16,000.0				Sedimentation ponds, FeSO4 and ore wastepiles, ROD, 11/21/1989, p. 11
VAD980705404	01	Surface water diversion	Other Process Area Wastes	16.0	16,000.0				Sedimentation ponds, FeSO4 and ore wastepiles, ROD, 11/21/1989, p. 11
VAD980705404	01	On-site disposal (excavation, capping, covering, reveg)	Leachate (from failed cap/cover or similar system)						Sedimentation ponds, FeSO4 and ore wastepiles, ROD, 11/21/1989, p. 11
VAD980705404	01	Institutional Controls	Other Process Area Wastes	16.0	16,000.0				Sedimentation ponds, FeSO4 and ore wastepiles, ROD, 11/21/1989, p. 11
SCN000407714									
SCN000407714	01								
SCD987577913									
SCD987577913	01	Water treatment-lime	Heap leach piles/leaching waste						ROD, 9/25/2005, p. 11, 19-20
TND987768546									
TND987768546	01								
TN0001890839									
TN0001890839	01								
TN0001890839	02								
TN0001890839	03								
TN0001890839	04								
TN0001890839	05								
TN0001890839	06								
TN0001890839	07								
TN0001890839	08								
TN0001890839	09								
TN0001890839	10								
TN0001890839	11								
TN0001890839	12								
TN0001890839	13								
TN0001890839	14								
TN0001890839	15								
TN0001890839	16								

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
TN0001890839	17								
FLD001704741									
FLD001704741	01								
FLD001704741	02								
SCN000407376									
SCN000407376	01								
SCD003360476									
SCD003360476	01	Water treatment-other	Open Pits/ Pit Lakes						ROD, 8/21/2002, p. 36
SCD003360476	01	Sediment dredging/ disposal	Process Areas and Buildings						ROD, 8/21/2002, p. 35
SCD003360476	01	Soil Amendments	Process Areas and Buildings						ROD, 8/21/2002, p. 35
SCD003360476	01	Institutional Controls	Process Areas and Buildings						ROD, 8/21/2002, p. 35
SCD003360476	01	Off-site disposal	Process Areas and Buildings						ROD, 8/21/2002, p. 35
SCD003360476	01	Surface water diversion	Process Areas and Buildings						ROD, 8/21/2002, p. 35
KYD049062375									
KYD049062375	00	Institutional Controls	Potliners						ROD, 7/6/2000, p. 6-7, 117-130
KYD049062375	00	On-site disposal (excavation, capping, covering, reveg)	Potliners						ROD, 7/6/2000, p. 6-7, 117-130
KYD049062375	00	Off-site disposal	Potliners						ROD, 7/6/2000, p. 6-7, 117-130
KYD049062375	01	Water treatment-other	Potliners		26,000.0				ROD, 2/19/1993, p. 12
KYD049062375	02								
NCN000409895									
NCN000409895	01								
FLD010596013									
FLD010596013	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD, 7/2/1998, p. 15
FLD010596013	01	Solidification	Contaminated soils						ROD, 7/2/1998, p. 15
FLD010596013	01	Institutional Controls	Contaminated soils						ROD, 7/2/1998, p. 15
FLD010596013	02								
ILN000508170									
ILN000508170	01								
ILN000508170	02								
ILD050231976									
ILD050231976	01								
ILD062340641									
ILD062340641	01	Sediment dredging/ disposal	Contaminated sediments		7,900.0				ROD, 10/3/2001. p. 24
ILD062340641	02								
ILD062340641	03								

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
ILD062340641	04								
ILD062340641	05								
ILD980606941									
ILD980606941	01	Deconstruction/ decontamination of buildings	Process Areas and Buildings						ROD, 6/16/2009, p. 23
ILD980606941	01	Off-site disposal	Demolition debris						ROD, 6/16/2009, pp. 23-24
ILD980606941	01	On-site disposal (excavation, capping, covering, reveg)	Process Areas and Buildings		11,906.0				ROD, 6/16/2009, pp. 23,25
ILD980606941	02								
ILN000508134									
ILN000508134	01								
ILN000508134	02								
ILN000508134	03								
IL0000064782									
IL0000064782	01								
IL0000064782	02								
OHD004379970									
OHD004379970	01	Chemical Oxidation	Potliners						ROD 9/12/1994, p. 36
OHD004379970	01	Other – Engineering/Containment	Leachate (from failed cap/cover or similar system)						ROD 9/12/1994 p. 19
OHD004379970	01	Other – Engineering/Containment	Other sources	4.5	240,000.0				ROD 9/12/1994 p. 12; FYR 5/4/2007 p. 3
OHD004379970	01	Soil flushing/washing	Potliners						ROD 9/12/1994 p. 8
OHD004379970	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/12/1994 pp. 2,3; FYR 5/6/2002 p. 7
OHD004379970	01	Sediment dredging/ disposal	Other Process Area Wastes						ROD 9/12/1994 p. 36
OHD004379970	01	Institutional Controls	Contaminated soils						ROD 9/12/1994 pp. 2,3; FYR 5/62002, p.7
MID980901946									
MID980901946	01	Institutional Controls	Tailings (pond, pile)						ROD 9/30/1992 p. 2
MID980901946	01	Off-site disposal	Other sources						ROD 9/30/1992 p. 2
MID980901946	01	Other – Engineering/Containment	Tailings (pond, pile)	442.0					ROD 9/30/1992 p. 2
MID980901946	02	No action	Contaminated sediments			200,000,000.0			ROD 3/31/1994 p. 3
MID980901946	03	Institutional Controls	Tailings (pond, pile)						ROD 9/30/1992 p. 2
MID980901946	03	Off-site disposal	Other sources						ROD 9/30/1992 p. 2
MID980901946	03	Other – Engineering/Containment	Tailings (pond, pile)	229.0					ROD 9/30/1992 p. 2
MID980901946	03	Other – Engineering/Containment	Slag						FYR 3/27/2008 p. 25, 55
MID980901946	03	Other – Engineering/Containment	Slag	28.0					ROD 9/30/1992 p. 23
MID980901946	04								

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
MID980901946	05								
MID980901946	06								
IND047030226									
IND047030226	01								
NMD002899094									
NMD002899094	00	Off-site disposal	Contaminated soils						ROD 12/20/2010 pp. 2-178 to 2-181
NMD002899094	00	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	420.0	118,600,000.0	328,000,000.0			ROD 12/20/2010 pp. 2-85, 2-86, 2-499, 2-500, 2-614
NMD002899094	00	Other – Engineering/Containment	Tailings (pond, pile)	1,050.0					ROD 12/20/2010 pp. 2-668, 2-669
NMD002899094	00	Water treatment-lime	Acid Mine/Rock Drainage					1,070.0	ROD 12/20/2010 pp. 2-212 to 2-216, 2-240, 2-241, 2-246
NMD002899094	00	Sediment dredging/ disposal	Contaminated sediments		15,000.0				ROD 12/20/2010 pp. 2-348, 2-614
NMD002899094	00	Institutional Controls	Tailings (pond, pile)						ROD 12/20/2010 pp. 2-276 to 2-278
NMD980749378									
NMD980749378	01	Water treatment-other	Other sources						ROD 9/21/1990 p.6
NMD980749378	01	Institutional Controls	Other sources						ROD 9/21/1990 p.6
NMD980749378	02	Solidification	Other sources		43.0				ROD 9/6/1991 p. 5
NMD980749378	02	On-site disposal (excavation, capping, covering, reveg)	Other sources						ROD 9/6/1991 p. 5
NMD980749378	02	Institutional Controls	Other sources						ROD 9/6/1991 p. 5
NMD981155930									
NMD981155930	01	No action	Tailings (pond, pile)		170,000.0				ROD 9/27/1993 p. 49; AMD 9/20/1999 pp. 6-8
NMD981155930	01	Institutional Controls	Tailings (pond, pile)						ROD 9/27/1993 p. 49; AMD 9/20/1999 pp. 6-8
NMD007860935									
NMD007860935	01	Water treatment-other	Tailings (pond, pile)	210.0		22,100,000.0			FYR 9/27/2001 p. 4
NMD007860935	02	Other – Engineering/Containment	Tailings (pond, pile)						FYR 9/27/2001 p. 4
NMD007860935	03	No action	Contaminated soils						ROD 9/27/1989 p2. 2,6-7; FYR 9/27/2001 p. 9
OKD000829440									
OKD000829440	01	Off-site disposal	Contaminated soils		85,000.0				ROD 12/13/1994 p. 23
OKD000829440	01	Institutional Controls	Contaminated soils						ROD 12/13/1994 p. 23
OKD000829440	02	Off-site disposal	Contaminated sediments		3,500.0				FYR 10/15/2001 p. 11
OKD980629844									

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
OKD980629844	01	Other – Engineering/Containment	Acid Mine/Rock Drainage					466.8	ROD 6/6/1984 pp. 3-5
OKD980629844	01	Surface water diversion	Acid Mine/Rock Drainage					466.8	ROD 6/6/1984 pp. 3-5
OKD980629844	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 8/27/1997 pp. 15-18; ESD pp. 3-4
OKD980629844	02	Institutional Controls	Contaminated soils						ROD 8/27/1997 pp. 15-18; ESD pp. 3-4
OKD980629844	03	No action							
OKD980629844	04	Resident relocation	Contaminated soils						ROD 2/20/2008 p. 45
OKD980629844	04	On-site disposal (excavation, capping, covering, reveg)	Chat		13,870,000.0				ROD 2/20/2008 p. 34
OKD980629844	04	Alternative drinking water	Acid Mine/Rock Drainage					466.8	ROD 6/6/1984 pp. 3-5
OKD980629844	04	Other – Engineering/Containment	Chat		36,538,000.0				ROD 2/20/2008 pp. 14, 34
OKD980629844	04	Institutional Controls	Tailings (pond, pile)	322.0	6,314,846.0				ROD 2/20/2008 pp. 34, 53-57
OKD980629844	04	Other – Engineering/Containment	Chat						ROD 2/20/2008 pp. 32, 51
OKD980629844	05								
TXD062113329									
TXD062113329	01	On-site disposal (excavation, capping, covering, reveg)	Impoundments	22.3	47,000.0		8,500,000.0		AMD 9/28/2000 p. 16
TXD062113329	01	Off-site disposal	Other sources				7,000.0		AMD 9/28/2000 p. 18-19
TXD062113329	01	Other – Engineering/Containment	Impoundments						AMD 9/28/2000 p. 17
TXD062113329	01	Institutional Controls	Impoundments						AMD 9/28/2000 p. 16
TXD062113329	02	No action	Contaminated soils						FYR 9/30/2003 p. 4
TXD062113329	03	No action							
TXD062113329	04	Other – Engineering/Containment	Contaminated sediments						ROD 9/27/2001 p. 11
OKD987096195									
OKD987096195	01								
NMD030443303									
NMD030443303	01	Water treatment-other	Tailings (pond, pile)	100.0		3,500,000.0			ROD 9/30/1988 p. 5
MO0000958611									
MO0000958611	01	On-site disposal (excavation, capping, covering, reveg)	Other sources						ROD 9/29/2005 p. 12
MO0000958611	01	Other – Engineering/Containment	Other sources						ROD 9/29/2005 p. 12
MO0000958611	01	Institutional Controls	Other sources						ROD 9/29/2005 p. 11
MO0000958611	02	No action	Tailings (pond, pile)	10.0		1,173,000.0			ROD 6/8/2007, p.3
MO0000958611	03	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 6/29/2007, p.13
MOD981126899									

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
MOD981126899	01								
MOD981126899	02								
MOD981126899	03								
KSD980741862									
KSD980741862	01	Alternative drinking water	Acid Mine/Rock Drainage						FYR 9/28/1995 p. 4
KSD980741862	02								
KSD980741862	03	On-site disposal (excavation, capping, covering, reveg)	Chat						AMD 9/29/2006 p. 21
KSD980741862	03	Other – Engineering/Containment	Chat						AMD 9/29/2006 p. 21
KSD980741862	03	Institutional Controls	Chat						AMD 9/29/2006 p. 10
KSD980741862	04								
KSD980741862	05	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						ROD 9/18/1989, p. 19
KSD980741862	05	Deconstruction/ decontamination of buildings	Demolition debris						FYR 9/30/2005 p. 14; FYR 9/30/2010 p. 12 (ROD is missing pages, limited info available in FYR)
KSD980741862	05	Surface water diversion	Acid Mine/Rock Drainage						ROD 9/18/1989, p. 9
KSD980741862	06	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD 9/30/2004 p. 16
KSD980741862	06	Other – Engineering/Containment	Tailings (pond, pile)						ROD 9/30/2004 p. 16
KSD980741862	07	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 7/29/1996 p. 1
KSD980741862	07	Institutional Controls	Contaminated soils						ROD 7/29/1996 p. 1
MOD098633415									
MOD098633415	01								
MOD098633415	02								
MOD098633415	03	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		204,600.0				ROD 7/31/2008 Table 9
MOD098633415	03	Institutional Controls	Contaminated soils						ROD 7/31/2008 p. 25
MOD098633415	04								
MOD098633415	05								
MOD098633415	06								
MOD981507585									
MOD981507585	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD 6/21/2010 p. 24
MOD981507585	01	Institutional Controls	Tailings (pond, pile)	49.0					ROD 6/21/2010 Table 6
MOD981507585	02								
MOD981507585	03								
NESFN0703481									
NESFN0703481	01	Off-site disposal	Contaminated soils		336,000.0				ROD 12/15/2004 p. 31

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
NESFN0703481	02	Off-site disposal	Contaminated soils			500,000.0			ROD 5/13/2009 p. 27
NESFN0703481	02	Institutional Controls	Contaminated soils						ROD 5/13/2009 p. 27
MOD980686281									
MOD980686281	01	On-site disposal (excavation, capping, covering, reveg)	Chat	3,235.0	5,531,362.0				ROD 9/30/2004 Table 1
MOD980686281	01	Institutional Controls	Chat						ROD 9/30/2004 Table 1
MOD980686281	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	65.0	500,000.0				ROD 8/1/1996 p. 14
MOD980686281	02	Institutional Controls	Contaminated soils						ROD 8/1/1996 p. 16
MOD980686281	03								
MOD980686281	04	Alternative drinking water	Acid Mine/Rock Drainage						ROD 7/29/1998 p. 31
MOD980686281	04	Water treatment-other	Acid Mine/Rock Drainage						ROD 7/29/1998 p. 31
MOD980686281	04	Institutional Controls	Acid Mine/Rock Drainage						ROD 7/29/1998 p. 31
MOD980686281	05								
MON000705443									
MON000705443	01								
MON000705443	02								
MON000705443	03								
MON000705443	04								
MON000705443	05								
MON000705443	06								
MON000705842									
MON000705842	01								
MON000705842	02								
MON000705842	03								
MON000705027									
MON000705027	01								
MON000705027	02								
MON000705027	03								
MON000705027	04								
MON000705023									
MON000705023	01								
MON000705023	02								
MON000705023	03								
MON000705023	04								
MON000705032									
MON000705032	01								
MON000705032	02								
MON000705032	03								
MON000705032	04								
MTD093291599									

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
MTD093291599	01								
MTD093291656									
MTD093291656	01								
MTD093291656	03	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						FYR, 11/24/1994, p.16
MTD093291656	04	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions	75,520.0					ROD, 9/29/1998, p.22-26
MTD093291656	04	Monitored natural attenuation/recovery	Smelter emissions	75,520.0					ROD, 9/29/1998, p.22-26
MTD093291656	04	Institutional Controls	Smelter emissions	75,520.0					ROD, 9/29/1998, p.22-26
MTD093291656	07	Institutional Controls	Other Process Area Wastes		892,000.0				red sands, ROD, 3/8/1994, p.14, 21
MTD093291656	07	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes		892,000.0				red sands and waste piles, ROD, 3/8/1994, p.14, 21
MTD093291656	07	Surface water diversion	Other Process Area Wastes		892,000.0				red sands and waste piles, ROD, 3/8/1994, p.14, 21
MTD093291656	09	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes		800.0				FYR, 11/24/1994, p.15
MTD093291656	11	Solidification	Flue dust		316,500.0				ROD, 9/23/1991, p. 6
MTD093291656	11	On-site disposal (excavation, capping, covering, reveg)	Flue dust		316,500.0				ROD, 9/23/1991, p. 6
MTD093291656	11	Institutional Controls	Flue dust		316,500.0				ROD, 9/23/1991, p. 6
MTD093291656	12	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes		160,000.0				FYR, 11/24/1994, p.15
MTD093291656	14								
MTD093291656	15	Resident relocation	Flue dust		250,000.0				ROD, 10/2/1987, p.3
MTD093291656	15	Deconstruction/ decontamination of buildings	Flue dust		250,000.0				ROD, 10/2/1987, p.3
MTD093291656	15	Institutional Controls	Flue dust		250,000.0				ROD, 10/2/1987, p.3
MTD093291656	15	On-site disposal (excavation, capping, covering, reveg)	Flue dust		250,000.0				ROD, 10/2/1987, p.3
MTD093291656	16	Institutional Controls	Smelter emissions						ROD, 9/30/1996, p.16
MTD093291656	16	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 9/30/1996, p.16
COD007063530									
COD007063530	01	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 2/18/1983, p. 6
COD007063530	01	Institutional Controls	Smelter emissions						ROD, 2/18/1983, p. 6
COD007063530	02	Other – Engineering/Containment	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	02	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 2/18/1983, p. 6
COD007063530	02	Institutional Controls	Smelter emissions						ROD, 2/18/1983, p. 6

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
COD007063530	03	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 2/18/1983, p. 6
COD007063530	03	Institutional Controls	Smelter emissions						ROD, 2/18/1983, p. 6
COD007063530	04	Other – Treatment Technology	Smelter emissions						ROD, 2/18/1983, p. 6
COD007063530	04	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 2/18/1983, p. 6
COD007063530	04	Institutional Controls	Smelter emissions						ROD, 2/18/1983, p. 6
MT6122307485									
MT6122307485	01								
MT6122307485	02								
MTD982572562									
MTD982572562	01	Off-site disposal	Contaminated soils		7,411.0				ROD 2001, p 64
MTD982572562	01	Institutional Controls	Tailings (pond, pile)						ROD 2001, p 64
MTD982572562	02								
MTD982572562	03								
MTD982572562	04								
MTD982572562	05								
MTD982572562	06								
COD980717938									
COD980717938	01	Other – Engineering/Containment	Underground workings						ROD, 3/29/1988, p. 4
COD980717938	01	Water treatment-other	Acid Mine/Rock Drainage					225	ROD, 3/29/1988, p. 4
COD980717938	02	No action	Tailings (pond, pile)		44,000.0	852,000.0			ROD, 9/30/1999, p. 16-50
COD980717938	03	No action	Slag		422,000.0				ROD, 5/6/1998, p.7
COD980717938	04	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden		431,000.0				ROD, 5/6/1998, p.11
COD980717938	04	Surface water diversion	Waste rock or overburden		431,000.0				ROD, 5/6/1998, p.11
COD980717938	05	Institutional Controls	Slag		112,200.0				ROD, 10/31/2000, p. 13-14, 34
COD980717938	06	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	6.5	245,000.0				ROD, 9/25/2003, p. 25; FYR, 9/29/2001, p. 55
COD980717938	06	Water treatment-other	Acid Mine/Rock Drainage				750,000,000.0	550.0	ROD, 9/25/2003, p. 25; FYR, 9/29/2001, p. 55; Note--volume (gallons) and volume (gpm) are two different sources--mine pool and mine shaft.
COD980717938	06	Institutional Controls	Tailings (pond, pile)	6.5	245,000.0				ROD, 9/25/2003, p. 25; FYR, 9/29/2001, p. 55
COD980717938	06	Surface water diversion	Tailings (pond, pile)	6.5	245,000.0				ROD, 9/25/2003, p. 25; FYR, 9/29/2001, p. 55
COD980717938	07	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		644,500.0				ROD, 6/6/2000, p. 26-28

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
COD980717938	07	Surface water diversion	Tailings (pond, pile)		644,500.0				ROD, 6/6/2000, p. 26-28
COD980717938	07	Institutional Controls	Tailings (pond, pile)		644,500.0				ROD, 6/6/2000, p. 26-28
COD980717938	08	Surface water diversion	Tailings (pond, pile)	5.0	40,200.0				ROD, 9/29/2000, p. 24-29
COD980717938	08	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	9.9					ROD, 9/29/2000, p. 24-29, 58
COD980717938	08	Institutional Controls	Contaminated soils	9.9					ROD, 9/29/2000, p. 24-29, 58
COD980717938	09	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 9/2/1999, p. 22
COD980717938	09	Institutional Controls	Smelter emissions						ROD, 9/2/1999, p. 22
COD980717938	10	On-site disposal (excavation, capping, covering, reveg)	Impoundments	14.2					ROD, 8/8/1997, p. 9
COD980717938	10	Other – Engineering/Containment	Impoundments	14.2					ROD, 8/8/1997, p. 9
COD980717938	11	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	379.0					ROD, 9/28/2005, p. 15
COD980717938	11	Institutional Controls	Contaminated soils	379.0					ROD, 9/28/2005, p. 15
COD980717938	12	Institutional Controls	Impoundments						ROD, 9/22/2009, p. 13
COD981551427									
COD981551427	01	Water treatment - Bioreactors (e.g., SRBs)	Acid Mine/Rock Drainage						ROD, 9/29/2008, p. 53-54
COD981551427	01	On-site disposal (excavation, capping, covering, reveg)	Underground workings						ROD, 9/29/2008, p. 53-54
COD981551427	01	Institutional Controls	Underground workings						ROD, 9/29/2008, p. 53-54
MT0001096353									
MT0001096353	01	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden		189,745.0				ROD, 4/26/2009, p. 28
MT0001096353	01	Institutional Controls	Waste rock or overburden		189,745.0				ROD, 4/26/2009, p. 28
MT0001096353	02								
MT0001096353	03								
COD980717557									
COD980717557	01	Water treatment - Created Wetlands	Acid Mine/Rock Drainage						ROD, 9/30/1987, p. 2
COD980717557	02	Surface water diversion	Tailings (pond, pile)						ROD, 3/31/1988, p. 2
COD980717557	02	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD, 3/31/1988, p. 2
COD980717557	03	On-site disposal (excavation, capping, covering, reveg)	Underground workings						ROD, 9/30/1991, p. 5
COD980717557	03	Institutional Controls	Underground workings						ROD, 9/30/1991, p. 5
COD980717557	03	Water treatment-other	Acid Mine/Rock Drainage						ROD, 9/30/1991, p. 5
COD980717557	03	Alternative drinking water	Underground workings						ROD, 9/30/1991, p. 5

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COD980717557	03	Water treatment - Created Wetlands	Acid Mine/Rock Drainage						ROD, 9/30/1991, p. 5
COD980717557	04	Water treatment - Bioreactors (e.g., SRBs)	Acid Mine/Rock Drainage						ROD, 9/24/2004, p. 18
COD980717557	04	Water treatment-other	Acid Mine/Rock Drainage						ROD, 9/24/2004, p. 18
COD980717557	04	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						ROD, 9/24/2004, p. 18
COD980717557	04	Surface water diversion	Waste rock or overburden						ROD, 9/24/2004, p. 18
COD980717557	04	Institutional Controls	Underground workings						ROD, 9/24/2004, p. 18
UTD988075719									
UTD988075719	01	Off-site disposal	Smelter emissions						ROD, 9/30/2002, p. 9
UTD988075719	01	Other – Engineering/Containment	Smelter emissions						ROD, 9/30/2002, p. 9
UTD988075719	01	Institutional Controls	Smelter emissions						ROD, 9/30/2002, p. 9
UTD988075719	02	Off-site disposal	Smelter emissions						ROD, 9/16/2009, p. 19
UTD988075719	02	Institutional Controls	Smelter emissions						ROD, 9/16/2009, p. 19
UTD988075719	03	Off-site disposal	Smelter emissions						ROD, 9/30/2002, p. 9
COD980716955									
COD980716955	01	Off-site disposal	Contaminated soils			32,665.0			FYR, 9/30/2003, p. 16
COD980716955	02	Off-site disposal	Contaminated soils			92,789.0			FYR, 9/12/1994, p.7
COD980716955	02	Institutional Controls	Contaminated soils			92,789.0			FYR, 9/12/1994, p.7
COD980716955	03	Off-site disposal	Contaminated soils			63,403.0			FYR, 9/12/1994, p.15
COD980716955	03	Institutional Controls	Contaminated soils			63,403.0			FYR, 9/12/1994, p.15
COD980716955	04	Off-site disposal	Contaminated soils			96,984.0			ROD, 9/30/1986, p. 10; FYR, 9/30/1993, p. 8
COD980716955	04	Institutional Controls	Contaminated soils			96,984.0			ROD, 9/30/1986, p. 10; FYR, 9/30/1993, p. 8
COD980716955	05								
COD980716955	06	Off-site disposal	Contaminated soils						ROD, 9/29/1987, p. 7
COD980716955	06	Institutional Controls	Contaminated soils						ROD, 9/29/1987, p. 7
COD980716955	07	Institutional Controls	Contaminated soils						ROD, 3/24/1986, p.10;
COD980716955	08	Off-site disposal	Contaminated soils		50,000.0				ROD, 1/28/1992, p. 9-14
COD980716955	08	Solidification	Contaminated soils		50,000.0				ROD, 1/28/1992, p. 9-14
COD980716955	08	Institutional Controls	Contaminated soils		50,000.0				ROD, 1/28/1992, p. 9-14
COD980716955	09	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	4.8	16,540.0				ROD, 12/23/1991, p. 5
COD980716955	09	Institutional Controls	Contaminated soils	4.8	16,540.0				ROD, 12/23/1991, p. 5
COD980716955	10	Off-site disposal	Contaminated soils			15,021.0			ROD, 6/30/1987, p. 8-11; FYR, 9/10/2003, p. 44
COD980716955	11	Off-site disposal	Contaminated soils						ROD, 9/29/1987, p. 7
COD980716955	11	Institutional Controls	Contaminated soils						ROD, 9/29/1987, p. 7

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
COD081961518									
COD081961518	01	Water treatment-lime	Acid Mine/Rock Drainage						ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	Surface water diversion	Underground workings						ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	On-site disposal (excavation, capping, covering, reveg)	Underground workings						ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	Alternative drinking water	Underground workings						ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	Institutional Controls	Underground workings						ROD, 3/29/1993, p. 3, 13-14
COD081961518	02	Institutional Controls	Waste rock or overburden	20.0					ROD, 9/3/1998, p. 3, 6
COD081961518	03								
COD081961518	04								
MTD006230346									
MTD006230346	01	Water treatment-other	Open Pits/ Pit Lakes						ROD 11/22/1989, p.13
MTD006230346	01	Other – Treatment Technology	Contaminated sediments		45,200.0				ROD 11/22/1989, p.13
MTD006230346	01	Other – Treatment Technology	Contaminated soils		9,950.0				ROD 11/22/1989, p.13
MTD006230346	02	Off-site disposal	Contaminated soils						ROD 9/17/2009, p.5
MTD006230346	02	Off-site disposal	Contaminated soils						ROD 9/17/2009, p.5
MTD006230346	02	Institutional Controls	Contaminated soils						ROD 9/17/2009, p.152
UT0002240158									
UT0002240158	00	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						ROD, 9/30/2002, p. 19
UT0002240158	00	Institutional Controls	Waste rock or overburden						ROD, 9/30/2002, p. 19
UT0002240158	01								
UT0002240158	02								
UT0002240158	03								
UT0002240158	04								
MT0012694970									
MT0012694970	01								
MT0012694970	02								
MT0012694970	03								
CO0001093392									
CO0001093392	00								
SDD987673985									
SDD987673985	01	On-site disposal (excavation, capping, covering, reveg)	Sludge						ROD, 9/29/2008, Sect. 1 Note: sludge volumes not included in ROD
SDD987673985	01	Institutional Controls	Open Pits/ Pit Lakes	73.6					ROD, 9/29/2008, Sect. 1
SDD987673985	01	Other – Engineering/Containment	Open Pits/ Pit Lakes	73.6					ROD, 9/29/2008, Sect. 1

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
SDD987673985	01	Water treatment-lime	Acid Mine/Rock Drainage				106,000,000.0		ROD, 9/29/2008, Sect. 1
SDD987673985	01	Monitoring (all media and as separate remedy)	Acid Mine/Rock Drainage				106,000,000.0		ROD, 9/29/2008, Sect. 1
SDD987673985	02	Water treatment-lime	Acid Mine/Rock Drainage				106,000,000.0		ROD, 4/23/2001, 2-6,7
SDD987673985	02	Impoundment	Acid Mine/Rock Drainage				106,000,000.0		ROD, 4/23/2001, 2-6,7
UTD093120921									
UTD093120921	01	Institutional Controls	Tailings (pond, pile)	390.0					ROD, 9/27/2007, p. 3, 17, 28
UTD093120921	01	Monitoring (all media and as separate remedy)	Tailings (pond, pile)	390.0					ROD, 9/27/2007, p. 3, 17, 28
UT0002391472									
UT0002391472	01	Institutional Controls	Contaminated soils			150,000.0			ROD, 7/29/1999, p. 20, 38
UT0002391472	01	Off-site disposal	Contaminated soils			150,000.0			ROD, 7/29/1999, p. 20, 38
UT0002391472	02								
UT0002391472	03								
UT0002391472	04								
UT0002391472	05								
UTD070926811									
UTD070926811	01								
UTD070926811	02								
UTD070926811	03								
UTD070926811	04								
UTD070926811	05								
UTD070926811	06								
UTD070926811	07								
UTD070926811	08	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes						Refinery and mill waste waters, ROD, 9/26/2002, p. 130
UTD070926811	09	No action	Tailings (pond, pile)			1,300,000.0			ROD, 9/26/2002, p. 70, 73
UTD070926811	10								
UTD070926811	11								
UTD070926811	12								
UTD070926811	13	On-site disposal (excavation, capping, covering, reveg)	Slag						ROD, 9/26/2002, p. 77
UTD070926811	13	Surface water diversion	Slag						ROD, 9/26/2002, p. 77
UTD070926811	13	Deconstruction/ decontamination of buildings	Slag						ROD, 9/26/2002, p. 77
UTD070926811	13	Off-site disposal	Slag						ROD, 9/26/2002, p. 77
UTD070926811	14	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes						ROD, 9/26/2002, p. 115-122

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
UTD070926811	14	Deconstruction/ decontamination of buildings	Other Process Area Wastes						ROD, 9/26/2002, p. 115-122
UTD070926811	15	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	6,782.0					ROD, 9/26/2002, p. 42-51, 57-60
UTD070926811	16								
UTD070926811	17								
UTD070926811	18	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	2.5	34,250.0				ROD, 9/26/2002, p. 205, 208, 210
UTD070926811	19	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 9/26/2002, p. 194
UTD070926811	19	Other – Engineering/Containment	Smelter emissions						ROD, 9/26/2002, p. 194
UTD070926811	20	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	2.5	34,250.0				ROD, 9/26/2002, p. 205, 208, 210
UTD070926811	21								
UTD070926811	22	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes						Leaks from underneath old Precious Metals Building, dumping of electrolyte in EP Pond, ROD, 9/26/2002, p. 149
UTD070926811	22	Surface water diversion	Other Process Area Wastes						Leaks from underneath old Precious Metals Building, dumping of electrolyte in EP Pond, ROD, 9/26/2002, p. 149
UTD070926811	23	Water treatment - Bioreactors (e.g., SRBs)	Other Process Area Wastes						Leaks from pipes associated with the Precious Metals Building, ROD, 9/26/2002, p. 162, 167
UTD000826404									
UTD000826404	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		1,048,000.0				ROD 11/3/1998, pp. 7-8, 28
UTD000826404	01	Institutional Controls	Contaminated soils		36,600.0				ROD 11/3/1998, pp. 9 , 29
UTD000826404	02	Water treatment-lime	Acid Mine/Rock Drainage					1,180.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Water treatment-other	Acid Mine/Rock Drainage					1,180.0	Source 1 is OU4, the Large Bingham

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
									Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Monitored natural attenuation/recovery	Acid Mine/Rock Drainage					1,180.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Water treatment-other	Acid Mine/Rock Drainage					1,180.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Alternative drinking water	Acid Mine/Rock Drainage					1,180.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Institutional Controls	Acid Mine/Rock Drainage					1,180.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	03	Institutional Controls	Waste rock or overburden	14.2		1,400,000.0			ROD - 9/28/2001: pages 33, 37

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	14.2		1,400,000.0			FYR - 9/30/2009, page 7
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	14.2		1,400,000.0			FYR - 9/30/2009, page 7
UTD000826404	04	On-site disposal (excavation, capping, covering, reveg)	Sludge		2,660,000.0				ROD 11/3/1998, p. 28
UTD000826404	04	Other – Engineering/Containment	Sludge		2,660,000.0				ROD 11/3/1998, p. 28
UTD000826404	05	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		1,574,850.0				ROD 11/3/1998, p. 29
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	40.0		2,000,000.0			ROD - 9/28/2001: page 17
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	470.0		5,000,000.0			ROD - 9/28/2001: page 17
UTD000826404	06	Surface water diversion	Acid Mine/Rock Drainage	200.0					ROD - 9/28/2001: page 17
UTD000826404	06	Water treatment - Created Wetlands	Acid Mine/Rock Drainage	200.0					ROD - 9/28/2001: page 17
UTD000826404	06	Soil Amendments	Acid Mine/Rock Drainage	200.0					ROD - 9/28/2001: page 17
UTD000826404	06	Sediment dredging/ disposal	Acid Mine/Rock Drainage	200.0					ROD - 9/28/2001: page 17
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						ROD - 9/28/2001: page 30
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	Sludge	830.0	3,100,000.0				ROD - 9/28/2001: page 30
UTD000826404	08								
UTD000826404	09								
UTD000826404	10	Institutional Controls	Tailings (pond, pile)						ROD 11/3/1998, p. 29
UTD000826404	11	Institutional Controls	Other sources			3,814,000.0			ROD 11/3/1998, p. 29
UTD000826404	12								
UTD000826404	13								
UTD000826404	14								
UTD000826404	15								
UTD000826404	16								
UTD000826404	17	Institutional Controls	Contaminated sediments		800,000.0				
UTD000826404	18								
UTD000826404	19								
UTD000826404	20								
UTD000826404	21								
UTD000826404	22								
UTD000826404	23								
UTD000826404	24								
UTD000826404	24	Deconstruction/ decontamination of buildings	Waste rock or overburden		645,000.0				ROD, 9/26/2002, p. 217

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
UTD000826404	24	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden		645,000.0				ROD, 9/26/2002, p. 217
MT0009083840									
MT0009083840	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	9.0					2010 ROD p12-3
MT0009083840	01	Off-site disposal	Contaminated soils		22,250.0				2010 ROD p12-3 (volume does not include additional areas selected as part of Alternative 4a)
MT0009083840	01	Institutional Controls	Contaminated soils						
MT0009083840	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	0.0					2010 ROD p12-3
MT0009083840	02	Off-site disposal	Contaminated soils	0.0					2010 ROD p12-3
MT0009083840	02	Institutional Controls	Contaminated soils						
MT0009083840	03								
MT0009083840	04								
MT0009083840	05								
MT0009083840	06								
MT0009083840	07								
MT0009083840	08								
COD042167858									
COD042167858	01	Impoundment	Tailings (pond, pile)		2,500,000.0				ROD, 1/3/2002, p. 2
COD042167858	01	Permeable Reactive Barrier	Other sources						ROD, 1/3/2002, p. 5-2
COD042167858	02	Monitoring (all media and as separate remedy)	Process Areas and Buildings						5yr - 9/27/2007, p. 78
UTD081834277									
UTD081834277	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		185,000.0				FYR, 10/2003, p. 4-1 ROD, 4/1995, p. 12
UTD081834277	01	Monitoring (all media and as separate remedy)	Slag						FYR, 10/2003, p.4-1
UTD081834277	01	Institutional Controls	Contaminated soils						FYR, 10/2003, p. 4-1 ROD, 4/1995, p. 12
UTD081834277	02	Off-site disposal	Contaminated soils						ROD, 12/2008, p. 6
UTD081834277	02	Other – Engineering/Containment	Slag		1,279,360.0				ROD, 12/2008, p. 6
UTD081834277	02	Institutional Controls	Slag		1,279,360.0				ROD, 12/2008, p. 6; 192
UTD081834277	02	Other – Engineering/Containment	Slag		8 ,900				ROD, 12/2008, p. 6; 192
UTD081834277	02	Monitoring (all media and as separate remedy)	Slag						ROD, 12/2008, p. 6
MTD980717565									
MTD980717565	01	Alternative drinking water	Contaminated sediments						ROD, 4/14/1984, p. 3
MTD980717565	02	Sediment dredging/ disposal	Contaminated sediments		6,600,000.0				ROD, 12/2004 PT2, p.14

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
MTD980717565	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments						ROD, 12/2004 PT41, p.12
MTD980717565	03								
UT3890090035									
UT3890090035	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		1,500,000.0				ROD OU 1/2, 08/22/1990, p. 2
UT3890090035	02	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		300,000.0				ROD OU 1/2, 08/22/1990, p. 2
UT3890090035	02	Institutional Controls	Contaminated soils						ROD OU 1/2, 08/22/1990, p. 2
UT3890090035	03	Monitoring (all media and as separate remedy)	Other sources						ROD Interim OU3, 9/2004, p. 17 (pdf)
UT3890090035	03	Permeable Reactive Barrier	Other sources						ROD OU3, 9/1998, p. 27 (pdf); Groundwater contaminated from contaminated soils is source
UT3890090035	03	Institutional Controls	Contaminated sediments						ROD Interim OU3, 9/2004, p. 17 (pdf)
UTD980667208									
UTD980667208	01	Off-site disposal	Tailings (pond, pile)						ROD, OU1, 1989, p.8
UTD980667208	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD, OU1, 1989, p.8
UTD980667208	01	Deconstruction/ decontamination of buildings	Tailings (pond, pile)						FYR, OU1, 2002, p. 8
UTD980667208	02								
UTD980667208	03	Monitored natural attenuation/recovery	Tailings (pond, pile)						ESD, OU3, 2009 p. 3
UTD980667208	03	Institutional Controls	Tailings (pond, pile)						ESD, OU3, 2009 p. 3
UTD980667208	03	Permeable Reactive Barrier	Other sources						ESD, OU3, 2009 p. 3; groundwater contaminated from tailings pile/pond is source
UTD980667208	04								
UTD980667208	05								
UTD980667208	06								
UTD980667208	07								
UTD980667208	08								
MTD021997689									
MTD021997689	01	Monitored natural attenuation/recovery	Other sources						FYR, 2008, p. 6
MTD021997689	01	Soil Amendments	Contaminated soils		14,000.0				FYR 2008, p. 14
MTD021997689	01	Off-site disposal	Contaminated soils		19,000.0				FYR 2008, p. 14
MTD021997689	01	Institutional Controls	Contaminated soils						FYR, 2008, p. 14
CON000802630									

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
CON000802630	01								
CON000802630	02								
UTD980952840									
UTD980952840	01	Impoundment	Tailings (pond, pile)	160.0					ROD OU1, 7/2005, p. 10
UTD980952840	01	Other – Engineering/Containment	Tailings (pond, pile)						ROD OU1, 7/2005, p. 51
UTD980952840	01	Institutional Controls	Tailings (pond, pile)						ROD OU1, 7/2005, p. 52
UTD980952840	02								
UTD980951388									
UTD980951388	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		197,900.0				ROD OU1, 12/1993, p. 32
UTD980951388	01	Soil Amendments	Contaminated soils		132,000.0				ROD OU1, 12/1993, p. 32
UTD980951388	01	Sediment dredging/ disposal	Contaminated sediments		43,600.0				ROD OU1, 12/1993, p. 30
UTD980951388	01	Institutional Controls	Other sources						ROD OU1, 12/1993, p. 30
UTD980951388	01	Monitoring (all media and as separate remedy)	Other sources						ROD OU1, 12/1993, p. 30
UTD980951388	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD OU2, 9/1990, p.12
UTD980951388	02	Institutional Controls	Contaminated soils						ROD OU2, 9/1990, p.12
MTD980502777									
MTD980502777	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		1,550,000.0				ROD, 11/29/1995, Table 14
MTD980502777	01	Soil Amendments	Tailings (pond, pile)		950,000.0				ROD, 11/29/1995, Table 14
MTD980502777	01	Sediment dredging/ disposal	Tailings (pond, pile)		73,000.0				ROD, 11/29/1995, Table 14
MTD980502777	01	Institutional Controls	Tailings (pond, pile)						ROD, 11/29/1995, Table 14
MTD980502777	02								
MTD980502777	03	Water treatment-lime	Open Pits/ Pit Lakes	675.0			#############		FYR Vol. 3, 6/28/2011, pp. 3-1, 3-2
MTD980502777	03	Institutional Controls	Open Pits/ Pit Lakes	675.0			#############		FYR Vol. 3, 6/28/2011, pp. 3-1, 3-2
MTD980502777	04	Water treatment-lime	Acid Mine/Rock Drainage						1990 ROD p18-20
MTD980502777	04	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						1990 ROD p18
MTD980502777	04	Other – Engineering/Containment	Contaminated sediments						1990 ROD p18-20, 76
MTD980502777	04	Surface water diversion	Contaminated soils						1990 ROD p18-20, 76
MTD980502777	04	Institutional Controls	Tailings (pond, pile)						1990 ROD p18-20, 76
MTD980502777	05								

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
MTD980502777	06								
MTD980502777	07	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		41,000.0				1995 ROD p34 (includes soil and other substrate materials)
MTD980502777	07	Water treatment-other	Acid Mine/Rock Drainage						1995 ROD p33
MTD980502777	07	Solidification	Contaminated soils						1995 ROD p32
MTD980502777	07	Off-site disposal	Contaminated soils		1,000.0				1995 ROD p33 "oversized material"
MTD980502777	07	Alternative drinking water	Contaminated soils						1995 ROD p33-5
MTD980502777	07	Monitored natural attenuation/recovery	Contaminated soils						1995 ROD p33-5
MTD980502777	07	Institutional Controls	Contaminated soils						1995 ROD p33-5
MTD980502777	08								
MTD980502777	09								
MTD980502777	10								
MTD980502777	11								
MTD980502777	12	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						1992 ROD p6
MTD980502777	12	Surface water diversion	Contaminated soils						1992 ROD p6
MTD980502777	12	Other – Engineering/Containment	Contaminated sediments						1992 ROD p7
MTD980502777	12	Water treatment-lime	Acid Mine/Rock Drainage						1992 ROD p7
MTD980502777	12	Impoundment	Tailings (pond, pile)						1992 ROD p7
MTD980502777	12	Monitoring (all media and as separate remedy)	Tailings (pond, pile)						1992 ROD p8
MTD980502777	12	Institutional Controls	Other sources						1992 ROD p8
MTD980502777	13								
COD983769738									
COD983769738	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		40,000.0				FYR, 9/2010, p. 18
COD983769738	01	Institutional Controls	Contaminated soils						FYR, 9/2005, p. 25
COD983769738	01	Monitored natural attenuation/recovery	Other sources						FYR, 9/2005, p. 25
COD983769738	02	Institutional Controls	Contaminated soils						ROD OU2, 6/1998, p. 46
COD983769738	02	Monitored natural attenuation/recovery	Contaminated soils						ROD OU2, 6/1998, p. 46
COD983769738	02	Off-site disposal	Contaminated soils			5,000.0			ROD OU2, 6/1998, p. 17
COD983769738	03	Alternative drinking water	Other sources						ROD OU2, 6/1998, p. 16
COD980806277									
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						FYR, 11,/1997, p. 2
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						FYR, 11,/1997, p. 2

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
COD980806277	01	Monitoring (all media and as separate remedy)	Contaminated soils						FYR, 11,/1997, p. 2
COD980806277	01	Alternative drinking water	Contaminated soils						FYR, 11,/1997, p. 2
COD980806277	01	Institutional Controls	Contaminated soils						FYR, 11,/1997, p. 2
COD980806277	02	Surface water diversion	Contaminated soils						FYR, 11,/1997, p. 2
COD980806277	02	Other – Engineering/Containment	Contaminated soils						FYR, 11,/1997, p. 2
CO0002378230									
CO0002378230	00								
COD983778432									
COD983778432	00	Water treatment-other	Heap leach piles/leaching waste	55.0					1994 ROD, p 10-13
COD983778432	00	Other – Engineering/Containment	Heap leach piles/leaching waste	55.0					1994 ROD, p 10-13
COD983778432	01	Water treatment-other	Heap leach piles/leaching waste	73.0	6,700,000.0				1994 ROD, p 20
COD983778432	01	Other – Engineering/Containment	Heap leach piles/leaching waste	73.0	6,700,000.0				1994 ROD, p 20
COD983778432	01	Water treatment - Bioreactors (e.g., SRBs)	Heap leach piles/leaching waste	73.0	6,700,000.0				1994 ROD, p 20
COD983778432	01	Monitoring (all media and as separate remedy)	Heap leach piles/leaching waste	73.0	6,700,000.0				1994 ROD, p 20
COD983778432	02	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden		4,500,000.0				1994 ROD p 32
COD983778432	03								
COD983778432	04	Other – Engineering/Containment	Waste rock or overburden		200.0				1994 ROD p 39
COD983778432	05	Impoundment	Acid Mine/Rock Drainage						2001 ROD p71
COD983778432	05	Monitoring (all media and as separate remedy)	Acid Mine/Rock Drainage						2001 ROD p73-4
COD983778432	05	On-site disposal (excavation, capping, covering, reveg)	Heap leach piles/leaching waste				94,500,000.0		2001 ROD, p. 24
COD983778432	05	Surface water diversion	Heap leach piles/leaching waste				94,500,000.0		2001 ROD, p. 24
COD983778432	05	Water treatment-lime	Acid Mine/Rock Drainage						2001 ROD p71
MTSFN7578012									
MTSFN7578012	01								
MTSFN7578012	02								
MTSFN7578012	03								
MTSFN7578012	04	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						ROD OU4, 6/2002, p. 5
MTSFN7578012	04	Other – Engineering/Containment	Acid Mine/Rock Drainage						ROD OU4, 6/2002, p. 5
MTSFN7578012	04	Water treatment-other	Acid Mine/Rock Drainage						ROD OU4, 6/2002, p. 5

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
MTSFN7578012	04	Other – Engineering/Containment	Other sources						ROD OU4, 6/2002, p. 5 (ground water)
MTSFN7578012	04	Alternative drinking water	Other sources						ROD OU4, 6/2002, p. 110 (ground water)
MTSFN7578012	04	Institutional Controls	Other sources						ROD OU4, 6/2002, p. 5 (ground water)
MTSFN7578012	05								
MTSFN7578012	06								
MTSFN7578012	07								
MTSFN7578012	08								
COD007063274									
COD007063274	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		22,000,000.0				2010 FYR, p. 5
COD007063274	01	Impoundment	Tailings (pond, pile)		22,000,000.0				2010 FYR, p. 5
UTN000802704									
UTN000802704	01								
CO0002259588									
CO0002259588	01	Off-site disposal	Contaminated soils						2003 ROD, p. 55
CO0002259588	02								
CO0002259588	03								
SDD980717136									
SDD980717136	01	Institutional Controls	Tailings (pond, pile)			21,000,000.0			1990 ROD, p. 7, 8
SDD980717136	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)			21,000,000.0			1990 ROD, p. 7, 8
AZD008397127									
AZD008397127	01								
CAD980496863									
CAD980496863	01	Other – Engineering/Containment	Contaminated sediments						ROD 2/14/1991, p.20
CAD980496863	01	Surface water diversion	Contaminated sediments						ROD 2/14/1991, p.20
CAD980496863	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD 2/14/1991, p.21
CAD980496863	01	Institutional Controls	Tailings (pond, pile)						ROD 2/14/1991, p.21
CAD980496863	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		14,500.0				ROD 7/19/98, p.8
NVD980813646									
NVD980813646	01	Off-site disposal	Tailings (pond, pile)		5,000.0				ROD 3/30/1995, p.39
NVD980813646	01	Institutional Controls	Tailings (pond, pile)		5,000.0				ROD 3/30/1995, p.39
NVD980813646	02								
CAD980638860									
CAD980638860	01	Off-site disposal	Tailings (pond, pile)		1,163.0				ROD 9/30/1985, p.4, FYR 8/29/2001, p.11
CAD980638860	02	Off-site disposal	Tailings (pond, pile)		865.0				ROD 10/3/1983, p.8
CAD980817217									

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
CAD980817217	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	25.0					Entire OU area ROD 9/21/1990, p.7
CAD980817217	01	Surface water diversion	Tailings (pond, pile)						ROD 9/21/1990, p.7
CAD980817217	01	Other – Engineering/Containment	Contaminated sediments						ROD 9/21/1990, p.7
CAD980817217	01	Institutional Controls	Contaminated soils						ROD 9/21/1990, p.7
CAD980817217	02	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	11.0	14,500.0				All Source Material ROD 7/19/1989, p.17
AZ0000309013									
AZ0000309013	01								
CAD980498612									
CAD980498612	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	2.5					ROD 10/3/1986, p.30
CAD980498612	01	Surface water diversion	Contaminated sediments						ROD 10/3/1986, p.30
CAD980498612	01	Other – Engineering/Containment	Contaminated soils						ROD 10/3/1986, p.31
CAD980498612	02	Water treatment-lime	Acid Mine/Rock Drainage						ROD 9/30/92, p. 40
CAD980498612	02	Water treatment-lime	Acid Mine/Rock Drainage						ROD 9/30/92, p. 40
CAD980498612	03	Water treatment-lime	Acid Mine/Rock Drainage						ROD 9/24/1993, p.31
CAD980498612	03	Water treatment-lime	Acid Mine/Rock Drainage						ROD 9/24/1993, p.31
CAD980498612	04	Other – Engineering/Containment	Contaminated sediments						ROD 9/30/1997, p.93
CAD980498612	04	Water treatment-lime	Contaminated sediments						ROD 9/30/1997, p.93
CAD980498612	05	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments						ROD 9/30/2004, p.76
CAD980498612	06								
CA1141190578									
CA1141190578	01								
CA1141190578	02								
CA1141190578	03								
CAD983618893									
CAD983618893	01	Institutional Controls	Contaminated soils						ROD 9/28/2004, p.101
CAD983618893	01	Other – Engineering/Containment	Contaminated soils						ROD 9/28/2004, p.101
CAD983618893	01	Deconstruction/ decontamination of buildings	Contaminated soils						ROD 9/28/2004, p.101
CAD983618893	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/28/2004, p.101
CAD983618893	01	Water treatment-other	Acid Mine/Rock Drainage						ROD 9/28/2004, p.101
CAD983618893	02	Alternative drinking water	Contaminated sediments						ROD 9/30/2008, p.58
CAD983618893	02	Institutional Controls	Contaminated sediments						ROD 9/30/2008, p.58
CAD983618893	03								
CAD983618893	04								
CAD980673685									

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
CAD980673685	01								
CAD980893275									
CAD980893275	01								
CAD980893275	02								
CAD980893275	03								
WAD009045279									
WAD009045279	01								
OR0000515759									
OR0000515759	01								
IDD980725832									
IDD980725832	01	Water treatment-lime	Acid Mine/Rock Drainage					800	ROD 2003, p. 2-4, 2-5
IDD980725832	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)			2,100,000.0			ROD 2003, p. 12-2
IDD980725832	01	Monitored natural attenuation/recovery	Waste rock or overburden			4,800,000.0			ROD 2003, 2-4, 2-5
IDD980725832	01	Institutional Controls	Waste rock or overburden			4,800,000.0			ROD 2003, 2-4, 2-5
IDD048340921									
IDD048340921	01	Off-site disposal	Contaminated soils						ROD 08/30/1991, p. 30
IDD048340921	01	Institutional Controls	Contaminated soils						ROD 08/30/1991, p. 31
IDD048340921	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	800.0	2,800,000.0				ROD 9/22/1992, p.52; FYR 11/18/2010, p. 30 (2.8 million cuyd total waste rmvd, 800 acres capped. Amounts entered under source 1 but likely includes source 2.
IDD048340921	02	Water treatment - Created Wetlands	Tailings (pond, pile)	34.0					ROD 9/22/1992, p.52 - 54, 59
IDD048340921	02	Surface water diversion	Tailings (pond, pile)						ROD 9/22/1992, p.54
IDD048340921	02	Alternative drinking water	Contaminated sediments						ROD 9/22/1992, p.60
IDD048340921	02	Institutional Controls	Contaminated soils						ROD 9/22/1992, p.52
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/12/2002, p.276
IDD048340921	03	Alternative drinking water	Contaminated sediments						ROD 9/12/2002, p.280
IDD048340921	03	Institutional Controls	Contaminated soils						ROD 9/12/2002, p.281
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/12/2002, p.375
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments						ROD 9/12/2002, p.396
WAD980726368									
WAD980726368	01	Air Stripping	Other sources						ROD Amend 10/26/2009, p.14 (groundwater-well 12A)

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
WAD980726368	01	Off-site disposal	Contaminated soils						ROD Amend 10/26/2009, p.15
WAD980726368	01	Other – Treatment Technology	Other sources						ROD Amend 10/26/2009, p.15 (GW on Time Oil property)
WAD980726368	01	Soil Vapor Extraction	Other sources						ROD Amend 10/26/2009, p.15 (filter cake)
WAD980726368	01	Thermal Treatment	Contaminated soils						ROD Amend 10/26/2009, p.16
WAD980726368	01	Water treatment - Bioreactors (e.g., SRBs)	Other sources						ROD Amend 10/26/2009, p.16 (ground water)
WAD980726368	01	Institutional Controls	Contaminated soils						ROD Amend 10/26/2009, p.16
WAD980726368	01	Off-site disposal	Contaminated sediments						FYR 12/23/2009, p. 41
WAD980726368	01	Sediment dredging/ disposal	Contaminated sediments						FYR 12/23/2009, p. 41
WAD980726368	02								
WAD980726368	03								
WAD980726368	04								
WAD980726368	05								
WAD980726368	06								
WAD980726368	07								
WAD980726368	08								
WAD980726368	09								
WAD980726368	10								
WAD980726368	11								
WAD980726368	12								
WAD980726368	13								
WAD980726368	14								
WAD980726368	16								
WAD980726368	17								
WAD980726368	18								
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 7/14/2000, p.47
WAD980726368	19	Institutional Controls	Other sources						ROD 7/14/2000, p.48 (Ground water)
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments	18.0					ROD 7/14/2000, p.52
WAD980726368	19	Sediment dredging/ disposal	Contaminated sediments	15.5	50,000.0				ROD 7/14/2000, p.52
WAD980726368	20	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 3/24/1995, p.45
WAD980726368	20	Off-site disposal	Demolition debris						ROD 3/24/1995, p.47
WAD980726368	20	Institutional Controls	Other sources						ROD 3/24/1995, p.48 (ground water)

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
WAD980726368	21	Deconstruction/ decontamination of buildings	Demolition debris						1990 ROD p15
WAD980726368	21	On-site disposal (excavation, capping, covering, reveg)	Demolition debris						1990 ROD p15, 17
WAD980726368	21	Surface water diversion	Demolition debris						1990 ROD p16, 18
WAD980726368	22	Off-site disposal	Contaminated soils						ROD 6/16/1993, p.15
WAD980726368	22	Off-site disposal	Contaminated soils						ROD 6/16/1993, p.15
WAD980726368	23	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 12/30/1987, p.12
WAD980726368	23	Institutional Controls	Other sources						ROD 12/30/1987, p.13 (ground water and surface water)
WAD980726368	24								
WAD980726368	25								
WAD980726368	26								
IDD984666610									
IDD984666610	01	Other – Engineering/Containment	Tailings (pond, pile)						ROD 6/8/1998, p.61
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD 6/8/1998, p.61 (Gypsum pile)
IDD984666610	01	Institutional Controls	Tailings (pond, pile)						ROD 6/8/1998, p.61 (Gypsum pile)
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 6/8/1998, p.66
IDD984666610	03								
IDD984666610	04								
ORN001002616									
ORN001002616	01								
OR7122307658									
OR7122307658	01								
OR7122307658	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		618,000.0				ROD 9/21/2001, p.107 (Consolidation of Protore and White King Overburden Stockpiles
OR7122307658	02	Water treatment-lime	Tailings (pond, pile)						ROD 9/21/2001, p.105
OR7122307658	02	Institutional Controls	Contaminated soils						ROD 9/21/2001, p.105
WAD000065508									
WAD000065508	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD, 5/1/1992, p.16
WAD000065508	01	Water treatment-other	Tailings (pond, pile)						ROD, 5/1/1992, p.16
WAD000065508	01	Institutional Controls	Tailings (pond, pile)						ROD, 5/1/1992, p.16
ORD052221025									
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		64,670.0				ROD, 9/29/1988, p.25

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	Sludge						ROD, 9/29/1988, p.24
ORD052221025	01	Water treatment-other	Heap leach piles/leaching waste						ESD, 9/28/1994, p.6
ORD052221025	01	Institutional Controls	Other sources						ROD, 9/29/1988, p.26 (ground water)
ORD052221025	02								
WAD980978753									
WAD980978753	01	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						ROD 9/29/2006, p.13
WAD980978753	01	Water treatment-other	Open Pits/ Pit Lakes						ROD 9/29/2006, p.13
WAD980978753	01	Off-site disposal	Sludge						ROD 9/29/2006, p.13
WAD980978753	01	Surface water diversion	Other sources						ROD 9/29/2006, p.13
WAD980978753	01	Institutional Controls	Other sources						ROD 9/29/2006, p.14
IDD081830994									
IDD081830994	01	Monitored natural attenuation/recovery	Other sources						ROD 4/30/1997, p.44 (ground water)
IDD081830994	01	Institutional Controls	Other sources						ROD 4/30/1997, p.44 (ground water)
IDD081830994	01	Institutional Controls	Contaminated soils						ROD 4/30/1997, p.45
IDD081830994	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 4/30/1997, p.45
ORD009412677									
ORD009412677	01	Off-site disposal	Other Process Area Wastes		43,500.0				ROD 9/30/2002, p.25
ORD009412677	01	Off-site disposal	Other Process Area Wastes		44,400.0				ROD 9/30/2002, p.25
ORD009412677	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/30/2002, p.25
ORD009412677	01	Water treatment-other	Other Process Area Wastes						ROD 9/30/2002, p.11
ORD009412677	01	Institutional Controls	Other sources						ROD 9/30/2002, p.27
ORD009412677	02	Institutional Controls	Other sources						ROD 9/29/2006, p.35
ORD009412677	02	Other – Engineering/Containment	Other sources						ROD 9/29/2006, p.35
ORD009412677	02	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden			170,401.0			ROD 9/29/2006, p.10
AK0001897602									
AK0001897602	01								
WAD980722789									
WAD980722789	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 3/27/1990, p.14
WAD980722789	01	Institutional Controls	Contaminated soils						ROD 3/27/1990, p.14
IDD980665459									
IDD980665459	01								
ORD050955848									
ORD050955848	01	Water treatment-other	Other Process Area Wastes						ROD 6/10/1994, p.29

EPA ID	OU	Selected Remedy (Q7)	Source 1 (Q3-1)	Source 1 Area (Acres) (Q3-1a)	Source 1 Volume (Cubic Yds) (Q3-1b)	Source 1 Volume (Tons) (Q3-1c)	Source 1 Volume (Gallons) (Q3-1d)	Source 1 Volume (GPM) (Q3-1e)	Source 1 Ref (Q3-1f)
ORD050955848	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments		3,600.0				ROD 6/10/1994, p.60
ORD050955848	01	Institutional Controls	Other sources						ROD 6/10/1994, p.60
ORD050955848	02	Off-site disposal	Sludge		85,000.0				ROD 12/28/1989, p.13
ORD050955848	03	Off-site disposal	Contaminated soils						ROD 9/27/1995, p. 72
ORD050955848	03	Institutional Controls	Contaminated soils						ROD 9/27/1995, p. 73
ORD050955848	04								

Table C-5 – Site and Operating Unit Detail at the 126 Site Universe (Part 5)

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
MED980524128									
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)							
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Other sources	2.1	16,000.0				Source 1=ore pad; 2009 ROD p9
MED980524128	01	Off-site disposal							
MED980524128	01	Sediment dredging/ disposal							
MED980524128	01	Institutional Controls							
MED980524128	02								
MED980524128	03								
VTD988366621									
VTD988366621	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						
VTD988366621	01	Surface water diversion	Open Pits/ Pit Lakes				400,000.0		
VTD988366621	01	Monitored natural attenuation/recovery							
VTD988366621	01	Institutional Controls							
VTD988366571									
VTD988366571	01								
VTD988366571	02								
VTD988366720									
VTD988366720	01								
NJD980785646									
NJD980785646	01	Off-site disposal							
NJD980785646	01	Other – Engineering/Containment							
NJD980785646	01	Institutional Controls							
NJD980785646	02	No action							
NJD980785646	03	Off-site disposal							
NYD986882660									
NYD986882660	01	Off-site disposal	Contaminated sediments						
NYD986882660	01	Institutional Controls	Contaminated sediments						
NYD986882660	02	Off-site disposal	Contaminated sediments						
NYD986882660	02	Institutional Controls	Contaminated sediments						
NYD986882660	03								

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
NYD986882660	04	Sediment dredging/ disposal	Contaminated sediments						
NJD980529762									
NJD980529762	01								
NJD980529762	02	Off-site disposal							
NJD980529762	02	Institutional Controls							
NJD980529762	02	Deconstruction/ decontamination of buildings							
NJD980529762	03								
NJD980785653									
NJD980785653	01	Off-site disposal							
NJD980785653	02	No action							
NJD980785653	03	Off-site disposal							
NJD002365930									
NJD002365930	01	Air Stripping							
NJD002365930	01	Water treatment-other							
NJD002365930	02								
NJD002365930	03								
NJD980654172									
NJD980654172	01	Off-site disposal							
NJD980654172	02	Off-site disposal	Demolition debris		150.0				1995 ROD p11 (total volume of Street and Adjacent Properties defined areas)
NJD980654172	03	No action							
NJ1891837980									
NJ1891837980	01	Off-site disposal	Other Process Area Wastes						
NJ1891837980	01	Water treatment-other	Other Process Area Wastes						
NJ1891837980	01	Institutional Controls							
PAD987341716									
PAD987341716	01	Off-site disposal	Contaminated soils		12,000.0				ROD, 06/27/1994, p.16 (soil volume from Cummings facility only)
PAD987341716	01	Resident relocation							
PAD987341716	01	Institutional Controls							
PAD987341716	02	No action							
PAD077087989									
PAD077087989	01	Off-site disposal	Contaminated soils		904.0				ROD, 3/31/2006, p. 16
PAD077087989	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		177,000.0				ROD, 3/31/2006, p. 18
PAD077087989	01	Other – Treatment Technology	Tailings (pond, pile)		177,000.0				ROD, 3/31/2006, p. 18
PAD077087989	01	Institutional Controls	Tailings (pond, pile)		177,000.0				ROD, 3/31/2006, p. 18
PASFN0305549									
PASFN0305549	01								

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
PASFN0305549	02								
PAD980829493									
PAD980829493	01	Off-site disposal	Other Process Area Wastes						waste piles, drums/vat, battery casings, buildings, scrap metal, ROD, 9/30/1997, p. 7-8
PAD980829493	01	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes						waste piles, drums/vat, battery casings, buildings, scrap metal, ROD, 9/30/1997, p. 7-8
PAD980829493	01	Institutional Controls	Other Process Area Wastes						waste piles, drums/vat, battery casings, buildings, scrap metal, ROD, 9/30/1997, p. 7-8
PAD002395887									
PAD002395887	01	Soil Amendments	Smelter emissions						ROD, 9/4/1987, p. 2
PAD002395887	02	Water treatment-lime	Smelter emissions						ROD, 6/29/1988, p. 2
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 6/29/1988, p. 2
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 6/29/1988, p. 2
PAD002395887	03	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 10/9/2001, p. 2
PAD002395887	03	Off-site disposal	Smelter emissions						ROD, 10/9/2001, p. 2
PAD002395887	03	Institutional Controls	Smelter emissions						ROD, 10/9/2001, p. 2
PAD002395887	04								
VAD980705404									
VAD980705404	01	Water treatment-lime	Other sources						Unprocessed ore, ROD, 11/21/1989, p. 11
VAD980705404	01	Water treatment - Created Wetlands	Other sources						Unprocessed ore, ROD, 11/21/1989, p. 11
VAD980705404	01	Surface water diversion	Other sources						Unprocessed ore, ROD, 11/21/1989, p. 11
VAD980705404	01	On-site disposal (excavation, capping, covering, reveg)	Other sources						Unprocessed ore, ROD, 11/21/1989, p. 11
VAD980705404	01	Institutional Controls	Other sources						Unprocessed ore, ROD, 11/21/1989, p. 11
SCN000407714									
SCN000407714	01								
SCD987577913									
SCD987577913	01	Water treatment-lime	Waste rock or overburden						ROD, 9/25/2005, p. 11, 19-20
TND987768546									
TND987768546	01								
TN0001890839									
TN0001890839	01								
TN0001890839	02								
TN0001890839	03								

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
TN0001890839	04								
TN0001890839	05								
TN0001890839	06								
TN0001890839	07								
TN0001890839	08								
TN0001890839	09								
TN0001890839	10								
TN0001890839	11								
TN0001890839	12								
TN0001890839	13								
TN0001890839	14								
TN0001890839	15								
TN0001890839	16								
TN0001890839	17								
FLD001704741									
FLD001704741	01								
FLD001704741	02								
SCN000407376									
SCN000407376	01								
SCD003360476									
SCD003360476	01	Water treatment-other	Slag						ROD, 8/21/2002, p. 38
SCD003360476	01	Sediment dredging/ disposal	Contaminated sediments		1,000.0				ROD, 8/21/2002, p. 38
SCD003360476	01	Soil Amendments	Contaminated soils		95,000.0				ROD, 8/21/2002, p. 36
SCD003360476	01	Institutional Controls	Contaminated soils						ROD, 8/21/2002, p. 36
SCD003360476	01	Off-site disposal	Contaminated soils		110.0				ROD, 8/21/2002, p. 36
SCD003360476	01	Surface water diversion	Contaminated sediments						ROD, 8/21/2002, p. 38
KYD049062375									
KYD049062375	00	Institutional Controls	Other Process Area Wastes		82,000.0				FYR, 8/2/2001, p. 6
KYD049062375	00	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes		82,000.0				FYR, 8/2/2001, p. 6
KYD049062375	00	Off-site disposal	Other Process Area Wastes		82,000.0				FYR, 8/2/2001, p. 6
KYD049062375	01	Water treatment-other	Other Process Area Wastes		82,000.0				ROD, 2/19/1993, p. 12-14
KYD049062375	02								
NCN000409895									
NCN000409895	01								
FLD010596013									
FLD010596013	01	On-site disposal (excavation, capping, covering, reveg)	Slag						ROD, 7/2/1998, p. 15

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
FLD010596013	01	Solidification	Slag						ROD, 7/2/1998, p. 15
FLD010596013	01	Institutional Controls	Slag						ROD, 7/2/1998, p. 15
FLD010596013	02								
ILN000508170									
ILN000508170	01								
ILN000508170	02								
ILD050231976									
ILD050231976	01								
ILD062340641									
ILD062340641	01	Sediment dredging/ disposal							
ILD062340641	02								
ILD062340641	03								
ILD062340641	04								
ILD062340641	05								
ILD980606941									
ILD980606941	01	Deconstruction/ decontamination of buildings	Other sources						ROD, 6/16/2009, p. 23
ILD980606941	01	Off-site disposal	Other sources			1,510.0			ROD, 6/16/2009, p. 25
ILD980606941	01	On-site disposal (excavation, capping, covering, reveg)	Other sources						ROD, 6/16/2009, p. 23
ILD980606941	02								
ILN000508134									
ILN000508134	01								
ILN000508134	02								
ILN000508134	03								
IL0000064782									
IL0000064782	01								
IL0000064782	02								
OHD004379970									
OHD004379970	01	Chemical Oxidation							
OHD004379970	01	Other – Engineering/Containment	Other sources	4.5	240,000.0				ROD 9/12/1994 p. 12; FYR 5/4/2007 p. 3
OHD004379970	01	Other – Engineering/Containment							
OHD004379970	01	Soil flushing/washing	Contaminated soils						ROD 9/12/1994 p. 8
OHD004379970	01	On-site disposal (excavation, capping, covering, reveg)							
OHD004379970	01	Sediment dredging/ disposal	Contaminated sediments						ROD 9/12/1994 p. 36
OHD004379970	01	Institutional Controls	Contaminated sediments						ROD 9/12/1994 p. 36
MID980901946									
MID980901946	01	Institutional Controls							

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
MID980901946	01	Off-site disposal							
MID980901946	01	Other – Engineering/Containment	Slag	9.0					ROD 9/30/1992 p. 2
MID980901946	02	No action							
MID980901946	03	Institutional Controls							
MID980901946	03	Off-site disposal							
MID980901946	03	Other – Engineering/Containment							
MID980901946	03	Other – Engineering/Containment							
MID980901946	03	Other – Engineering/Containment							
MID980901946	04								
MID980901946	05								
MID980901946	06								
IND047030226									
IND047030226	01								
NMD002899094									
NMD002899094	00	Off-site disposal							
NMD002899094	00	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		3,800.0				ROD 12/20/2010 p. 2-681
NMD002899094	00	Other – Engineering/Containment							
NMD002899094	00	Water treatment-lime	Waste rock or overburden						ROD 12/20/2010 pp. 2-212 to 2-216, 2-240, 2-241, 2-246
NMD002899094	00	Sediment dredging/ disposal							
NMD002899094	00	Institutional Controls							
NMD980749378									
NMD980749378	01	Water treatment-other	Tailings (pond, pile)						ROD 9/21/1990 p.6
NMD980749378	01	Institutional Controls	Tailings (pond, pile)						ROD 9/21/1990 p.6
NMD980749378	02	Solidification	Contaminated soils		182.0				ROD 9/6/1991 p. 5
NMD980749378	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/6/1991 p. 5
NMD980749378	02	Institutional Controls	Contaminated soils						ROD 9/6/1991 p. 5
NMD981155930									
NMD981155930	01	No action	Contaminated sediments						ROD 9/27/1993 p. 49; AMD 9/20/1999 p. 6
NMD981155930	01	Institutional Controls	Contaminated sediments						ROD 9/27/1993 p. 49; AMD 9/20/1999 p. 6
NMD007860935									
NMD007860935	01	Water treatment-other							
NMD007860935	02	Other – Engineering/Containment	Contaminated soils						FYR 9/27/2001 p. 7
NMD007860935	03	No action							

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
OKD000829440									
OKD000829440	01	Off-site disposal							
OKD000829440	01	Institutional Controls							
OKD000829440	02	Off-site disposal							
OKD980629844									
OKD980629844	01	Other – Engineering/Containment							
OKD980629844	01	Surface water diversion							
OKD980629844	02	On-site disposal (excavation, capping, covering, reveg)							
OKD980629844	02	Institutional Controls							
OKD980629844	03	No action							
OKD980629844	04	Resident relocation							
OKD980629844	04	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	252.0					ROD 2/20/2008 p. 34
OKD980629844	04	Alternative drinking water							
OKD980629844	04	Other – Engineering/Containment							
OKD980629844	04	Institutional Controls	Contaminated soils						ROD 2/20/2008 pp. 53-57
OKD980629844	04	Other – Engineering/Containment	Tailings (pond, pile)						ROD 2/20/2008 p. 51
OKD980629844	05								
TXD062113329									
TXD062113329	01	On-site disposal (excavation, capping, covering, reveg)	Demolition debris	11.9					AMD 9/28/2000 p. 20
TXD062113329	01	Off-site disposal	Other sources						AMD 9/28/2000 p. 38
TXD062113329	01	Other – Engineering/Containment	Contaminated soils		7,500.0				AMD 9/28/2000 pp. 38-39
TXD062113329	01	Institutional Controls	Demolition debris						AMD 9/28/2000 p. 20
TXD062113329	02	No action	Other sources						FYR 9/30/2003 p. 4
TXD062113329	03	No action							
TXD062113329	04	Other – Engineering/Containment							
OKD987096195									
OKD987096195	01								
NMD030443303									
NMD030443303	01	Water treatment-other							
MO0000958611									
MO0000958611	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/29/2005 p. 12
MO0000958611	01	Other – Engineering/Containment	Contaminated soils						ROD 9/29/2005 p. 12
MO0000958611	01	Institutional Controls	Contaminated soils						ROD 9/29/2005 p. 11
MO0000958611	02	No action							

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
MO0000958611	03	On-site disposal (excavation, capping, covering, reveg)							
MOD981126899									
MOD981126899	01								
MOD981126899	02								
MOD981126899	03								
KSD980741862									
KSD980741862	01	Alternative drinking water							
KSD980741862	02								
KSD980741862	03	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						AMD 9/29/2006 p. 21
KSD980741862	03	Other – Engineering/Containment							
KSD980741862	03	Institutional Controls	Tailings (pond, pile)						AMD 9/29/2006 p. 10
KSD980741862	04								
KSD980741862	05	On-site disposal (excavation, capping, covering, reveg)	Chat						ROD 9/18/1989, p. 19
KSD980741862	05	Deconstruction/ decontamination of buildings							
KSD980741862	05	Surface water diversion							
KSD980741862	06	On-site disposal (excavation, capping, covering, reveg)	Chat						ROD 9/30/2004 p. 16
KSD980741862	06	Other – Engineering/Containment	Chat						ROD 9/30/2004 p. 16
KSD980741862	07	On-site disposal (excavation, capping, covering, reveg)							
KSD980741862	07	Institutional Controls							
MOD098633415									
MOD098633415	01								
MOD098633415	02								
MOD098633415	03	On-site disposal (excavation, capping, covering, reveg)							
MOD098633415	03	Institutional Controls							
MOD098633415	04								
MOD098633415	05								
MOD098633415	06								
MOD981507585									
MOD981507585	01	On-site disposal (excavation, capping, covering, reveg)	Chat						ROD 6/21/2010 p. 24
MOD981507585	01	Institutional Controls	Chat						ROD 6/21/2010 p. 24
MOD981507585	02								
MOD981507585	03								
NESFN0703481									
NESFN0703481	01	Off-site disposal							

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
NESFN0703481	02	Off-site disposal							
NESFN0703481	02	Institutional Controls							
MOD980686281									
MOD980686281	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	1,208.0	1,949,552.0				ROD 9/30/2004 Table 1
MOD980686281	01	Institutional Controls	Contaminated soils						ROD 9/30/2004 Table 1
MOD980686281	02	On-site disposal (excavation, capping, covering, reveg)							
MOD980686281	02	Institutional Controls							
MOD980686281	03								
MOD980686281	04	Alternative drinking water	Tailings (pond, pile)						ROD 7/29/1998 p. 31
MOD980686281	04	Water treatment-other	Tailings (pond, pile)						ROD 7/29/1998 p. 31
MOD980686281	04	Institutional Controls	Tailings (pond, pile)						ROD 7/29/1998 p. 31
MOD980686281	05								
MON000705443									
MON000705443	01								
MON000705443	02								
MON000705443	03								
MON000705443	04								
MON000705443	05								
MON000705443	06								
MON000705842									
MON000705842	01								
MON000705842	02								
MON000705842	03								
MON000705027									
MON000705027	01								
MON000705027	02								
MON000705027	03								
MON000705027	04								
MON000705023									
MON000705023	01								
MON000705023	02								
MON000705023	03								
MON000705023	04								
MON000705032									
MON000705032	01								
MON000705032	02								
MON000705032	03								
MON000705032	04								
MTD093291599									
MTD093291599	01								

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
MTD093291656									
MTD093291656	01								
MTD093291656	03	On-site disposal (excavation, capping, covering, reveg)							
MTD093291656	04	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		132,678,116.0				ROD, 9/29/1998, p.22-26
MTD093291656	04	Monitored natural attenuation/recovery	Tailings (pond, pile)		132,678,116.0				ROD, 9/29/1998, p.22-26
MTD093291656	04	Institutional Controls	Tailings (pond, pile)		132,678,116.0				ROD, 9/29/1998, p.22-26
MTD093291656	07	Institutional Controls	Slag		298,000.0				ROD, 3/8/1994, p.14, 21
MTD093291656	07	On-site disposal (excavation, capping, covering, reveg)	Slag		298,000.0				ROD, 3/8/1994, p.14, 21
MTD093291656	07	Surface water diversion	Slag		298,000.0				ROD, 3/8/1994, p.14, 21
MTD093291656	09	On-site disposal (excavation, capping, covering, reveg)							
MTD093291656	11	Solidification							
MTD093291656	11	On-site disposal (excavation, capping, covering, reveg)							
MTD093291656	11	Institutional Controls							
MTD093291656	12	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		70,000.0				FYR, 11/24/1994, p.15
MTD093291656	14								
MTD093291656	15	Resident relocation	Tailings (pond, pile)		185,000,000.0				ROD, 10/2/1987, p.3
MTD093291656	15	Deconstruction/ decontamination of buildings	Tailings (pond, pile)		185,000,000.0				ROD, 10/2/1987, p.3
MTD093291656	15	Institutional Controls	Tailings (pond, pile)		185,000,000.0				ROD, 10/2/1987, p.3
MTD093291656	15	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		185,000,000.0				ROD, 10/2/1987, p.3
MTD093291656	16	Institutional Controls	Tailings (pond, pile)						ROD, 9/30/1996, p. 23
MTD093291656	16	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD, 9/30/1996, p. 23
COD007063530									
COD007063530	01	On-site disposal (excavation, capping, covering, reveg)	Slag		183,000.0				ROD, 2/18/1983, p. 6
COD007063530	01	Institutional Controls	Slag		183,000.0				ROD, 2/18/1983, p. 6
COD007063530	02	Other – Engineering/Containment	Slag		183,000.0				ROD, 2/18/1983, p. 6
COD007063530	02	On-site disposal (excavation, capping, covering, reveg)	Slag		183,000.0				ROD, 2/18/1983, p. 6
COD007063530	02	Institutional Controls	Slag		183,000.0				ROD, 2/18/1983, p. 6
COD007063530	03	On-site disposal (excavation, capping, covering, reveg)	Slag		183,000.0				ROD, 2/18/1983, p. 6
COD007063530	03	Institutional Controls	Slag		183,000.0				ROD, 2/18/1983, p. 6
COD007063530	04	Other – Treatment Technology	Slag		183,000.0				ROD, 2/18/1983, p. 6
COD007063530	04	On-site disposal (excavation, capping, covering, reveg)	Slag		183,000.0				ROD, 2/18/1983, p. 6

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COD007063530	04	Institutional Controls	Slag		183,000.0				ROD, 2/18/1983, p. 6
MT6122307485									
MT6122307485	01								
MT6122307485	02								
MTD982572562									
MTD982572562	01	Off-site disposal	Tailings (pond, pile)	10.3	46,443.0				ROD 2001, p 64
MTD982572562	01	Institutional Controls	Waste rock or overburden						ROD 2001, p 64
MTD982572562	02								
MTD982572562	03								
MTD982572562	04								
MTD982572562	05								
MTD982572562	06								
COD980717938									
COD980717938	01	Other – Engineering/Containment	Acid Mine/Rock Drainage						ROD, 3/29/1988, p.17-20
COD980717938	01	Water treatment-other	Underground workings						ROD, 3/29/1988, p.17-20
COD980717938	02	No action	Other sources						ROD, 9/30/1999, p. 34 (36 55-gal and 6 5-gal drums,)
COD980717938	03	No action							
COD980717938	04	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	102,000.0					ROD, 5/6/1998, p.11
COD980717938	04	Surface water diversion	Tailings (pond, pile)	102,000.0					ROD, 5/6/1998, p.11
COD980717938	05	Institutional Controls	Contaminated soils	10,560.0					ROD, 10/31/2000, p. 13-14, 34
COD980717938	06	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	4.0	173,000.0				ROD, 9/25/2003, p. 25; FYR, 9/29/2001, p. 55
COD980717938	06	Water treatment-other	Waste rock or overburden	4.0	173,000.0				ROD, 9/25/2003, p. 25; FYR, 9/29/2001, p. 55
COD980717938	06	Institutional Controls	Waste rock or overburden	4.0	173,000.0				ROD, 9/25/2003, p. 25; FYR, 9/29/2001, p. 55
COD980717938	06	Surface water diversion	Waste rock or overburden	4.0	173,000.0				ROD, 9/25/2003, p. 25; FYR, 9/29/2001, p. 55
COD980717938	07	On-site disposal (excavation, capping, covering, reveg)							
COD980717938	07	Surface water diversion							
COD980717938	07	Institutional Controls							
COD980717938	08	Surface water diversion	Contaminated soils	9.9					ROD, 9/29/2000, p. 24-29, 58
COD980717938	08	On-site disposal (excavation, capping, covering, reveg)							
COD980717938	08	Institutional Controls							
COD980717938	09	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes						ROD, 9/2/1999, p. 22
COD980717938	09	Institutional Controls	Other Process Area Wastes						ROD, 9/2/1999, p. 22

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
COD980717938	10	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		485,000.0				ROD, 8/8/1997, p. 9
COD980717938	10	Other – Engineering/Containment	Tailings (pond, pile)		485,000.0				ROD, 8/8/1997, p. 9
COD980717938	11	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		1,000,000.0				ROD, 9/28/2005, p. 15 (with other mining wastes)
COD980717938	11	Institutional Controls	Tailings (pond, pile)		1,000,000.0				ROD, 9/28/2005, p. 15 (with other mining wastes)
COD980717938	12	Institutional Controls	Underground workings						ROD, 9/22/2009, p. 13
COD981551427									
COD981551427	01	Water treatment - Bioreactors (e.g., SRBs)	Waste rock or overburden	11.2	142,000.0				ROD, 9/29/2008, p. 53
COD981551427	01	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	11.2	142,000.0				ROD, 9/29/2008, p. 53
COD981551427	01	Institutional Controls	Waste rock or overburden	11.2	142,000.0				ROD, 9/29/2008, p. 53
MT0001096353									
MT0001096353	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		170,200.0				ROD, 4/26/2009, p. 28
MT0001096353	01	Institutional Controls	Tailings (pond, pile)		170,200.0				ROD, 4/26/2009, p. 28
MT0001096353	02								
MT0001096353	03								
COD980717557									
COD980717557	01	Water treatment - Created Wetlands	Tailings (pond, pile)						ROD, 9/30/1987, p. 2
COD980717557	02	Surface water diversion	Waste rock or overburden		8,200.0				ROD, 3/31/1988, p. 2
COD980717557	02	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden		8,200.0				ROD, 3/31/1988, p. 2
COD980717557	03	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						ROD, 9/30/1991, p. 5
COD980717557	03	Institutional Controls	Waste rock or overburden						ROD, 9/30/1991, p. 5
COD980717557	03	Water treatment-other	Waste rock or overburden						ROD, 9/30/1991, p. 5
COD980717557	03	Alternative drinking water	Waste rock or overburden						ROD, 9/30/1991, p. 5
COD980717557	03	Water treatment - Created Wetlands	Waste rock or overburden						ROD, 9/30/1991, p. 5
COD980717557	04	Water treatment - Bioreactors (e.g., SRBs)	Waste rock or overburden						ROD, 9/24/2004, p. 18
COD980717557	04	Water treatment-other	Waste rock or overburden						ROD, 9/24/2004, p. 18
COD980717557	04	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD, 9/24/2004, p. 18
COD980717557	04	Surface water diversion	Tailings (pond, pile)						ROD, 9/24/2004, p. 18

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
COD980717557	04	Institutional Controls	Waste rock or overburden						ROD, 9/24/2004, p. 18
UTD988075719									
UTD988075719	01	Off-site disposal	Slag						ROD, 9/30/2002, p. 9
UTD988075719	01	Other – Engineering/Containment	Slag						ROD, 9/30/2002, p. 9
UTD988075719	01	Institutional Controls	Slag						ROD, 9/30/2002, p. 9
UTD988075719	02	Off-site disposal	Slag						ROD, 9/16/2009, p. 19
UTD988075719	02	Institutional Controls	Slag						ROD, 9/16/2009, p. 19
UTD988075719	03	Off-site disposal	Slag						ROD, 9/30/2002, p. 9
COD980716955									
COD980716955	01	Off-site disposal	Other sources						ROD, 9/29/1987, p. 4 (Gamma radiation)
COD980716955	02	Off-site disposal	Other Process Area Wastes						ROD, 9/29/1987, p. 3 (Radium processing and gamma radiation)
COD980716955	02	Institutional Controls	Other Process Area Wastes						ROD, 9/29/1987, p. 3 (Radium processing and gamma radiation)
COD980716955	03	Off-site disposal	Process Areas and Buildings						ROD, 9/29/1987, p. 11-12; FYR, 9/12/1994, p.15
COD980716955	03	Institutional Controls	Process Areas and Buildings						ESD, 12/13/1993, p. 5
COD980716955	04	Off-site disposal	Process Areas and Buildings		200.0				ROD, 9/30/1986, p. 10
COD980716955	04	Institutional Controls	Process Areas and Buildings		200.0				ROD, 9/30/1986, p. 10
COD980716955	05								
COD980716955	06	Off-site disposal	Other sources						ROD, 9/29/1987, p. 7 (Gamma radiation)
COD980716955	06	Institutional Controls	Other sources						ROD, 9/29/1987, p. 7 (Gamma radiation)
COD980716955	07	Institutional Controls	Other sources						ROD, 3/24/1986, p.5 (Gamma radiation)
COD980716955	08	Off-site disposal	Process Areas and Buildings						ROD, 1/28/1992, p. 9-14
COD980716955	08	Solidification	Process Areas and Buildings						ROD, 1/28/1992, p. 9-14
COD980716955	08	Institutional Controls	Process Areas and Buildings						ROD, 1/28/1992, p. 9-14
COD980716955	09	On-site disposal (excavation, capping, covering, reveg)	Other sources						ROD, 12/23/1991, p. 5 (Gamma radiation)
COD980716955	09	Institutional Controls	Other sources						ROD, 12/23/1991, p. 5 (Gamma radiation)
COD980716955	10	Off-site disposal	Other sources						ROD, 6/30/1987, p. 8-11 (Gamma radiation)
COD980716955	11	Off-site disposal	Other sources						ROD, 9/29/1987, p. 7 (Gamma radiation)

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
COD980716955	11	Institutional Controls	Other sources						ROD, 9/29/1987, p. 7 (Gamma radiation)
COD081961518									
COD081961518	01	Water treatment-lime	Waste rock or overburden	93.0	1,500,000.0				ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	Surface water diversion	Waste rock or overburden	93.0	1,500,000.0				ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	93.0	1,500,000.0				ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	Alternative drinking water	Waste rock or overburden	93.0	1,500,000.0				ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	Institutional Controls	Waste rock or overburden	93.0	1,500,000.0				ROD, 3/29/1993, p. 3, 13-14
COD081961518	02	Institutional Controls	Contaminated soils						ROD, 9/3/1998, p. 3
COD081961518	03								
COD081961518	04								
MTD006230346									
MTD006230346	01	Water treatment-other							
MTD006230346	01	Other – Treatment Technology							
MTD006230346	01	Other – Treatment Technology							
MTD006230346	02	Off-site disposal							
MTD006230346	02	Off-site disposal							
MTD006230346	02	Institutional Controls							
UT0002240158									
UT0002240158	00	On-site disposal (excavation, capping, covering, reveg)	Underground workings						ROD, 9/30/2002, p. 19
UT0002240158	00	Institutional Controls	Underground workings						ROD, 9/30/2002, p. 19
UT0002240158	01								
UT0002240158	02								
UT0002240158	03								
UT0002240158	04								
MT0012694970									
MT0012694970	01								
MT0012694970	02								
MT0012694970	03								
CO0001093392									
CO0001093392	00								
SDD987673985									
SDD987673985	01	On-site disposal (excavation, capping, covering, reveg)	Acid Mine/Rock Drainage				106,000,000.0		ROD, 9/29/2008, Sect. 1 Note: sludge volumes not included in ROD
SDD987673985	01	Institutional Controls	Waste rock or overburden	75.0	12,000,000.0				ROD, 9/29/2008, Sect. 1
SDD987673985	01	Other – Engineering/Containment	Waste rock or overburden	75.0	12,000,000.0				ROD, 9/29/2008, Sect. 1

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
SDD987673985	01	Water treatment-lime	Waste rock or overburden	75.0	12,000,000.0				ROD, 9/29/2008, Sect. 1
SDD987673985	01	Monitoring (all media and as separate remedy)	Waste rock or overburden	75.0	12,000,000.0				ROD, 9/29/2008, Sect. 1
SDD987673985	02	Water treatment-lime	Heap leach piles/leaching waste	37.0	2,200,000.0				ROD, 4/23/2001, 2-6,7
SDD987673985	02	Impoundment	Heap leach piles/leaching waste	37.0	2,200,000.0				ROD, 4/23/2001, 2-6,7
UTD093120921									
UTD093120921	01	Institutional Controls	Contaminated soils						ROD, 9/27/2007, p. 3, 28
UTD093120921	01	Monitoring (all media and as separate remedy)	Contaminated soils						ROD, 9/27/2007, p. 3, 28
UT0002391472									
UT0002391472	01	Institutional Controls	Other Process Area Wastes						ROD, 7/29/1999, p. 20
UT0002391472	01	Off-site disposal	Other Process Area Wastes						ROD, 7/29/1999, p. 20
UT0002391472	02								
UT0002391472	03								
UT0002391472	04								
UT0002391472	05								
UTD070926811									
UTD070926811	01								
UTD070926811	02								
UTD070926811	03								
UTD070926811	04								
UTD070926811	05								
UTD070926811	06								
UTD070926811	07								
UTD070926811	08	On-site disposal (excavation, capping, covering, reveg)	Sludge			956,363.0			ROD, 9/26/2002, p. 129, 132-133
UTD070926811	09	No action	Smelter emissions			6,420.0			ROD, 9/26/2002, p. 70, 73
UTD070926811	10								
UTD070926811	11								
UTD070926811	12								
UTD070926811	13	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 9/26/2002, p. 77
UTD070926811	13	Surface water diversion	Smelter emissions						ROD, 9/26/2002, p. 77
UTD070926811	13	Deconstruction/ decontamination of buildings	Smelter emissions						ROD, 9/26/2002, p. 77
UTD070926811	13	Off-site disposal	Smelter emissions						ROD, 9/26/2002, p. 77
UTD070926811	14	On-site disposal (excavation, capping, covering, reveg)	Slag						ROD, 9/26/2002, p. 115-122
UTD070926811	14	Deconstruction/ decontamination of buildings	Smelter emissions						ROD, 9/26/2002, p. 115-122

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
UTD070926811	15	On-site disposal (excavation, capping, covering, reveg)	Process Areas and Buildings	3,386.0					ROD, 9/26/2002, p. 42-51, 57-60
UTD070926811	16								
UTD070926811	17								
UTD070926811	18	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD, 9/26/2002, p. 205
UTD070926811	19	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD, 9/26/2002, p. 194
UTD070926811	19	Other – Engineering/Containment	Contaminated soils						ROD, 9/26/2002, p. 194
UTD070926811	20	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD, 9/26/2002, p. 205
UTD070926811	21								
UTD070926811	22	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD, 9/26/2002, p. 149
UTD070926811	22	Surface water diversion	Tailings (pond, pile)						ROD, 9/26/2002, p. 149
UTD070926811	23	Water treatment - Bioreactors (e.g., SRBs)	Contaminated soils						ROD, 9/26/2002, p. 167
UTD000826404									
UTD000826404	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		174,000.0				ROD 11/3/1998, pp. 7-8, 28
UTD000826404	01	Institutional Controls							
UTD000826404	02	Water treatment-lime	Other sources					300.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Water treatment-other	Other sources					300.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Monitored natural attenuation/recovery	Other sources					300.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Water treatment-other	Other sources					300.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Alternative drinking water	Other sources					300.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
									Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Institutional Controls	Other sources					300.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	03	Institutional Controls	Tailings (pond, pile)	5.1	25,050.0				ROD - 9/28/2001: pages 33, 37
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	5.1	25,050.0				FYR - 9/30/2009, page 7
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)							
UTD000826404	04	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD 11/3/1998, p. 28
UTD000826404	04	Other – Engineering/Containment	Tailings (pond, pile)						ROD 11/3/1998, p. 28
UTD000826404	05	On-site disposal (excavation, capping, covering, reveg)							
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	470.0		5,000,000.0			ROD - 9/28/2001: page 17
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)							
UTD000826404	06	Surface water diversion							
UTD000826404	06	Water treatment - Created Wetlands							
UTD000826404	06	Soil Amendments							
UTD000826404	06	Sediment dredging/ disposal							
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	Sludge	830.0	3,100,000.0				ROD - 9/28/2001: page 30
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)							
UTD000826404	08								
UTD000826404	09								
UTD000826404	10	Institutional Controls							
UTD000826404	11	Institutional Controls							
UTD000826404	12								
UTD000826404	13								
UTD000826404	14								
UTD000826404	15								
UTD000826404	16								
UTD000826404	17	Institutional Controls							
UTD000826404	18								
UTD000826404	19								

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
UTD000826404	20								
UTD000826404	21								
UTD000826404	22								
UTD000826404	23								
UTD000826404	24								
UTD000826404	24	Deconstruction/ decontamination of buildings	Other Process Area Wastes						ROD, 9/26/2002, p. 217-218
UTD000826404	24	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes						ROD, 9/26/2002, p. 217-218
MT0009083840									
MT0009083840	01	On-site disposal (excavation, capping, covering, reveg)							
MT0009083840	01	Off-site disposal							
MT0009083840	01	Institutional Controls							
MT0009083840	02	On-site disposal (excavation, capping, covering, reveg)							
MT0009083840	02	Off-site disposal							
MT0009083840	02	Institutional Controls							
MT0009083840	03								
MT0009083840	04								
MT0009083840	05								
MT0009083840	06								
MT0009083840	07								
MT0009083840	08								
COD042167858									
COD042167858	01	Impoundment							
COD042167858	01	Permeable Reactive Barrier							
COD042167858	02	Monitoring (all media and as separate remedy)							
UTD081834277									
UTD081834277	01	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 4/1995, p. 11
UTD081834277	01	Monitoring (all media and as separate remedy)							
UTD081834277	01	Institutional Controls	Slag						ROD, 4/1995, p. 11
UTD081834277	02	Off-site disposal	Slag						ROD, 12/2008, p. 6
UTD081834277	02	Other – Engineering/Containment							
UTD081834277	02	Institutional Controls							
UTD081834277	02	Other – Engineering/Containment							
UTD081834277	02	Monitoring (all media and as separate remedy)							
MTD980717565									

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
MTD980717565	01	Alternative drinking water							
MTD980717565	02	Sediment dredging/ disposal							
MTD980717565	02	On-site disposal (excavation, capping, covering, reveg)							
MTD980717565	03								
UT3890090035									
UT3890090035	01	On-site disposal (excavation, capping, covering, reveg)							
UT3890090035	02	On-site disposal (excavation, capping, covering, reveg)							
UT3890090035	02	Institutional Controls							
UT3890090035	03	Monitoring (all media and as separate remedy)							
UT3890090035	03	Permeable Reactive Barrier							
UT3890090035	03	Institutional Controls							
UTD980667208									
UTD980667208	01	Off-site disposal							
UTD980667208	01	On-site disposal (excavation, capping, covering, reveg)							
UTD980667208	01	Deconstruction/ decontamination of buildings							
UTD980667208	02								
UTD980667208	03	Monitored natural attenuation/recovery							
UTD980667208	03	Institutional Controls							
UTD980667208	03	Permeable Reactive Barrier							
UTD980667208	04								
UTD980667208	05								
UTD980667208	06								
UTD980667208	07								
UTD980667208	08								
MTD021997689									
MTD021997689	01	Monitored natural attenuation/recovery							
MTD021997689	01	Soil Amendments							
MTD021997689	01	Off-site disposal							
MTD021997689	01	Institutional Controls							
CON000802630									
CON000802630	01								
CON000802630	02								
UTD980952840									
UTD980952840	01	Impoundment							
UTD980952840	01	Other – Engineering/Containment							

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
UTD980952840	01	Institutional Controls							
UTD980952840	02								
UTD980951388									
UTD980951388	01	On-site disposal (excavation, capping, covering, reveg)							
UTD980951388	01	Soil Amendments							
UTD980951388	01	Sediment dredging/ disposal							
UTD980951388	01	Institutional Controls							
UTD980951388	01	Monitoring (all media and as separate remedy)							
UTD980951388	02	On-site disposal (excavation, capping, covering, reveg)							
UTD980951388	02	Institutional Controls							
MTD980502777									
MTD980502777	01	On-site disposal (excavation, capping, covering, reveg)	Slag		72,000.0				ROD, 11/29/1995, Table 14
MTD980502777	01	Soil Amendments							
MTD980502777	01	Sediment dredging/ disposal							
MTD980502777	01	Institutional Controls							
MTD980502777	02								
MTD980502777	03	Water treatment-lime							
MTD980502777	03	Institutional Controls							
MTD980502777	04	Water treatment-lime							
MTD980502777	04	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						1990 ROD p18
MTD980502777	04	Other – Engineering/Containment							
MTD980502777	04	Surface water diversion	Acid Mine/Rock Drainage						1990 ROD p18-20, 76
MTD980502777	04	Institutional Controls	Contaminated soils						1990 ROD p18-20, 76
MTD980502777	05								
MTD980502777	06								
MTD980502777	07	On-site disposal (excavation, capping, covering, reveg)							
MTD980502777	07	Water treatment-other							
MTD980502777	07	Solidification							
MTD980502777	07	Off-site disposal							
MTD980502777	07	Alternative drinking water							
MTD980502777	07	Monitored natural attenuation/recovery							
MTD980502777	07	Institutional Controls							
MTD980502777	08								
MTD980502777	09								
MTD980502777	10								

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
MTD980502777	11								
MTD980502777	12	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						1992 ROD p6
MTD980502777	12	Surface water diversion	Acid Mine/Rock Drainage						1992 ROD p6
MTD980502777	12	Other – Engineering/Containment	Tailings (pond, pile)						1992 ROD p7
MTD980502777	12	Water treatment-lime	Tailings (pond, pile)						1992 ROD p7
MTD980502777	12	Impoundment	Contaminated soils						1992 ROD p7
MTD980502777	12	Monitoring (all media and as separate remedy)	Contaminated soils						1992 ROD p8
MTD980502777	12	Institutional Controls							
MTD980502777	13								
COD983769738									
COD983769738	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		10,000.0				FYR, 9/2010, p. 18
COD983769738	01	Institutional Controls							
COD983769738	01	Monitored natural attenuation/recovery							
COD983769738	02	Institutional Controls							
COD983769738	02	Monitored natural attenuation/recovery							
COD983769738	02	Off-site disposal							
COD983769738	03	Alternative drinking water							
COD980806277									
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						FYR, 11,/1997, p. 2
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						FYR, 11,/1997, p. 2
COD980806277	01	Monitoring (all media and as separate remedy)	Tailings (pond, pile)						FYR, 11,/1997, p. 2
COD980806277	01	Alternative drinking water	Tailings (pond, pile)						FYR, 11,/1997, p. 2
COD980806277	01	Institutional Controls	Tailings (pond, pile)						FYR, 11,/1997, p. 2
COD980806277	02	Surface water diversion	Tailings (pond, pile)						FYR, 11,/1997, p. 2
COD980806277	02	Other – Engineering/Containment	Tailings (pond, pile)						FYR, 11,/1997, p. 2
CO0002378230									
CO0002378230	00								
COD983778432									
COD983778432	00	Water treatment-other	Waste rock or overburden	50.0	1,033,000.0	66,000,000.0			1994 ROD, p 10-13
COD983778432	00	Other – Engineering/Containment	Waste rock or overburden	50.0	1,033,000.0	66,000,000.0			1994 ROD, p 10-13
COD983778432	01	Water treatment-other	Leachate (from failed cap/cover or similar system)				1,000,000.0		1994 ROD, p 20

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
COD983778432	01	Other – Engineering/Containment	Leachate (from failed cap/cover or similar system)				1,000,000.0		1994 ROD, p 20
COD983778432	01	Water treatment - Bioreactors (e.g., SRBs)	Leachate (from failed cap/cover or similar system)				1,000,000.0		1994 ROD, p 20
COD983778432	01	Monitoring (all media and as separate remedy)	Leachate (from failed cap/cover or similar system)				1,000,000.0		1994 ROD, p 20
COD983778432	02	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						1994 ROD p 32
COD983778432	03								
COD983778432	04	Other – Engineering/Containment							
COD983778432	05	Impoundment							
COD983778432	05	Monitoring (all media and as separate remedy)	Heap leach piles/leaching waste				94,500,000.0		2001 ROD, p. 24
COD983778432	05	On-site disposal (excavation, capping, covering, reveg)	Impoundments				89,600,000.0		2001 ROD, p. 24
COD983778432	05	Surface water diversion	Impoundments				89,600,000.0		2001 ROD, p. 24
COD983778432	05	Water treatment-lime							
MTSFN7578012									
MTSFN7578012	01								
MTSFN7578012	02								
MTSFN7578012	03								
MTSFN7578012	04	On-site disposal (excavation, capping, covering, reveg)	Acid Mine/Rock Drainage						ROD OU4, 6/2002, p. 5
MTSFN7578012	04	Other – Engineering/Containment	Other sources						ROD OU4, 6/2002, p. 5, (surface water)
MTSFN7578012	04	Water treatment-other							
MTSFN7578012	04	Other – Engineering/Containment							
MTSFN7578012	04	Alternative drinking water							
MTSFN7578012	04	Institutional Controls							
MTSFN7578012	05								
MTSFN7578012	06								
MTSFN7578012	07								
MTSFN7578012	08								
COD007063274									
COD007063274	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	400.0					2010 FYR, p. 19
COD007063274	01	Impoundment	Contaminated soils	400.0					2010 FYR, p. 19
UTN000802704									
UTN000802704	01								
CO0002259588									

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
CO0002259588	01	Off-site disposal							
CO0002259588	02								
CO0002259588	03								
SDD980717136									
SDD980717136	01	Institutional Controls	Contaminated sediments			10,000,000.0			1990 ROD, p. 7,8
SDD980717136	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments			10,000,000.0			1990 ROD, p. 7,8
AZD008397127									
AZD008397127	01								
CAD980496863									
CAD980496863	01	Other – Engineering/Containment							
CAD980496863	01	Surface water diversion							
CAD980496863	01	On-site disposal (excavation, capping, covering, reveg)	Demolition debris						ROD 2/14/1991, p.21
CAD980496863	01	Institutional Controls	Demolition debris						ROD 2/14/1991, p.21
CAD980496863	02	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						ROD 7/19/98, p.8
NVD980813646									
NVD980813646	01	Off-site disposal							
NVD980813646	01	Institutional Controls							
NVD980813646	02								
CAD980638860									
CAD980638860	01	Off-site disposal							
CAD980638860	02	Off-site disposal	Contaminated soils		156.0				ROD 10/3/1983, p.8
CAD980817217									
CAD980817217	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD 9/21/1990, p.7
CAD980817217	01	Surface water diversion							
CAD980817217	01	Other – Engineering/Containment							
CAD980817217	01	Institutional Controls	Tailings (pond, pile)						ROD 9/21/1990, p.7
CAD980817217	02	On-site disposal (excavation, capping, covering, reveg)	Demolition debris						ROD 7/19/1989, p.17 (All Source Material)
AZ0000309013									
AZ0000309013	01								
CAD980498612									
CAD980498612	01	On-site disposal (excavation, capping, covering, reveg)							
CAD980498612	01	Surface water diversion							
CAD980498612	01	Other – Engineering/Containment							

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
CAD980498612	02	Water treatment-lime	Tailings (pond, pile)						ROD 9/30/92, p. 40
CAD980498612	02	Water treatment-lime							
CAD980498612	03	Water treatment-lime							
CAD980498612	03	Water treatment-lime							
CAD980498612	04	Other – Engineering/Containment							
CAD980498612	04	Water treatment-lime	Acid Mine/Rock Drainage						ROD 9/30/1997, p.93
CAD980498612	05	On-site disposal (excavation, capping, covering, reveg)							
CAD980498612	06								
CA1141190578									
CA1141190578	01								
CA1141190578	02								
CA1141190578	03								
CAD983618893									
CAD983618893	01	Institutional Controls	Contaminated sediments						ROD 9/28/2004, p.101
CAD983618893	01	Other – Engineering/Containment	Contaminated sediments						ROD 9/28/2004, p.101
CAD983618893	01	Deconstruction/ decontamination of buildings							
CAD983618893	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments						ROD 9/28/2004, p.101
CAD983618893	01	Water treatment-other	Contaminated sediments						ROD 9/28/2004, p.101
CAD983618893	02	Alternative drinking water							
CAD983618893	02	Institutional Controls							
CAD983618893	03								
CAD983618893	04								
CAD980673685									
CAD980673685	01								
CAD980893275									
CAD980893275	01								
CAD980893275	02								
CAD980893275	03								
WAD009045279									
WAD009045279	01								
OR0000515759									
OR0000515759	01								
IDD980725832									
IDD980725832	01	Water treatment-lime	Tailings (pond, pile)			4,100,000.0			ROD 2003, p. 2-4, 2-5
IDD980725832	01	On-site disposal (excavation, capping, covering, reveg)							

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
IDD980725832	01	Monitored natural attenuation/recovery	Tailings (pond, pile)			4,100,000.0			ROD 2003, 2-4, 2-5
IDD980725832	01	Institutional Controls	Tailings (pond, pile)			4,100,000.0			ROD 2003, 2-4, 2-5
IDD048340921									
IDD048340921	01	Off-site disposal							
IDD048340921	01	Institutional Controls							
IDD048340921	02	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	100.0	50,000.0				ROD 9/22/1992, p.52 - 54
IDD048340921	02	Water treatment - Created Wetlands							
IDD048340921	02	Surface water diversion							
IDD048340921	02	Alternative drinking water							
IDD048340921	02	Institutional Controls							
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)							
IDD048340921	03	Alternative drinking water							
IDD048340921	03	Institutional Controls							
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments						ROD 9/12/2002, p.375
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)							
WAD980726368									
WAD980726368	01	Air Stripping							
WAD980726368	01	Off-site disposal							
WAD980726368	01	Other – Treatment Technology							
WAD980726368	01	Soil Vapor Extraction							
WAD980726368	01	Thermal Treatment	Other sources						ROD Amend 10/26/2009, p.16 (ground water)
WAD980726368	01	Water treatment - Bioreactors (e.g., SRBs)							
WAD980726368	01	Institutional Controls	Other sources						ROD Amend 10/26/2009, p.16 (ground water)
WAD980726368	01	Off-site disposal							
WAD980726368	01	Sediment dredging/ disposal							
WAD980726368	02								
WAD980726368	03								
WAD980726368	04								
WAD980726368	05								
WAD980726368	06								
WAD980726368	07								
WAD980726368	08								
WAD980726368	09								
WAD980726368	10								
WAD980726368	11								

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
WAD980726368	12								
WAD980726368	13								
WAD980726368	14								
WAD980726368	16								
WAD980726368	17								
WAD980726368	18								
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)							
WAD980726368	19	Institutional Controls							
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)							
WAD980726368	19	Sediment dredging/ disposal							
WAD980726368	20	On-site disposal (excavation, capping, covering, reveg)	Slag						ROD 3/24/1995, p.45
WAD980726368	20	Off-site disposal							
WAD980726368	20	Institutional Controls							
WAD980726368	21	Deconstruction/ decontamination of buildings							
WAD980726368	21	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						1990 ROD p15, 17
WAD980726368	21	Surface water diversion	Contaminated soils						1990 ROD p16, 18
WAD980726368	22	Off-site disposal	Slag						ROD 6/16/1993, p.15
WAD980726368	22	Off-site disposal							
WAD980726368	23	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments		45,000.0				ROD 12/30/1987, p.12 (volume includes soil and sediment)
WAD980726368	23	Institutional Controls							
WAD980726368	24								
WAD980726368	25								
WAD980726368	26								
IDD984666610									
IDD984666610	01	Other – Engineering/Containment							
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD 6/8/1998, p.61(Phosphate ore)
IDD984666610	01	Institutional Controls	Tailings (pond, pile)						ROD 6/8/1998, p.61(Phosphate ore)
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)							
IDD984666610	03								
IDD984666610	04								
ORN001002616									
ORN001002616	01								
OR7122307658									
OR7122307658	01								

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
OR7122307658	02	On-site disposal (excavation, capping, covering, reveg)							
OR7122307658	02	Water treatment-lime							
OR7122307658	02	Institutional Controls	Tailings (pond, pile)						ROD 9/21/2001, p.105
WAD000065508									
WAD000065508	01	On-site disposal (excavation, capping, covering, reveg)	Potliners						ROD, 5/1/1992, p.16
WAD000065508	01	Water treatment-other	Potliners						ROD, 5/1/1992, p.16
WAD000065508	01	Institutional Controls	Potliners						ROD, 5/1/1992, p.16
ORD052221025									
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)							
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)							
ORD052221025	01	Water treatment-other							
ORD052221025	01	Institutional Controls							
ORD052221025	02								
WAD980978753									
WAD980978753	01	On-site disposal (excavation, capping, covering, reveg)							
WAD980978753	01	Water treatment-other							
WAD980978753	01	Off-site disposal							
WAD980978753	01	Surface water diversion							
WAD980978753	01	Institutional Controls							
IDD081830994									
IDD081830994	01	Monitored natural attenuation/recovery							
IDD081830994	01	Institutional Controls							
IDD081830994	01	Institutional Controls							
IDD081830994	01	On-site disposal (excavation, capping, covering, reveg)							
ORD009412677									
ORD009412677	01	Off-site disposal							
ORD009412677	01	Off-site disposal	Contaminated soils						ROD 9/30/2002, p.25
ORD009412677	01	On-site disposal (excavation, capping, covering, reveg)							
ORD009412677	01	Water treatment-other							
ORD009412677	01	Institutional Controls							
ORD009412677	02	Institutional Controls							
ORD009412677	02	Other – Engineering/Containment							
ORD009412677	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/29/2006, p.10
AK0001897602									

EPA ID	OU	Selected Remedy (Q7)	Source 2 (Q3-2)	Source 2 Area (Acres) (Q3-2a)	Source 2 Volume (Cubic Yds) (Q3-2b)	Source 2 Volume (Tons) (Q3-2c)	Source 2 Volume (Gallons) (Q3-2d)	Source 2 Volume (GPM) (Q3-2e)	Source 2 Ref (Q3-2f)
AK0001897602	01								
WAD980722789									
WAD980722789	01	On-site disposal (excavation, capping, covering, reveg)	Demolition debris						ROD 3/27/1990, p.14
WAD980722789	01	Institutional Controls	Demolition debris						ROD 3/27/1990, p.14
IDD980665459									
IDD980665459	01								
ORD050955848									
ORD050955848	01	Water treatment-other							
ORD050955848	01	On-site disposal (excavation, capping, covering, reveg)							
ORD050955848	01	Institutional Controls	Contaminated soils						ESD 10/8/1996, p.5
ORD050955848	02	Off-site disposal							
ORD050955848	03	Off-site disposal							
ORD050955848	03	Institutional Controls							
ORD050955848	04								

Table C-6 – Site and Operating Unit Detail at the 126 Site Universe (Part 6)

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
MED980524128									
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)							
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	6.6	16,000.0				2009 ROD p9
MED980524128	01	Off-site disposal							
MED980524128	01	Sediment dredging/ disposal							
MED980524128	01	Institutional Controls							
MED980524128	02								
MED980524128	03								
VTD988366621									
VTD988366621	01	On-site disposal (excavation, capping, covering, reveg)							
VTD988366621	01	Surface water diversion							2006 ROD p21
VTD988366621	01	Monitored natural attenuation/recovery							
VTD988366621	01	Institutional Controls							
VTD988366571									
VTD988366571	01								
VTD988366571	02								
VTD988366720									
VTD988366720	01								
NJD980785646									
NJD980785646	01	Off-site disposal							
NJD980785646	01	Other – Engineering/Containment							
NJD980785646	01	Institutional Controls							
NJD980785646	02	No action							
NJD980785646	03	Off-site disposal							
NYD986882660									
NYD986882660	01	Off-site disposal	Other Process Area Wastes						
NYD986882660	01	Institutional Controls	Other Process Area Wastes						
NYD986882660	02	Off-site disposal	Other Process Area Wastes						
NYD986882660	02	Institutional Controls	Other Process Area Wastes						
NYD986882660	03								
NYD986882660	04	Sediment dredging/ disposal							
NJD980529762									
NJD980529762	01								

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
NJD980529762	02	Off-site disposal							
NJD980529762	02	Institutional Controls							
NJD980529762	02	Deconstruction/ decontamination of buildings							
NJD980529762	03								
NJD980785653									
NJD980785653	01	Off-site disposal							
NJD980785653	02	No action							
NJD980785653	03	Off-site disposal							
NJD002365930									
NJD002365930	01	Air Stripping							
NJD002365930	01	Water treatment-other							
NJD002365930	02								
NJD002365930	03								
NJD980654172									
NJD980654172	01	Off-site disposal							
NJD980654172	02	Off-site disposal							
NJD980654172	03	No action							
NJ1891837980									
NJ1891837980	01	Off-site disposal	Demolition debris						
NJ1891837980	01	Water treatment-other							
NJ1891837980	01	Institutional Controls							
PAD987341716									
PAD987341716	01	Off-site disposal							
PAD987341716	01	Resident relocation							
PAD987341716	01	Institutional Controls							
PAD987341716	02	No action							
PAD077087989									
PAD077087989	01	Off-site disposal							
PAD077087989	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD, 3/31/2006, p. 16
PAD077087989	01	Other – Treatment Technology	Contaminated soils						ROD, 3/31/2006, p. 16
PAD077087989	01	Institutional Controls	Contaminated soils						ROD, 3/31/2006, p. 16
PASFN0305549									
PASFN0305549	01								
PASFN0305549	02								
PAD980829493									
PAD980829493	01	Off-site disposal	Tailings (pond, pile)	140,000.0					ROD, 9/30/1997, p. 7
PAD980829493	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	140,000.0					ROD, 9/30/1997, p. 7
PAD980829493	01	Institutional Controls	Tailings (pond, pile)	140,000.0					ROD, 9/30/1997, p. 7
PAD002395887									

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
PAD002395887	01	Soil Amendments							
PAD002395887	02	Water treatment-lime	Other Process Area Wastes	200.0		27,500,000.0			briquettes and municipal waste, ROD, 6/29/1988, p. 4; FYR, 7/1/2002, p. 14
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)							
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)							
PAD002395887	03	On-site disposal (excavation, capping, covering, reveg)							
PAD002395887	03	Off-site disposal							
PAD002395887	03	Institutional Controls							
PAD002395887	04								
VAD980705404									
VAD980705404	01	Water treatment-lime	Leachate (from failed cap/cover or similar system)						ROD, 11/21/1989, p. 18
VAD980705404	01	Water treatment - Created Wetlands	Leachate (from failed cap/cover or similar system)						ROD, 11/21/1989, p. 18
VAD980705404	01	Surface water diversion	Leachate (from failed cap/cover or similar system)						ROD, 11/21/1989, p. 18
VAD980705404	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		65,600.0				ROD, 11/21/1989, p. 18; FYR, 3/17/2000, p. 7
VAD980705404	01	Institutional Controls	Leachate (from failed cap/cover or similar system)						ROD, 11/21/1989, p. 18
SCN000407714									
SCN000407714	01								
SCD987577913									
SCD987577913	01	Water treatment-lime	Acid Mine/Rock Drainage						ROD, 9/25/2005, p. 11, 19-20
TND987768546									
TND987768546	01								
TN0001890839									
TN0001890839	01								
TN0001890839	02								
TN0001890839	03								
TN0001890839	04								
TN0001890839	05								
TN0001890839	06								
TN0001890839	07								
TN0001890839	08								
TN0001890839	09								
TN0001890839	10								
TN0001890839	11								

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
TN0001890839	12								
TN0001890839	13								
TN0001890839	14								
TN0001890839	15								
TN0001890839	16								
TN0001890839	17								
FLD001704741									
FLD001704741	01								
FLD001704741	02								
SCN000407376									
SCN000407376	01								
SCD003360476									
SCD003360476	01	Water treatment-other							
SCD003360476	01	Sediment dredging/ disposal							
SCD003360476	01	Soil Amendments							
SCD003360476	01	Institutional Controls							
SCD003360476	01	Off-site disposal							
SCD003360476	01	Surface water diversion	Contaminated soils						ROD, 8/21/2002, p. 36
KYD049062375									
KYD049062375	00	Institutional Controls							
KYD049062375	00	On-site disposal (excavation, capping, covering, reveg)							
KYD049062375	00	Off-site disposal							
KYD049062375	01	Water treatment-other	Leachate (from failed cap/cover or similar system)	12.0					ROD, 2/19/1993, p. 12
KYD049062375	02								
NCN000409895									
NCN000409895	01								
FLD010596013									
FLD010596013	01	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes						ROD, 7/2/1998, p. 15
FLD010596013	01	Solidification	Other Process Area Wastes						ROD, 7/2/1998, p. 15
FLD010596013	01	Institutional Controls	Other Process Area Wastes						ROD, 7/2/1998, p. 15
FLD010596013	02								
ILN000508170									
ILN000508170	01								
ILN000508170	02								
ILD050231976									
ILD050231976	01								
ILD062340641									
ILD062340641	01	Sediment dredging/ disposal							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
ILD062340641	02								
ILD062340641	03								
ILD062340641	04								
ILD062340641	05								
ILD980606941									
ILD980606941	01	Deconstruction/ decontamination of buildings							
ILD980606941	01	Off-site disposal							
ILD980606941	01	On-site disposal (excavation, capping, covering, reveg)							
ILD980606941	02								
ILN000508134									
ILN000508134	01								
ILN000508134	02								
ILN000508134	03								
IL0000064782									
IL0000064782	01								
IL0000064782	02								
OHD004379970									
OHD004379970	01	Chemical Oxidation							
OHD004379970	01	Other – Engineering/Containment							
OHD004379970	01	Other – Engineering/Containment							
OHD004379970	01	Soil flushing/washing							
OHD004379970	01	On-site disposal (excavation, capping, covering, reveg)							
OHD004379970	01	Sediment dredging/ disposal	Contaminated soils						ROD 9/12/1994 p. 36
OHD004379970	01	Institutional Controls	Leachate (from failed cap/cover or similar system)						ROD 9/12/1994 p. 36
MID980901946									
MID980901946	01	Institutional Controls							
MID980901946	01	Off-site disposal							
MID980901946	01	Other – Engineering/Containment							
MID980901946	02	No action							
MID980901946	03	Institutional Controls							
MID980901946	03	Off-site disposal							
MID980901946	03	Other – Engineering/Containment							
MID980901946	03	Other – Engineering/Containment							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
MID980901946	03	Other – Engineering/Containment							
MID980901946	04								
MID980901946	05								
MID980901946	06								
IND047030226									
IND047030226	01								
NMD002899094									
NMD002899094	00	Off-site disposal							
NMD002899094	00	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		26,000.0				ROD 12/20/2010 p. 2-682
NMD002899094	00	Other – Engineering/Containment							
NMD002899094	00	Water treatment-lime	Tailings (pond, pile)						ROD 12/20/2010 pp. 2-276 to 2-278
NMD002899094	00	Sediment dredging/ disposal							
NMD002899094	00	Institutional Controls							
NMD980749378									
NMD980749378	01	Water treatment-other	Impoundments						ROD 9/21/1990 p.6
NMD980749378	01	Institutional Controls	Impoundments						ROD 9/21/1990 p.6
NMD980749378	02	Solidification	Contaminated soils		345.0				ROD 9/6/1991 p. 5
NMD980749378	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/6/1991 p. 5
NMD980749378	02	Institutional Controls							
NMD981155930									
NMD981155930	01	No action							
NMD981155930	01	Institutional Controls							
NMD007860935									
NMD007860935	01	Water treatment-other							
NMD007860935	02	Other – Engineering/Containment	Process Areas and Buildings						FYR 9/27/2001 p. 7
NMD007860935	03	No action							
OKD000829440									
OKD000829440	01	Off-site disposal							
OKD000829440	01	Institutional Controls							
OKD000829440	02	Off-site disposal							
OKD980629844									
OKD980629844	01	Other – Engineering/Containment							
OKD980629844	01	Surface water diversion							
OKD980629844	02	On-site disposal (excavation, capping, covering, reveg)							
OKD980629844	02	Institutional Controls							
OKD980629844	03	No action							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
OKD980629844	04	Resident relocation							
OKD980629844	04	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	1,180.0	1,374,537.0				ROD 2/20/2008 pp. 15,16
OKD980629844	04	Alternative drinking water							
OKD980629844	04	Other – Engineering/Containment							
OKD980629844	04	Institutional Controls	Other sources						ROD 2/20/2008 pp. 53-57
OKD980629844	04	Other – Engineering/Containment							
OKD980629844	05								
TXD062113329									
TXD062113329	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	7.2					AMD 9/28/2000 pp. 19, 38-39
TXD062113329	01	Off-site disposal	Demolition debris		133.0				FYR 9/21/2010 p. 26
TXD062113329	01	Other – Engineering/Containment							
TXD062113329	01	Institutional Controls	Contaminated soils						AMD 9/28/2000 pp. 19, 38-39
TXD062113329	02	No action							
TXD062113329	03	No action							
TXD062113329	04	Other – Engineering/Containment							
OKD987096195									
OKD987096195	01								
NMD030443303									
NMD030443303	01	Water treatment-other							
MO0000958611									
MO0000958611	01	On-site disposal (excavation, capping, covering, reveg)							
MO0000958611	01	Other – Engineering/Containment	Contaminated sediments						ROD 9/29/2005 p. 12
MO0000958611	01	Institutional Controls							
MO0000958611	02	No action							
MO0000958611	03	On-site disposal (excavation, capping, covering, reveg)							
MOD981126899									
MOD981126899	01								
MOD981126899	02								
MOD981126899	03								
KSD980741862									
KSD980741862	01	Alternative drinking water							
KSD980741862	02								
KSD980741862	03	On-site disposal (excavation, capping, covering, reveg)							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
KSD980741862	03	Other – Engineering/Containment							
KSD980741862	03	Institutional Controls	Contaminated soils						AMD 9/29/2006 p. 10
KSD980741862	04								
KSD980741862	05	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 9/18/1989, p. 9
KSD980741862	05	Deconstruction/ decontamination of buildings							
KSD980741862	05	Surface water diversion							
KSD980741862	06	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments						ROD 9/30/2004 p. 16
KSD980741862	06	Other – Engineering/Containment	Contaminated sediments						ROD 9/30/2004 p. 16
KSD980741862	07	On-site disposal (excavation, capping, covering, reveg)							
KSD980741862	07	Institutional Controls							
MOD098633415									
MOD098633415	01								
MOD098633415	02								
MOD098633415	03	On-site disposal (excavation, capping, covering, reveg)							
MOD098633415	03	Institutional Controls							
MOD098633415	04								
MOD098633415	05								
MOD098633415	06								
MOD981507585									
MOD981507585	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments						ROD 6/21/2010 p. 24
MOD981507585	01	Institutional Controls	Contaminated sediments						ROD 6/21/2010 p. 24
MOD981507585	02								
MOD981507585	03								
NESFN0703481									
NESFN0703481	01	Off-site disposal							
NESFN0703481	02	Off-site disposal							
NESFN0703481	02	Institutional Controls							
MOD980686281									
MOD980686281	01	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	39.0	335,661.0				ROD 9/30/2004 Table 1
MOD980686281	01	Institutional Controls	Waste rock or overburden						ROD 9/30/2004 Table 1
MOD980686281	02	On-site disposal (excavation, capping, covering, reveg)							
MOD980686281	02	Institutional Controls							
MOD980686281	03								
MOD980686281	04	Alternative drinking water	Open Pits/ Pit Lakes						ROD 7/29/1998 p. 31

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
MOD980686281	04	Water treatment-other	Open Pits/ Pit Lakes						ROD 7/29/1998 p. 31
MOD980686281	04	Institutional Controls	Open Pits/ Pit Lakes						ROD 7/29/1998 p. 31
MOD980686281	05								
MON000705443									
MON000705443	01								
MON000705443	02								
MON000705443	03								
MON000705443	04								
MON000705443	05								
MON000705443	06								
MON000705842									
MON000705842	01								
MON000705842	02								
MON000705842	03								
MON000705027									
MON000705027	01								
MON000705027	02								
MON000705027	03								
MON000705027	04								
MON000705023									
MON000705023	01								
MON000705023	02								
MON000705023	03								
MON000705023	04								
MON000705032									
MON000705032	01								
MON000705032	02								
MON000705032	03								
MON000705032	04								
MTD093291599									
MTD093291599	01								
MTD093291656									
MTD093291656	01								
MTD093291656	03	On-site disposal (excavation, capping, covering, reveg)							
MTD093291656	04	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes		125,563,000.0				ROD, 9/29/1998, p.22-26 (slag, sludge, waste rock, other waste)
MTD093291656	04	Monitored natural attenuation/recovery	Other Process Area Wastes		125,563,000.0				ROD, 9/29/1998, p.22-26 (slag, sludge, waste rock, other waste)
MTD093291656	04	Institutional Controls	Other Process Area Wastes		125,563,000.0				ROD, 9/29/1998, p.22-26 (slag, sludge, waste rock, other waste)
MTD093291656	07	Institutional Controls	Tailings (pond, pile)		440,000.0				ROD, 3/8/1994, p.14, 21

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
MTD093291656	07	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)		440,000.0				ROD, 3/8/1994, p.14, 21
MTD093291656	07	Surface water diversion	Tailings (pond, pile)		440,000.0				ROD, 3/8/1994, p.14, 21
MTD093291656	09	On-site disposal (excavation, capping, covering, reveg)							
MTD093291656	11	Solidification							
MTD093291656	11	On-site disposal (excavation, capping, covering, reveg)							
MTD093291656	11	Institutional Controls							
MTD093291656	12	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils		45,000.0				FYR, 11/24/1994, p.15
MTD093291656	14								
MTD093291656	15	Resident relocation	Slag		27,000,000.0				ROD, 10/2/1987, p.3
MTD093291656	15	Deconstruction/ decontamination of buildings	Slag		27,000,000.0				ROD, 10/2/1987, p.3
MTD093291656	15	Institutional Controls	Slag		27,000,000.0				ROD, 10/2/1987, p.3
MTD093291656	15	On-site disposal (excavation, capping, covering, reveg)	Slag		27,000,000.0				ROD, 10/2/1987, p.3
MTD093291656	16	Institutional Controls	Slag						ROD, 9/30/1996, p. 23
MTD093291656	16	On-site disposal (excavation, capping, covering, reveg)	Slag						ROD, 9/30/1996, p. 23
COD007063530									
COD007063530	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	01	Institutional Controls	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	02	Other – Engineering/Containment	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	02	Institutional Controls	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	03	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	03	Institutional Controls	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	04	Other – Treatment Technology	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	04	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
COD007063530	04	Institutional Controls	Contaminated sediments	7.0					ROD, 2/18/1983, p. 6
MT6122307485									
MT6122307485	01								
MT6122307485	02								
MTD982572562									
MTD982572562	01	Off-site disposal	Waste rock or overburden						ROD 2001, p 64
MTD982572562	01	Institutional Controls							
MTD982572562	02								
MTD982572562	03								

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
MTD982572562	04								
MTD982572562	05								
MTD982572562	06								
COD980717938									
COD980717938	01	Other – Engineering/Containment							
COD980717938	01	Water treatment-other							
COD980717938	02	No action							
COD980717938	03	No action							
COD980717938	04	On-site disposal (excavation, capping, covering, reveg)							
COD980717938	04	Surface water diversion							
COD980717938	05	Institutional Controls	Other Process Area Wastes		600.0				ROD, 10/31/2000, p. 13-14
COD980717938	06	On-site disposal (excavation, capping, covering, reveg)	Acid Mine/Rock Drainage				759,600,000.0	550.0	ROD, 9/25/2003, p. 44
COD980717938	06	Water treatment-other	Acid Mine/Rock Drainage				759,600,000.0	550.0	ROD, 9/25/2003, p. 44
COD980717938	06	Institutional Controls	Acid Mine/Rock Drainage				759,600,000.0	550.0	ROD, 9/25/2003, p. 44
COD980717938	06	Surface water diversion	Acid Mine/Rock Drainage				759,600,000.0	550.0	ROD, 9/25/2003, p. 44
COD980717938	07	On-site disposal (excavation, capping, covering, reveg)							
COD980717938	07	Surface water diversion							
COD980717938	07	Institutional Controls							
COD980717938	08	Surface water diversion							
COD980717938	08	On-site disposal (excavation, capping, covering, reveg)							
COD980717938	08	Institutional Controls							
COD980717938	09	On-site disposal (excavation, capping, covering, reveg)							
COD980717938	09	Institutional Controls							
COD980717938	10	On-site disposal (excavation, capping, covering, reveg)							
COD980717938	10	Other – Engineering/Containment							
COD980717938	11	On-site disposal (excavation, capping, covering, reveg)							
COD980717938	11	Institutional Controls							
COD980717938	12	Institutional Controls	Tailings (pond, pile)						ROD, 9/22/2009, p. 13 (with other mining wastes)
COD981551427									
COD981551427	01	Water treatment - Bioreactors (e.g., SRBs)	Underground workings						ROD, 9/29/2008, p. 17
COD981551427	01	On-site disposal (excavation, capping, covering, reveg)	Process Areas and Buildings						ROD, 9/29/2008, p. 54
COD981551427	01	Institutional Controls	Process Areas and Buildings						ROD, 9/29/2008, p. 54

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
MT0001096353									
MT0001096353	01	On-site disposal (excavation, capping, covering, reveg)							
MT0001096353	01	Institutional Controls							
MT0001096353	02								
MT0001096353	03								
COD980717557									
COD980717557	01	Water treatment - Created Wetlands	Waste rock or overburden						ROD, 9/30/1987, p. 2
COD980717557	02	Surface water diversion							
COD980717557	02	On-site disposal (excavation, capping, covering, reveg)							
COD980717557	03	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)						ROD, 9/30/1991, p. 5
COD980717557	03	Institutional Controls	Tailings (pond, pile)						ROD, 9/30/1991, p. 5
COD980717557	03	Water treatment-other	Tailings (pond, pile)						ROD, 9/30/1991, p. 5
COD980717557	03	Alternative drinking water	Tailings (pond, pile)						ROD, 9/30/1991, p. 5
COD980717557	03	Water treatment - Created Wetlands	Tailings (pond, pile)						ROD, 9/30/1991, p. 5
COD980717557	04	Water treatment - Bioreactors (e.g., SRBs)	Tailings (pond, pile)						ROD, 9/24/2004, p. 18
COD980717557	04	Water treatment-other	Tailings (pond, pile)						ROD, 9/24/2004, p. 18
COD980717557	04	On-site disposal (excavation, capping, covering, reveg)	Underground workings						ROD, 9/24/2004, p. 18
COD980717557	04	Surface water diversion	Underground workings						ROD, 9/24/2004, p. 18
COD980717557	04	Institutional Controls	Tailings (pond, pile)						ROD, 9/24/2004, p. 18
UTD988075719									
UTD988075719	01	Off-site disposal	Contaminated soils			30,964.0			ROD, 9/30/2002, p. 9, 34
UTD988075719	01	Other – Engineering/Containment	Contaminated soils			30,964.0			ROD, 9/30/2002, p. 9, 34
UTD988075719	01	Institutional Controls	Contaminated soils			30,964.0			ROD, 9/30/2002, p. 9, 34
UTD988075719	02	Off-site disposal	Contaminated soils	28.8		6,000.0			ROD, 9/16/2009, p. 15, 19
UTD988075719	02	Institutional Controls	Contaminated soils	28.8		6,000.0			ROD, 9/16/2009, p. 15, 19
UTD988075719	03	Off-site disposal	Contaminated soils			30,964.0			ROD, 9/30/2002, p. 9, 34
COD980716955									
COD980716955	01	Off-site disposal							
COD980716955	02	Off-site disposal							
COD980716955	02	Institutional Controls							
COD980716955	03	Off-site disposal	Other sources						ESD, 12/13/1993, p. 5 (Gamma radiation)
COD980716955	03	Institutional Controls	Other sources						ESD, 12/13/1993, p. 5 (Gamma radiation)
COD980716955	04	Off-site disposal							
COD980716955	04	Institutional Controls							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
COD980716955	05								
COD980716955	06	Off-site disposal							
COD980716955	06	Institutional Controls							
COD980716955	07	Institutional Controls							
COD980716955	08	Off-site disposal	Other sources						ROD, 1/28/1992, p. 9-14 (Gamma radiation)
COD980716955	08	Solidification	Other sources						ROD, 1/28/1992, p. 9-14 (Gamma radiation)
COD980716955	08	Institutional Controls	Other sources						ROD, 1/28/1992, p. 9-14 (Gamma radiation)
COD980716955	09	On-site disposal (excavation, capping, covering, reveg)							
COD980716955	09	Institutional Controls							
COD980716955	10	Off-site disposal							
COD980716955	11	Off-site disposal							
COD980716955	11	Institutional Controls							
COD081961518									
COD081961518	01	Water treatment-lime	Tailings (pond, pile)	136.0		165,800.0			ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	Surface water diversion	Tailings (pond, pile)	136.0		165,800.0			ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	On-site disposal (excavation, capping, covering, reveg)	Tailings (pond, pile)	136.0		165,800.0			ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	Alternative drinking water	Tailings (pond, pile)	136.0		165,800.0			ROD, 3/29/1993, p. 3, 13-14
COD081961518	01	Institutional Controls	Tailings (pond, pile)	136.0		165,800.0			ROD, 3/29/1993, p. 3, 13-14
COD081961518	02	Institutional Controls							
COD081961518	03								
COD081961518	04								
MTD006230346									
MTD006230346	01	Water treatment-other							
MTD006230346	01	Other – Treatment Technology							
MTD006230346	01	Other – Treatment Technology							
MTD006230346	02	Off-site disposal							
MTD006230346	02	Off-site disposal							
MTD006230346	02	Institutional Controls							
UT0002240158									
UT0002240158	00	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD, 9/30/2002, p. 19
UT0002240158	00	Institutional Controls	Contaminated soils						ROD, 9/30/2002, p. 19
UT0002240158	01								
UT0002240158	02								
UT0002240158	03								
UT0002240158	04								
MT0012694970									
MT0012694970	01								

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
MT0012694970	02								
MT0012694970	03								
CO0001093392									
CO0001093392	00								
SDD987673985									
SDD987673985	01	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden	75.0	12,000,000.0		12,000,000.0		ROD, 9/29/2008, Sect. 1 Note: sludge volumes not included in ROD
SDD987673985	01	Institutional Controls	Acid Mine/Rock Drainage				106,000,000.0		ROD, 9/29/2008, Sect. 1
SDD987673985	01	Other – Engineering/Containment	Acid Mine/Rock Drainage				106,000,000.0		ROD, 9/29/2008, Sect. 1
SDD987673985	01	Water treatment-lime	Heap leach piles/leaching waste	37.0	2,200,000.0				ROD, 9/29/2008, Sect. 1
SDD987673985	01	Monitoring (all media and as separate remedy)	Heap leach piles/leaching waste	37.0	2,200,000.0				ROD, 9/29/2008, Sect. 1
SDD987673985	02	Water treatment-lime	Open Pits/ Pit Lakes	73.6					ROD, 4/23/2001, 2-6,7
SDD987673985	02	Impoundment	Open Pits/ Pit Lakes	73.6					ROD, 4/23/2001, 2-6,7
UTD093120921									
UTD093120921	01	Institutional Controls	Other Process Area Wastes						ROD, 9/27/2007, p. 28
UTD093120921	01	Monitoring (all media and as separate remedy)	Other Process Area Wastes						ROD, 9/27/2007, p. 28
UT0002391472									
UT0002391472	01	Institutional Controls							
UT0002391472	01	Off-site disposal							
UT0002391472	02								
UT0002391472	03								
UT0002391472	04								
UT0002391472	05								
UTD070926811									
UTD070926811	01								
UTD070926811	02								
UTD070926811	03								
UTD070926811	04								
UTD070926811	05								
UTD070926811	06								
UTD070926811	07								
UTD070926811	08	On-site disposal (excavation, capping, covering, reveg)	Impoundments	66.4					ROD, 9/26/2002, p. 131
UTD070926811	09	No action	Other sources						Contaminated mud brought into town by flood waters in the 1930s, ROD, 9/26/2002, p. 71
UTD070926811	10								
UTD070926811	11								
UTD070926811	12								

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
UTD070926811	13	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes						ROD, 9/26/2002, p. 77
UTD070926811	13	Surface water diversion	Other Process Area Wastes						ROD, 9/26/2002, p. 77
UTD070926811	13	Deconstruction/ decontamination of buildings	Other Process Area Wastes						ROD, 9/26/2002, p. 77
UTD070926811	13	Off-site disposal	Other Process Area Wastes						ROD, 9/26/2002, p. 77
UTD070926811	14	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD, 9/26/2002, p. 115-122
UTD070926811	14	Deconstruction/ decontamination of buildings	Contaminated soils						ROD, 9/26/2002, p. 115-122
UTD070926811	15	On-site disposal (excavation, capping, covering, reveg)	Smelter emissions						ROD, 9/26/2002, p. 42-51, 57-60
UTD070926811	16								
UTD070926811	17								
UTD070926811	18	On-site disposal (excavation, capping, covering, reveg)	Acid Mine/Rock Drainage					35-500	ROD, 9/26/2002, p. 205, 210
UTD070926811	19	On-site disposal (excavation, capping, covering, reveg)							
UTD070926811	19	Other – Engineering/Containment							
UTD070926811	20	On-site disposal (excavation, capping, covering, reveg)	Acid Mine/Rock Drainage					35-500	ROD, 9/26/2002, p. 205, 210
UTD070926811	21								
UTD070926811	22	On-site disposal (excavation, capping, covering, reveg)	Contaminated sediments		825,040.0				ROD, 9/26/2002, p. 149-150, 159
UTD070926811	22	Surface water diversion	Contaminated sediments		825,040.0				ROD, 9/26/2002, p. 149-150, 159
UTD070926811	23	Water treatment - Bioreactors (e.g., SRBs)	Slag						ROD, 9/26/2002, p. 168
UTD000826404									
UTD000826404	01	On-site disposal (excavation, capping, covering, reveg)							
UTD000826404	01	Institutional Controls							
UTD000826404	02	Water treatment-lime	leachate (from failed cap/cover or similar system)					2,000.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Water treatment-other	leachate (from failed cap/cover or similar system)					2,000.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Monitored natural attenuation/recovery	leachate (from failed cap/cover or similar system)					2,000.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage;

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
									additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Water treatment-other	leachate (from failed cap/cover or similar system)					2,000.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Alternative drinking water	leachate (from failed cap/cover or similar system)					2,000.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	02	Institutional Controls	leachate (from failed cap/cover or similar system)					2,000.0	Source 1 is OU4, the Large Bingham Reservoir; Source 2 is OU16, the Bingham Creek underflow ; Source 3 is a lime treatment basin leakage; additional sources exist - ROD 12/13/00, pp. 22-23
UTD000826404	03	Institutional Controls	Acid Mine/Rock Drainage						ROD - 9/28/2001: pages 33, 37
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						FYR - 9/30/2009, page 7
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)							
UTD000826404	04	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 11/3/1998, p. 28
UTD000826404	04	Other – Engineering/Containment	Contaminated soils						ROD 11/3/1998, p. 28
UTD000826404	05	On-site disposal (excavation, capping, covering, reveg)							ROD 11/3/1998, p. 29
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)							ROD - 9/28/2001: page 17
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)							ROD - 9/28/2001: page 17
UTD000826404	06	Surface water diversion							ROD - 9/28/2001: page 17
UTD000826404	06	Water treatment - Created Wetlands							ROD - 9/28/2001: page 17
UTD000826404	06	Soil Amendments							ROD - 9/28/2001: page 17
UTD000826404	06	Sediment dredging/ disposal							ROD - 9/28/2001: page 17
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)							ROD - 9/28/2001: page 30
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)							ROD - 9/28/2001: page 30
UTD000826404	08								
UTD000826404	09								
UTD000826404	10	Institutional Controls							
UTD000826404	11	Institutional Controls							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
UTD000826404	12								
UTD000826404	13								
UTD000826404	14								
UTD000826404	15								
UTD000826404	16								
UTD000826404	17	Institutional Controls							
UTD000826404	18								
UTD000826404	19								
UTD000826404	20								
UTD000826404	21								
UTD000826404	22								
UTD000826404	23								
UTD000826404	24								
UTD000826404	24	Deconstruction/ decontamination of buildings							
UTD000826404	24	On-site disposal (excavation, capping, covering, reveg)							
MT0009083840									
MT0009083840	01	On-site disposal (excavation, capping, covering, reveg)							
MT0009083840	01	Off-site disposal							
MT0009083840	01	Institutional Controls							
MT0009083840	02	On-site disposal (excavation, capping, covering, reveg)							
MT0009083840	02	Off-site disposal							
MT0009083840	02	Institutional Controls							
MT0009083840	03								
MT0009083840	04								
MT0009083840	05								
MT0009083840	06								
MT0009083840	07								
MT0009083840	08								
COD042167858									
COD042167858	01	Impoundment							
COD042167858	01	Permeable Reactive Barrier							
COD042167858	02	Monitoring (all media and as separate remedy)							ROD, 1/3/2002, p. 7-2
UTD081834277									
UTD081834277	01	On-site disposal (excavation, capping, covering, reveg)	Slag						ROD, 4/1995, p. 11
UTD081834277	01	Monitoring (all media and as separate remedy)							
UTD081834277	01	Institutional Controls							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
UTD081834277	02	Off-site disposal	Tailings (pond, pile)						ROD, 12/2008, p. 6
UTD081834277	02	Other – Engineering/Containment							
UTD081834277	02	Institutional Controls							
UTD081834277	02	Other – Engineering/Containment							
UTD081834277	02	Monitoring (all media and as separate remedy)							
MTD980717565									
MTD980717565	01	Alternative drinking water							
MTD980717565	02	Sediment dredging/ disposal							
MTD980717565	02	On-site disposal (excavation, capping, covering, reveg)							
MTD980717565	03								
UT3890090035									
UT3890090035	01	On-site disposal (excavation, capping, covering, reveg)							
UT3890090035	02	On-site disposal (excavation, capping, covering, reveg)							
UT3890090035	02	Institutional Controls							
UT3890090035	03	Monitoring (all media and as separate remedy)							
UT3890090035	03	Permeable Reactive Barrier							
UT3890090035	03	Institutional Controls							
UTD980667208									
UTD980667208	01	Off-site disposal							
UTD980667208	01	On-site disposal (excavation, capping, covering, reveg)							
UTD980667208	01	Deconstruction/ decontamination of buildings							
UTD980667208	02								
UTD980667208	03	Monitored natural attenuation/recovery							
UTD980667208	03	Institutional Controls							
UTD980667208	03	Permeable Reactive Barrier							
UTD980667208	04								
UTD980667208	05								
UTD980667208	06								
UTD980667208	07								
UTD980667208	08								
MTD021997689									
MTD021997689	01	Monitored natural attenuation/recovery							
MTD021997689	01	Soil Amendments							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
MTD021997689	01	Off-site disposal							
MTD021997689	01	Institutional Controls							
CON000802630									
CON000802630	01								
CON000802630	02								
UTD980952840									
UTD980952840	01	Impoundment							
UTD980952840	01	Other – Engineering/Containment							
UTD980952840	01	Institutional Controls							
UTD980952840	02								
UTD980951388									
UTD980951388	01	On-site disposal (excavation, capping, covering, reveg)							
UTD980951388	01	Soil Amendments							
UTD980951388	01	Sediment dredging/ disposal							
UTD980951388	01	Institutional Controls							
UTD980951388	01	Monitoring (all media and as separate remedy)							
UTD980951388	02	On-site disposal (excavation, capping, covering, reveg)							
UTD980951388	02	Institutional Controls							
MTD980502777									
MTD980502777	01	On-site disposal (excavation, capping, covering, reveg)							
MTD980502777	01	Soil Amendments							
MTD980502777	01	Sediment dredging/ disposal							
MTD980502777	01	Institutional Controls							
MTD980502777	02								
MTD980502777	03	Water treatment-lime							
MTD980502777	03	Institutional Controls							
MTD980502777	04	Water treatment-lime							
MTD980502777	04	On-site disposal (excavation, capping, covering, reveg)							
MTD980502777	04	Other – Engineering/Containment							
MTD980502777	04	Surface water diversion							
MTD980502777	04	Institutional Controls	Contaminated sediments						1990 ROD p19, 76
MTD980502777	05								
MTD980502777	06								
MTD980502777	07	On-site disposal (excavation, capping, covering, reveg)							
MTD980502777	07	Water treatment-other							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
MTD980502777	07	Solidification							
MTD980502777	07	Off-site disposal							
MTD980502777	07	Alternative drinking water							
MTD980502777	07	Monitored natural attenuation/recovery							
MTD980502777	07	Institutional Controls							
MTD980502777	08								
MTD980502777	09								
MTD980502777	10								
MTD980502777	11								
MTD980502777	12	On-site disposal (excavation, capping, covering, reveg)							
MTD980502777	12	Surface water diversion							
MTD980502777	12	Other – Engineering/Containment							
MTD980502777	12	Water treatment-lime	Contaminated sediments						1992 ROD p7
MTD980502777	12	Impoundment							
MTD980502777	12	Monitoring (all media and as separate remedy)	Acid Mine/Rock Drainage						1992 ROD p8
MTD980502777	12	Institutional Controls							
MTD980502777	13								
COD983769738									
COD983769738	01	On-site disposal (excavation, capping, covering, reveg)							
COD983769738	01	Institutional Controls							
COD983769738	01	Monitored natural attenuation/recovery							
COD983769738	02	Institutional Controls							
COD983769738	02	Monitored natural attenuation/recovery							
COD983769738	02	Off-site disposal							
COD983769738	03	Alternative drinking water							
COD980806277									
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)							
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)							
COD980806277	01	Monitoring (all media and as separate remedy)							
COD980806277	01	Alternative drinking water							
COD980806277	01	Institutional Controls							
COD980806277	02	Surface water diversion							
COD980806277	02	Other – Engineering/Containment							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
CO0002378230									
CO0002378230	00								
COD983778432									
COD983778432	00	Water treatment-other	Underground workings					340-720	1994 ROD, p 10-13
COD983778432	00	Other – Engineering/Containment	Underground workings					340-720	1994 ROD, p 10-13
COD983778432	01	Water treatment-other							
COD983778432	01	Other – Engineering/Containment							
COD983778432	01	Water treatment - Bioreactors (e.g., SRBs)							
COD983778432	01	Monitoring (all media and as separate remedy)							
COD983778432	02	On-site disposal (excavation, capping, covering, reveg)	Open Pits/ Pit Lakes						1994 ROD p 32
COD983778432	03								
COD983778432	04	Other – Engineering/Containment							
COD983778432	05	Impoundment							
COD983778432	05	Monitoring (all media and as separate remedy)	Impoundments				89,600,000.0		2001 ROD, p. 24
COD983778432	05	On-site disposal (excavation, capping, covering, reveg)	Underground workings				52,500,000.0	10-300	2001 ROD, p. 24-26
COD983778432	05	Surface water diversion	Underground workings				52,500,000.0	10-300	2001 ROD, p. 24-26
COD983778432	05	Water treatment-lime							
MTSFN7578012									
MTSFN7578012	01								
MTSFN7578012	02								
MTSFN7578012	03								
MTSFN7578012	04	On-site disposal (excavation, capping, covering, reveg)							
MTSFN7578012	04	Other – Engineering/Containment							
MTSFN7578012	04	Water treatment-other							
MTSFN7578012	04	Other – Engineering/Containment							
MTSFN7578012	04	Alternative drinking water							
MTSFN7578012	04	Institutional Controls							
MTSFN7578012	05								
MTSFN7578012	06								
MTSFN7578012	07								
MTSFN7578012	08								
COD007063274									
COD007063274	01	On-site disposal (excavation, capping, covering, reveg)	Other Process Area Wastes		1,100,000.0				2010 FYR, pp. 22-27

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
COD007063274	01	Impoundment	Other Process Area Wastes		1,100,000.0				2010 FYR, pp. 22-27
UTN000802704									
UTN000802704	01								
CO0002259588									
CO0002259588	01	Off-site disposal							
CO0002259588	02								
CO0002259588	03								
SDD980717136									
SDD980717136	01	Institutional Controls	Contaminated soils	83.0					1990 ROD, p. 7,8
SDD980717136	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils	83.0					1990 ROD, p. 7,8
AZD008397127									
AZD008397127	01								
CAD980496863									
CAD980496863	01	Other – Engineering/Containment							
CAD980496863	01	Surface water diversion							
CAD980496863	01	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 2/14/1991, p.9
CAD980496863	01	Institutional Controls	Contaminated soils						ROD 2/14/1991, p.9
CAD980496863	02	On-site disposal (excavation, capping, covering, reveg)							
NVD980813646									
NVD980813646	01	Off-site disposal							
NVD980813646	01	Institutional Controls							
NVD980813646	02								
CAD980638860									
CAD980638860	01	Off-site disposal							
CAD980638860	02	Off-site disposal							
CAD980817217									
CAD980817217	01	On-site disposal (excavation, capping, covering, reveg)							
CAD980817217	01	Surface water diversion							
CAD980817217	01	Other – Engineering/Containment							
CAD980817217	01	Institutional Controls							
CAD980817217	02	On-site disposal (excavation, capping, covering, reveg)	Contaminated soils						ROD 7/19/1989, p.17 (All Source Material)
AZ0000309013									
AZ0000309013	01								
CAD980498612									
CAD980498612	01	On-site disposal (excavation, capping, covering, reveg)							

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
CAD980498612	01	Surface water diversion							
CAD980498612	01	Other – Engineering/Containment							
CAD980498612	02	Water treatment-lime							
CAD980498612	02	Water treatment-lime							
CAD980498612	03	Water treatment-lime							
CAD980498612	03	Water treatment-lime							
CAD980498612	04	Other – Engineering/Containment							
CAD980498612	04	Water treatment-lime							
CAD980498612	05	On-site disposal (excavation, capping, covering, reveg)							
CAD980498612	06								
CA1141190578									
CA1141190578	01								
CA1141190578	02								
CA1141190578	03								
CAD983618893									
CAD983618893	01	Institutional Controls	Waste rock or overburden						ROD 9/28/2004, p.101
CAD983618893	01	Other – Engineering/Containment	Waste rock or overburden						ROD 9/28/2004, p.101
CAD983618893	01	Deconstruction/ decontamination of buildings							
CAD983618893	01	On-site disposal (excavation, capping, covering, reveg)	Waste rock or overburden						ROD 9/28/2004, p.101
CAD983618893	01	Water treatment-other							
CAD983618893	02	Alternative drinking water							
CAD983618893	02	Institutional Controls							
CAD983618893	03								
CAD983618893	04								
CAD980673685									
CAD980673685	01								
CAD980893275									
CAD980893275	01								
CAD980893275	02								
CAD980893275	03								
WAD009045279									
WAD009045279	01								
OR0000515759									
OR0000515759	01								
IDD980725832									
IDD980725832	01	Water treatment-lime	Waste rock or overburden			4,800,000.0			ROD 2003, p. 2-4, 2-5

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
IDD980725832	01	On-site disposal (excavation, capping, covering, reveg)							
IDD980725832	01	Monitored natural attenuation/recovery	Acid Mine/Rock Drainage						ROD 2003, 2-4, 2-5
IDD980725832	01	Institutional Controls	Acid Mine/Rock Drainage						ROD 2003, 2-4, 2-5
IDD048340921									
IDD048340921	01	Off-site disposal							
IDD048340921	01	Institutional Controls							
IDD048340921	02	On-site disposal (excavation, capping, covering, reveg)							
IDD048340921	02	Water treatment - Created Wetlands							
IDD048340921	02	Surface water diversion							
IDD048340921	02	Alternative drinking water							
IDD048340921	02	Institutional Controls							
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)							
IDD048340921	03	Alternative drinking water							
IDD048340921	03	Institutional Controls							
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)							
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)							
WAD980726368									
WAD980726368	01	Air Stripping							
WAD980726368	01	Off-site disposal							
WAD980726368	01	Other – Treatment Technology							
WAD980726368	01	Soil Vapor Extraction							
WAD980726368	01	Thermal Treatment							
WAD980726368	01	Water treatment - Bioreactors (e.g., SRBs)							
WAD980726368	01	Institutional Controls							
WAD980726368	01	Off-site disposal							
WAD980726368	01	Sediment dredging/ disposal							
WAD980726368	02								
WAD980726368	03								
WAD980726368	04								
WAD980726368	05								
WAD980726368	06								
WAD980726368	07								
WAD980726368	08								
WAD980726368	09								
WAD980726368	10								

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
WAD980726368	11								
WAD980726368	12								
WAD980726368	13								
WAD980726368	14								
WAD980726368	16								
WAD980726368	17								
WAD980726368	18								
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)							
WAD980726368	19	Institutional Controls							
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)							
WAD980726368	19	Sediment dredging/ disposal							
WAD980726368	20	On-site disposal (excavation, capping, covering, reveg)							
WAD980726368	20	Off-site disposal							
WAD980726368	20	Institutional Controls							
WAD980726368	21	Deconstruction/ decontamination of buildings							
WAD980726368	21	On-site disposal (excavation, capping, covering, reveg)							
WAD980726368	21	Surface water diversion	Slag						1990 ROD p15
WAD980726368	22	Off-site disposal							
WAD980726368	22	Off-site disposal							
WAD980726368	23	On-site disposal (excavation, capping, covering, reveg)							
WAD980726368	23	Institutional Controls							
WAD980726368	24								
WAD980726368	25								
WAD980726368	26								
IDD984666610									
IDD984666610	01	Other – Engineering/Containment							
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)							
IDD984666610	01	Institutional Controls							
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)							
IDD984666610	03								
IDD984666610	04								
ORN001002616									
ORN001002616	01								
OR7122307658									
OR7122307658	01								

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
OR7122307658	02	On-site disposal (excavation, capping, covering, reveg)							
OR7122307658	02	Water treatment-lime							
OR7122307658	02	Institutional Controls							
WAD000065508									
WAD000065508	01	On-site disposal (excavation, capping, covering, reveg)							
WAD000065508	01	Water treatment-other							
WAD000065508	01	Institutional Controls							
ORD052221025									
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)							
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)							
ORD052221025	01	Water treatment-other							
ORD052221025	01	Institutional Controls							
ORD052221025	02								
WAD980978753									
WAD980978753	01	On-site disposal (excavation, capping, covering, reveg)							
WAD980978753	01	Water treatment-other							
WAD980978753	01	Off-site disposal							
WAD980978753	01	Surface water diversion							
WAD980978753	01	Institutional Controls							
IDD081830994									
IDD081830994	01	Monitored natural attenuation/recovery							
IDD081830994	01	Institutional Controls							
IDD081830994	01	Institutional Controls							
IDD081830994	01	On-site disposal (excavation, capping, covering, reveg)							
ORD009412677									
ORD009412677	01	Off-site disposal							
ORD009412677	01	Off-site disposal							
ORD009412677	01	On-site disposal (excavation, capping, covering, reveg)							
ORD009412677	01	Water treatment-other							
ORD009412677	01	Institutional Controls							
ORD009412677	02	Institutional Controls							
ORD009412677	02	Other – Engineering/Containment							
ORD009412677	02	On-site disposal (excavation, capping, covering, reveg)							
AK0001897602									

EPA ID	OU	Selected Remedy (Q7)	Source 3 (Q3-3)	Source 3 Area (Acres) (Q3-3a)	Source 3 Volume (Cubic Yds) (Q3-3b)	Source 3 Volume (Tons) (Q3-3c)	Source 3 Volume (Gallons) (Q3-3d)	Source 3 Volume (GPM) (Q3-3e)	Source 3 Ref (Q3) (Q3-3f)
AK0001897602	01								
WAD980722789									
WAD980722789	01	On-site disposal (excavation, capping, covering, reveg)	Heap leach piles/leaching waste						ROD 3/27/1990, p.14
WAD980722789	01	Institutional Controls	Heap leach piles/leaching waste						ROD 3/27/1990, p.14
IDD980665459									
IDD980665459	01								
ORD050955848									
ORD050955848	01	Water treatment-other							
ORD050955848	01	On-site disposal (excavation, capping, covering, reveg)							
ORD050955848	01	Institutional Controls							
ORD050955848	02	Off-site disposal							
ORD050955848	03	Off-site disposal							
ORD050955848	03	Institutional Controls							
ORD050955848	04								

Table C-7 – Site and Operating Unit Detail at the 126 Site Universe (Part 7)

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
MED980524128				
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Comply with all Federal and State ARARs, including achieving closure standards under State mining regulations.; Stabilize the Tailings Impoundment berm to achieve acceptable stability criteria. Minimize acid rock drainage from mineralized waste rock and tailings that may act as a continuing source of copper, lead, and zinc to groundwater, surface water, and sediment.	
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Comply with all Federal and State ARARs, including achieving closure standards under State mining regulations.; Protect current residents by preventing direct contact and incidental ingestion of site soils and waste material in the current Residential Use Area of the Site containing lead that would result in greater than 5 percent of the exposed population with a blood lead level above 10 ug/dl, or the Maine Solid Waste Lead Remediation Regulations, whichever is lower, using the site-specific risk assessment assumptions for current and future residential use. Protect current residents by preventing direct contact and incidental ingestion of site soils and waste material in the current Residential Use Area of the Site containing arsenic above background levels that represent a non-cancer threat with a HQ greater than 1 and a cancer risk greater than lAxI0-5 using the site-specific risk assessment assumptions for current and future residential use. Minimize acid rock drainage from mineralized waste rock and tailings that may act as a continuing source of copper, lead, and zinc to groundwater, surface water, and sediment.	
MED980524128	01	Off-site disposal	Comply with all Federal and State ARARs, including achieving closure standards under State mining regulations.; Protect current and future recreational visitors by preventing direct contact and incidental ingestion of site soils and waste material containing PCBs that represent a non-cancer threat with a HQ greater than I and a cancer risk greater than Ix10-6 using the site-specific risk assessment assumptions for current and future recreational use.	
MED980524128	01	Sediment dredging/ disposal	Comply with all Federal and State ARARs, including achieving closure standards under State mining regulations.; Prevent exposure of biota to sediment, including the sediment/soil in the salt marsh, with concentrations of copper, lead, or zinc that may represent a threat to insectivorous and piscivorous birds, fish, and other aquatic organisms.	
MED980524128	01	Institutional Controls		
MED980524128	02			
MED980524128	03			
VTD988366621				
VTD988366621	01	On-site disposal (excavation, capping, covering, reveg)		
VTD988366621	01	Surface water diversion		
VTD988366621	01	Monitored natural attenuation/recovery		
VTD988366621	01	Institutional Controls		
VTD988366571				
VTD988366571	01			
VTD988366571	02			
VTD988366720				
VTD988366720	01			
NJD980785646				
NJD980785646	01	Off-site disposal	Reduce to the lowest levels practical, the existing public health threats posed by indoor radon and radon decay product concentrations, indoor and outdoor gamma radiation levels, and inhalation and/or ingestion of radium-contaminated materials.	1989 ROD p2
NJD980785646	01	Other – Engineering/Containment	Reduce to the lowest levels practical, the existing public health threats posed by indoor radon and radon decay product concentrations, indoor and outdoor gamma radiation levels, and inhalation and/or ingestion of radium-contaminated materials.	1989 ROD p2
NJD980785646	01	Institutional Controls	Reduce to the lowest levels practical, the existing public health threats posed by indoor radon and radon decay product concentrations, indoor and outdoor gamma radiation levels, and inhalation and/or ingestion of radium-contaminated materials.	1989 ROD p2
NJD980785646	02	No action		
NJD980785646	03	Off-site disposal		
NYD986882660				

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
NYD986882660	01	Off-site disposal	Remedial Action Objectives for soil are to prevent or minimize exposure to contaminants of concern through inhalation, direct contact or ingestion, and to prevent or minimize cross-media impacts from contaminants of concern in soil/sediments to underlying groundwater.	1999 ROD p6
NYD986882660	01	Institutional Controls		
NYD986882660	02	Off-site disposal	to prevent or minimize exposure to contaminants of concern through inhalation, direct contact or ingestion, and to prevent or minimize cross-media impacts from contaminants of concern in soil/sediments to underlying groundwater; to prevent or minimize ingestion, dermal contact and inhalation of metals contaminated groundwater on lower Parcel C and on Parcel A that is above State and Federal MCLs, as well as to restore groundwater quality to levels which meet State and Federal standards	1999 ROD p6
NYD986882660	02	Institutional Controls		
NYD986882660	03			
NYD986882660	04	Sediment dredging/ disposal	Remedial Action Objectives for Creek remediation are to reduce or eliminate any direct contact, ingestion, or external radiation threat to public health and the environment associated with radioactive slag in the Creek project area and to reduce or eliminate any direct contact, ingestion, inhalation or external radiation threat to public health and the environment associated with radioactive slag in dewatered sediments placed in upland disposal areas	2005 ROD p3
NJD980529762				
NJD980529762	01			
NJD980529762	02	Off-site disposal	1)To eliminate or minimize the potential for humans to ingest, come into dermal contact with, or inhale particulates of radioactive constituents, or to be exposed to external gamma radiation; 2)To reduce radium and thorium concentrations in soil including the NRC licensed burial pits to levels in accordance with EPA/DOE dispute resolution cleanup criteria. An average of 15 pCi/g combined Ra-226 and Th-232 above background for the subsurface soils with an ALARA goal of 5 pCi/g; institutional controls to prohibit future residential use will be used. For unrestricted use, the cleanup criterion is an average of 5 pCi/g combined Ra-226 and Th-232 above background for soil; 3)To reduce FMSS site concentrations of U-238 to 50 pCi/g (which is essentially 100 pCi/g total uranium) above background. These levels are considered protective for unrestricted use. 4)To comply with exposure dose limits of 15 millirem per year (mrem/yr) as specified in NJAC 7:28-12.8(a)l.*; 5)	ROD, 9/22/2003, p.88
NJD980529762	02	Institutional Controls	1)To eliminate or minimize the potential for humans to ingest, come into dermal contact with, or inhale particulates of radioactive constituents, or to be exposed to external gamma radiation; 2)To reduce radium and thorium concentrations in soil including the NRC licensed burial pits to levels in accordance with EPA/DOE dispute resolution cleanup criteria. An average of 15 pCi/g combined Ra-226 and Th-232 above background for the subsurface soils with an ALARA goal of 5 pCi/g; institutional controls to prohibit future residential use will be used. For unrestricted use, the cleanup criterion is an average of 5 pCi/g combined Ra-226 and Th-232 above background for soil; 3)To reduce FMSS site concentrations of U-238 to 50 pCi/g (which is essentially 100 pCi/g total uranium) above background. These levels are considered protective for unrestricted use. 4)To comply with exposure dose limits of 15 millirem per year (mrem/yr) as specified in NJAC 7:28-12.8(a)l.*; 5)	ROD, 9/22/2003, p.88
NJD980529762	02	Deconstruction/ decontamination of buildings	1)To eliminate or minimize the potential for humans to ingest, come into dermal contact with, or inhale particulates of radioactive constituents, or to be exposed to external gamma radiation; 2)To reduce radium and thorium concentrations in soil including the NRC licensed burial pits to levels in accordance with EPA/DOE dispute resolution cleanup criteria. An average of 15 pCi/g combined Ra-226 and Th-232 above background for the subsurface soils with an ALARA goal of 5 pCi/g; institutional controls to prohibit future residential use will be used. For unrestricted use, the cleanup criterion is an average of 5 pCi/g combined Ra-226 and Th-232 above background for soil; 3)To reduce FMSS site concentrations of U-238 to 50 pCi/g (which is essentially 100 pCi/g total uranium) above background. These levels are considered protective for unrestricted use. 4)To comply with exposure dose limits of 15 millirem per year (mrem/yr) as specified in NJAC 7:28-12.8(a)l.*; 5)	ROD, 9/22/2003, p.88
NJD980529762	03			
NJD980785653				
NJD980785653	01	Off-site disposal	Reduce to the lowest levels practical, the existing public health threats posed by indoor radon and radon decay product concentrations, indoor and outdoor gamma radiation levels, and inhalation and/or ingestion of radium-contaminated materials.	1989 ROD p2
NJD980785653	02	No action		
NJD980785653	03	Off-site disposal		
NJD002365930				
NJD002365930	01	Air Stripping	Prevent exposure, due to ground water ingestion, to ground water contaminants attributable to the SMC facility which have been detected at levels exceeding applicable or relevant and appropriate requirements (ARARs); Prevent migration of ground water contamination; and Remediate the ground water contamination attributable to the SMC facility to achieve ARARs.	1996 ROD p14
NJD002365930	01	Water treatment-other	Prevent exposure, due to ground water ingestion, to ground water contaminants attributable to the SMC facility which have been detected at levels exceeding applicable or relevant and appropriate requirements (ARARs); Prevent migration of ground water contamination; and Remediate the ground water contamination attributable to the SMC facility to achieve ARARs.	1996 ROD p14
NJD002365930	02			

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
NJD002365930	03			
NJD980654172				
NJD980654172	01	Off-site disposal	(1) Prevent exposure to gamma radiation in excess of 20 uR/hr above background; (2) Prevent exposure to indoor concentrations of radon gas levels in excess of 4 pCi/l and radon decay products in excess of 0.02 WL; (3) Prevent ingestion of and general contact with radium contaminated material (e.g., soil) with concentrations in excess of 5 pCi/g; and (4) Prevent migration of material contaminated with radium in excess of 5 pCi/g that could result in the exposures described above.	1993 ROD p10
NJD980654172	02	Off-site disposal	(1) Reduce exposure to radon gas levels in excess of 4 pci/l and radon decay products in excess of 0.02 WL. (2) Reduce exposure to gamma radiation emitted from radium-contaminated material resulting from site sources with radium concentrations in excess of 5 pCi/g; employing As Low As Reasonably Achievable (ALARA) principles.(3) Prevent ingestion of and general contact with radium-contaminated material resulting from site sources with radium concentrations in excess of 5 pCi/g, employing ALARA principles.	1995 ROD p14
NJD980654172	03	No action		
NJ1891837980				
NJ1891837980	01	Off-site disposal	(1) To eliminate or minimize the potential for humans to ingest, come into contact with, or inhale particulates of radioactive constituents, or to be exposed to external gamma radiation to achieve the level of protection required by the NCP and meet the requirements of 10 CFR 20, subpart E; (2) To reduce chemical COC levels in impacted media to levels that would be protective based on site-specific risk and groundwater impact evaluations; (3) to return impacted groundwater to conditions consistent with groundwater ARARs; (4) to protect the integrity of the clay layer in order to ensure protection of the lower groundwater aquifer; (5) To reduce potential exposure to radium and thorium in soil to levels that would be protective for the intended land use as established by site-specific risk analyses. (6) to reduce exposure to uranium to levels that would be protective for the intended land use; (7) to eliminate or minimize toxicity, mobility, and/or volume of impacted soils; (8) to eliminate or minimize the potential migration of contaminants into stream and storm drain sediments by surface water runoff, or by infiltration or percolation that would resulted in contamination of the groundwater; (9) to comply with chemical- and action-specific ARARs; (10) to prevent exposures from radioactivity in buildings and structures greater than the guideline limits; (11) to access and address the contaminated soils beneath the building; (12) to eliminate or minimize potential exposure to external gamma radiation; (13) to eliminate or minimize toxicity or mobility, and/or volume of contaminants; (14) to comply with chemical- and action-specific ARARs	2000 ROD p29
NJ1891837980	01	Water treatment-other	(2) To reduce chemical COC levels in impacted media to levels that would be protective based on site-specific risk and groundwater impact evaluations; (3) to return impacted groundwater to conditions consistent with groundwater ARARs; (4) to protect the integrity of the clay layer in order to ensure protection of the lower groundwater aquifer; (8) to eliminate or minimize the potential migration of contaminants into stream and storm drain sediments by surface water runoff, or by infiltration or percolation that would resulted in contamination of the groundwater; (9) to comply with chemical- and action-specific ARARs;	2000 ROD p29
NJ1891837980	01	Institutional Controls		
PAD987341716				
PAD987341716	01	Off-site disposal	1) All soils in residential and potentially residential settings having site-related Ra226 contaminant concentrations in excess of 5.0 picocuries/gram (pCi/g) (in individual soil samples, including background activity concentration) were removed; 2) For properties that EPA determined were unlikely to become residential (i.e. the lot at the 133 Austin Ave location is too narrow to allow rebuilding under current Lansdowne Borough ordinances.) streets, parks, railroad right-of-way, etc. had soils removed to the 5 pCi/g level if those soils had Ra226 contamination exceeding 5pCi/g above background in the top 15 cm (centimeters) and/or 15 pCi/g above background in soils below 15 cm averaged over 100 square meters.	FYR, 12/21/2000, p.10
PAD987341716	01	Resident relocation	1) All soils in residential and potentially residential settings having site-related Ra226 contaminant concentrations in excess of 5.0 picocuries/gram (pCi/g) (in individual soil samples, including background activity concentration) were removed; 2) For properties that EPA determined were unlikely to become residential (i.e. the lot at the 133 Austin Ave location is too narrow to allow rebuilding under current Lansdowne Borough ordinances.) streets, parks, railroad right-of-way, etc. had soils removed to the 5 pCi/g level if those soils had Ra226 contamination exceeding 5pCi/g above background in the top 15 cm (centimeters) and/or 15 pCi/g above background in soils below 15 cm averaged over 100 square meters.	FYR, 12/21/2000, p.10
PAD987341716	01	Institutional Controls	Institutional controls to restrict the future construction of residential dwellings and/or the depth of building footings and foundations will be implemented if EPA is unable to reduce contamination to the 5 pCi/g level at these non-residential properties.	FYR, 12/21/2000, p.10
PAD987341716	02	No action		
PAD077087989				
PAD077087989	01	Off-site disposal	The remedial action objectives for this Site are as follows:1) Reduce or eliminate risk posed by direct human contact with the waste materials in the Quarries and contaminated soils present at the Site; 3) Reduce or eliminate the potential for direct human or ecological exposure to radiologically contaminated soils; 4) Minimize the potential human and ecological exposure to unacceptably contaminated groundwater; 5)	ROD, 3/31/2006, p. 27

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			Reduce the contamination leaching into the groundwater to allow the groundwater in the Downgradient Contaminant Plume to be returned to beneficial use; and 6) Comply with applicable or relevant and appropriate regulations.	
PAD077087989	01	On-site disposal (excavation, capping, covering, reveg)	The remedial action objectives for this Site are as follows:1) Reduce or eliminate risk posed by direct human contact with the waste materials in the Quarries and contaminated soils present at the Site; 3) Reduce or eliminate the potential for direct human or ecological exposure to radiologically contaminated soils; 4) Minimize the potential human and ecological exposure to unacceptably contaminated groundwater; 5) Reduce the contamination leaching into the groundwater to allow the groundwater in the Downgradient Contaminant Plume to be returned to beneficial use; and 6) Comply with applicable or relevant and appropriate regulations.	ROD, 3/31/2006, p. 27
PAD077087989	01	Other – Treatment Technology	The remedial action objectives for this Site are as follows:1) Reduce or eliminate risk posed by direct human contact with the waste materials in the Quarries and contaminated soils present at the Site; 3) Reduce or eliminate the potential for direct human or ecological exposure to radiologically contaminated soils; 4) Minimize the potential human and ecological exposure to unacceptably contaminated groundwater; 5) Reduce the contamination leaching into the groundwater to allow the groundwater in the Downgradient Contaminant Plume to be returned to beneficial use; and 6) Comply with applicable or relevant and appropriate regulations.	ROD, 3/31/2006, p. 27
PAD077087989	01	Institutional Controls	The remedial action objectives for this Site are as follows:1) Reduce or eliminate risk posed by direct human contact with the waste materials in the Quarries and contaminated soils present at the Site; 3) Reduce or eliminate the potential for direct human or ecological exposure to radiologically contaminated soils; 4) Minimize the potential human and ecological exposure to unacceptably contaminated groundwater; 5) Reduce the contamination leaching into the groundwater to allow the groundwater in the Downgradient Contaminant Plume to be returned to beneficial use; and 6) Comply with applicable or relevant and appropriate regulations.	ROD, 3/31/2006, p. 27
PASFN0305549				
PASFN0305549	01			
PASFN0305549	02			
PAD980829493				
PAD980829493	01	Off-site disposal	Reduce the risk from contaminated materials to workers on Site and nearby residences and the environment.	FYR, 4/28/2006, p. 17
PAD980829493	01	On-site disposal (excavation, capping, covering, reveg)	Reduce the risk from contaminated materials to workers on Site and nearby residences and the environment.	FYR, 4/28/2006, p. 17
PAD980829493	01	Institutional Controls	Reduce the risk from contaminated materials to workers on Site and nearby residences and the environment.	FYR, 4/28/2006, p. 17
PAD002395887				
PAD002395887	01	Soil Amendments	(1) MINIMIZE DIRECT CONTACT WITH CONTAMINATED SOIL, (2) REDUCE VOLUME OF RUNOFF, (3) REDUCE CONTAMINATION IN RUNOFF, AND (4) MITIGATE ENVIRONMENTAL DAMAGE.	ROD, 9/4/1987, p. 3
PAD002395887	02	Water treatment-lime	THE MAJOR OBJECTIVES OF REMEDIAL ACTIONS TO BE TAKEN AT THE PALMERTON ZINC SUPERFUND SITE INCLUDE (1) MINIMIZE DIRECT CONTACT WITH THE CINDER BANK (2) REDUCE VOLUME OF RUN-OFF, (3) REDUCE CONTAMINATION IN RUN-OFF, (4) REDUCE THE VOLUME OF RUN-ON, (5) COLLECT AND TREAT LEACHATE, (6) REDUCE WIND-BORNE CONTAMINATED EMISSIONS AND (7) REDUCE PARTICULATE EROSION.	ROD, 6/29/1988, p. 9
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	THE MAJOR OBJECTIVES OF REMEDIAL ACTIONS TO BE TAKEN AT THE PALMERTON ZINC SUPERFUND SITE INCLUDE (1) MINIMIZE DIRECT CONTACT WITH THE CINDER BANK (2) REDUCE VOLUME OF RUN-OFF, (3) REDUCE CONTAMINATION IN RUN-OFF, (4) REDUCE THE VOLUME OF RUN-ON, (5) COLLECT AND TREAT LEACHATE, (6) REDUCE WIND-BORNE CONTAMINATED EMISSIONS AND (7) REDUCE PARTICULATE EROSION.	ROD, 6/29/1988, p. 9
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	THE MAJOR OBJECTIVES OF REMEDIAL ACTIONS TO BE TAKEN AT THE PALMERTON ZINC SUPERFUND SITE INCLUDE (1) MINIMIZE DIRECT CONTACT WITH THE CINDER BANK (2) REDUCE VOLUME OF RUN-OFF, (3) REDUCE CONTAMINATION IN RUN-OFF, (4) REDUCE THE VOLUME OF RUN-ON, (5) COLLECT AND TREAT LEACHATE, (6) REDUCE WIND-BORNE CONTAMINATED EMISSIONS AND (7) REDUCE PARTICULATE EROSION.	ROD, 6/29/1988, p. 9
PAD002395887	03	On-site disposal (excavation, capping, covering, reveg)	1) Prevent ingestion of contaminated residential soil and/ or indoor dust by reducing contaminant concentrations in these media and/ or creating a vegetative barrier to the soils to reduce exposure and therefore reduce risk at each residence to acceptable levels; 2) in addition, preference will be given toward utilizing permanent remedial alternatives which will provide the greatest long term protectiveness, whenever practicable, thereby avoiding institutional controls to the extent practicable.	ROD, 10/29/2001, p. 11-12

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
PAD002395887	03	Off-site disposal	1) Prevent ingestion of contaminated residential soil and/ or indoor dust by reducing contaminant concentrations in these media and/ or creating a vegetative barrier to the soils to reduce exposure and therefore reduce risk at each residence to acceptable levels; 2) in addition, preference will be given toward utilizing permanent remedial alternatives which will provide the greatest long term protectiveness, whenever practicable, thereby avoiding institutional controls to the extent practicable.	ROD, 10/29/2001, p. 11-12
PAD002395887	03	Institutional Controls	1) Prevent ingestion of contaminated residential soil and/ or indoor dust by reducing contaminant concentrations in these media and/ or creating a vegetative barrier to the soils to reduce exposure and therefore reduce risk at each residence to acceptable levels; 2) in addition, preference will be given toward utilizing permanent remedial alternatives which will provide the greatest long term protectiveness, whenever practicable, thereby avoiding institutional controls to the extent practicable.	ROD, 10/29/2001, p. 11-12
PAD002395887	04			
VAD980705404				
VAD980705404	01	Water treatment-lime	The purpose of this response action is to control risks posed by acidic discharge into groundwater and the Piney River. By eliminating most of the sources of acidic discharge into the river, the remedial action will prevent future fish kills and stop further leaching of metals and continued degradation of the Piney River.	ROD, 11/21/1989, p. 37
VAD980705404	01	Water treatment - Created Wetlands	The purpose of this response action is to control risks posed by acidic discharge into groundwater and the Piney River. By eliminating most of the sources of acidic discharge into the river, the remedial action will prevent future fish kills and stop further leaching of metals and continued degradation of the Piney River.	ROD, 11/21/1989, p. 37
VAD980705404	01	Surface water diversion	The purpose of this response action is to control risks posed by acidic discharge into groundwater and the Piney River. By eliminating most of the sources of acidic discharge into the river, the remedial action will prevent future fish kills and stop further leaching of metals and continued degradation of the Piney River.	ROD, 11/21/1989, p. 37
VAD980705404	01	On-site disposal (excavation, capping, covering, reveg)	Prevent the threat of direct contact with wastes and contaminated soils; minimize leaching of hazardous substances to the ground water.	FYR, 3/17/2000, p. 6
VAD980705404	01	Institutional Controls	Protect human health and the environment and to maintain the integrity of the selected remedy as described in the ROD, ESD Number 1 and ESD Number 2.	FYR, 3/17/2005, p. 17
SCN000407714				
SCN000407714	01			
SCD987577913				
SCD987577913	01	Water treatment-lime	The following interim action objectives are established for the Brewer site: 1) Meet and sustain in Little Fork Creek South Carolina water quality standards for protection of human health; 2) Meet and sustain in Little Fork Creek National Water Quality Criteria for human consumption of water and organisms.	ROD, 9/25/2005, p. 30
TND987768546				
TND987768546	01			
TN0001890839				
TN0001890839	01			
TN0001890839	02			
TN0001890839	03			
TN0001890839	04			
TN0001890839	05			
TN0001890839	06			
TN0001890839	07			
TN0001890839	08			
TN0001890839	09			
TN0001890839	10			
TN0001890839	11			
TN0001890839	12			
TN0001890839	13			
TN0001890839	14			

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
TN0001890839	15			
TN0001890839	16			
TN0001890839	17			
FLD001704741				
FLD001704741	01			
FLD001704741	02			
SCN000407376				
SCN000407376	01			
SCD003360476				
SCD003360476	01	Water treatment-other	1) Prevent future site worker exposure to unacceptable hazard levels in groundwater. 2) Remediate shallow groundwater zones exhibiting the highest concentrations of chromium (VI) and limit its migration to Shipyard Creek to minimize long-term threats. 3)Remediate soil that leaches chromium (VI) to groundwater and surface water at concentrations hazardous to human health and the environment.	ROD, 8/21/2002, p. 66-67
SCD003360476	01	Sediment dredging/ disposal	Mitigate the exposure of benthic organisms to contaminated sediments in the tidal creek.	ROD, 8/21/2002, p. 66-67
SCD003360476	01	Soil Amendments	Remediate soil that leaches chromium (VI) to groundwater and surface water at concentrations hazardous to human health and the environment.	ROD, 8/21/2002, p. 66-67
SCD003360476	01	Institutional Controls	1) Remediate soil that leaches chromium (VI) to groundwater and surface water at concentrations hazardous to human health and the environment. 2) Remediate soil and debris that produce elevated levels of gamma radiation to mitigate current exposure pathways.	ROD, 8/21/2002, p. 66-67
SCD003360476	01	Off-site disposal	Remediate soil and debris that produce elevated levels of gamma radiation to mitigate current exposure pathways.	ROD, 8/21/2002, p. 66-67
SCD003360476	01	Surface water diversion	Mitigate offsite chromium (VI) discharges in storm water to Shipyard Creek through a combination of the aforementioned remediation measures and a comprehensive site-wide storm water management plan. Mitigate the exposure of benthic organisms to contaminated sediments in the tidal creek	ROD, 8/21/2002, p. 66-67
KYD049062375				
KYD049062375	00	Institutional Controls	1) Minimize direct contact by Site workers and the public with soil containing excessive levels of total PCBs; 2) Minimize direct contact by Site workers and the public with soil containing excessive levels of PAH compounds; 3)Minimize transport of contaminated soil by erosion to water courses, including the Ohio River; 4) Minimize potential for leaching of total PCBs and PAHs to Site groundwater from areas of high concentrations; 5) Remediate groundwater contaminated with elevated levels of cyanide and fluoride; 6)Prevent deterioration of Old South Slurry Pond containment system.	ROD, 7/6/2000, p. 81-82
KYD049062375	00	On-site disposal (excavation, capping, covering, reveg)	1) Minimize direct contact by Site workers and the public with soil containing excessive levels of total PCBs; 2) Minimize direct contact by Site workers and the public with soil containing excessive levels of PAH compounds; 3)Minimize transport of contaminated soil by erosion to water courses, including the Ohio River; 4) Minimize potential for leaching of total PCBs and PAHs to Site groundwater from areas of high concentrations; 5) Remediate groundwater contaminated with elevated levels of cyanide and fluoride; 6)Prevent deterioration of Old South Slurry Pond containment system.	ROD, 7/6/2000, p. 81-82
KYD049062375	00	Off-site disposal	1) Minimize direct contact by Site workers and the public with soil containing excessive levels of total PCBs; 2) Minimize direct contact by Site workers and the public with soil containing excessive levels of PAH compounds; 3)Minimize transport of contaminated soil by erosion to water courses, including the Ohio River; 4) Minimize potential for leaching of total PCBs and PAHs to Site groundwater from areas of high concentrations; 5) Remediate groundwater contaminated with elevated levels of cyanide and fluoride; 6)Prevent deterioration of Old South Slurry Pond containment system.	ROD, 7/6/2000, p. 81-82
KYD049062375	01	Water treatment-other	1) Prevent the spread of contamination within the localized area; 2)Reduce the volume of contaminants in two on-site plumes containing cyanide and metals in the unconsolidated aquifer; 3)Supplement initial aquifer cleaning with pertinent information for the RI/FS; 4)Prevent further migration of contaminants via groundwater through the unconsolidated alluvial aquifer toward the Ohio River less than ¾ mile away; 5)Recover, treat, and discharge impacted groundwater until the aquifer is restored and groundwater contamination is below action levels established by KPDES; 6)Identify the aquifer's response to long-term pumping; 7)Reduce toxicity and mobility of hazardous contaminants; 8)Reduce concentrations of hazardous substances, pollutants and contaminants; and 9) Eliminate or minimize the threat imposed by these contaminants	FYR, 8/2/2001, p. 9

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
KYD049062375	02			
NCN000409895				
NCN000409895	01			
FLD010596013				
FLD010596013	01	On-site disposal (excavation, capping, covering, reveg)	The purpose of this proposed action is to prevent current or future exposure to contamination and to control the source of contamination.	ROD, 7/2/1998, p. 10
FLD010596013	01	Solidification	The purpose of this proposed action is to prevent current or future exposure to contamination and to control the source of contamination.	ROD, 7/2/1998, p. 10
FLD010596013	01	Institutional Controls	The purpose of this proposed action is to prevent current or future exposure to contamination and to control the source of contamination.	ROD, 7/2/1998, p. 10
FLD010596013	02			
ILN000508170				
ILN000508170	01			
ILN000508170	02			
ILD050231976				
ILD050231976	01			
ILD062340641				
ILD062340641	01	Sediment dredging/ disposal	1. Mitigate the potential for flood water and water discharges to the South Ditch to mobilize the unnatural sediment; 2. Mitigate the potential acute exposure risk to sensitive ecological and human receptors via contact with the unnatural sediment; 3. Mitigate the potential for the on-site trespasser; and 4. Be compatible with future site-wide remedies.	ROD, 10/3/2001. p. 10
ILD062340641	02			
ILD062340641	03			
ILD062340641	04			
ILD062340641	05			
ILD980606941				
ILD980606941	01	Deconstruction/ decontamination of buildings	Control fugitive dust sources, access, tracking, and erosion of contaminants and 2. Prevent or abate actual or potential exposure to nearby human populations or animals from hazardous substances located on and in the dilapidated buildings onsite.	ROD 6/16/2009, p.18
ILD980606941	01	Off-site disposal	Control fugitive dust sources, access, tracking, and erosion of contaminants and 2. Prevent or abate actual or potential exposure to nearby human populations or animals from hazardous substances located on and in the dilapidated buildings onsite.	ROD 6/16/2009, p.18
ILD980606941	01	On-site disposal (excavation, capping, covering, reveg)	Control fugitive dust sources, access, tracking, and erosion of contaminants and 2. Prevent or abate actual or potential exposure to nearby human populations or animals from hazardous substances located on and in the dilapidated buildings onsite.	ROD 6/16/2009, p.18
ILD980606941	02			
ILN000508134				
ILN000508134	01			
ILN000508134	02			
ILN000508134	03			
IL0000064782				
IL0000064782	01			
IL0000064782	02			
OHD004379970				

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
OHD004379970	01	Chemical Oxidation	1. Reduce the ingestion-related risk to future workers and restore the aquifer to its most beneficial use. 2. Meet action-specific ARARs for PCBs under TSCA and RCRA Subtitle C & D closure requirements; meet chemical-specific ARARs for drinking water throughout the plume; meet location-specific ARARs for 100-yr floodplain protection (details in ROD).	ROD 9/12/1994 pp. 23-26
OHD004379970	01	Other – Engineering/Containment	1. Installation of trenches to prevent contaminants from migrating from CMSD to backwater area. 2. Meet action-specific ARARs for PCBs under TSCA and RCRA Subtitle C & D closure requirements; meet chemical-specific ARARs for drinking water throughout the plume; meet location-specific ARARs for 100-yr floodplain protection (details in ROD).	ROD 9/12/1994 pp. 23-26
OHD004379970	01	Other – Engineering/Containment	1. Reduce risk of exposure to hazardous substances present in soil, seeps and sediments; reduce the rate of infiltration by which precipitation passes through the contaminated soil and maintain that reduction over time; the final cover will also reduce the rate of leachate generation in the CMSD and reduce migration of hazardous substances from the CMSD into the backwater area. 2. Meet action-specific ARARs for PCBs under TSCA and RCRA Subtitle C & D closure requirements; meet chemical-specific ARARs for drinking water throughout the plume; meet location-specific ARARs for 100-yr floodplain protection (details in ROD).	ROD 9/12/1994 pp. 23-26
OHD004379970	01	Soil flushing/washing	1. Soil flushing the FSPSA will increase the rate at which hazardous substances leach into the ground water and will, therefore, reduce the length of time needed to clean up the FSPSA as a source of contamination to ground water. 2. Meet action-specific ARARs for PCBs under TSCA and RCRA Subtitle C & D closure requirements; meet chemical-specific ARARs for drinking water throughout the plume; meet location-specific ARARs for 100-yr floodplain protection (details in ROD).	ROD 9/12/1994 pp. 23-26
OHD004379970	01	On-site disposal (excavation, capping, covering, reveg)	1. Remove the threat of continued migration of hazardous substances from these areas (CRDA and seeps) into the backwater area. 2. Meet action-specific ARARs for PCBs under TSCA and RCRA Subtitle C & D closure requirements; meet chemical-specific ARARs for drinking water throughout the plume; meet location-specific ARARs for 100-yr floodplain protection (details in ROD).	ROD 9/12/1994 pp. 23-26
OHD004379970	01	Sediment dredging/ disposal	1. Remove the direct contact threat (of PCBs) to humans and the ecological risk to fish and other organisms in the backwater area. 2. Meet action-specific ARARs for PCBs under TSCA and RCRA Subtitle C & D closure requirements; meet chemical-specific ARARs for drinking water throughout the plume; meet location-specific ARARs for 100-yr floodplain protection (details in ROD).	ROD 9/12/1994 pp. 23-26
OHD004379970	01	Institutional Controls	1. ICs to restrict uses of the Site to prevent exposure to hazardous substances and contaminants in the soils and ground water at the Site. 2. Meet action-specific ARARs for PCBs under TSCA and RCRA Subtitle C & D closure requirements; meet chemical-specific ARARs for drinking water throughout the plume; meet location-specific ARARs for 100-yr floodplain protection (details in ROD).	ROD 9/12/1994 pp. 23-26
MID980901946				
MID980901946	01	Institutional Controls	1. Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site; 2. Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site; 3. Reduce or minimize the release of contaminants in tailings to the groundwater through leaching; and 4. Reduce or minimize the release of contaminants in tailings to the surface water and sediment by soil erosion and/or air deposition.	ROD 9/30/1992 p. 8; FYR 3/27/2008 p. 23
MID980901946	01	Off-site disposal	1. Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site; 2. Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site; 3. Reduce or minimize the release of contaminants in tailings to the groundwater through leaching; and 4. Reduce or minimize the release of contaminants in tailings to the surface water and sediment by soil erosion and/or air deposition.	ROD 9/30/1992 p. 8; FYR 3/27/2008 p. 23
MID980901946	01	Other – Engineering/Containment	1. Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site; 2. Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site; 3. Reduce or minimize the release of contaminants in tailings to the groundwater through leaching; and 4. Reduce or minimize the release of contaminants in tailings to the surface water (Torch Lake) and sediment by soil erosion and/or air deposition.	ROD 9/30/1992 p. 8; FYR 3/27/2008 p. 23
MID980901946	02	No action		
MID980901946	03	Institutional Controls	1. Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site; 2. Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site; 3. Reduce or minimize the release of contaminants in tailings to the groundwater through leaching; and 4. Reduce or minimize the release of contaminants in tailings to the surface water and sediment by soil erosion and/or air deposition.	ROD 9/30/1992 p. 8; FYR 3/27/2008 p. 23
MID980901946	03	Off-site disposal	1. Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site; 2. Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site; 3. Reduce or minimize the release of contaminants in tailings to the groundwater through leaching; and 4. Reduce or minimize the release of contaminants in tailings to the surface water and sediment by soil erosion and/or air deposition.	ROD 9/30/1992 p. 8; FYR 3/27/2008 p. 23

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
MID980901946	03	Other – Engineering/Containment	1. Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site; 2. Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site; 3. Reduce or minimize the release of contaminants in tailings to the groundwater through leaching; and 4. Reduce or minimize the release of contaminants in tailings to the surface water (Torch Lake) and sediment by soil erosion and/or air deposition.	ROD 9/30/1992 p. 8; FYR 3/27/2008 p. 23
MID980901946	03	Other – Engineering/Containment	1. Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site; 2. Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site; 3. Reduce or minimize the release of contaminants in tailings to the groundwater through leaching; and 4. Reduce or minimize the release of contaminants in tailings to the surface water and sediment by soil erosion and/or air deposition.	ROD 9/30/1992 p. 8; FYR 3/27/2008 p. 23
MID980901946	03	Other – Engineering/Containment	1. Reduce or minimize potential risks to human health associated with the inhalation of airborne contaminants from the tailings and/or slag located at the Site; 2. Reduce or minimize potential risks to human health associated with direct contact with and/or the ingestion of the tailings and/or the slag located at the Site; 3. Reduce or minimize the release of contaminants in tailings to the groundwater through leaching; and 4. Reduce or minimize the release of contaminants in tailings to the surface water and sediment by soil erosion and/or air deposition.	ROD 9/30/1992 p. 8; FYR 3/27/2008 p. 23
MID980901946	04			
MID980901946	05			
MID980901946	06			
IND047030226				
IND047030226	01			
NMD002899094				
NMD002899094	00	Off-site disposal	Protect humans by preventing direct contact or ingestion of Mill Area soil that has a concentration of molybdenum or PCBs greater than federal ARARs and/or Site-specific health-based cleanup levels for soil.	ROD 12/20/2010 p. 2-442
NMD002899094	00	On-site disposal (excavation, capping, covering, reveg)	1.Eliminate or reduce, to the maximum extent practicable, leaching and migration of inorganic COCs and acidity from waste rock (acid rock drainage) to ground water at concentrations and quantities that have the potential to cause exceedances of the numeric ground water ARARs or Site-specific risk-based cleanup levels. 2. Eliminate or reduce direct exposure and exposure via accumulation in plants to mining-affected soil and tailing spills that contain molybdenum at concentrations exceeding the Site-specific risk-based cleanup levels of 54 mg/kg for the protection of birds and other terrestrial wildlife not including grazing mammals protected by the 41 mg/kg level, 41 mg/kg for protection of wildlife (deer and elk) and 11 mg/kg for the protection of livestock (cattle and sheep). 3. Eliminate or reduce direct exposure of fish to Red River surface water along the mine site and tailing facility that exceeds surface water ARARs or Site-specific risk-based cleanup levels for aluminum (direct toxicity).	ROD 12/20/2010 pp.2-444, 2-254
NMD002899094	00	Other – Engineering/Containment	1. Protect recreational visitor/trespasser or future commercial use scenario by reducing or eliminating exposure (dermal contact/investigation) to tailing in the ponded area that contains molybdenum at concentrations exceeding Site-specific health-based cleanup levels. 2. Protect aquatic and aquatic-dependant life by reducing or eliminating exposure to tailing in the ponded areas that contains metals at concentrations exceeding Site specific risk-based cleanup levels. 3. Eliminate or reduce direct exposure and exposure via accumulation in plants to tailing that contain molybdenum at concentrations exceeding the Site-specific risk-based cleanup level for protection of wildlife (41 mg/kg for protection of deer and elk; 54 mg/kg for protection of birds and other terrestrial wildlife not including grazing mammals protected by the 41 mg/kg level) .	ROD 12/20/2010 pp. 2-450, 451
NMD002899094	00	Water treatment-lime	1. Prevent ingestion by humans of gw containing mine-related inorganic COCs exceeding state/federal ARARs or site-specific risk-based cleanup levels; restore contaminated gw to meet state/federal ARARs or Site-specific risk-based cleanup levels for inorganic COCs; maintain underground mine water elevations below those of the Red River, prevent ingestion by humans, and treat gw from the underground mine workings containing mine-related inorganic COCs exceeding state/federal ARARs or Site specific risk-based cleanup levels; restore contaminated ground water at and off-site of the tailing facility to meet state/federal ARARs or Site-specific risk-based cleanup levels for inorganic COCs; eliminate or reduce, to the maximum extent practicable, the seeping and migration of inorganic COCs from tailing to ground water at concentrations and quantities that have the potential to cause exceedances of the numeric ground water ARARs or Site-specific risk-based cleanup levels for ground water. 2. Eliminate or reduce, to the maximum extent practicable, the migration of mine-related inorganic COCs in ground water to Red River surface water at concentrations that would result in surface water concentrations exceeding surface water ARARs or Site-specific risk-based cleanup levels; protect Red River aquatic species from chronic exposure to inorganic COCs and acidity at Springs 13 and 39 by eliminating or reducing discharge, to the maximum extent practicable, of Springs 13 and 39 water to the Red River at levels that result in total aluminum concentrations below the Site-specific risk-based cleanup level of 1 mg/L in Red River surface water at Spring 13 and 0.8 mg/L in Red River surface water at Spring 39; protect	ROD 12/20/2010 pp.2-444 to 2-446, 2-450, 2-451

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			recreational visitor/trespasser by reducing exposure (incidental ingestion) of surface water containing beryllium, cadmium, and manganese exceeding federal drinking water standards or Site-specific risk-based cleanup levels.	
NMD002899094	00	Sediment dredging/ disposal	1. Eliminate or reduce direct exposure of benthic macroinvertebrates to mine site affected sediment in Eagle Rock Lake that exceeds preliminary Site-specific risk based cleanup levels for aluminum (with consideration of floc formation), cadmium, copper, manganese, nickel, and zinc; 2. eliminate or reduce the deposition of mine site-affected sediment in Eagle Rock Lake that exceeds preliminary Site-specific risk-based cleanup levels for the Red River sediment COCs (nickel and zinc) for benthic macroinvertebrates.	ROD 12/20/2010 pp.2-456, 2-457
NMD002899094	00	Institutional Controls	Eliminate or reduce ingestion by humans of ground water drawn from private wells containing mine-related inorganic COCs exceeding state/federal ARARs or Site-specific risk-based cleanup levels.	ROD 12/20/2010 p. 2-450
NMD980749378				
NMD980749378	01	Water treatment-other	Groundwater RAOs: Federal drinking water standards were not considered ARARs due to the characterization of the site ground water as Class IIIA water. However, human health based ground water standards of the New Mexico Water Quality Control Commission Regulations (NMWQCCR) were included as ARARs; the NMWQCCR standard for cyanide is 0.2 mg/L.	ROD 9/21/1990 pp.12-13
NMD980749378	01	Institutional Controls	Groundwater RAOs: Federal drinking water standards were not considered ARARs due to the characterization of the site ground water as Class IIIA water. However, human health based ground water standards of the New Mexico Water Quality Control Commission Regulations (NMWQCCR) were included as ARARs; the NMWQCCR standard for cyanide is 0.2 mg/L.	ROD 9/21/1990 pp.12-13
NMD980749378	02	Solidification	Remediation goal for lead in surface soils 500 ppm; stabilization of the soil and waste pile material exceeding 500 ppm would provide protection of human health and the environment by reducing the mobility of the lead in the soils and its potential for contaminating groundwater. treatment will also ensure that the waste is not asignificant ingestion or inhalation risk.	ROD 9/6/1991 pp.1 5-16
NMD980749378	02	On-site disposal (excavation, capping, covering, reveg)	Remediation goal for lead in surface soils 500 ppm; stabilization of the soil and waste pile material exceeding 500 ppm would provide protection of human health and the environment by reducing the mobility of the lead in the soils and its potential for contaminating groundwater. treatment will also ensure that the waste is not asignificant ingestion or inhalation risk.	ROD 9/6/1991 pp.1 5-16
NMD980749378	02	Institutional Controls	On April 25. 2006, an IC was signed by the Mayor of Carrizozo and registered in County Court requiring that no excavation is to occur in the soil repository areas or in any manner that could potentially breach or disturb the repository cell. ICs included deed restrictions and site access restrictions.	FYR 7/31/2008, pp. EX-2, 10
NMD981155930				
NMD981155930	01	No action	Prevent dermal contact, ingestion of, and inhalation of contaminated tailings and Sediment; prevent direct contact with and ingestion of contaminated ground water and surface water; prevent the downstream aquifers from becoming contaminated with hazardous substances from the tailings and sediments, at concentrations which exceed MCLs and NM WQCC standards; return the shallow perched aquifer at the toe of the tailings to a condition where the concentration of contaminants is below MCLs and NM WQCC standards. The 1993 ROD set remedial action goals (RAGs) for the site to meet the RAOs. Tailings and sediment that contain concentrations of contaminants above the listed RAGs shall be excavated and removed from the Site. RAGs for cadmium, lead, and zinc were set to risk-based health standards, while the RAGs for arsenic and beryllium were set to background concentrations of these contaminants.	ROD 9/27/1993 pp. 50-51; AMD 9/20/1999 p. 13
NMD981155930	01	Institutional Controls	Prevent dermal contact, ingestion of, and inhalation of contaminated tailings and Sediment; prevent direct contact with and ingestion of contaminated ground water and surface water; prevent the downstream aquifers from becoming contaminated with hazardous substances from the tailings and sediments, at concentrations which exceed MCLs and NM WQCC standards; return the shallow perched aquifer at the toe of the tailings to a condition where the concentration of contaminants is below MCLs and NM WQCC standards.	ROD 9/27/1993 pp. 50-51; AMD 9/20/1999 p. 13
NMD007860935				
NMD007860935	01	Water treatment-other	(1) limit radon emissions from the tailings impoundments; (2) remediate contamination in soil that resulted from windblown tailings, remediate ground water to levels stipulated in the NRC License SUA-1471 and the NMED DP-200; (3) dewater the large tailings impoundment to remove this area as a continuing source of ground water contamination; and (4) prevent the use of contaminated ground water by residents in the Subdivisions for domestic purposes.	FYR 9/27/2001 pp. 10-11
NMD007860935	02	Other – Engineering/Containment	(1) limit radon emissions from the tailings impoundments; (2) remediate contamination in soil that resulted from windblown tailings, remediate ground water to levels stipulated in the NRC License SUA-1471 and the NMED DP-200; (3) dewater the large tailings impoundment to remove this area as a continuing source of ground water contamination; and (4) prevent the use of contaminated ground water by residents in the Subdivisions for domestic purposes.	FYR 9/27/2001 pp. 10-11
NMD007860935	03	No action		

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
OKD000829440				
OKD000829440	01	Off-site disposal	1) ingestion of soil/dust lead that would result in a percent probability of a child having a blood level concentration above 10 ug/dL; 2) ingestion or direct contact with soil/dust cadmium in excess of 0.001 mg/Kg-day; and 3) ingestion of soil/dust arsenic in excess of the 0.00003 mg/Kg-day Oklahoma State Department of Health agency cancer risk level determined to be protective of human health. Also, remediation levels for residential/recreation soils are - Lead 925 mg/kg, Cadmium 100 mg/kg, Arsenic 60 mg/kg; for commercial/industrial soils - Lead 2000 mg/kg, Cadmium 200 mg/kg, Arsenic 600 mg/kg.	ROD 12/13/1994 pp. 16, 17; FYR 11/22/2006 p. 17
OKD000829440	01	Institutional Controls	1) ingestion of soil/dust lead that would result in a percent probability of a child having a blood level concentration above 10 ug/dL; 2) ingestion or direct contact with soil/dust cadmium in excess of 0.001 mg/Kg-day; and 3) ingestion of soil/dust arsenic in excess of the 0.00003 mg/Kg-day Oklahoma State Department of Health agency cancer risk level determined to be protective of human health. Also, remediation levels for residential/recreation soils are - Lead 925 mg/kg, Cadmium 100 mg/kg, Arsenic 60 mg/kg; for commercial/industrial soils - Lead 2000 mg/kg, Cadmium 200 mg/kg, Arsenic 600 mg/kg.	ROD 12/13/1994 pp. 16, 17; FYR 11/22/2006 p. 17
OKD000829440	02	Off-site disposal	The OU2 RAOs and PRGs focused on preventing substantial impact to aquatic ecology caused by stream sediment having elevated concentrations of the COPCs and to return and/or maintain the physiochemical conditions in the ecosystem to those that would support aquatic life forms. (rod p. 7) PRGs for metals in sediments: cadmium- 100 mg/kg, lead- 692 mg/kg, selenium – 292 mg/kg, zinc – 12,000 mg/kg	ROD 10/02/1997 p. 7; FYR 11/22/2006 p. 17
OKD980629844				
OKD980629844	01	Other – Engineering/Containment	Mitigate the potential threat to public health and the environment by preventing contamination of the Roubidoux aquifer from acid mine water.	FYR 9/29/2010 p.14
OKD980629844	01	Surface water diversion	Minimize the damage to Tar Creek from acid mine water discharges.	FYR 9/29/2010 p.14
OKD980629844	02	On-site disposal (excavation, capping, covering, reveg)	Reduce ingestion by humans, especially children, of surface soil in residential areas contaminated with lead at a concentration greater than or equal to 500 ppm.	ROD 8/27/1997 p. 10
OKD980629844	02	Institutional Controls	Reduce ingestion by humans, especially children, of surface soil in residential areas contaminated with lead at a concentration greater than or equal to 500 ppm.	ROD 8/27/1997 p. 10
OKD980629844	03	No action		
OKD980629844	04	Resident relocation	To remove a limited populace from areas with concentrated sources of potential exposure. RAOs for voluntary relocation are not specifically listed in Section 15.1 (Remedial Action Objectives for the Site), pp. 26-27 of 02/20/2008 ROD.	ROD 2/20/2008 pp. 2-3, 45
OKD980629844	04	On-site disposal (excavation, capping, covering, reveg)	1) Prevent children and adolescents from coming in direct contact, through the ingestion and inhalation exposure pathways, with lead contaminated source material where lead concentrations exceed 500 ppm; 2) Prevent terrestrial fauna from coming in direct or indirect contact, through the ingestion exposure pathway, with cadmium-, lead-, or zinc-contaminated source materials and soils where cadmium, lead, and zinc concentrations exceed their respective remediation goals of 10.0 mg/kg, 500 mg/kg, and 1100 mg/kg respectively; 3) Prevent riparian biota including waterfowl from coming into contact, through the ingestion exposure pathway, with unacceptable concentrations of cadmium, lead, and zinc in surface water and sediment by eliminating all discharges of cadmium, lead, and zinc from source materials to surface water; 4) Prevent children from direct contact, through the ingestion and inhalation exposure, with lead contaminated soil where soil lead concentrations exceed 500 ppm (for RAO details, refer to pp. 26-27 of ROD)	ROD 2/20/2008 pp. 26-27
OKD980629844	04	Alternative drinking water	Prevent site residents from the ingestion of water from private wells that contains lead in concentrations exceeding 0.015 mg/L lead at the water tap.	ROD 2/20/2008 p. 27
OKD980629844	04	Other – Engineering/Containment	1) Prevent children and adolescents from coming in direct contact, through the ingestion and inhalation exposure pathways, with lead contaminated source material where lead concentrations exceed 500 ppm; 2) Prevent terrestrial fauna from coming in direct or indirect contact, through the ingestion exposure pathway, with cadmium-, lead-, or zinc-contaminated source materials and soils where cadmium, lead, and zinc concentrations exceed their respective remediation goals of 10.0 mg/kg, 500 mg/kg, and 1100 mg/kg respectively; 3) Prevent riparian biota including waterfowl from coming into contact, through the ingestion exposure pathway, with unacceptable concentrations of cadmium, lead, and zinc in surface water and sediment by eliminating all discharges of cadmium, lead, and zinc from source materials to surface water; 4) Prevent	

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			children from direct contact, through the ingestion and inhalation exposure, with lead contaminated soil where soil lead concentrations exceed 500 ppm (for RAO details, refer to pp. 26-27 of ROD)	
OKD980629844	04	Institutional Controls	1) Prevent children and adolescents from coming in direct contact, through the ingestion and inhalation exposure pathways, with lead contaminated source material where lead concentrations exceed 500 ppm; 2) Prevent terrestrial fauna from coming in direct or indirect contact, through the ingestion exposure pathway, with cadmium-, lead-, or zinc-contaminated source materials and soils where cadmium, lead, and zinc concentrations exceed their respective remediation goals of 10.0 mg/kg, 500 mg/kg, and 1100 mg/kg respectively; 3) Prevent riparian biota including waterfowl from coming into contact, through the ingestion exposure pathway, with unacceptable concentrations of cadmium, lead, and zinc in surface water and sediment by eliminating all discharges of cadmium, lead, and zinc from source materials to surface water; 4) Prevent children from direct contact, through the ingestion and inhalation exposure, with lead contaminated soil where soil lead concentrations exceed 500 ppm (for RAO details, refer to pp. 26-27 of ROD)	
OKD980629844	04	Other – Engineering/Containment	1) Prevent children and adolescents from coming in direct contact, through the ingestion and inhalation exposure pathways, with lead contaminated source material where lead concentrations exceed 500 ppm; 2) Prevent terrestrial fauna from coming in direct or indirect contact, through the ingestion exposure pathway, with cadmium-, lead-, or zinc-contaminated source materials and soils where cadmium, lead, and zinc concentrations exceed their respective remediation goals of 10.0 mg/kg, 500 mg/kg, and 1100 mg/kg respectively; 3) Prevent riparian biota including waterfowl from coming into contact, through the ingestion exposure pathway, with unacceptable concentrations of cadmium, lead, and zinc in surface water and sediment by eliminating all discharges of cadmium, lead, and zinc from source materials to surface water; 4) Prevent children from direct contact, through the ingestion and inhalation exposure, with lead contaminated soil where soil lead concentrations exceed 500 ppm (for RAO details, refer to pp. 26-27 of ROD)	
OKD980629844	05			
TXD062113329				
TXD062113329	01	On-site disposal (excavation, capping, covering, reveg)	RAOs for OU1 are: 1) Prevent direct contact, ingestion, and inhalation of surface and subsurface soil, sediments, waste piles, drummed (spent catalyst) materials and gw containing contaminants that exceed PRGs; 2) Prevent the release of contaminants from the Acid Pond, wastewater ponds, drums (spent catalyst), above ground storage tanks, and slag piles to surface and subsurface soils, surface water, and ground water. Protect off site ecological receptors by preventing offsite contaminant migration as a result of on-site releases; 3) Prevent external radiation exposure and prevent direct contact, ingestion, and inhalation of soils and slag piles that contain radium-226 material exceeding 40 C.F.R. Part 192 criteria; 4) Prevent further degradation of the Shallow and Medium Transmissive Zone ground water outside the operable unit boundaries; 5) Prevent migration of contaminated gw outside the operable unit boundaries in the Deep Transmissive Zone by addressing the site source materials and preventing further degradation of the shallow and medium transmissive zones; and 6) Prevent the release of friable asbestos-containing materials in buildings and structures onsite.	AMD 9/28/2000 p. 28
TXD062113329	01	Off-site disposal	RAOs for OU1 listed above.	AMD 9/28/2000 p. 28
TXD062113329	01	Other – Engineering/Containment	RAOs for site ground water include preventing further degradation of the shallow and medium transmissive zones offsite and preventing migration of contaminated ground water to the deep transmissive zone offsite. Preventing discharge of ground water contaminants to offsite ponds at concentrations that would impact ecological receptors is also an objective.	AMD 9/28/2000 pp. 18, 28, 35
TXD062113329	01	Institutional Controls	RAOs for OU1 listed above.	AMD 9/28/2000 p. 28
TXD062113329	02	No action	The following RAOs for OU1 contaminants are also applicable to OU No. 2: 1) Prevent direct contact, ingestion, and inhalation of surface and subsurface soil, sediments, waste piles, drummed (spent catalyst) materials and ground water containing contaminants that exceed PRGs. 2) Prevent further degradation of the Shallow and Medium Transmissive Zone ground water outside the operable unit boundaries. 3) Prevent migration of contaminated ground water outside the operable unit boundaries in the Deep Transmissive Zone by addressing the site source materials and preventing further degradation of the shallow and medium transmissive zones.	FYR 9/30/2003 p. 6
TXD062113329	03	No action		
TXD062113329	04	Other – Engineering/Containment	1) Protect offsite sediment-dwelling invertebrate organisms and omnivorous mammals from direct contact or ingestion of sediment-containing concentrations of metals > the remediation goals. 2) Prevent release of chemicals from the Swan Lake Salt Marsh to Swan Lake where they would accumulate in sediments or water to levels > the remediation goals. 3) Prevent direct contact/ingestion/inhalation of sediments by humans of sediment concentrations greater than the PRGs for OU No.. 4) Minimize destruction of existing benthic macroinvertebrate ecosystem when addressing the contaminants of concern.	ROD 9/27/2001 p. 15
OKD987096195				
OKD987096195	01			

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
NMD030443303				
NMD030443303	01	Water treatment-other	The overall objective of the remedial action is to contain, remove and evaporate contaminated ground water resulting from tailings seepage into the environment and to implement source control and onsite surface reclamation. In addition, the specific goal of the selected remedy is to restore ground water outside the tailings disposal area to concentrations dictated by Federal and State standards, or background, to the maximum extent practicable, and to the extent necessary to adequately protect public health and the environment.	FYR 9/24/1998 p. 7
MO0000958611				
MO0000958611	01	On-site disposal (excavation, capping, covering, reveg)	1. Limit exposure of aquatic biota to waters contaminated with COCs in Sutton Branch Creek in excess of chronic and acute AQWC for such COCs. 2. Limit risks to aquatic biota by controlling erosion and transport of lead-contaminated mill wastes and contaminated sediments in classified perennial or state-listed ephemeral streams or rivers.	ROD 9/29/2005 p. 12
MO0000958611	01	Other – Engineering/Containment	1. Limit exposure of aquatic biota to waters contaminated with COCs in Sutton Branch Creek in excess of chronic and acute AQWC for such COCs. 2. Limit risks to aquatic biota by controlling erosion and transport of lead-contaminated mill wastes and contaminated sediments in classified perennial or state-listed ephemeral streams or rivers.	ROD 9/29/2005 p. 12
MO0000958611	01	Institutional Controls	1. Limit exposure of terrestrial biota to COCs in surficial materials that would potentially result in excessive ecological risks associated with intake of Site COCs. 2. Limit human ingestion of COCs from onsite soils/source materials that would potentially result in cancer risks greater than 10~6, non-carcinogenic HI> 1, or unacceptable BLLs that present human health risks.	ROD 9/29/2005 p. 11
MO0000958611	02	No action		
MO0000958611	03	On-site disposal (excavation, capping, covering, reveg)	The objective is to remove the contaminated media from the contaminated residential driveway.	ROD 6/29/2007, p. 12
MOD981126899				
MOD981126899	01			
MOD981126899	02			
MOD981126899	03			
KSD980741862				
KSD980741862	01	Alternative drinking water	1. To provide suitable drinking water that meets the MCLs to the current population within OU1; 2. To protect the deep aquifer from contamination that may occur as a result of implementing an alternate water supply.	ROD 12/21/1987 p. 8
KSD980741862	02			
KSD980741862	03	On-site disposal (excavation, capping, covering, reveg)	Prevention of ecological and human health risks associated with the exposure to soils and mine wastes containing heavy metals. For surface water, prevention of ecological risks by reducing the exposures related to metals-contaminated surface water.	AMD 9/29/2006 p. 13, 43
KSD980741862	03	Other – Engineering/Containment	Prevention of ecological and human health risks associated with the exposure to mine wastes containing heavy metals.	AMD 9/29/2006 p. 13, 43
KSD980741862	03	Institutional Controls	Prevention of ecological and human health risks associated with the exposure to soils and mine wastes containing heavy metals. For surface water, prevention of ecological risks by reducing the exposures related to metals-contaminated surface water.	AMD 9/29/2006 p. 13, 43
KSD980741862	04			
KSD980741862	05	On-site disposal (excavation, capping, covering, reveg)	Remove the source materials from the surface and selectively place them in mine voids to essentially eliminate the risk posed by ingestion of metal contaminated waste; reduce the metals contamination in the ground water and surface water; and be protective of the Roubidoux aquifer.	ROD 9/18/1989, pp.6, 19
KSD980741862	05	Deconstruction/ decontamination of buildings	LONG-TERM: 1)Protect the Roubidoux Aquifer from contaminant inflows within the bounds of the subsite. 2)Protect human health of the population within the subsite from mining-related contaminants in the ground water and surface water systems and in the surface mine wastes and soils. 3)Meet Kansas Ground Water Contaminant Cleanup Target Concentrations in ground water within the subsite. 4) Meet both Federal and State Ambient Water Quality Criteria (AWQC) in surface streams, within the subsite. SHORT-TERM: 1) Protect the Roubidoux Aquifer from deep well contaminant inflows within the subsite; 2)Protect human health of the population within the subsite from mining-related contaminants in the ground water and surface water systems and in the surface mine wastes and soils. 3)Provide suitable drinking water (meet primary MCLs at existing taps) for the population within the subsiteb. 4)Improve water quality or reduce the volume of surface water entering the shallow ground water system within the subsite. 5) Reduce metals loadings in Short Creek, Shoal Creek and Spring River to support site-wide goals. 6)Improve water quality of the shallow aquifer within the Galena subsite.	ROD 9/19/1989, p.15

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
KSD980741862	05	Surface water diversion	Reduce the metals contamination in the ground water and surface water; and be protective of the Roubidoux aquifer.	ROD 9/18/1989, pp.6, 19
KSD980741862	06	On-site disposal (excavation, capping, covering, reveg)	1. Prevent human ingestion of COCs from on-site soils or source materials that would potentially result in cancer risks greater than 1x10-06, non-carcinogenic HI>1, or BLLs causing unacceptable human health risks. Soils or source materials containing <800 ppm lead and <75 ppm cadmium are deemed acceptable. 2. Prevent exposure of biota to COCs in materials that would potentially result in excessive ecological risks. 3 Prevent exposure of biota to surface waters exceeding Kansas Aquatic Life Criteria and sediments exceeding MacDonald TEC values, or background sediment values, resulting from the release and transport of COCs. 4. Prevent risks to biota by controlling the erosion and transport of mine wastes and impacted sediments. 5. Prevent human ingestion of COCs in subsite groundwater at concentrations exceeding the National Primary and Secondary Drinking Water Standards. 6. Prevent exceedances of drinking water standards caused by the downward migration of site-related groundwater from the shallow Boone Aquifer to the deep Roubidoux Aquifer. 7. Prevent the discharge of groundwater containing site-related COCs that would result in exceedances of surface water and sediment criteria or cause excessive ecological risks.	ROD 9/30/2004 p. 57 (Table 1)
KSD980741862	06	Other – Engineering/Containment	1. Prevent human ingestion of COCs from on-site soils or source materials that would potentially result in cancer risks greater than 1x10-06, non-carcinogenic HI>1, or BLLs causing unacceptable human health risks. Soils or source materials containing <800 ppm lead and <75 ppm cadmium are deemed acceptable. 2. Prevent exposure of biota to COCs in materials that would potentially result in excessive ecological risks. 3 Prevent exposure of biota to surface waters exceeding Kansas Aquatic Life Criteria and sediments exceeding MacDonald TEC values, or background sediment values, resulting from the release and transport of COCs. 4. Prevent risks to biota by controlling the erosion and transport of mine wastes and impacted sediments. 5. Prevent human ingestion of COCs in subsite groundwater at concentrations exceeding the National Primary and Secondary Drinking Water Standards. 6. Prevent exceedances of drinking water standards caused by the downward migration of site-related groundwater from the shallow Boone Aquifer to the deep Roubidoux Aquifer. 7. Prevent the discharge of groundwater containing site-related COCs that would result in exceedances of surface water and sediment criteria or cause excessive ecological risks.	ROD 9/30/2004 p. 57 (Table 1)
KSD980741862	07	On-site disposal (excavation, capping, covering, reveg)	Reduce public exposure, and particularly children's exposure, to residential soils with elevated lead and cadmium resulting from past mining, milling, and smelting activities.	ROD 7/29/1996 pp. 3-4
KSD980741862	07	Institutional Controls	Reduce public exposure, and particularly children's exposure, to residential soils with elevated lead and cadmium resulting from past mining, milling, and smelting activities.	ROD 7/29/1996 pp. 3-4
MOD098633415				
MOD098633415	01			
MOD098633415	02			
MOD098633415	03	On-site disposal (excavation, capping, covering, reveg)	Reduce the risk of exposure of young children (children under 7 years old) to lead such that an individual child or group of similarly exposed children have no greater than a 5% chance of exceeding a BLL of 10 ug/dL.	ROD 7/31/2008 p. 15
MOD098633415	03	Institutional Controls	Reduce the risk of exposure of young children (children under 7 years old) to lead such that an individual child or group of similarly exposed children have no greater than a 5% chance of exceeding a BLL of 10 ug/dL.	ROD 7/31/2008 p. 15
MOD098633415	04			
MOD098633415	05			
MOD098633415	06			
MOD981507585				
MOD981507585	01	On-site disposal (excavation, capping, covering, reveg)	1. Control ecological and human health risks from exposure to COCs from mining and milling wastes and affected soils within the Site. 2. Prevent risks to aquatic biota in Class P streams by controlling the transport of mining and milling wastes from source areas and contaminated sediments in the intermittent tributaries to waters of the state.	ROD 6/21/2010 pp. 8-9
MOD981507585	01	Institutional Controls	1. Control ecological and human health risks from exposure to COCs from mining and milling wastes and affected soils within the Site. 2. Prevent risks to aquatic biota in Class P streams by controlling the transport of mining and milling wastes from source areas and contaminated sediments in the intermittent tributaries to waters of the state.	ROD 6/21/2010 pp. 8-9
MOD981507585	02			
MOD981507585	03			
NESFN0703481				

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
NESFN0703481	01	Off-site disposal	To reduce the risk of exposure of young children to lead such that an individual child, or group of similarly exposed children, have no greater than a 5 percent chance of having a BLL> 10 µg/dl. The goal of this interim remedy is to address high child impact properties and the most highly contaminated OLS properties, i.e., any residential-type property where at least one non-foundation sample exceeds 800 ppm lead; residences with any non-foundation sample exceeding 400 ppm lead where a child identified with an elevated blood lead level resides; child-care facilities and other high child-impact areas with any non-foundation sample exceeding400 ppm lead.	ROD 12/15/2004 pp. 13, 29-30; ROD 5/13/2009 p. 11
NESFN0703481	02	Off-site disposal	To reduce the risk of exposure of young children to lead such that an individual child, or group of similarly exposed children, have no greater than a 5 percent chance of having a BLL> 10 µg/dl. The goal of this remedy is to address remaining properties that exceed risk-based soil lead levels established during final remedy selection process.	ROD 5/13/2009 pp. 11, 22-23
NESFN0703481	02	Institutional Controls	To reduce the risk of exposure of young children to lead such that an individual child, or group of similarly exposed children, have no greater than a 5 percent chance of having a BLL> 10 µg/dl. The goal of this remedy is to address remaining properties that exceed risk-based soil lead levels established during final remedy selection process.	ROD 5/13/2009 pp. 11, 22-23
MOD980686281				
MOD980686281	01	On-site disposal (excavation, capping, covering, reveg)	There are RAOs for source materials, sediments, surface water, and ground water (from flowing mine openings only) - see ROD.	ROD 9/30/2004 pp. 9-11
MOD980686281	01	Institutional Controls	There are RAOs for source materials, sediments, surface water, and ground water (from flowing mine openings only) - see ROD.	ROD 9/30/2004 pp. 9-11
MOD980686281	02	On-site disposal (excavation, capping, covering, reveg)	Reduce public exposure, and particularly children's exposure, to residential soils with elevated lead and cadmium concentrations resulting from historic mining and smelting activities.	ROD 8/1/1996 p. 10
MOD980686281	02	Institutional Controls	Reduce public exposure, and particularly children's exposure, to residential soils with elevated lead and cadmium concentrations resulting from historic mining and smelting activities.	ROD 8/1/1996 p. 10
MOD980686281	03			
MOD980686281	04	Alternative drinking water	Prevent unacceptable human health risks due to ingestion of or exposure to site-related contaminants in ground water. This ROD does not distinguish between shallow and deep aquifer ground water as to its purpose. The objective is to prevent or reduce potential ground water-related human health risks irrespective of which aquifer residents may be using for water supplies.	ROD 7/29/1998 p. 10-12
MOD980686281	04	Water treatment-other	Prevent unacceptable human health risks due to ingestion of or exposure to site-related contaminants in ground water. This ROD does not distinguish between shallow and deep aquifer ground water as to its purpose. The objective is to prevent or reduce potential ground water-related human health risks irrespective of which aquifer residents may be using for water supplies.	ROD 7/29/1998 p. 10-12
MOD980686281	04	Institutional Controls	Prevent unacceptable human health risks due to ingestion of or exposure to site-related contaminants in ground water. This ROD does not distinguish between shallow and deep aquifer ground water as to its purpose. The objective is to prevent or reduce potential ground water-related human health risks irrespective of which aquifer residents may be using for water supplies.	ROD 7/29/1998 p. 10-12
MOD980686281	05			
MON000705443				
MON000705443	01			
MON000705443	02			
MON000705443	03			
MON000705443	04			
MON000705443	05			
MON000705443	06			
MON000705842				
MON000705842	01			
MON000705842	02			
MON000705842	03			

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
MON000705027				
MON000705027	01			
MON000705027	02			
MON000705027	03			
MON000705027	04			
MON000705023				
MON000705023	01			
MON000705023	02			
MON000705023	03			
MON000705023	04			
MON000705032				
MON000705032	01			
MON000705032	02			
MON000705032	03			
MON000705032	04			
MTD093291599				
MTD093291599	01			
MTD093291656				
MTD093291656	01			
MTD093291656	03	On-site disposal (excavation, capping, covering, reveg)		
MTD093291656	04	On-site disposal (excavation, capping, covering, reveg)	The Selected Remedy will achieve reduction of risk to human health and the environment through the following: • Preventing human ingestion of, inhalation of dust from, or direct contact with, contaminated soil and/or waste media where such ingestion or contact would pose an unacceptable health risk for the designated land use. • Stabilization of contaminated soil and waste material against wind and surface erosion. • Minimizing transport of contaminants to ground water and surface water receptors.	ROD, 9/29/1998, p. 6
MTD093291656	04	Monitored natural attenuation/recovery	The Selected Remedy will achieve reduction of risk to human health and the environment through the following: • Preventing human ingestion of, inhalation of dust from, or direct contact with, contaminated soil and/or waste media where such ingestion or contact would pose an unacceptable health risk for the designated land use. • Stabilization of contaminated soil and waste material against wind and surface erosion. • Minimizing transport of contaminants to ground water and surface water receptors.	ROD, 9/29/1998, p. 6
MTD093291656	04	Institutional Controls	The Selected Remedy will achieve reduction of risk to human health and the environment through the following: • Preventing human ingestion of, inhalation of dust from, or direct contact with, contaminated soil and/or waste media where such ingestion or contact would pose an unacceptable health risk for the designated land use. • Stabilization of contaminated soil and waste material against wind and surface erosion. • Minimizing transport of contaminants to ground water and surface water receptors.	ROD, 9/29/1998, p. 6
MTD093291656	07	Institutional Controls	Reduction of risk to human health through: - Reduction of surface soil arsenic concentrations to acceptable levels, and - Prevention of direct human contact with waste materials exceeding acceptable levels. • Reduction of risk to the environment through: - Minimization of infiltration and deep percolation of metal-laden pore water to ground water, and - Minimization of erosion and metal loading via transport of waste and contaminated soil	ROD, 3/8/1994, p.5

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			to Warm Springs Creek. • Preservation, to the extent practical, of historic features at the site.	
MTD093291656	07	On-site disposal (excavation, capping, covering, reveg)	Reduction of risk to human health through: - Reduction of surface soil arsenic concentrations to acceptable levels, and - Prevention of direct human contact with waste materials exceeding acceptable levels. • Reduction of risk to the environment through: - Minimization of infiltration and deep percolation of metal-laden pore water to ground water, and - Minimization of erosion and metal loading via transport of waste and contaminated soil to Warm Springs Creek. • Preservation, to the extent practical, of historic features at the site.	ROD, 3/8/1994, p.5
MTD093291656	07	Surface water diversion	Reduction of risk to human health through: - Reduction of surface soil arsenic concentrations to acceptable levels, and - Prevention of direct human contact with waste materials exceeding acceptable levels. • Reduction of risk to the environment through: - Minimization of infiltration and deep percolation of metal-laden pore water to ground water, and - Minimization of erosion and metal loading via transport of waste and contaminated soil to Warm Springs Creek. • Preservation, to the extent practical, of historic features at the site.	ROD, 3/8/1994, p.5
MTD093291656	09	On-site disposal (excavation, capping, covering, reveg)	EPA's selected removal action was to remove beryllium wastes from the B-2 Pond, and Weather Hill and store them in on-site waste repositories.	FYR, 11/24/1994, p.14
MTD093291656	11	Solidification	The EPA selected a remedy for Flue Dust in 1991 featuring: (1) stabilizing via cement and lime approximately 316,500 cubic yards of flue dust; and (2) placement of treated materials in an engineered repository.	FYR, 11/23/1999, p11
MTD093291656	11	On-site disposal (excavation, capping, covering, reveg)	The EPA selected a remedy for Flue Dust in 1991 featuring: (1) stabilizing via cement and lime approximately 316,500 cubic yards of flue dust; and (2) placement of treated materials in an engineered repository.	FYR, 11/23/1999, p11
MTD093291656	11	Institutional Controls	The EPA selected a remedy for Flue Dust in 1991 featuring: (1) stabilizing via cement and lime approximately 316,500 cubic yards of flue dust; and (2) placement of treated materials in an engineered repository.	FYR, 11/23/1999, p11
MTD093291656	12	On-site disposal (excavation, capping, covering, reveg)	EPA's selected removal action was to remove Arbiter wastes from the Arbiter ponds and bunkers, and store them in on-site waste repositories.	FYR, 11/24/1994, p.14
MTD093291656	14			
MTD093291656	15	Resident relocation	THE AGENCY CAN ESTABLISH A REMEDIAL ACTION OBJECTIVE OF BETWEEN 10-4 AND 10-7 EXCESS CANCERS. The EPA selected a remedy for Mill Creek in 1987 featuring: (1) permanently relocating all Mill Creek residents; (2) stabilizing the area temporarily; (3) storing relocation or demolition debris and disposing of it, along with contaminated soils from Mill Creek, in the final cleanup of Anaconda; (4) regrading and replanting area disturbed by relocation/demolition activities; (5) monitoring and maintaining the vegetation and the fence installed around the area; and (6) imposing short-term controls on access and land use.	ROD, 10/2/1987, p.11 and FYR, 11/23/1994, p.9
MTD093291656	15	Deconstruction/ decontamination of buildings	THE AGENCY CAN ESTABLISH A REMEDIAL ACTION OBJECTIVE OF BETWEEN 10-4 AND 10-7 EXCESS CANCERS. The EPA selected a remedy for Mill Creek in 1987 featuring: (1) permanently relocating all Mill Creek residents; (2) stabilizing the area temporarily; (3) storing relocation or demolition debris and disposing of it, along with contaminated soils from Mill Creek, in the final cleanup of Anaconda; (4) regrading and replanting area disturbed by relocation/demolition activities; (5) monitoring and maintaining the vegetation and the fence installed around the area; and (6) imposing short-term controls on access and land use.	ROD, 10/2/1987, p.11 and FYR, 11/23/1994, p.9
MTD093291656	15	Institutional Controls	THE AGENCY CAN ESTABLISH A REMEDIAL ACTION OBJECTIVE OF BETWEEN 10-4 AND 10-7 EXCESS CANCERS. The EPA selected a remedy for Mill Creek in 1987 featuring: (1) permanently relocating all Mill Creek residents; (2) stabilizing the area temporarily; (3) storing relocation or demolition debris and disposing of it, along with contaminated soils from Mill Creek, in the final cleanup of	ROD, 10/2/1987, p.11 and FYR,

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			Anaconda; (4) regrading and replanting area disturbed by relocation/demolition activities; (5) monitoring and maintaining the vegetation and the fence installed around the area; and (6) imposing short-term controls on access and land use.	11/23/1994, p.9
MTD093291656	15	On-site disposal (excavation, capping, covering, reveg)	THE AGENCY CAN ESTABLISH A REMEDIAL ACTION OBJECTIVE OF BETWEEN 10-4 AND 10-7 EXCESS CANCERS. The EPA selected a remedy for Mill Creek in 1987 featuring: (1) permanently relocating all Mill Creek residents; (2) stabilizing the area temporarily; (3) storing relocation or demolition debris and disposing of it, along with contaminated soils from Mill Creek, in the final cleanup of Anaconda; (4) regrading and replanting area disturbed by relocation/demolition activities; (5) monitoring and maintaining the vegetation and the fence installed around the area; and (6) imposing short-term controls on access and land use.	ROD, 10/2/1987, p.11 and FYR, 11/23/1994, p.9
MTD093291656	16	Institutional Controls	The Selected Remedy will achieve reduction of risk to human health through the following: • Reduction of surface soil concentrations in residential and commercial/industrial areas to acceptable levels; and/or • Prevention of direct human contact with waste materials exceeding acceptable levels.	ROD, 9/30/1996, p. 5
MTD093291656	16	On-site disposal (excavation, capping, covering, reveg)	The Selected Remedy will achieve reduction of risk to human health through the following: • Reduction of surface soil concentrations in residential and commercial/industrial areas to acceptable levels; and/or • Prevention of direct human contact with waste materials exceeding acceptable levels.	ROD, 9/30/1996, p. 5
COD007063530				
COD007063530	01	On-site disposal (excavation, capping, covering, reveg)	Remedial Action is to prevent exposure and to prevent or minimize migration of FNP materials into the environment.	FYR, 2/26/1999, p.5
COD007063530	01	Institutional Controls	Remedial Action is to prevent exposure and to prevent or minimize migration of FNP materials into the environment.	FYR, 2/26/1999, p.5
COD007063530	02	Other – Engineering/Containment	The goals of the Terrace Groundwater Remedial Action are to prevent or minimize the flow of groundwater containing concentrations of cadmium to 0.005 mg/l, arsenic to 0.05 mg/l, and zinc to 0.5 mg/l, from the terrace portion of the Plant to the floodplain, and resulting impacts to the floodplain aquifer.	FYR, 2/26/1999, p.6
COD007063530	02	On-site disposal (excavation, capping, covering, reveg)	The goals of the Terrace Groundwater Remedial Action are to prevent or minimize the flow of groundwater containing concentrations of cadmium to 0.005 mg/l, arsenic to 0.05 mg/l, and zinc to 0.5 mg/l, from the terrace portion of the Plant to the floodplain, and resulting impacts to the floodplain aquifer.	FYR, 2/26/1999, p.6
COD007063530	02	Institutional Controls	The goals of the Terrace Groundwater Remedial Action are to prevent or minimize the flow of groundwater containing concentrations of cadmium to 0.005 mg/l, arsenic to 0.05 mg/l, and zinc to 0.5 mg/l, from the terrace portion of the Plant to the floodplain, and resulting impacts to the floodplain aquifer.	FYR, 2/26/1999, p.6
COD007063530	03	On-site disposal (excavation, capping, covering, reveg)	The goal of the Community Soils and Vegetable Gardens Remedial Action is to prevent or minimize exposure to soils and vegetables grown in soils with concentrations of metals exceeding the health-based action levels, stated previously. Properties that exceed action levels will be identified through a property-by-property sampling and testing program.	FYR, 2/26/1999, p.8
COD007063530	03	Institutional Controls	The goal of the Community Soils and Vegetable Gardens Remedial Action is to prevent or minimize exposure to soils and vegetables grown in soils with concentrations of metals exceeding the health-based action levels, stated previously. Properties that exceed action levels will be identified through a property-by-property sampling and testing program.	FYR, 2/26/1999, p.8
COD007063530	04	Other – Treatment Technology	The goal of the IDD and Retention Ponds Remedial Action is to prevent or minimize metals migration from the Globe Plant to the IDD and Retention Ponds water and sediments. The proposed Remedial Actions, referenced under the CD's SOW, under paragraph 4.3.2, were as follows: • Ditch sediments with metals concentrations exceeding community soils actions levels (>70 parts per million (ppm) for As, >73 ppm for Cd, and >500 ppm for Pb), will be removed from the IDD and Retention Ponds. • The IDD and Retention Ponds will be restored to their previous retention and flow capacities (or greater) through grading and establishment of vegetation as necessary to control erosion. • The Interceptor Trench will be excavated of sediments down to unweathered clay stone and then backfilled. A gravel and pipe drain will be installed in the backfill in the event that pumping from	FYR, 2/26/1999, p.8
COD007063530	04	On-site disposal (excavation, capping, covering, reveg)	The goal of the IDD and Retention Ponds Remedial Action is to prevent or minimize metals migration from the Globe Plant to the IDD and Retention Ponds water and sediments. The proposed Remedial Actions, referenced under the CD's SOW, under paragraph 4.3.2, were as follows: • Ditch sediments with metals concentrations exceeding community soils actions levels (>70 parts per million (ppm) for As, >73 ppm for Cd, and >500 ppm for Pb), will be removed from the IDD and Retention Ponds. • The IDD and Retention Ponds will be restored to their previous retention and flow capacities (or greater) through grading and establishment of vegetation as necessary to control erosion. • The Interceptor Trench will be excavated of sediments down to unweathered clay stone and then backfilled. A gravel and pipe drain will be installed in the backfill in the event that pumping from	FYR, 2/26/1999, p.8

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
COD007063530	04	Institutional Controls	The goal of the IDD and Retention Ponds Remedial Action is to prevent or minimize metals migration from the Globe Plant to the IDD and Retention Ponds water and sediments. The proposed Remedial Actions, referenced under the CD's SOW, under paragraph 4.3.2, were as follows: • Ditch sediments with metals concentrations exceeding community soils actions levels (>70 parts per million (ppm) for As, >73 ppm for Cd, and >500 ppm for Pb), will be removed from the IDD and Retention Ponds. • The IDD and Retention Ponds will be restored to their previous retention and flow capacities (or greater) through grading and establishment of vegetation as necessary to control erosion. • The Interceptor Trench will be excavated of sediments down to unweathered clay stone and then backfilled. A gravel and pipe drain will be installed in the backfill in the event that pumping from	FYR, 2/26/1999, p.8
MT6122307485				
MT6122307485	01			
MT6122307485	02			
MTD982572562				
MTD982572562	01	Off-site disposal	1. Prevent direct exposure of the population to elevated contaminant concentrations in residential soil and mine waste. 2.Control erosion of contaminated soil by wind and water from the source locations. 3. Control airborne transport of mine waste particles, especially fine-grained materials such as tailings. 4. Control erosion of mine waste into local water courses. 5. Control leaching and migration of contaminants from mine waste into surface water and groundwater.	ROD 2001, p 55
MTD982572562	01	Institutional Controls	1. Prevent direct exposure of the population to elevated contaminant concentrations in residential soil and mine waste.	ROD 2001, p 5
MTD982572562	02			
MTD982572562	03			
MTD982572562	04			
MTD982572562	05			
MTD982572562	06			
COD980717938				
COD980717938	01	Other – Engineering/Containment	THE REMEDIAL ALTERNATIVES EVALUATED IN THE FS REPORT WERE DEVELOPED TO ACCOMPLISH THE FOLLOWING: 1. SEAL THE UNDERGROUND WORKINGS TO ELIMINATE THE OUTFLOW OF CONTAMINATED WATER (REDUCE OR ELIMINATE THE NEED FOR LONG-TERM MANAGEMENT); 2. REMOVE AND PROCESS THE SULFIDE MINERAL ZONE (REDUCE THE NEED FOR LONG-TERM MANAGEMENT); 3. TREAT THE CONTAMINATED OUTFLOW PRIOR TO DISCHARGE TO THE ENVIRONMENT (REDUCE MOBILITY AND TOXICITY); OR 4. COMBINATIONS OF THESE ALTERNATIVES.	
COD980717938	01	Water treatment-other	THE REMEDIAL ALTERNATIVES EVALUATED IN THE FS REPORT WERE DEVELOPED TO ACCOMPLISH THE FOLLOWING: 1. SEAL THE UNDERGROUND WORKINGS TO ELIMINATE THE OUTFLOW OF CONTAMINATED WATER (REDUCE OR ELIMINATE THE NEED FOR LONG-TERM MANAGEMENT); 2. REMOVE AND PROCESS THE SULFIDE MINERAL ZONE (REDUCE THE NEED FOR LONG-TERM MANAGEMENT); 3. TREAT THE CONTAMINATED OUTFLOW PRIOR TO DISCHARGE TO THE ENVIRONMENT (REDUCE MOBILITY AND TOXICITY); OR 4. COMBINATIONS OF THESE ALTERNATIVES.	
COD980717938	02	No action	None - removal completed during RI phase	ROD, 9/30/1999, p. 3, 50-51; FYR 9/28/2001, p. 25
COD980717938	03	No action	None - removal completed during RI phase	
COD980717938	04	On-site disposal (excavation, capping, covering, reveg)	The RAOs for OU4 are identified in the ROD as: • Control erosion of contaminated materials into local water courses • Control leaching and migration of metals from contaminated materials into the surface water • Control leaching and migration of metals from contaminated materials into the groundwater	ROD, 3/31/1998, p. 54; FYR, 9/29/2001, p 41

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
COD980717938	04	Surface water diversion	The RAOs for OU4 are identified in the ROD as: • Control erosion of contaminated materials into local water courses • Control leaching and migration of metals from contaminated materials into the surface water • Control leaching and migration of metals from contaminated materials into the groundwater	ROD, 3/31/1998, p. 54; FYR, 9/29/2001, p 41
COD980717938	05	Institutional Controls	Slag • Control of leaching of metals of concern in concentrations that would have an adverse impact on soils, surface water, or groundwater; • Control airborne transport of contaminated materials; and • Control erosion of contaminated materials to prevent deposition into local surface water courses. Non-residential Area Soils • Control airborne transport of contaminated materials; • Control erosion of contaminated materials and deposition into local water courses; • Control leaching and migration of metals from soil into surface water; • Control leaching and migration of metals from soil into groundwater; and • Control contaminant exposure to animals and aquatic life. Residential Area Soils • Prevent direct exposure of the population to elevated concentrations of contaminants in the surface soil.	ROD, 10/31/2000, p. 28
COD980717938	06	On-site disposal (excavation, capping, covering, reveg)	Based on the forgoing, the RAO's for OU6 include: 1. Control erosion of mine waste rock and deposition into local water courses. 2. Control leaching and migration of metals from mine waste rock into surface water. 3. Control leaching of metals from mine waste rock into groundwater. 4. Prevent direct unacceptable exposures to elevated concentrations of contaminants in the soil and waste rock.	ROD, 9/25/2003, p. 34
COD980717938	06	Water treatment-other	Based on the forgoing, the RAO's for OU6 include: 1. Control erosion of mine waste rock and deposition into local water courses. 2. Control leaching and migration of metals from mine waste rock into surface water. 3. Control leaching of metals from mine waste rock into groundwater. 4. Prevent direct unacceptable exposures to elevated concentrations of contaminants in the soil and waste rock.	ROD, 9/25/2003, p. 34
COD980717938	06	Institutional Controls	Based on the forgoing, the RAO's for OU6 include: 1. Control erosion of mine waste rock and deposition into local water courses. 2. Control leaching and migration of metals from mine waste rock into surface water. 3. Control leaching of metals from mine waste rock into groundwater. 4. Prevent direct unacceptable exposures to elevated concentrations of contaminants in the soil and waste rock.	ROD, 9/25/2003, p. 34
COD980717938	06	Surface water diversion	Based on the forgoing, the RAO's for OU6 include: 1. Control erosion of mine waste rock and deposition into local water courses. 2. Control leaching and migration of metals from mine waste rock into surface water. 3. Control leaching of metals from mine waste rock into groundwater. 4. Prevent direct unacceptable exposures to elevated concentrations of contaminants in the soil and waste rock.	ROD, 9/25/2003, p. 34
COD980717938	07	On-site disposal (excavation, capping, covering, reveg)	The RAOs of the remedy presented in this ROD are: • Control airborne transport of tailing particles; • Control erosion of tailing materials and deposition into local water courses; • Control leaching and migration of metals from tailing into surface water; and • Control leaching and migration of metals from tailing into groundwater.	ROD, 6/6/2000, p. 41
COD980717938	07	Surface water diversion	The RAOs of the remedy presented in this ROD are: • Control airborne transport of tailing particles; • Control erosion of tailing materials and deposition into local water courses; • Control leaching and migration of metals from tailing into surface water; and • Control leaching and migration of metals from tailing into groundwater.	ROD, 6/6/2000, p. 41
COD980717938	07	Institutional Controls	The RAOs of the remedy presented in this ROD are: • Control airborne transport of tailing particles; • Control erosion of tailing materials and deposition into local water courses; • Control leaching and migration of metals from tailing into surface water; and • Control leaching and migration of metals from tailing into groundwater.	ROD, 6/6/2000, p. 41

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
COD980717938	08	Surface water diversion	The following RAOs were defined for impounded tailing: • Control airborne transport of tailing particles; • Control erosion of tailing materials and deposition into local water courses; • Control leaching and migration of metals from tailing into surface water; and • Control leaching and migration of metals from tailing into groundwater. The following RAOs were defined for non-residential area soil: • Control airborne transport of contaminated materials; • Control erosion of soil materials and deposition into local water courses; • Control leaching and migration of metals from soil into surface water; • Control leaching and migration of metals from soil into groundwater; and • Control contaminant exposure to animals and aquatic life. The following RAOs were defined for waste rock: • Control air and water erosion of waste rock materials from the source locations; • Control leaching and migration of metals from waste rock into surface water; and • Control leaching and migration of metals from waste rock into groundwater. The following RAOs were defined for fluvial tailing and stream sediments: • Control erosion of contaminated materials into local water courses; • Control leaching and migration of metals from contaminated materials into surface water; and • Control leaching and migration of metals from contaminated materials into groundwater.	ROD, 9/29/2000, p. 42
COD980717938	08	On-site disposal (excavation, capping, covering, reveg)	The following RAOs were defined for impounded tailing: • Control airborne transport of tailing particles; • Control erosion of tailing materials and deposition into local water courses; • Control leaching and migration of metals from tailing into surface water; and • Control leaching and migration of metals from tailing into groundwater. The following RAOs were defined for non-residential area soil: • Control airborne transport of contaminated materials; • Control erosion of soil materials and deposition into local water courses; • Control leaching and migration of metals from soil into surface water; • Control leaching and migration of metals from soil into groundwater; and • Control contaminant exposure to animals and aquatic life. The following RAOs were defined for waste rock: • Control air and water erosion of waste rock materials from the source locations; • Control leaching and migration of metals from waste rock into surface water; and • Control leaching and migration of metals from waste rock into groundwater. The following RAOs were defined for fluvial tailing and stream sediments: • Control erosion of contaminated materials into local water courses; • Control leaching and migration of metals from contaminated materials into surface water; and • Control leaching and migration of metals from contaminated materials into groundwater.	ROD, 9/29/2000, p. 42
COD980717938	08	Institutional Controls	The following RAOs were defined for impounded tailing: • Control airborne transport of tailing particles; • Control erosion of tailing materials and deposition into local water courses; • Control leaching and migration of metals from tailing into surface water; and • Control leaching and migration of metals from tailing into groundwater. The following RAOs were defined for non-residential area soil: • Control airborne transport of contaminated materials; • Control erosion of soil materials and deposition into local water courses; • Control leaching and migration of metals from soil into surface water; • Control leaching and migration of metals from soil into groundwater; and • Control contaminant exposure to animals and aquatic life. The following RAOs were defined for waste rock: • Control air and water erosion of waste rock materials from the source locations; • Control leaching and migration of metals from waste rock into surface water; and • Control leaching and migration of metals from waste rock into groundwater.	ROD, 9/29/2000, p. 42

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			The following RAOs were defined for fluvial tailing and stream sediments: • Control erosion of contaminated materials into local water courses; • Control leaching and migration of metals from contaminated materials into surface water; and • Control leaching and migration of metals from contaminated materials into groundwater.	
COD980717938	09	On-site disposal (excavation, capping, covering, reveg)	RAO- 1: "No more than five percent of all children (age 0 to 72 months) who live at this site, either now or in the future, will have blood lead values higher than 10 Fg/dL blood lead level." RAO-2: "Health will be adequately protected if the highest risk level at any sub-location (e.g., a yard or home) is a probability no higher than one percent that a population of children (age 0 to 72 months) residing at that sub-lo.cation will exceed a blood lead value of 15 Fg/dL." Reduce the direct exposure of lead incurred by children, which will result in optimal risk reduction through effective use of resources.	ROD, 9/2/1999, p. 25
COD980717938	09	Institutional Controls	RAO- 1: "No more than five percent of all children (age 0 to 72 months) who live at this site, either now or in the future, will have blood lead values higher than 10 Fg/dL blood lead level." RAO-2: "Health will be adequately protected if the highest risk level at any sub-location (e.g., a yard or home) is a probability no higher than one percent that a population of children (age 0 to 72 months) residing at that sub-lo.cation will exceed a blood lead value of 15 Fg/dL." Reduce the direct exposure of lead incurred by children, which will result in optimal risk reduction through effective use of resources.	ROD, 9/2/1999, p. 25
COD980717938	10	On-site disposal (excavation, capping, covering, reveg)	The primary objectives of the remedy presented in this ROD are: • Control airborne transport of tailings particles; • Control erosion of tailings materials and deposition into local water courses; • Control leaching and migration of metals from tailings into surface water; and • Control leaching and migration of metals from tailings into groundwater.	ROD, 8/8/1997, p. 13
COD980717938	10	Other – Engineering/Containment	The primary objectives of the remedy presented in this ROD are: • Control airborne transport of tailings particles; • Control erosion of tailings materials and deposition into local water courses; • Control leaching and migration of metals from tailings into surface water; and • Control leaching and migration of metals from tailings into groundwater.	ROD, 8/8/1997, p. 13
COD980717938	11	On-site disposal (excavation, capping, covering, reveg)	Based on the forgoing, the RAOs for OU11 include: 1. Minimize future human exposures of heavy metals as defined in the human health Baseline Risk Assessment (Weston 1995a, 1995b, 1996a, 1996b). 2. Minimize erosion of Fluvial Mine Waste Deposits into the Arkansas River as determined necessary to prevent further harm to aquatic life. 3. Control leaching and migration of metals from contaminated materials into groundwater. 4. Reduce toxins in plants and improve plant demographics in the Irrigated Meadows, Riparian Areas and Fluvial Deposits as determined necessary. 5. Reduce exposures of wildlife and livestock to heavy metals in soil and vegetation at toxic concentrations via direct exposure or bioaccumulation.	ROD, 9/28/2005, p. 33
COD980717938	11	Institutional Controls	Based on the forgoing, the RAOs for OU11 include: 1. Minimize future human exposures of heavy metals as defined in the human health Baseline Risk Assessment (Weston 1995a, 1995b, 1996a, 1996b). 2. Minimize erosion of Fluvial Mine Waste Deposits into the Arkansas River as determined necessary to prevent further harm to aquatic life. 3. Control leaching and migration of metals from contaminated materials into groundwater. 4. Reduce toxins in plants and improve plant demographics in the Irrigated Meadows, Riparian Areas and Fluvial Deposits as determined necessary. 5. Reduce exposures of wildlife and livestock to heavy metals in soil and vegetation at toxic concentrations via direct exposure or bioaccumulation.	ROD, 9/28/2005, p. 33
COD980717938	12	Institutional Controls	Based on the forgoing, the Remedial Action Objective (RAOs) for OU12 include: 1. Prevent unacceptable exposure of aquatic organisms in the Arkansas River to COCs. 2. Prevent unacceptable human exposure to (COCs) in surface and ground water.	ROD, 9/22/2009, p. 41
COD981551427				
COD981551427	01	Water treatment - Bioreactors (e.g., SRBs)	The RAOs specific to soils, tailings, and waste rock include: 1. Reducing exposure to arsenic, lead, and thallium from incidental ingestion and/or inhalation of surface tailings/waste rock and other mine wastes; and 2. Controlling and/or reduction of run-on and run-off from soils/tailings/waste rock piles.	ROD, 9/29/2008, p. 89-90

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			The RAOs specific to surface water include: 1. Reducing in-stream metals concentrations; 2. Ensuring that in-stream metals concentrations do not degrade drinking water supplies diverted from Left Hand Creek; and 3. Reducing the contaminant pathways to benthic aquatic organisms living at the surface water/sediment interface or contamination in sediment to levels that are protective of aquatic life, with the ultimate goal of attaining surface water standards to ensure longterm survival of fish and benthic aquatic organisms in Left Hand Creek. The RAOs specific to groundwater are as follows: I. Controlling and/or reducing metals loading to groundwater from surface sources; 2. Ensuring that contaminated groundwater does not adversely impact human health and aquatic ecological receptors, and 3. Ensuring that contaminated groundwater does not adversely impact receiving surface waters.	
COD981551427	01	On-site disposal (excavation, capping, covering, reveg)	The RAOs specific to soils, tailings, and waste rock include: 1. Reducing exposure to arsenic, lead, and thallium from incidental ingestion and/or inhalation of surface tailings/waste rock and other mine wastes; and 2. Controlling and/or reduction of run-on and run-off from soils/tailings/waste rock piles. The RAOs specific to surface water include: 1. Reducing in-stream metals concentrations; 2. Ensuring that in-stream metals concentrations do not degrade drinking water supplies diverted from Left Hand Creek; and 3. Reducing the contaminant pathways to benthic aquatic organisms living at the surface water/sediment interface or contamination in sediment to levels that are protective of aquatic life, with the ultimate goal of attaining surface water standards to ensure longterm survival of fish and benthic aquatic organisms in Left Hand Creek. The RAOs specific to groundwater are as follows: I. Controlling and/or reducing metals loading to groundwater from surface sources; 2. Ensuring that contaminated groundwater does not adversely impact human health and aquatic ecological receptors, and 3. Ensuring that contaminated groundwater does not adversely impact receiving surface waters.	ROD, 9/29/2008, p. 89-90
COD981551427	01	Institutional Controls	The RAOs specific to soils, tailings, and waste rock include: 1. Reducing exposure to arsenic, lead, and thallium from incidental ingestion and/or inhalation of surface tailings/waste rock and other mine wastes; and 2. Controlling and/or reduction of run-on and run-off from soils/tailings/waste rock piles. The RAOs specific to surface water include: 1. Reducing in-stream metals concentrations; 2. Ensuring that in-stream metals concentrations do not degrade drinking water supplies diverted from Left Hand Creek; and 3. Reducing the contaminant pathways to benthic aquatic organisms living at the surface water/sediment interface or contamination in sediment to levels that are protective of aquatic life, with the ultimate goal of attaining surface water standards to ensure longterm survival of fish and benthic aquatic organisms in Left Hand Creek. The RAOs specific to groundwater are as follows: I. Controlling and/or reducing metals loading to groundwater from surface sources; 2. Ensuring that contaminated groundwater does not adversely impact human health and aquatic ecological receptors, and 3. Ensuring that contaminated groundwater does not adversely impact receiving surface waters.	ROD, 9/29/2008, p. 89-90
MT0001096353				
MT0001096353	01	On-site disposal (excavation, capping, covering, reveg)	-Prevent direct exposure of the population to elevated concentrations of contaminants in near-surface residential soil and near-surface road base waste material, contaminants that could be present in soil-type material imported to Neihart for use as backfill or for other purposes, and material brought from depth by the Town of Neihart during its water distribution system upgrade. -Control erosion of mine waste and contaminated soil by wind and water in the residential portion of Neihart. -Control airborne transport of contaminated residential soils and road base waste material.	ROD, 4/26/2009, p. 73-74
MT0001096353	01	Institutional Controls	-Prevent direct exposure of the population to elevated concentrations of contaminants in near-surface residential soil and near-surface road base waste material, contaminants that could be present in soil-type material imported to Neihart for use as backfill or for other purposes, and material brought from depth by the Town of Neihart during its water distribution system upgrade. -Control erosion of mine waste and contaminated soil by wind and water in the residential portion of Neihart. -Control airborne transport of contaminated residential soils and road base waste material.	ROD, 4/26/2009, p. 73-74
MT0001096353	02			
MT0001096353	03			
COD980717557				

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
COD980717557	01	Water treatment - Created Wetlands	The specific remedial action objectives for the Site are to protect humans from the potentially harmful effects of metals, especially lead and arsenic, to which they can be exposed via contact with tailings and waste rock material. A second objective is to protect humans from exposure to harmful levels of metal in contaminated private drinking water supplies. Finally, EPA and CDPHE seek to restore the water quality of Clear Creek to a condition which protects aquatic species.	FYR, 3/26/1999, p. 7
COD980717557	02	Surface water diversion	The specific remedial action objectives for the Site are to protect humans from the potentially harmful effects of metals, especially lead and arsenic, to which they can be exposed via contact with tailings and waste rock material. A second objective is to protect humans from exposure to harmful levels of metal in contaminated private drinking water supplies. Finally, EPA and CDPHE seek to restore the water quality of Clear Creek to a condition which protects aquatic species.	FYR, 3/26/1999, p. 7
COD980717557	02	On-site disposal (excavation, capping, covering, reveg)	The specific remedial action objectives for the Site are to protect humans from the potentially harmful effects of metals, especially lead and arsenic, to which they can be exposed via contact with tailings and waste rock material. A second objective is to protect humans from exposure to harmful levels of metal in contaminated private drinking water supplies. Finally, EPA and CDPHE seek to restore the water quality of Clear Creek to a condition which protects aquatic species.	FYR, 3/26/1999, p. 7
COD980717557	03	On-site disposal (excavation, capping, covering, reveg)	THE OBJECTIVES OF THE SELECTED ALTERNATIVE INCLUDE: • PREVENTING INCIDENTAL INGESTION OF MINE WASTE POSING AN EXCESS RISK OF 1 CANCER INCIDENCE PER 100,000 PEOPLE OR GREATER, AND PREVENTING INCIDENTAL INGESTION OF MINE WASTE CONTAINING MORE THAN 500 MILLIGRAMS/KILOGRAM OF LEAD; • REDUCING THE EXCESS CANCER RISK DUE TO INHALATION OF DUST CONTAINING HEAVY METALS; • PREVENTING INGESTION OF GROUND WATER HAVING CONTAMINANT CONCENTRATIONS IN EXCESS OF PRIMARY DRINKING WATER STANDARDS, OR EXCEED HEALTH-BASED LEVELS FOR CONTAMINANTS WHICH HAVE NO PRIMARY DRINKING WATER STANDARDS FOR THE CONTAMINANTS OF CONCERN AT THE SITE. • PREVENTING COLLAPSE OF UNSTABLE MINE WASTE PILES THROUGH SLOPE STABILIZATION. • REDUCING EROSION FROM MINE WASTE PILES TO THE POINT WHERE STREAM STANDARDS ARE NOT EXCEEDED BY STORM WATER RUNOFF FROM THE MINE WASTE PILE. • REDUCING CONTAMINANT LOADING FROM THE MINE DRAINAGE TUNNELS, FOR THE CONTAMINANTS OF CONCERN AT THE SITE, TO LEVELS WHICH WILL ALLOW STATE STREAM STANDARDS, AND STATE TABLE VALUE STANDARDS (WHERE THEY HAVE BEEN DETERMINED TO BE RELEVANT AND APPROPRIATE) TO BE MET.	ROD, 9/30/1991, p. 23
COD980717557	03	Institutional Controls	THE OBJECTIVES OF THE SELECTED ALTERNATIVE INCLUDE: • PREVENTING INCIDENTAL INGESTION OF MINE WASTE POSING AN EXCESS RISK OF 1 CANCER INCIDENCE PER 100,000 PEOPLE OR GREATER, AND PREVENTING INCIDENTAL INGESTION OF MINE WASTE CONTAINING MORE THAN 500 MILLIGRAMS/KILOGRAM OF LEAD; • REDUCING THE EXCESS CANCER RISK DUE TO INHALATION OF DUST CONTAINING HEAVY METALS; • PREVENTING INGESTION OF GROUND WATER HAVING CONTAMINANT CONCENTRATIONS IN EXCESS OF PRIMARY DRINKING WATER STANDARDS, OR EXCEED HEALTH-BASED LEVELS FOR CONTAMINANTS WHICH HAVE NO PRIMARY DRINKING WATER STANDARDS FOR THE CONTAMINANTS OF CONCERN AT THE SITE. • PREVENTING COLLAPSE OF UNSTABLE MINE WASTE PILES THROUGH SLOPE STABILIZATION. • REDUCING EROSION FROM MINE WASTE PILES TO THE POINT WHERE STREAM STANDARDS ARE NOT EXCEEDED BY STORM WATER RUNOFF FROM THE MINE WASTE PILE. • REDUCING CONTAMINANT LOADING FROM THE MINE DRAINAGE TUNNELS, FOR THE CONTAMINANTS OF CONCERN AT THE SITE, TO LEVELS WHICH WILL ALLOW STATE STREAM STANDARDS, AND STATE TABLE VALUE STANDARDS (WHERE THEY HAVE BEEN DETERMINED TO BE RELEVANT AND APPROPRIATE) TO BE MET.	ROD, 9/30/1991, p. 23
COD980717557	03	Water treatment-other	THE OBJECTIVES OF THE SELECTED ALTERNATIVE INCLUDE: • PREVENTING INCIDENTAL INGESTION OF MINE WASTE POSING AN EXCESS RISK OF 1 CANCER INCIDENCE PER 100,000 PEOPLE OR GREATER, AND PREVENTING INCIDENTAL INGESTION OF MINE WASTE CONTAINING MORE THAN 500 MILLIGRAMS/KILOGRAM OF LEAD; • REDUCING THE EXCESS CANCER RISK DUE TO INHALATION OF DUST CONTAINING HEAVY METALS; • PREVENTING INGESTION OF GROUND WATER HAVING CONTAMINANT CONCENTRATIONS IN EXCESS OF PRIMARY DRINKING WATER STANDARDS, OR EXCEED HEALTH-BASED LEVELS FOR CONTAMINANTS WHICH HAVE NO PRIMARY DRINKING WATER STANDARDS FOR THE CONTAMINANTS OF CONCERN AT THE SITE. • PREVENTING COLLAPSE OF UNSTABLE MINE WASTE PILES THROUGH SLOPE STABILIZATION. • REDUCING EROSION FROM MINE WASTE PILES TO THE POINT WHERE STREAM STANDARDS ARE NOT EXCEEDED BY STORM WATER RUNOFF FROM THE MINE WASTE PILE. • REDUCING CONTAMINANT LOADING FROM THE MINE DRAINAGE TUNNELS, FOR THE CONTAMINANTS OF CONCERN AT	ROD, 9/30/1991, p. 23

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			THE SITE, TO LEVELS WHICH WILL ALLOW STATE STREAM STANDARDS, AND STATE TABLE VALUE STANDARDS (WHERE THEY HAVE BEEN DETERMINED TO BE RELEVANT AND APPROPRIATE) TO BE MET.	
COD980717557	03	Alternative drinking water	THE OBJECTIVES OF THE SELECTED ALTERNATIVE INCLUDE: • PREVENTING INCIDENTAL INGESTION OF MINE WASTE POSING AN EXCESS RISK OF 1 CANCER INCIDENCE PER 100,000 PEOPLE OR GREATER, AND PREVENTING INCIDENTAL INGESTION OF MINE WASTE CONTAINING MORE THAN 500 MILLIGRAMS/KILOGRAM OF LEAD; • REDUCING THE EXCESS CANCER RISK DUE TO INHALATION OF DUST CONTAINING HEAVY METALS; • PREVENTING INGESTION OF GROUND WATER HAVING CONTAMINANT CONCENTRATIONS IN EXCESS OF PRIMARY DRINKING WATER STANDARDS, OR EXCEED HEALTH-BASED LEVELS FOR CONTAMINANTS WHICH HAVE NO PRIMARY DRINKING WATER STANDARDS FOR THE CONTAMINANTS OF CONCERN AT THE SITE. • PREVENTING COLLAPSE OF UNSTABLE MINE WASTE PILES THROUGH SLOPE STABILIZATION. • REDUCING EROSION FROM MINE WASTE PILES TO THE POINT WHERE STREAM STANDARDS ARE NOT EXCEEDED BY STORM WATER RUNOFF FROM THE MINE WASTE PILE. • REDUCING CONTAMINANT LOADING FROM THE MINE DRAINAGE TUNNELS, FOR THE CONTAMINANTS OF CONCERN AT THE SITE, TO LEVELS WHICH WILL ALLOW STATE STREAM STANDARDS, AND STATE TABLE VALUE STANDARDS (WHERE THEY HAVE BEEN DETERMINED TO BE RELEVANT AND APPROPRIATE) TO BE MET.	ROD, 9/30/1991, p. 23
COD980717557	03	Water treatment - Created Wetlands	THE OBJECTIVES OF THE SELECTED ALTERNATIVE INCLUDE: • PREVENTING INCIDENTAL INGESTION OF MINE WASTE POSING AN EXCESS RISK OF 1 CANCER INCIDENCE PER 100,000 PEOPLE OR GREATER, AND PREVENTING INCIDENTAL INGESTION OF MINE WASTE CONTAINING MORE THAN 500 MILLIGRAMS/KILOGRAM OF LEAD; • REDUCING THE EXCESS CANCER RISK DUE TO INHALATION OF DUST CONTAINING HEAVY METALS; • PREVENTING INGESTION OF GROUND WATER HAVING CONTAMINANT CONCENTRATIONS IN EXCESS OF PRIMARY DRINKING WATER STANDARDS, OR EXCEED HEALTH-BASED LEVELS FOR CONTAMINANTS WHICH HAVE NO PRIMARY DRINKING WATER STANDARDS FOR THE CONTAMINANTS OF CONCERN AT THE SITE. • PREVENTING COLLAPSE OF UNSTABLE MINE WASTE PILES THROUGH SLOPE STABILIZATION. • REDUCING EROSION FROM MINE WASTE PILES TO THE POINT WHERE STREAM STANDARDS ARE NOT EXCEEDED BY STORM WATER RUNOFF FROM THE MINE WASTE PILE. • REDUCING CONTAMINANT LOADING FROM THE MINE DRAINAGE TUNNELS, FOR THE CONTAMINANTS OF CONCERN AT THE SITE, TO LEVELS WHICH WILL ALLOW STATE STREAM STANDARDS, AND STATE TABLE VALUE STANDARDS (WHERE THEY HAVE BEEN DETERMINED TO BE RELEVANT AND APPROPRIATE) TO BE MET.	ROD, 9/30/1991, p. 23
COD980717557	04	Water treatment - Bioreactors (e.g., SRBs)	-Reduce in-stream metals concentrations and sediment transport in the North Fork of Clear Creek with the objective of supporting brown trout in the North Fork of Clear Creek and supporting a viable reproducing brown trout population in the mainstem of Clear Creek -Protect drinking water supplies diverted from the main stem of Clear Creek -Control and/or reduce run-on and run-off from waste rock/tailings piles to minimize generation of contaminated runoff and/or ground water, and to reduce sediment loading of streams -Reduce human exposure to arsenic and lead from incidental ingestions of waste rock/tailings and other mine wastes	FYR, 9/29/2004, p. 28
COD980717557	04	Water treatment-other	-Reduce in-stream metals concentrations and sediment transport in the North Fork of Clear Creek with the objective of supporting brown trout in the North Fork of Clear Creek and supporting a viable reproducing brown trout population in the mainstem of Clear Creek -Protect drinking water supplies diverted from the main stem of Clear Creek -Control and/or reduce run-on and run-off from waste rock/tailings piles to minimize generation of contaminated runoff and/or ground water, and to reduce sediment loading of streams -Reduce human exposure to arsenic and lead from incidental ingestions of waste rock/tailings and other mine wastes	FYR, 9/29/2004, p. 28
COD980717557	04	On-site disposal (excavation, capping, covering, reveg)	-Reduce in-stream metals concentrations and sediment transport in the North Fork of Clear Creek with the objective of supporting brown trout in the North Fork of Clear Creek and supporting a viable reproducing brown trout population in the mainstem of Clear Creek -Protect drinking water supplies diverted from the main stem of Clear Creek -Control and/or reduce run-on and run-off from waste rock/tailings piles to minimize generation of contaminated runoff and/or ground water, and to reduce sediment loading of streams -Reduce human exposure to arsenic and lead from incidental ingestions of waste rock/tailings and other mine wastes	FYR, 9/29/2004, p. 28
COD980717557	04	Surface water diversion	-Reduce in-stream metals concentrations and sediment transport in the North Fork of Clear Creek with the objective of supporting brown trout in the North Fork of Clear Creek and supporting a viable reproducing brown trout population in the mainstem of Clear Creek -Protect drinking water supplies diverted from the main stem of Clear Creek -Control and/or reduce run-on and run-off from waste rock/tailings piles to minimize generation of contaminated runoff and/or ground water, and	FYR, 9/29/2004, p. 28

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			to reduce sediment loading of streams -Reduce human exposure to arsenic and lead from incidental ingestions of waste rock/tailings and other mine wastes	
COD980717557	04	Institutional Controls	-Reduce in-stream metals concentrations and sediment transport in the North Fork of Clear Creek with the objective of supporting brown trout in the North Fork of Clear Creek and supporting a viable reproducing brown trout population in the mainstem of Clear Creek • Protect drinking water supplies diverted from the main stem of Clear Creek • Control and/or reduce run-on and run-off from waste rock/tailings piles to minimize generation of contaminated runoff and/or ground water, and to reduce sediment loading of streams • Reduce human exposure to arsenic and lead from incidental ingestions of waste rock/tailings and other mine wastes	FYR, 9/29/2004, p. 28
UTD988075719				
UTD988075719	01	Off-site disposal	-Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead level of 10 micrograms of lead per deciliter of blood. -Reducing risks from exposure to arsenic-contaminated soil such that no person has greater than a 10-4 increased risk of contracting cancer from contaminated soil. -Remediating soils to levels that allow continued residential use. -Preventing the occurrence and spread of windblown contamination.	ROD, 9/30/2004, p. 31
UTD988075719	01	Other – Engineering/Containment	-Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead level of 10 micrograms of lead per deciliter of blood. -Reducing risks from exposure to arsenic-contaminated soil such that no person has greater than a 10-4 increased risk of contracting cancer from contaminated soil. -Remediating soils to levels that allow continued residential use. -Preventing the occurrence and spread of windblown contamination.	ROD, 9/30/2004, p. 31
UTD988075719	01	Institutional Controls	-Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead level of 10 micrograms of lead per deciliter of blood. -Reducing risks from exposure to arsenic-contaminated soil such that no person has greater than a 10-4 increased risk of contracting cancer from contaminated soil. -Remediating soils to levels that allow continued residential use. -Preventing the occurrence and spread of windblown contamination.	ROD, 9/30/2004, p. 31
UTD988075719	02	Off-site disposal	-Reducing risks from exposure to lead-contaminated soil such that no developing fetus of an adult visitor (used as a surrogate for the youth visitor scenario) has more than a 5 percent chance of exceeding a blood lead level (BLL) of 10 micrograms per decaliter (µg/dL); -Reducing the risks from exposure to arsenic-contaminated soil such that no person has greater than a 1 in 10,000 increased risk of contracting cancer; -Preventing the occurrence and spread of windblown contamination; and -Addressing the bulk of the source material that is driving the risk to ecological receptors, while minimizing the damage that the undeveloped area would sustain through more extensive construction activities.	ROD, 9/16/2009, p. 29
UTD988075719	02	Institutional Controls	-Reducing risks from exposure to lead-contaminated soil such that no developing fetus of an adult visitor (used as a surrogate for the youth visitor scenario) has more than a 5 percent chance of exceeding a blood lead level (BLL) of 10 micrograms per decaliter (µg/dL); -Reducing the risks from exposure to arsenic-contaminated soil such that no person has greater than a 1 in 10,000 increased risk of contracting cancer; -Preventing the occurrence and spread of windblown contamination; and Addressing the bulk of the source material that is driving the risk to ecological receptors, while minimizing the damage that the undeveloped area would sustain through more extensive construction activities.	ROD, 9/16/2009, p. 29
UTD988075719	03	Off-site disposal	-Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead level of 10 micrograms of lead per deciliter of blood. -Reducing risks from exposure to arsenic-contaminated soil such that no person has greater than a 10-4 increased risk of contracting cancer from contaminated soil. -Remediating soils to levels that allow continued residential use. -Preventing the occurrence and spread of windblown contamination.	ROD, 9/30/2004, p. 31; ESD, 11/15/2005, p. 6
COD980716955				
COD980716955	01	Off-site disposal	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/30/2003, p. 15-16

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
COD980716955	02	Off-site disposal	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 7
COD980716955	02	Institutional Controls	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 7
COD980716955	03	Off-site disposal	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 13
COD980716955	03	Institutional Controls	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 13
COD980716955	04	Off-site disposal	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionucleides; and 3) direct exposure to gamma radiation.	FYR, 9/30/1993, p.5
COD980716955	04	Institutional Controls	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionucleides; and 3) direct exposure to gamma radiation.	FYR, 9/30/1993, p.5
COD980716955	05			
COD980716955	06	Off-site disposal	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionucleides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 21
COD980716955	06	Institutional Controls	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionucleides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 21
COD980716955	07	Institutional Controls	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionucleides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 25
COD980716955	08	Off-site disposal	Specific objectives include: -prevent excess cancer risk due to inhalation of radon and radon decay products; -prevent exposure, contact with and/or ingestion and inhalation of soils or dust posing an excess cancer risk due to gamma radiation; -prevent ingestion of garden produce grown in contaminated soil; -prevent potential exposure to soils having radium-226 concentrations greater than 5 pCi/g above background in the top 15 cm and/or 15 pCi/g above background below 15 cm in depth; -prevent potential exposure to non-radioactive contaminants in soils; and •-prevent ingestion of ground water with contaminants in excess of ARARs or health-based concentrations if no ARARs exist.	ROD, 1/28/1992, p. 31; FYR, 9/12/1994, p. 27
COD980716955	08	Solidification	Specific objectives include: -prevent excess cancer risk due to inhalation of radon and radon decay products; -prevent exposure, contact with and/or ingestion and inhalation of soils or dust posing an excess cancer risk due to gamma radiation; -prevent ingestion of garden produce grown in contaminated soil; -prevent potential exposure to soils having radium-226 concentrations greater than 5 pCi/g above background in the top 15 cm and/or 15 pCi/g above background below 15 cm in depth; -prevent potential exposure to non-radioactive contaminants in soils; and -prevent ingestion of ground water with contaminants in excess of ARARs or health-based concentrations if no ARARs exist.	ROD, 1/28/1992, p. 31; FYR, 9/12/1994, p. 27
COD980716955	08	Institutional Controls	Specific objectives include: -prevent excess cancer risk due to inhalation of radon and radon decay products; -prevent exposure, contact with and/or ingestion and inhalation of soils or dust posing an excess cancer risk due to gamma radiation; -prevent ingestion of garden produce grown in contaminated soil; -prevent potential exposure to soils having radium-226 concentrations greater than 5 pCi/g above background in the top 15 cm and/or 15 pCi/g above background below 15 cm in depth; -prevent potential exposure to non-radioactive contaminants in soils; and -prevent ingestion of ground water with contaminants in excess of ARARs or health-based concentrations if no ARARs exist.	ROD, 1/28/1992, p. 31; FYR, 9/12/1994, p. 27

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
COD980716955	09	On-site disposal (excavation, capping, covering, reveg)	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 21
COD980716955	09	Institutional Controls	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 21
COD980716955	10	Off-site disposal	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/10/2003, p. 44
COD980716955	11	Off-site disposal	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 21
COD980716955	11	Institutional Controls	The objectives of this remedy were to prevent: 1) radiation exposure due to inhalation of radon gas and its daughter products; 2) radiation exposure due to inhalation and ingestion of long-lived radionuclides; and 3) direct exposure to gamma radiation.	FYR, 9/12/1994, p. 21
COD081961518				
COD081961518	01	Water treatment-lime	Reduce the surface and groundwater transport of metals so that final remediation goals will be achieved in the Eagle River. Provide adequate capacity and treatment performance until such time that water treatment is no longer required to consistently achieve the final remediation goals in the Eagle River.	FYR, 9/21/2000, p. 70-74
COD081961518	01	Surface water diversion	Reduce the surface and groundwater transport of metals so that final remediation goals will be achieved in the Eagle River.	FYR, 9/21/2000, p. 70-74
COD081961518	01	On-site disposal (excavation, capping, covering, reveg)	Reduce the surface and groundwater transport of metals so that final remediation goals will be achieved in the Eagle River. Control potential exposure pathway to mine tailings. Control exposure to airborne contaminants. Re-establish vegetation to a natural condition. Prevent direct contact exposures to tailings or contaminated sediments	FYR, 9/21/2000, p. 70-74
COD081961518	01	Alternative drinking water	Reduce the surface and groundwater transport of metals so that final remediation goals will be achieved in the Eagle River. Control potential human ingestion of groundwater.	FYR, 9/21/2000, p. 70-74
COD081961518	01	Institutional Controls	Reduce the surface and groundwater transport of metals so that final remediation goals will be achieved in the Eagle River.	FYR, 9/21/2000, p. 70-74
COD081961518	02	Institutional Controls	To addresses the principal threat at the site by limiting site access and providing a long-term, local presence.	ROD, 9/3/1998, p. 3, 8
COD081961518	03			
COD081961518	04			
MTD006230346				
MTD006230346	01	Water treatment-other		
MTD006230346	01	Other – Treatment Technology		
MTD006230346	01	Other – Treatment Technology		
MTD006230346	02	Off-site disposal	1) Continue to have no child in the East Helena area exhibit a blood lead concentration greater than 10 ug/dl; 2) For human receptors in existing residential areas, prevent direct contact/ingestion with soil having concentrations in excess of the cleanup level of 1,000/500 ppm lead. Once cleanup is triggered by a section of the yard exceeding 1,000 ppm, all sections of the yard with concentrations of lead exceeding 500 ppm will be cleaned up; 3) For human receptors in residential areas, prevent direct contact/ingestion with soil having concentrations in excess of the cleanup level of a yard average 100 ppm arsenic; 4) Prevent recontamination of areas already cleaned up, such as from undeveloped areas that have not been cleaned up, or from buried soils or remodeling debris with residual lead levels above risk-based concentrations; 5) Minimize wind-borne migration of lead into residential areas; 6) Minimize exposures to livestock and wildlife; 7) For undeveloped lands that may be used by workers (farmer, rancher, irrigator, commercial retailer, etc.) or recreational visitors, prevent direct contact/ingestion with soil having concentrations in excess of cleanup levels. For lead, these cleanup levels are 1,482 ppm for commercial workers and 3,245 ppm for recreational visitors. For arsenic,	ROD 9/17/2009, p.119

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			these cleanup levels are 572 ppm for commercial workers and 794 ppm for recreational visitors; 8) For undeveloped areas that are proposed for residential development in the future, ensure that soil lead and arsenic concentrations do not exceed 500 ppm lead or 100 ppm arsenic. A lead cleanup level of 500 ppm for the remediation of undeveloped lands with fewer samples (than residential areas) allows undeveloped lands to be remediated at a cost less than the cost of sampling at a residential intensity.	
MTD006230346	02	Off-site disposal	1) Continue to have no child in the East Helena area exhibit a blood lead concentration greater than 10 ug/dl; 2) For human receptors in existing residential areas, prevent direct contact/ingestion with soil having concentrations in excess of the cleanup level of 1,000/500 ppm lead. Once cleanup is triggered by a section of the yard exceeding 1,000 ppm, all sections of the yard with concentrations of lead exceeding 500 ppm will be cleaned up; 3) For human receptors in residential areas, prevent direct contact/ingestion with soil having concentrations in excess of the cleanup level of a yard average 100 ppm arsenic; 4) Prevent recontamination of areas already cleaned up, such as from undeveloped areas that have not been cleaned up, or from buried soils or remodeling debris with residual lead levels above risk-based concentrations; 5) Minimize wind-borne migration of lead into residential areas; 6) Minimize exposures to livestock and wildlife; 7) For undeveloped lands that may be used by workers (farmer, rancher, irrigator, commercial retailer, etc.) or recreational visitors, prevent direct contact/ingestion with soil having concentrations in excess of cleanup levels. For lead, these cleanup levels are 1,482 ppm for commercial workers and 3,245 ppm for recreational visitors. For arsenic, these cleanup levels are 572 ppm for commercial workers and 794 ppm for recreational visitors; 8) For undeveloped areas that are proposed for residential development in the future, ensure that soil lead and arsenic concentrations do not exceed 500 ppm lead or 100 ppm arsenic. A lead cleanup level of 500 ppm for the remediation of undeveloped lands with fewer samples (than residential areas) allows undeveloped lands to be remediated at a cost less than the cost of sampling at a residential intensity.	ROD 9/17/2009, p.119
MTD006230346	02	Institutional Controls	Continue the Lead Education and Abatement Program and continue to seek ways to improve its effectiveness and outreach.	ROD 9/17/2009, p.119
UT0002240158				
UT0002240158	00	On-site disposal (excavation, capping, covering, reveg)	Prevent exposure of children to lead in surface soil within current residential properties, vacant properties interspersed among residential properties, and commercial properties at the Site where soil is determined to be the source of lead and the ingestion of soil is predicted to result in a greater than 5% chance that an individual child or a group of similarly exposed children will have a blood lead level greater than 10 ?g/dL; Prevent exposure of adolescents and adults engaging in recreational activities to lead in surface soil within discrete mine waste piles and non-residential properties (areas currently used for recreation but proposed for future development) at the Site where ingestion of soil is predicted to result in a greater than 5% chance that an individual or a group of similarly exposed individuals will have a blood lead level greater than 11.1 ?g/dL.	ROD, 9/30/2002, p. 36
UT0002240158	00	Institutional Controls	Prevent exposure of children to lead in surface soil within current residential properties, vacant properties interspersed among residential properties, and commercial properties at the Site where soil is determined to be the source of lead and the ingestion of soil is predicted to result in a greater than 5% chance that an individual child or a group of similarly exposed children will have a blood lead level greater than 10 ?g/dL; Prevent exposure of adolescents and adults engaging in recreational activities to lead in surface soil within discrete mine waste piles and non-residential properties (areas currently used for recreation but proposed for future development) at the Site where ingestion of soil is predicted to result in a greater than 5% chance that an individual or a group of similarly exposed individuals will have a blood lead level greater than 11.1 ?g/dL.	ROD, 9/30/2002, p. 36
UT0002240158	01			
UT0002240158	02			
UT0002240158	03			
UT0002240158	04			
MT0012694970				
MT0012694970	01			
MT0012694970	02			
MT0012694970	03			
CO0001093392				
CO0001093392	00			
SDD987673985				
SDD987673985	01	On-site disposal (excavation, capping, covering, reveg)	• Manage ARD source materials to reduce the volume of ARD that requires onsite treatment • Reduce or eliminate the risk of an uncontrolled release of ARD from the site as a result of a lOO-year, 24-hour storm event • Ensure that low intensity recreational site users and commercial workers have no more than a I X104 chance of contracting cancer from ingestion and inhalation of onsite soils	ROD, 9/29/2008, 8-1,2

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			• Ensure that low intensity recreational site users and commercial workers are protected against non-eancer effects through inhalation and ingestion of surface soils for contaminants that exceed a hazard index of greater than or equal to one • Reduce risks to terrestrial ecological receptors through control of mine waste. • Ensure the remedy is compatible with existing and future RODs for the site.	
SDD987673985	01	Institutional Controls	• Implement institutional controls to prevent the unacceptable uses of groundwater that pose human or ecological risks. • Implement institutional controls that limit residential and off-road motorized vehicle rider use and allow only low intensity recreational site users and commercial workers. • Reduce risks to terrestrial ecological receptors through control of mine waste. • Ensure the remedy is compatible with existing and future RODs for the site.	ROD, 9/29/2008, 8-1,2
SDD987673985	01	Other – Engineering/Containment	• Manage ARD source materials to reduce the volume of ARD that requires onsite treatment • Reduce or eliminate the risk of an uncontrolled release of ARD from the site as a result of a lOO-year, 24-hour storm event • Ensure that low intensity recreational site users and commercial workers have no more than a I X104 chance of contracting cancer from ingestion and inhalation of onsite soils • Ensure that low intensity recreational site users and commercial workers are protected against non-eancer effects through inhalation and ingestion of surface soils for contaminants that exceed a hazard index of greater than or equal to one • Reduce risks to terrestrial ecological receptors through control of mine waste. • Ensure the remedy is compatible with existing and future RODs for the site.	ROD, 9/29/2008, 8-1,2
SDD987673985	01	Water treatment-lime	• Manage ARD source materials to reduce the volume of ARD that requires onsite treatment • Reduce or eliminate the risk of an uncontrolled release of ARD from the site as a result of a lOO-year, 24-hour storm event • Ensure that low intensity recreational site users and commercial workers have no more than a I X104 chance of contracting cancer from ingestion and inhalation of onsite soils • Ensure that low intensity recreational site users and commercial workers are protected against non-eancer effects through inhalation and ingestion of surface soils for contaminants that exceed a hazard index of greater than or equal to one • Reduce risks to terrestrial ecological receptors through control of mine waste. • Ensure the remedy is compatible with existing and future RODs for the site.	ROD, 9/29/2008, 8-1,2
SDD987673985	01	Monitoring (all media and as separate remedy)	• Manage ARD source materials to reduce the volume of ARD that requires onsite treatment • Reduce or eliminate the risk of an uncontrolled release of ARD from the site as a result of a lOO-year, 24-hour storm event • Ensure that low intensity recreational site users and commercial workers have no more than a I X104 chance of contracting cancer from ingestion and inhalation of onsite soils • Ensure that low intensity recreational site users and commercial workers are protected against non-eancer effects through inhalation and ingestion of surface soils for contaminants that exceed a hazard index of greater than or equal to one • Reduce risks to terrestrial ecological receptors through control of mine waste. • Ensure the remedy is compatible with existing and future RODs for the site.	ROD, 9/29/2008, 8-1,2
SDD987673985	02	Water treatment-lime	• Maintain site security and operation infrastructure; • Capture source water and ARD; • Treat source water and ARD on-site to reduce the toxicity of the water prior to discharge; • If possible, treat sufficient ARD volumes to gain storage and/or dewater the site during low precipitation cycles; • Meet surface water discharge quality goals at the compliance point in Strawberry Creek	ROD, 4/23/2001, 2-18
SDD987673985	02	Impoundment	• Maintain site security and operation infrastructure; • Capture source water and ARD; • Treat source water and ARD on-site to reduce the toxicity of the water prior to discharge; • If possible, treat sufficient ARD volumes to gain storage and/or dewater the site during low precipitation cycles; • Meet surface water discharge quality goals at the compliance point in Strawberry Creek	ROD, 4/23/2001, 2-18
UTD093120921				
UTD093120921	01	Institutional Controls	The RAOs for the site, identified to be protective of human health and the environment for the conservation area, the TVRR grade area, and Pine Canyon, are as follows: 1) For human and ecological receptors, prevent direct contact/ingestion with soil having lead and/or arsenic	ROD, 9/27/2007, p. 59

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			concentrations in excess of cleanup levels identified for the site, and 2)For human and ecological receptors, protect water quality in streams by minimizing migration of soil with lead and/or arsenic concentrations above cleanup levels into streams.	
UTD093120921	01	Monitoring (all media and as separate remedy)	The RAOs for the site, identified to be protective of human health and the environment for the conservation area, the TVRR grade area, and Pine Canyon, are as follows: 1) For human and ecological receptors, prevent direct contact/ingestion with soil having lead and/or arsenic concentrations in excess of cleanup levels identified for the site, and 2)For human and ecological receptors, protect water quality in streams by minimizing migration of soil with lead and/or arsenic concentrations above cleanup levels into streams.	ROD, 9/27/2007, p. 59
UT0002391472				
UT0002391472	01	Institutional Controls	1) Reduce risks from exposure to lead contaminated soil such that no child has more than a 5% chance of exceeding a blood lead level of 10 micrograms per deciliter; 2) Reduce risks from exposure to arsenic contaminated soil such that no person has greater than a 1 x 10-4 chance of contracting cancer; 3) Clean the site up to levels that allow for residential use; 4) Remove as much contamination as practicable which could serve as source of contamination to ground water; 5) Prevent the occurrence and spread of windblown contamination.	ROD, 7/29/1999, p. 33
UT0002391472	01	Off-site disposal	1) Reduce risks from exposure to lead contaminated soil such that no child has more than a 5% chance of exceeding a blood lead level of 10 micrograms per deciliter; 2) Reduce risks from exposure to arsenic contaminated soil such that no person has greater than a 1 x 10-4 chance of contracting cancer; 3) Clean the site up to levels that allow for residential use; 4) Remove as much contamination as practicable which could serve as source of contamination to ground water; 5) Prevent the occurrence and spread of windblown contamination.	ROD, 7/29/1999, p. 33
UT0002391472	02			
UT0002391472	03			
UT0002391472	04			
UT0002391472	05			
UTD070926811				
UTD070926811	01			
UTD070926811	02			
UTD070926811	03			
UTD070926811	04			
UTD070926811	05			
UTD070926811	06			
UTD070926811	07			
UTD070926811	08	On-site disposal (excavation, capping, covering, reveg)	1. Prevent ground water contamination through removal or capping of leachable materials. 2. Eliminate or contain contaminated materials which washed down into sensitive wetland habitats. 3. Eliminate or prevent exposure of contaminants to wildlife, especially wetland birds.	ROD, 9/26/2002, p. 134
UTD070926811	09	No action	The objective of the potential removal project in the town of Magna was to reduce or eliminate unacceptably high exposures of lead and arsenic to the residents of Magna. This objective was not applied in this case because no unacceptably high exposures were found in the assessment studies.	ROD, 9/26/2002, p. 75
UTD070926811	10			
UTD070926811	11			
UTD070926811	12			
UTD070926811	13	On-site disposal (excavation, capping, covering, reveg)	1. Reduce or eliminate exposure of industrial workers to soils with unacceptable concentrations of hazardous contaminants; 2. Prevent contamination of ground water by eliminating sources of groundwater contamination or containing contamination so that it does not continue to leach into the ground water; 3. Eliminate or contain contaminated materials which might wash down into sensitive wetland habitats; 4. Notify local governmental agencies of any wastes remaining on site which could pose a threat to future occupants of the land following facility closure.	ROD, 9/26/2002, p. 108
UTD070926811	13	Surface water diversion	1. Reduce or eliminate exposure of industrial workers to soils with unacceptable concentrations of hazardous contaminants; 2. Prevent contamination of ground water by eliminating sources of groundwater contamination or containing contamination so that it does not continue to leach into the ground water; 3. Eliminate or contain contaminated materials which might wash down into sensitive wetland habitats; 4. Notify local governmental agencies of any wastes remaining on site which could pose a threat to future occupants of the land following facility closure.	ROD, 9/26/2002, p. 108
UTD070926811	13	Deconstruction/ decontamination of buildings	1. Reduce or eliminate exposure of industrial workers to soils with unacceptable concentrations of hazardous contaminants; 2. Prevent contamination of ground water by eliminating sources of groundwater contamination or containing contamination so that it does not continue to leach into the ground water; 3. Eliminate or contain contaminated materials which might wash down into sensitive wetland habitats; 4. Notify local governmental agencies of any wastes remaining on site which could pose a threat to future occupants of the land following facility closure.	ROD, 9/26/2002, p. 108

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
UTD070926811	13	Off-site disposal	1. Reduce or eliminate exposure of industrial workers to soils with unacceptable concentrations of hazardous contaminants; 2. Prevent contamination of ground water by eliminating sources of groundwater contamination or containing contamination so that it does not continue to leach into the ground water; 3. Eliminate or contain contaminated materials which might wash down into sensitive wetland habitats; 4. Notify local governmental agencies of any wastes remaining on site which could pose a threat to future occupants of the land following facility closure.	ROD, 9/26/2002, p. 108
UTD070926811	14	On-site disposal (excavation, capping, covering, reveg)	1. Reduce or eliminate exposure of industrial workers to soils with unacceptable concentrations of hazardous contaminants; 2. Prevent additional contamination of ground water by eliminating source of groundwater contamination, or contain the contamination so that it does not continue to leach into the ground water. 3. Eliminate or contain contaminated materials which might wash down into sensitive wetland habitats; 4. Notify local governmental agencies of any wastes remaining on site which cost pose a threat to future occupants of the land following mine closure.	ROD, 9/26/2002, p. 124-125
UTD070926811	14	Deconstruction/ decontamination of buildings	1. Reduce or eliminate exposure of industrial workers to soils with unacceptable concentrations of hazardous contaminants; 2. Prevent additional contamination of ground water by eliminating source of groundwater contamination, or contain the contamination so that it does not continue to leach into the ground water. 3. Eliminate or contain contaminated materials which might wash down into sensitive wetland habitats; 4. Notify local governmental agencies of any wastes remaining on site which cost pose a threat to future occupants of the land following mine closure.	ROD, 9/26/2002, p. 124-125
UTD070926811	15	On-site disposal (excavation, capping, covering, reveg)	The objectives for the operational areas of the milling areas and waste disposal areas are (1) to reduce or eliminate exposures to industrial workers at the site; (2) reduce or eliminate exposures to wildlife that might visit these areas after older structures are demolished; and (3) prevent ground water contamination by leaching of rain waters through wastes.	ROD, 9/26/2002, p. 65
UTD070926811	16			
UTD070926811	17			
UTD070926811	18	On-site disposal (excavation, capping, covering, reveg)	1. Reduce or eliminate unacceptable levels of exposures to wildlife 2. Reduce or eliminate unacceptable levels of exposures to recreational and industrial workers.	ROD, 9/26/2002, p. 211
UTD070926811	19	On-site disposal (excavation, capping, covering, reveg)	1. Reduce or eliminate unacceptable exposures of plants and wildlife to residual contaminants in the soils of the canyon. 2. Reduce or eliminate unacceptable exposures experienced by people who might use the canyon properties for recreational activities in the future, such as hiking and hunting. 3. Prevent migration of contaminants into sensitive habitats such as wetlands.	ROD, 9/26/2002, p. 203
UTD070926811	19	Other – Engineering/Containment	1. Reduce or eliminate unacceptable exposures of plants and wildlife to residual contaminants in the soils of the canyon. 2. Reduce or eliminate unacceptable exposures experienced by people who might use the canyon properties for recreational activities in the future, such as hiking and hunting. 3. Prevent migration of contaminants into sensitive habitats such as wetlands.	ROD, 9/26/2002, p. 203
UTD070926811	20	On-site disposal (excavation, capping, covering, reveg)	1. Reduce or eliminate unacceptable levels of exposures to wildlife 2. Reduce or eliminate unacceptable levels of exposures to recreational and industrial workers.	ROD, 9/26/2002, p. 211
UTD070926811	21			
UTD070926811	22	On-site disposal (excavation, capping, covering, reveg)	1. Eliminate or reduce the concentrations of hazardous substances in wetland habitats to reduce exposures to wildlife 2. Eliminate or reduce the concentrations of hazardous substances discharged into the Great Salt Lake	ROD, 9/26/2002, p. 158
UTD070926811	22	Surface water diversion	1. Eliminate or reduce the concentrations of hazardous substances in wetland habitats to reduce exposures to wildlife 2. Eliminate or reduce the concentrations of hazardous substances discharged into the Great Salt Lake	ROD, 9/26/2002, p. 158
UTD070926811	23	Water treatment - Bioreactors (e.g., SRBs)	1.) Minimize or remove the potential for on-site (wetlands and Great Salt Lake) ecological risk to receptors of concern by limiting the migration and uptake of constituents of concern in excess of risk-based concentrations for sensitive species. 2.) Minimize or remove the potential for on-site human risk via ingestion by limiting exposure to ground water containing constituents of concern exceeding risk-based concentrations for human health or drinking water MCLs. 3.) Minimize or remove the potential for on-site ecological risk via artesian flow and springs into the Garfield wetlands to receptors of concern by limiting the migration of constituents of concern in excess of risk-based concentrations for sensitive species.	ROD, 9/26/2002, p. 170
UTD000826404				
UTD000826404	01	On-site disposal (excavation, capping, covering, reveg)	Action level of 1100 ppm lead and 100 ppm arsenic in residential soil; 2000 ppm lead in open space, recreational and industrial lands	ROD 11/3/1998, pp. 31-32
UTD000826404	01	Institutional Controls	City of West Jordan to design a long-term plan of this and nearby area under a Brownfields grant	ROD 11/3/1998, p. 9
UTD000826404	02	Water treatment-lime	1. Minimize or remove the potential for human risk (by means of ingestion) by limiting exposure to ground water containing COCs exceeding risk-based concentrations or drinking water MCLs. 2. Minimize or remove the potential for environmental risk (by means of flow of ground water to	ROD 12/13/00 pp. 54-55

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			the Jordan River) to receptors of concern. 3. Contain the acid plume and keep it from expanding; maintain sulfate-laden ground water in excess of 1500 mg/l west of the Kennecott property line in Zone A. 4. Remediate the aquifer over the long term. 5. Return ground water to beneficial use.	
UTD000826404	02	Water treatment-other	1. Minimize or remove the potential for human risk (by means of ingestion) by limiting exposure to ground water containing COCs exceeding risk-based concentrations or drinking water MCLs. 2. Minimize or remove the potential for environmental risk (by means of flow of ground water to the Jordan River) to receptors of concern. 3. Contain the acid plume and keep it from expanding; maintain sulfate-laden ground water in excess of 1500 mg/l west of the Kennecott property line in Zone A. 4. Remediate the aquifer over the long term. 5. Return ground water to beneficial use.	ROD 12/13/00 pp. 54-55
UTD000826404	02	Monitored natural attenuation/recovery	Goal of natural attenuation is to achieve State of Utah's primary dw standard of 500 ppm for sulfates.	ROD 12/13/00 pp. 2, 82
UTD000826404	02	Water treatment-other	Install a barrier well containment system at leading edge of acid plume at points in path of movement (where sulfate is less than 1500 ppm). No water with sulfate concentrations greater than 1500 ppm should move off Kennecott property.	ROD 12/13/00 pp. 3; ESD 06/23/03, p. 3
UTD000826404	02	Alternative drinking water	1. Minimize or remove the potential for human risk (by means of ingestion) by limiting exposure to ground water containing COCs exceeding risk-based concentrations or drinking water MCLs. 2. Minimize or remove the potential for environmental risk (by means of flow of ground water to the Jordan River) to receptors of concern. 3. Contain the acid plume and keep it from expanding; maintain sulfate-laden ground water in excess of 1500 mg/l west of the Kennecott property line in Zone A. 4. Remediate the aquifer over the long term. 5. Return ground water to beneficial use.	ROD 12/13/00 pp. 54-55
UTD000826404	02	Institutional Controls	1. Minimize or remove the potential for human risk (by means of ingestion) by limiting exposure to ground water containing COCs exceeding risk-based concentrations or drinking water MCLs. 2. Minimize or remove the potential for environmental risk (by means of flow of ground water to the Jordan River) to receptors of concern. 3. Contain the acid plume and keep it from expanding; maintain sulfate-laden ground water in excess of 1500 mg/l west of the Kennecott property line in Zone A. 4. Remediate the aquifer over the long term. 5. Return ground water to beneficial use.	ROD 12/13/00 pp. 54-55
UTD000826404	03	Institutional Controls	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	04	On-site disposal (excavation, capping, covering, reveg)	No action level; 1000 ppm lead used as guide to retire, drain and excavate old reservoir to a depth of 20-30 ft	ROD 11/3/1998, p. 27
UTD000826404	04	Other – Engineering/Containment	Construction of a new reservoir with triple lining system and leak detection system.	ROD 11/3/1998, p. 33
UTD000826404	05	On-site disposal (excavation, capping, covering, reveg)	Removal and consolidation of tailings with a lead industrial/recreational action level of 2000 ppm; to prevent any direct contact with the waste by visitors, workers, and wildlife; to prevent any future migration of contaminants to groundwater and to prevent any off-site migration associated with a 100 year storm event.	ROD 11/3/1998, pp. 27-28, 33
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
UTD000826404	06	Surface water diversion	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	06	Water treatment - Created Wetlands	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	06	Soil Amendments	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	06	Sediment dredging/ disposal	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	1.)Prevent ground water contamination from uncontrolled releases of acids and metals leached from waste rock piles. 2.) Prevent exposures of humans to unacceptably high levels of lead and arsenic in soils, based on different exposure rates at different land uses. 3.) Prevent downstream migration of unacceptable levels of lead and arsenic in waters used for irrigation by homeowners and farmers. 4.) Protect flora and fauna in areas which are prime wildlife habitat.	ROD - 9/28/2001: page 16
UTD000826404	08			
UTD000826404	09			
UTD000826404	10	Institutional Controls	Action level to be used for lead was 1000 ppm, residential use	ROD 11/3/1998, p. 29
UTD000826404	11	Institutional Controls	None	ROD 11/3/1998, p. 37
UTD000826404	12			
UTD000826404	13			
UTD000826404	14			
UTD000826404	15			
UTD000826404	16			
UTD000826404	17	Institutional Controls	None; no lead levels > 2000 ppm AL for agricultural use; area zoned industrial	ROD 11/3/1998, p. 33
UTD000826404	18			
UTD000826404	19			
UTD000826404	20			
UTD000826404	21			
UTD000826404	22			
UTD000826404	23			
UTD000826404	24			

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
UTD000826404	24	Deconstruction/ decontamination of buildings	1. Reduce or eliminate unacceptable exposures to industrial workers and future visitors to the site; 2. Reduce or eliminate unacceptable exposures of site contaminants to wildlife; 3. Prevent movement of contaminants from the site into ground water or downstream.	ROD, 9/26/2002, p. 219
UTD000826404	24	On-site disposal (excavation, capping, covering, reveg)	1. Reduce or eliminate unacceptable exposures to industrial workers and future visitors to the site; 2. Reduce or eliminate unacceptable exposures of site contaminants to wildlife; 3. Prevent movement of contaminants from the site into ground water or downstream.	ROD, 9/26/2002, p. 219
MT0009083840				
MT0009083840	01	On-site disposal (excavation, capping, covering, reveg)	(1) Break the exposure pathways for inhalation of LA fibers that would result in unacceptable cancer risk or non-cancer hazard. (2) Control erosion of contaminated soil by wind and water from source locations to prevent exposures and the spread of contamination to unimpacted locations. (3)	2010 ROD
MT0009083840	01	Off-site disposal	(1) Break the exposure pathways for inhalation of LA fibers that would result in unacceptable cancer risk or non-cancer hazard. (2) Control erosion of contaminated soil by wind and water from source locations to prevent exposures and the spread of contamination to unimpacted locations.	2010 ROD
MT0009083840	01	Institutional Controls	(3) Implement controls to prevent uses of the site that could pose unacceptable risks to human health or the environment or compromise the remedy.	2010 ROD
MT0009083840	02	On-site disposal (excavation, capping, covering, reveg)	Break the exposure pathways for inhalation of LA fibers that would result in unacceptable cancer risk or non-cancer hazard. Control erosion of contaminated soil by wind and water from source locations to prevent exposures and the spread of contamination to unimpacted locations.	2010 ROD p8-2
MT0009083840	02	Off-site disposal	Break the exposure pathways for inhalation of LA fibers that would result in unacceptable cancer risk or non-cancer hazard. Control erosion of contaminated soil by wind and water from source locations to prevent exposures and the spread of contamination to unimpacted locations.	2010 ROD p8-2
MT0009083840	02	Institutional Controls	Implement controls to prevent uses of the site that could pose unacceptable risks to human health or the environment or compromise the remedy.	2010 ROD p8-2
MT0009083840	03			
MT0009083840	04			
MT0009083840	05			
MT0009083840	06			
MT0009083840	07			
MT0009083840	08			
COD042167858				
COD042167858	01	Impoundment	isolate and/or reduce the mobility of contaminated materials within source areas at Cotter's Cañon City mill property and to reduce exposure to contaminated soils and ground water, in order to protect human health and the environment	ROD, 1/3/2002, p. 2
COD042167858	01	Permeable Reactive Barrier	to reduce and eventually eliminate ground-water contamination within the Lincoln Park Study Area	ROD, 1/3/2002, p. 5-5
COD042167858	02	Monitoring (all media and as separate remedy)	isolate and/or reduce the mobility of contaminated materials within source areas at Cotter's Cañon City mill property and to reduce exposure to contaminated soils and ground water, in order to protect human health and the environment	ROD, 1/3/2002, p. 2
UTD081834277				
UTD081834277	01	On-site disposal (excavation, capping, covering, reveg)	Reduce or eliminate exposure to contaminated soils for current or hypothetical residents and hypothetical future workers	FYR, 10/2003, p.4-1
UTD081834277	01	Monitoring (all media and as separate remedy)	Prevent unacceptable risk of exposure to current and future human populations presented by direct contact, inhalation, or ingestion ofcontaminated ground water Protect water quality of previously uncontaminated portions of the US&G Aquifer and the Deep Principal Aquifer as these aquifers are sources of drinking water Provide that future discharge of contaminated ground water from the Site to the Jordan River is protective of the aquatic environment and designated uses Restore ground water to beneficial use (if possible)	ESD, 2/10/2006, p. 5
UTD081834277	01	Institutional Controls	Reduce or eliminate exposure to contaminated soils for current or hypothetical residents and hypothetical future workers	FYR, 10/2003, p. 7-4

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
UTD081834277	02	Off-site disposal	Prevent unacceptable exposure risks to current and future human populations presented by contact, ingestion, or inhalation of smelter materials, associated contaminated materials, or COCs derived from the smelter areas. Provide that the future migration of contaminants from the smelter materials is within limits considered protective of groundwater. Prevent unacceptable exposure risks to current and future human populations presented by contact, ingestion, or inhalation of slag and associated contaminated materials. Provide that the future migration of contaminants from the slag or contaminated materials within the slag is within limits considered protective of groundwater.	ROD, 12/2008, p. 30
UTD081834277	02	Other – Engineering/Containment	Prevent unacceptable exposure risks to current and future human populations presented by contact, ingestion, or inhalation of smelter materials, associated contaminated materials, or COCs derived from the smelter areas. Provide that the future migration of contaminants from the smelter materials is within limits considered protective of groundwater. Prevent unacceptable exposure risks to current and future human populations presented by contact, ingestion, or inhalation of slag and associated contaminated materials. Provide that the future migration of contaminants from the slag or contaminated materials within the slag is within limits considered protective of groundwater.	ROD, 12/2008, p. 30
UTD081834277	02	Institutional Controls	Prevent unacceptable exposure risks to current and future human populations presented by contact, ingestion, or inhalation of smelter materials, associated contaminated materials, or COCs derived from the smelter areas. Provide that the future migration of contaminants from the smelter materials is within limits considered protective of groundwater. Prevent unacceptable exposure risks to current and future human populations presented by contact, ingestion, or inhalation of slag and associated contaminated materials. Provide that the future migration of contaminants from the slag or contaminated materials within the slag is within limits considered protective of groundwater.	ROD, 12/2008, p. 30
UTD081834277	02	Other – Engineering/Containment	Prevent unacceptable exposure risks to current or future ecological receptors presented by contact, ingestion, inhalation, or uptake from smelter materials, associated contaminated materials, or COCs derived from the smelter areas or from uptake of slag, associated contaminated material within slag, or COCs derived from the slag areas. Five-Year Review Report for Midvale Slag Superfund Site – 30 Prevent smelter materials, slag or contaminated materials within slag from entering the Jordan River via surface water flow.	ROD, 12/2008, p. 30
UTD081834277	02	Monitoring (all media and as separate remedy)	1. Prevent unacceptable risk of exposure to current and future human populations presented by direct contact, inhalation, or ingestion of contaminated groundwater. 2. Protect water quality of previously uncontaminated portions of the US&G Aquifer and Deep Principal Aquifer as these aquifers are sources of drinking water. 3. Provide that future discharge of contaminated groundwater from the Site to the Jordan River is protective of the aquatic environment and designated uses. 4. Restore groundwater to beneficial use (if possible).	ROD, 12/2008, p. 30
MTD980717565				
MTD980717565	01	Alternative drinking water		
MTD980717565	02	Sediment dredging/ disposal	- Existing local waste repositories and newly created debris repositories will remain out of the 100-year flood plain. Remedial design of the new channel and the adjacent flood plain will accommodate this requirement. - Milltown Reservoir sediments containing elevated levels of metals in Area 3 not removed by the remedial activities or left in place adjacent to I-90 will be isolated from the flood plain and protected from erosion by adequate slope and toe protection. Remedial design considerations for such areas will be able to withstand a 100-year flood event without significant soil losses resulting from erosion.	ROD, 12/2004, PT. 6., p. 31
MTD980717565	02	On-site disposal (excavation, capping, covering, reveg)	- Improvements in groundwater quality compared to Performance Standards for multiple points of compliance over a reasonable time period. - Reduction of acute and chronic risks to aquatics as measured by biological surveys of fish densities, and benthic macroinvertebrate taxa richness and species diversity counts. - A measure of vegetation attributes of cover, production, species richness, and successional trend across the reconstructed flood plain. - Assessments of meeting Performance Standards established in this Record of Decision, including ARARs.	ROD, 12/2004, PT. 6., p. 33
MTD980717565	03			
UT3890090035				
UT3890090035	01	On-site disposal (excavation, capping, covering, reveg)	1. excavate tailings and other byproduct material and hazardous substances to levels protective of human health and the environment.	FYR 1997, p. 5

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			2. dispose of the resulting contaminated materials in an on-site repository; for OU II, it is to store the contaminated materials at an interim repository on the millsite (OU I) pending their permanent disposal in the OU I repository	
UT3890090035	02	On-site disposal (excavation, capping, covering, reveg)	1. excavate tailings and other byproduct material and hazardous substances to levels protective of human health and the environment. 2. dispose of the resulting contaminated materials in an on-site repository; for OU II, it is to store the contaminated materials at an interim repository on the millsite (OU I) pending their permanent disposal in the OU I repository	FYR 1997, p. 5
UT3890090035	02	Institutional Controls	1. excavate tailings and other byproduct material and hazardous substances to levels protective of human health and the environment. 2. dispose of the resulting contaminated materials in an on-site repository; for OU II, it is to store the contaminated materials at an interim repository on the millsite (OU I) pending their permanent disposal in the OU I repository	FYR 1997, p. 5
UT3890090035	03	Monitoring (all media and as separate remedy)		
UT3890090035	03	Permeable Reactive Barrier	1. Prevent ingestion of alluvial ground water that contains COCs that may cause cancer and poses an incremental risk greater than the risk management range of 10–4 to 10–6 (1 in 10,000 to 1 in 1,000,000) or that has concentrations exceeding federal or state ground water standards. 2. Prevent ingestion of alluvial ground water that contains COCs that may cause negative health effects other than cancer (noncarcinogens) with a hazard index or hazard quotient greater than 1.0 or that has concentrations exceeding federal or state ground water standards.	ROD OU3, 5/2004, p. 43
UT3890090035	03	Institutional Controls	1. Prevent ingestion of alluvial ground water that contains COCs that may cause cancer and poses an incremental risk greater than the risk management range of 10–4 to 10–6 (1 in 10,000 to 1 in 1,000,000) or that has concentrations exceeding federal or state ground water standards. 2. Prevent ingestion of alluvial ground water that contains COCs that may cause negative health effects other than cancer (noncarcinogens) with a hazard index or hazard quotient greater than 1.0 or that has concentrations exceeding federal or state ground water standards.	ROD OU3, 5/2004, p. 43
UTD980667208				
UTD980667208	01	Off-site disposal	1. to excavate tailings and other byproduct materials or to modify existing structures to levels protective of human health and the environment 2. to temporarily store those wastes on the millsite	FYR, OU1, 1997, p. 5
UTD980667208	01	On-site disposal (excavation, capping, covering, reveg)	1. to excavate tailings and other byproduct materials or to modify existing structures to levels protective of human health and the environment 2. to temporarily store those wastes on the millsite	FYR, OU1, 1997, p. 5
UTD980667208	01	Deconstruction/ decontamination of buildings	1. to excavate tailings and other byproduct materials or to modify existing structures to levels protective of human health and the environment 2. to temporarily store those wastes on the millsite	FYR, OU1, 1997, p. 5
UTD980667208	02			
UTD980667208	03	Monitored natural attenuation/recovery		
UTD980667208	03	Institutional Controls		
UTD980667208	03	Permeable Reactive Barrier		
UTD980667208	04			
UTD980667208	05			
UTD980667208	06			
UTD980667208	07			
UTD980667208	08			
MTD021997689				
MTD021997689	01	Monitored natural attenuation/recovery		
MTD021997689	01	Soil Amendments		
MTD021997689	01	Off-site disposal		
MTD021997689	01	Institutional Controls		
CON000802630				
CON000802630	01			
CON000802630	02			
UTD980952840				

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
UTD980952840	01	Impoundment	1. Reduce risks to wildlife receptors in the wetland area and south diversion ditch such that hazard indexes for lead are less than or equal to one. 2. Ensure that recreational users, including children, continue to have no more than a 5% chance of exceeding a blood lead level of 10 micrograms per deciliter from exposure to lead in soils 3. Ensure that recreational users, including children, continue to have no more than 1 x 10-4 chance of contracting cancer from exposure to arsenic in soils. 4. Eliminate the risk of catastrophic failure of the tailings impoundment. 5. Ensure that surface water discharged from the Site meets applicable Utah water quality standards. 6. Eliminate the possibility of future ground water use and withdrawal at the Site. 7. Allow for a variety of future recreational uses. 8. Allow for future disposal of mine tailings from the Park City area within the tailings impoundment until the remedy is complete. 9. Minimize post-cleanup disturbance of tailings and contaminated soil. Provide controls that ensure any necessary disturbance at the Site follows prescribed methods.	ROD, OU1, 7/2005, p. 41
UTD980952840	01	Other – Engineering/Containment		
UTD980952840	01	Institutional Controls		
UTD980952840	02			
UTD980951388				
UTD980951388	01	On-site disposal (excavation, capping, covering, reveg)	1. Prevent exposure to contaminated soil/tailings on the site by either isolating (selected remedy) or removing (contingency alternative) tailings and soil exhibiting contaminant concentrations exceeding health-based remediation levels (action levels) shown in Table 14. 2. Prevent migration of and exposure to contaminated groundwater exhibiting arsenic concentrations greater than the action levels identified in Table 14 beyond the boundaries of the OU1 site. This will be accomplished by monitoring and containing groundwater in the unconfined upper sand and gravel aquifer beneath OU1. 3. Prevent exposure to contaminated soil/tailings, reduce inflow of water to the tailings, and reduce further contamination of the shallow groundwater by construction of a cap and interceptor trench (selected remedy) or removal of contaminated soil/tailings for offsite disposal (contingency alternative).	ROD OU1, 12/1993, p.23
UTD980951388	01	Soil Amendments	1. Prevent exposure to contaminated soil/tailings on the site by either isolating (selected remedy) or removing (contingency alternative) tailings and soil exhibiting contaminant concentrations exceeding health-based remediation levels (action levels) shown in Table 14. 2. Prevent migration of and exposure to contaminated groundwater exhibiting arsenic concentrations greater than the action levels identified in Table 14 beyond the boundaries of the OU1 site. This will be accomplished by monitoring and containing groundwater in the unconfined upper sand and gravel aquifer beneath OU1. 3. Prevent exposure to contaminated soil/tailings, reduce inflow of water to the tailings, and reduce further contamination of the shallow groundwater by construction of a cap and interceptor trench (selected remedy) or removal of contaminated soil/tailings for offsite disposal (contingency alternative).	ROD OU1, 12/1993, p.23
UTD980951388	01	Sediment dredging/ disposal	1. Prevent exposure to contaminated soil/tailings on the site by either isolating (selected remedy) or removing (contingency alternative) tailings and soil exhibiting contaminant concentrations exceeding health-based remediation levels (action levels) shown in Table 14. 2. Prevent migration of and exposure to contaminated groundwater exhibiting arsenic concentrations greater than the action levels identified in Table 14 beyond the boundaries of the OU1 site. This will be accomplished by monitoring and containing groundwater in the unconfined upper sand and gravel aquifer beneath OU1. 3. Prevent exposure to contaminated soil/tailings, reduce inflow of water to the tailings, and reduce further contamination of the shallow groundwater by construction of a cap and interceptor trench (selected remedy) or removal of contaminated soil/tailings for offsite disposal (contingency alternative).	ROD OU1, 12/1993, p.23

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
UTD980951388	01	Institutional Controls	1. Prevent exposure to contaminated soil/tailings on the site by either isolating (selected remedy) or removing (contingency alternative) tailings and soil exhibiting contaminant concentrations exceeding health-based remediation levels (action levels) shown in Table 14. 2. Prevent migration of and exposure to contaminated groundwater exhibiting arsenic concentrations greater than the action levels identified in Table 14 beyond the boundaries of the OU1 site. This will be accomplished by monitoring and containing groundwater in the unconfined upper sand and gravel aquifer beneath OU1. 3. Prevent exposure to contaminated soil/tailings, reduce inflow of water to the tailings, and reduce further contamination of the shallow groundwater by construction of a cap and interceptor trench (selected remedy) or removal of contaminated soil/tailings for offsite disposal (contingency alternative).	ROD OU1, 12/1993, p.23
UTD980951388	01	Monitoring (all media and as separate remedy)	1. Prevent exposure to contaminated soil/tailings on the site by either isolating (selected remedy) or removing (contingency alternative) tailings and soil exhibiting contaminant concentrations exceeding health-based remediation levels (action levels) shown in Table 14. 2. Prevent migration of and exposure to contaminated groundwater exhibiting arsenic concentrations greater than the action levels identified in Table 14 beyond the boundaries of the OU1 site. This will be accomplished by monitoring and containing groundwater in the unconfined upper sand and gravel aquifer beneath OU1. 3. Prevent exposure to contaminated soil/tailings, reduce inflow of water to the tailings, and reduce further contamination of the shallow groundwater by construction of a cap and interceptor trench (selected remedy) or removal of contaminated soil/tailings for offsite disposal (contingency alternative).	ROD OU1, 12/1993, p.23
UTD980951388	02	On-site disposal (excavation, capping, covering, reveg)	reduce/eliminate the exposure of the residents to unacceptably high concentrations of lead and arsenic in their soil by removing contaminated soils in commercial and residential areas	FYR, 2/1999, p. 3
UTD980951388	02	Institutional Controls	reduce/eliminate the exposure of the residents to unacceptably high concentrations of lead and arsenic in their soil by removing contaminated soils in commercial and residential areas	FYR, 2/1999, p. 3
MTD980502777				
MTD980502777	01	On-site disposal (excavation, capping, covering, reveg)	1. Meet the more restrictive of the aquatic life or human health standards for surface water identified in MDEQ Circular WQB-7, through application of Is-classification requirements. 2. Prevent exposure of humans and aquatic species to instream sediments having concentrations of inorganic contamination in excess of risk-based standards. A physical criterion is used to define those sediments posing the greatest risk to receptor species. A contingency is established to develop metal-specific concentrations which would be risk-based, and allow sediment cleanup standards if the physical criterion standard cannot be employed appropriately. 3. Provided that upstream sources of Silver Bow Creek contaminants are eliminated, meeting the two remediation standards identified above should attain the remedial action objective to improve the quality of Silver Bow Creek's surface water and instream sediments to the point that Silver Bow Creek could support the growth and propagation of fishes and associated aquatic life, one of the designated goals for an Is-class stream, including a self-sustaining population of trout species. 1. Prevent human exposure to tailings/impacted soils from residential or occupational activity within the SST OU. This will be accomplished, in part, through institutional controls that will require the entire OU to be developed into a recreational corridor. 2. Prevent erosion or migration of inorganic contaminants of concern in tailings/impacted soils into Silver Bow Creek or into groundwater that would prevent attainment of groundwater, surface water, and sediment remediation levels. 3. Protect all solid waste within the SST OU from flood displacement, washout or erosion in accordance with ARARs. 4. Prevent the saturation of tailings/impacted soils by groundwater during any period of the hydrologic year or by bank storage of high-flow stream discharge. 5. Prevent migration of contaminants of concern in tailings/impacted soils that would cause phytotoxicity in terrestrial vegetation. 1. Prevent exposure by recreational users of the railroad beds in excess if acceptable cancer and noncancer risks from arsenic. Risks will be adequately reduced by removal of ore concentrate spills and other impacted railroad materials exhibiting arsenic concentrations in excess of 2,000 mg/kg (MDEQ, 1995b). 2. Prevent erosion of contaminated railroad bed materials into Silver Bow Creek to the degree that surface water standards would be exceeded, or instream sediments would be contaminated, or vegetation on adjacent relocation or STARS treated areas would be adversely impacted.	ROD, 11/29/1995, pp. 73-76

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
MTD980502777	01	Soil Amendments	1. Meet the more restrictive of the aquatic life or human health standards for surface water identified in MDEQ Circular WQB-7, through application of Is-classification requirements. 2. Prevent exposure of humans and aquatic species to instream sediments having concentrations of inorganic contamination in excess of risk-based standards. A physical criterion is used to define those sediments posing the greatest risk to receptor species. A contingency is established to develop metal-specific concentrations which would be risk-based, and allow sediment cleanup standards if the physical criterion standard cannot be employed appropriately. 3. Provided that upstream sources of Silver Bow Creek contaminants are eliminated, meeting the two remediation standards identified above should attain the remedial action objective to improve the quality of Silver Bow Creek's surface water and instream sediments to the point that Silver Bow Creek could support the growth and propagation of fishes and associated aquatic life, one of the designated goals for an Is-class stream, including a self-sustaining population of trout species. 1. Prevent human exposure to tailings/impacted soils from residential or occupational activity within the SST OU. This will be accomplished, in part, through institutional controls that will require the entire OU to be developed into a recreational corridor. 2. Prevent erosion or migration of inorganic contaminants of concern in tailings/impacted soils into Silver Bow Creek or into groundwater that would prevent attainment of groundwater, surface water, and sediment remediation levels. 3. Protect all solid waste within the SST OU from flood displacement, washout or erosion in accordance with ARARs. 4. Prevent the saturation of tailings/impacted soils by groundwater during any period of the hydrologic year or by bank storage of high-flow stream discharge. 5. Prevent migration of contaminants of concern in tailings/impacted soils that would cause phytotoxicity in terrestrial vegetation. 1. Prevent exposure by recreational users of the railroad beds in excess if acceptable cancer and noncancer risks from arsenic. Risks will be adequately reduced by removal of ore concentrate spills and other impacted railroad materials exhibiting arsenic concentrations in excess of 2,000 mg/kg (MDEQ, 1995b). 2. Prevent erosion of contaminated railroad bed materials into Silver Bow Creek to the degree that surface water standards would be exceeded, or instream sediments would be contaminated, or vegetation on adjacent relocation or STARS treated areas would be adversely impacted.	ROD, 11/29/1995, pp. 73-76
MTD980502777	01	Sediment dredging/ disposal	1. Meet the more restrictive of the aquatic life or human health standards for surface water identified in MDEQ Circular WQB-7, through application of Is-classification requirements. 2. Prevent exposure of humans and aquatic species to instream sediments having concentrations of inorganic contamination in excess of risk-based standards. A physical criterion is used to define those sediments posing the greatest risk to receptor species. A contingency is established to develop metal-specific concentrations which would be risk-based, and allow sediment cleanup standards if the physical criterion standard cannot be employed appropriately. 3. Provided that upstream sources of Silver Bow Creek contaminants are eliminated, meeting the two remediation standards identified above should attain the remedial action objective to improve the quality of Silver Bow Creek's surface water and instream sediments to the point that Silver Bow Creek could support the growth and propagation of fishes and associated aquatic life, one of the designated goals for an Is-class stream, including a self-sustaining population of trout species. 1. Prevent human exposure to tailings/impacted soils from residential or occupational activity within the SST OU. This will be accomplished, in part, through institutional controls that will require the entire OU to be developed into a recreational corridor. 2. Prevent erosion or migration of inorganic contaminants of concern in tailings/impacted soils into Silver Bow Creek or into groundwater that would prevent attainment of groundwater, surface water, and sediment remediation levels. 3. Protect all solid waste within the SST OU from flood displacement, washout or erosion in accordance with ARARs. 4. Prevent the saturation of tailings/impacted soils by groundwater during any period of the hydrologic year or by bank storage of high-flow stream discharge. 5. Prevent migration of contaminants of concern in tailings/impacted soils that would cause phytotoxicity in terrestrial vegetation. 1. Prevent exposure by recreational users of the railroad beds in excess if acceptable cancer and noncancer risks from arsenic. Risks will be adequately reduced by removal of ore concentrate spills and other impacted railroad materials exhibiting arsenic concentrations in excess of 2,000 mg/kg (MDEQ, 1995b). 2. Prevent erosion of contaminated railroad bed materials into Silver Bow Creek to the degree that surface water standards would be exceeded, or instream sediments would be contaminated, or vegetation on adjacent relocation or STARS treated areas would be adversely impacted.	ROD, 11/29/1995, pp. 73-76
MTD980502777	01	Institutional Controls	1. Meet the more restrictive of the aquatic life or human health standards for surface water identified in MDEQ Circular WQB-7, through application of Is-classification requirements. 2. Prevent exposure of humans and aquatic species to instream sediments having concentrations of inorganic contamination in excess of risk-based standards. A physical criterion is used to define those sediments posing the greatest risk to receptor species. A contingency is established to develop metal-specific concentrations which would be risk-based, and allow sediment cleanup standards if the physical criterion standard cannot be employed appropriately. 3. Provided that upstream sources of Silver Bow Creek contaminants are eliminated, meeting the two remediation standards identified above	ROD, 11/29/1995, pp. 73-77

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			should attain the remedial action objective to improve the quality of Silver Bow Creek's surface water and instream sediments to the point that Silver Bow Creek could support the growth and propagation of fishes and associated aquatic life, one of the designated goals for an Is-class stream, including a self-sustaining population of trout species. 1. Prevent human exposure to tailings/impacted soils from residential or occupational activity within the SST OU. This will be accomplished, in part, through institutional controls that will require the entire OU to be developed into a recreational corridor. 2. Prevent erosion or migration of inorganic contaminants of concern in tailings/impacted soils into Silver Bow Creek or into groundwater that would prevent attainment of groundwater, surface water, and sediment remediation levels. 3. Protect all solid waste within the SST OU from flood displacement, washout or erosion in accordance with ARARs. 4. Prevent the saturation of tailings/impacted soils by groundwater during any period of the hydrologic year or by bank storage of high-flow stream discharge. 5. Prevent migration of contaminants of concern in tailings/impacted soils that would cause phytotoxicity in terrestrial vegetation. 1. Prevent exposure by recreational users of the railroad beds in excess if acceptable cancer and noncancer risks from arsenic. Risks will be adequately reduced by removal of ore concentrate spills and other impacted railroad materials exhibiting arsenic concentrations in excess of 2,000 mg/kg (MDEQ, 1995b). 2. Prevent erosion of contaminated railroad bed materials into Silver Bow Creek to the degree that surface water standards would be exceeded, or instream sediments would be contaminated, or vegetation on adjacent relocation or STARS treated areas would be adversely impacted. 1. Attain compliance with applicable MDEQ Circular WQB-7 standards, federal MCL's and federal nonzero maximum contaminant level goals (MCLGs) for all OU groundwater. 2. Prevent discharge of groundwater that would prevent attainment of Silver Bow Creek ambient Circular WQB-7 standards or instream sediment remediation goals. 1. Compliance with air ARARs within adjacent to the SST OU during implementation of the remedial action.	
MTD980502777	02			
MTD980502777	03	Water treatment-lime	To prevent human and aquatic exposure to contaminated groundwater and surface water.	FYR Vol. 3, 6/28/2011, p. 4-1
MTD980502777	03	Institutional Controls	To prevent human and aquatic exposure to contaminated groundwater and surface water.	fire Vol. 3, 6/28/2011, p. 4-1
MTD980502777	04	Water treatment-lime	MEET AMBIENT WATER QUALITY STANDARDS FOR AQUATIC LIFE AT THE IDENTIFIED COMPLIANCE POINT. MEET AMBIENT WATER QUALITY STANDARDS FOR AQUATIC LIFE AT THE IDENTIFIED COMPLIANCE POINT. PREVENT INGESTION ABOVE MAXIMUM CONTAMINANT LEVELS AND ESTABLISHED REFERENCE DOSES FOR COPPER, IRON, ZINC, AND CADMIUM.ALSO PREVENT INGESTION OF WATER CONTAINING ARSENIC IN CONCENTRATIONS THAT WOULD CAUSE AN EXCESS CANCER RISK GREATER THAN (10-4) TO (10-7). Reduce the metals contamination in the groundwater downgradiant of the ponds to achieve compliance with maximum containment levels.	1990 ROD p76
MTD980502777	04	On-site disposal (excavation, capping, covering, reveg)	MEET AMBIENT WATER QUALITY STANDARDS FOR AQUATIC LIFE AT THE IDENTIFIED COMPLIANCE POINT. PREVENT INGESTION ABOVE MAXIMUM CONTAMINANT LEVELS AND ESTABLISHED REFERENCE DOSES FOR COPPER, IRON, ZINC, AND CADMIUM.ALSO PREVENT INGESTION OF WATER CONTAINING ARSENIC IN CONCENTRATIONS THAT WOULD CAUSE AN EXCESS CANCER RISK GREATER THAN (10-4) TO (10-7). Reduce the potential for tailing in the Mill-Willow Bypass to reach the Clark Fork River. Reduce the potential for human exposure to exposed tailings and other surface contamination to satisfy acceptable intake criteria. Reduce the metals contamination in the groundwater downgradiant of the ponds to achieve compliance with maximum containment levels.	1990 ROD p76
MTD980502777	04	Other – Engineering/Containment	PREVENT THE RELEASE OF THE POND SEDIMENTS FROM DESIGN FLOODS AND EARTHQUAKES. MEET AMBIENT WATER QUALITY STANDARDS FOR AQUATIC LIFE AT THE IDENTIFIED COMPLIANCE POINT.PREVENT INGESTION ABOVE MAXIMUM CONTAMINANT LEVELS AND ESTABLISHED REFERENCE DOSES FOR COPPER, IRON, ZINC, AND CADMIUM.ALSO PREVENT INGESTION OF WATER CONTAINING ARSENIC IN CONCENTRATIONS THAT WOULD CAUSE AN EXCESS CANCER RISK GREATER THAN (10-4) TO (10-7). Reduce the potential for tailing in the Mill-Willow Bypass to reach the Clark Fork River. Reduce the potential for human exposure to exposed tailings and other surface contamination to satisfy acceptable intake criteria. Reduce the metals contamination in the groundwater downgradiant of the ponds to achieve compliance with maximum containment levels.	1990 ROD p76
MTD980502777	04	Surface water diversion	MEET AMBIENT WATER QUALITY STANDARDS FOR AQUATIC LIFE AT THE IDENTIFIED COMPLIANCE POINT. PREVENT INGESTION ABOVE MAXIMUM CONTAMINANT LEVELS AND ESTABLISHED REFERENCE DOSES FOR COPPER, IRON, ZINC, AND CADMIUM.ALSO PREVENT INGESTION OF WATER CONTAINING ARSENIC IN CONCENTRATIONS THAT WOULD CAUSE AN EXCESS CANCER RISK GREATER THAN (10-4) TO (10-7). Reduce the potential for tailing in the Mill-Willow Bypass to reach the Clark Fork River.	1990 ROD p76

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
MTD980502777	04	Institutional Controls	MEET AMBIENT WATER QUALITY STANDARDS FOR AQUATIC LIFE AT THE IDENTIFIED COMPLIANCE POINT. PREVENT INGESTION ABOVE MAXIMUM CONTAMINANT LEVELS AND ESTABLISHED REFERENCE DOSES FOR COPPER, IRON, ZINC, AND CADMIUM.ALSO PREVENT INGESTION OF WATER CONTAINING ARSENIC IN CONCENTRATIONS THAT WOULD CAUSE AN EXCESS CANCER RISK GREATER THAN (10-4) TO (10-7). Reduce the potential for tailing in the Mill-Willow Bypass to reach the Clark Fork River. Reduce the potential for tailings in upstream areas of Silver Bow Creek to reach the Clark Fork River. Reduce the potential for human exposure to exposed tailings and other surface contamination to satisfy acceptable intake criteria. Reduce the metals contamination in the groundwater downgradiant of the ponds to achieve compliance with maximum containment levels.	1990 ROD p76
MTD980502777	05			
MTD980502777	06			
MTD980502777	07	On-site disposal (excavation, capping, covering, reveg)	(1) Attain groundwater standards (ARARs or other risk-based levels) for inorganic (primarily arsenic) and organic contaminants of concern for groundwater underlying and adjacent to the site, and protect human health during and after cleanup. (2) Prevent release of contaminated groundwater to Silver Bow Creek that would result in a violation of surface water ARARs or other risk based contaminant levels. (3) Prevent degradation of groundwater underlying and adjacent to the site (4) Prevent migration of contaminated site groundwater from areas where levels exceed groundwater standards into regions where levels are within groundwater standards. (5) Prevent human exposure to inorganic (primarily arsenic) and organic contaminants in soils which exceed risk-based or other relevant levels. (6) Prevent migration of contaminants from soils to underlying and adjacent offsite groundwater, such that it would fail to comply with groundwater ARARs or other risk-based levels.	1995 ROD p22
MTD980502777	07	Water treatment-other	(1) Attain groundwater standards (ARARs or other risk-based levels) for inorganic (primarily arsenic) and organic contaminants of concern for groundwater underlying and adjacent to the site, and protect human health during and after cleanup. (2) Prevent release of contaminated groundwater to Silver Bow Creek that would result in a violation of surface water ARARs or other risk based contaminant levels. (3) Prevent degradation of groundwater underlying and adjacent to the site (4) Prevent migration of contaminated site groundwater from areas where levels exceed groundwater standards into regions where levels are within groundwater standards.	1995 ROD p22
MTD980502777	07	Solidification	(1) Attain groundwater standards (ARARs or other risk-based levels) for inorganic (primarily arsenic) and organic contaminants of concern for groundwater underlying and adjacent to the site, and protect human health during and after cleanup. (2) Prevent release of contaminated groundwater to Silver Bow Creek that would result in a violation of surface water ARARs or other risk based contaminant levels. (3) Prevent degradation of groundwater underlying and adjacent to the site (4) Prevent migration of contaminated site groundwater from areas where levels exceed groundwater standards into regions where levels are within groundwater standards. (5) Prevent human exposure to inorganic (primarily arsenic) and organic contaminants in soils which exceed risk-based or other relevant levels. (6) Prevent migration of contaminants from soils to underlying and adjacent offsite groundwater, such that it would fail to comply with groundwater ARARs or other risk-based levels.	1995 ROD p22
MTD980502777	07	Off-site disposal	(1) Attain groundwater standards (ARARs or other risk-based levels) for inorganic (primarily arsenic) and organic contaminants of concern for groundwater underlying and adjacent to the site, and protect human health during and after cleanup. (2) Prevent release of contaminated groundwater to Silver Bow Creek that would result in a violation of surface water ARARs or other risk based contaminant levels. (3) Prevent degradation of groundwater underlying and adjacent to the site (4) Prevent migration of contaminated site groundwater from areas where levels exceed groundwater standards into regions where levels are within groundwater standards. (5) Prevent human exposure to inorganic (primarily arsenic) and organic contaminants in soils which exceed risk-based or other relevant levels. (6) Prevent migration of contaminants from soils to underlying and adjacent offsite groundwater, such that it would fail to comply with groundwater ARARs or other risk-based levels.	1995 ROD p22
MTD980502777	07	Alternative drinking water	Attain groundwater standards (ARARs or other risk-based levels) for inorganic (primarily arsenic) and organic contaminants of concern for groundwater underlying and adjacent to the site, and protect human health during and after cleanup.	1995 ROD p22
MTD980502777	07	Monitored natural attenuation/recovery	(1) Attain groundwater standards (ARARs or other risk-based levels) for inorganic (primarily arsenic) and organic contaminants of concern for groundwater underlying and adjacent to the site, and protect human health during and after cleanup. (2) Prevent release of contaminated groundwater to Silver Bow Creek that would result in a violation of surface water ARARs or other risk based contaminant levels. (3) Prevent degradation of groundwater underlying and adjacent to the site (4) Prevent migration of contaminated site groundwater from areas where levels exceed groundwater standards into regions where levels are within groundwater standards.	1995 ROD p22
MTD980502777	07	Institutional Controls	(1) Attain groundwater standards (ARARs or other risk-based levels) for inorganic (primarily arsenic) and organic contaminants of concern for groundwater underlying and adjacent to the site, and protect human health during and after cleanup. (2) Prevent release of contaminated groundwater to Silver Bow Creek that would result in a violation of surface water ARARs or other risk based contaminant levels. (3) Prevent degradation of groundwater underlying and adjacent to the site (4) Prevent migration of contaminated site groundwater from areas where levels exceed groundwater standards into regions where levels are within groundwater standards. (5) Prevent human exposure to inorganic (primarily arsenic) and organic contaminants in soils which exceed risk-based or other relevant levels. (6) Prevent migration of contaminants from soils to underlying and adjacent offsite groundwater, such that it would fail to comply with groundwater ARARs or other risk-based levels.	1995 ROD p22
MTD980502777	08			
MTD980502777	09			
MTD980502777	10			

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
MTD980502777	11			
MTD980502777	12	On-site disposal (excavation, capping, covering, reveg)	(1) The remediation goal for pond bottom sediments is to prevent release of contaminated sediments during earthquakes and major floods. (2)Surface water: Meet the State of Montana's ambient water quality standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc at the compliance point. (3) Surface water: Prevent ingestion of water above the standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc, as specified by the Montana Public Water Supply Act. Another goal is to prevent ingestion of water containing arsenic in concentrations that would increase cancer risks to greater than 1 in 10,000. (4) The goal for remediation is to substantially reduce the potential for direct contact, inhalation, and ingestion of contaminated soils and tailings. (5) The remediation goal for ground water is to prevent offsite migration of ground water with contaminant concentrations in excess of Montana ground water maximum contaminant levels.	1992 ROD p24; 1992 ROD p39-40
MTD980502777	12	Surface water diversion	(2)Surface water: Meet the State of Montana's ambient water quality standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc at the compliance point. (3) Surface water: Prevent ingestion of water above the standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc, as specified by the Montana Public Water Supply Act. Another goal is to prevent ingestion of water containing arsenic in concentrations that would increase cancer risks to greater than 1 in 10,000.	1992 ROD p24; 1992 ROD p39-40
MTD980502777	12	Other – Engineering/Containment	(1) The remediation goal for pond bottom sediments is to prevent release of contaminated sediments during earthquakes and major floods. (2)Surface water: Meet the State of Montana's ambient water quality standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc at the compliance point. (3) Surface water: Prevent ingestion of water above the standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc, as specified by the Montana Public Water Supply Act. Another goal is to prevent ingestion of water containing arsenic in concentrations that would increase cancer risks to greater than 1 in 10,000. (4) The goal for remediation is to substantially reduce the potential for direct contact, inhalation, and ingestion of contaminated soils and tailings.	1992 ROD p24; 1992 ROD p39-40
MTD980502777	12	Water treatment-lime	(2)Surface water: Meet the State of Montana's ambient water quality standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc at the compliance point. (3) Surface water: Prevent ingestion of water above the standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc, as specified by the Montana Public Water Supply Act. Another goal is to prevent ingestion of water containing arsenic in concentrations that would increase cancer risks to greater than 1 in 10,000. (5) The remediation goal for ground water is to prevent offsite migration of ground water with contaminant concentrations in excess of Montana ground water maximum contaminant levels.	1992 ROD p24
MTD980502777	12	Impoundment	(1) The remediation goal for pond bottom sediments is to prevent release of contaminated sediments during earthquakes and major floods. (2)Surface water: Meet the State of Montana's ambient water quality standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc at the compliance point. (3) Surface water: Prevent ingestion of water above the standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc, as specified by the Montana Public Water Supply Act. Another goal is to prevent ingestion of water containing arsenic in concentrations that would increase cancer risks to greater than 1 in 10,000. (4) The goal for remediation is to substantially reduce the potential for direct contact, inhalation, and ingestion of contaminated soils and tailings. (5) The remediation goal for ground water is to prevent offsite migration of ground water with contaminant concentrations in excess of Montana ground water maximum contaminant levels.	1992 ROD p24; 1992 ROD p39-40
MTD980502777	12	Monitoring (all media and as separate remedy)	(1) The remediation goal for pond bottom sediments is to prevent release of contaminated sediments during earthquakes and major floods. (2)Surface water: Meet the State of Montana's ambient water quality standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc at the compliance point. (3) Surface water: Prevent ingestion of water above the standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc, as specified by the Montana Public Water Supply Act. Another goal is to prevent ingestion of water containing arsenic in concentrations that would increase cancer risks to greater than 1 in 10,000. (4) The goal for remediation is to substantially reduce the potential for direct contact, inhalation, and ingestion of contaminated soils and tailings. (5) The remediation goal for ground water is to prevent offsite migration of ground water with contaminant concentrations in excess of Montana ground water maximum contaminant levels.	1992 ROD p24; 1992 ROD p39-40
MTD980502777	12	Institutional Controls	(1) The remediation goal for pond bottom sediments is to prevent release of contaminated sediments during earthquakes and major floods. (2)Surface water: Meet the State of Montana's ambient water quality standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc at the compliance point. (3) Surface water: Prevent ingestion of water above the standards for arsenic, cadmium, lead, mercury, copper, iron, and zinc, as specified by the Montana Public Water Supply Act. Another goal is to prevent ingestion of water containing arsenic in concentrations that would increase cancer risks to greater than 1 in 10,000. (4) The goal for remediation is to substantially reduce the potential for direct contact, inhalation, and ingestion of contaminated soils and tailings. (5) The remediation goal for ground water is to prevent offsite migration of ground water with contaminant concentrations in excess of Montana ground water maximum contaminant levels.	1992 ROD p24; 1992 ROD p39-40
MTD980502777	13			
COD983769738				
COD983769738	01	On-site disposal (excavation, capping, covering, reveg)		
COD983769738	01	Institutional Controls		
COD983769738	01	Monitored natural attenuation/recovery		

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
COD983769738	02	Institutional Controls	1. The Site is zoned industrial and, while not currently permitted for mining, is used as a storage area in support of a gravel mining operation on adjacent property; 2. Significant amounts of material impacted by wood treating constituents have already been moved off-Site and disposed of at a hazardous waste landfill; 3. The risk assessment prepared for the Site indicates that under an industrial scenario wood treating; constituents in the surface soils do not represent a threat to human health or the environment; and 4. Soils in the subsurface exceed the PRGs and would represent a threat to human health or the environment if mined.	ROD OU2, 6/1998, p. 27
COD983769738	02	Monitored natural attenuation/recovery	1. The Site is zoned industrial and, while not currently permitted for mining, is used as a storage area in support of a gravel mining operation on adjacent property; 2. Significant amounts of material impacted by wood treating constituents have already been moved off-Site and disposed of at a hazardous waste landfill; 3. The risk assessment prepared for the Site indicates that under an industrial scenario wood treating; constituents in the surface soils do not represent a threat to human health or the environment; and 4. Soils in the subsurface exceed the PRGs and would represent a threat to human health or the environment if mined.	ROD OU2, 6/1998, p. 27
COD983769738	02	Off-site disposal	1. The Site is zoned industrial and, while not currently permitted for mining, is used as a storage area in support of a gravel mining operation on adjacent property; 2. Significant amounts of material impacted by wood treating constituents have already been moved off-Site and disposed of at a hazardous waste landfill; 3. The risk assessment prepared for the Site indicates that under an industrial scenario wood treating; constituents in the surface soils do not represent a threat to human health or the environment; and 4. Soils in the subsurface exceed the PRGs and would represent a threat to human health or the environment if mined.	ROD OU2, 6/1998, p. 27
COD983769738	03	Alternative drinking water		
COD980806277				
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	an isolation of the source of the contamination (lead in mine wastes) to prevent direct contact and the distribution of windblown dusts, along with the protection of potential ground water receptors	FYR, 11/1997, p.3
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	an isolation of the source of the contamination (lead in mine wastes) to prevent direct contact and the distribution of windblown dusts, along with the protection of potential ground water receptors	FYR, 11/1997, p.3
COD980806277	01	Monitoring (all media and as separate remedy)	an isolation of the source of the contamination (lead in mine wastes) to prevent direct contact and the distribution of windblown dusts, along with the protection of potential ground water receptors	FYR, 11/1997, p.3
COD980806277	01	Alternative drinking water	an isolation of the source of the contamination (lead in mine wastes) to prevent direct contact and the distribution of windblown dusts, along with the protection of potential ground water receptors	FYR, 11/1997, p.3
COD980806277	01	Institutional Controls	an isolation of the source of the contamination (lead in mine wastes) to prevent direct contact and the distribution of windblown dusts, along with the protection of potential ground water receptors	FYR, 11/1997, p.3
COD980806277	02	Surface water diversion	abate the threat of direct contact with lead contaminated soils and waste rock in mine waste dumps; abate the threat of inhalation of contaminated dust; abate the threat of migration of contamination via air and surface water; and attain applicable or relevant and appropriate requirements (ARARS).	FYR 9/1997, p. 7
COD980806277	02	Other – Engineering/Containment	abate the threat of direct contact with lead contaminated soils and waste rock in mine waste dumps; abate the threat of inhalation of contaminated dust; abate the threat of migration of contamination via air and surface water; and attain applicable or relevant and appropriate requirements (ARARS).	FYR 9/1997, p. 7
CO0002378230				
CO0002378230	00			
COD983778432				
COD983778432	00	Water treatment-other	-To eliminate or minimize HLP impacts to aquatic receptors in Wightman Fork, the Alamosa River and Terrace Reservoir. -To eliminate or minimize the need for continued water treatment at the HLP. -To reduce or control HLP drainage so that the Alamosa River will continue to be usable for agriculture in the San Luis Valley. -To reduce or control HLP drainage so that human health will continue to be protected from releases from HLP. -To implement interim remedial action at HLP in an accelerated manner, preferably within two years of signing the IROD.	1994 ROD, p 13
COD983778432	00	Other – Engineering/Containment	-To eliminate or minimize HLP impacts to aquatic receptors in Wightman Fork, the Alamosa River and Terrace Reservoir. -To eliminate or minimize the need for continued water treatment at the HLP. -To reduce or control HLP drainage so that the Alamosa River will continue to be usable for agriculture in the San Luis Valley.	1994 ROD, p 13

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			-To reduce or control HLP drainage so that human health will continue to be protected from releases from HLP. -To implement interim remedial action at HLP in an accelerated manner, preferably within two years of signing the IROD.	
COD983778432	01	Water treatment-other	-To eliminate or minimize HLP impacts to aquatic receptors in Wightman Fork, the Alamosa River and Terrace Reservoir. -To eliminate or minimize the need for continued water treatment at the HLP. -To reduce or control HLP drainage so that the Alamosa River will continue to be usable for agriculture in the San Luis Valley. -To reduce or control HLP drainage so that human health will continue to be protected from releases from HLP. -To implement interim remedial action at HLP in an accelerated manner, preferably within two years of signing the IROD.	1994 ROD, p 15
COD983778432	01	Other – Engineering/Containment	-To eliminate or minimize HLP impacts to aquatic receptors in Wightman Fork, the Alamosa River and Terrace Reservoir. -To eliminate or minimize the need for continued water treatment at the HLP. • To reduce or control HLP drainage so that the Alamosa River will continue to be usable for agriculture in the San Luis Valley. • To reduce or control HLP drainage so that human health will continue to be protected from releases from HLP. • To implement interim remedial action at HLP in an accelerated manner, preferably within two years of signing the IROD.	1994 ROD, p 15
COD983778432	01	Water treatment - Bioreactors (e.g., SRBs)	-To eliminate or minimize HLP impacts to aquatic receptors in Wightman Fork, the Alamosa River and Terrace Reservoir. -To eliminate or minimize the need for continued water treatment at the HLP. • To reduce or control HLP drainage so that the Alamosa River will continue to be usable for agriculture in the San Luis Valley. • To reduce or control HLP drainage so that human health will continue to be protected from releases from HLP. • To implement interim remedial action at HLP in an accelerated manner, preferably within two years of signing the IROD.	1994 ROD, p 15
COD983778432	01	Monitoring (all media and as separate remedy)	-To eliminate or minimize HLP impacts to aquatic receptors in Wightman Fork, the Alamosa River and Terrace Reservoir. -To eliminate or minimize the need for continued water treatment at the HLP. -To reduce or control HLP drainage so that the Alamosa River will continue to be usable for agriculture in the San Luis Valley. -To reduce or control HLP drainage so that human health will continue to be protected from releases from HLP. -To implement interim remedial action at HLP in an accelerated manner, preferably within two years of signing the IROD.	1994 ROD, p 15
COD983778432	02	On-site disposal (excavation, capping, covering, reveg)	-Reduce and/or eliminate acid rock drainage and metals released from the CWP Drainage. -Ensure compatibility with the sitewide remedy. -Remove, reduce, stabilize and/or contain significant manmade sources of acid rock drainage to prevent further release. -Divert water from flowing into the HLP, thereby reducing treatment costs. -Separate or eliminate the CWP drainage impact, (including volume and quality of water) on structural integrity of the valley drainage system (e.g., dikes, waters diverting from outside the French Drain underneath the HLP). -Implement pre/post monitoring programs at the CWP and at subsequent compliance points.	1994 ROD, p 13
COD983778432	03			
COD983778432	04	Other – Engineering/Containment	-Ensure compatibility with the Site-wide remedy; -Remove, reduce, stabilize and/or contain non-point sources of acid rock drainage to prevent further releases to the Site; -Eliminate or minimize non-point source impacts to aquatic receptors in Wightman Fork, the Alamosa River, and the Terrace Reservoir;, -Eliminate or minimize potential water treatment for non-point source contaminated waters; and -Enhance and/or improve on-site biota habitat.	1994 ROD, p 13
COD983778432	05	Impoundment	-Control and treat surface water, groundwater and leachate, as necessary, to meet State and Federal ARARs. -Re-establish State aquatic use classifications and attainment of water quality numeric criteria in Segment 3c for the Alamosa River and downstream. -Ensure geotechnical stability of constructed earthen structures and slopes. -Mitigate erosion and transport of sediment into Wightman Fork and Cropsy Creek. -Control airborne contaminants from the site.	2001 ROD, p. 52
COD983778432	05	Monitoring (all media and as separate remedy)	-Control and treat surface water, groundwater and leachate, as necessary, to meet State and Federal ARARs. -Re-establish State aquatic use classifications and attainment of water quality numeric criteria in Segment 3c for the Alamosa River and downstream. -Ensure geotechnical stability of constructed earthen structures and slopes. -Mitigate erosion and transport of sediment into Wightman Fork and Cropsy Creek. -Control airborne contaminants from the site.	2001 ROD, p. 52
COD983778432	05	On-site disposal (excavation, capping, covering, reveg)	-Control and treat surface water, groundwater and leachate, as necessary, to meet State and Federal ARARs. -Re-establish State aquatic use classifications and attainment of water quality numeric criteria in Segment 3c for the Alamosa River and downstream. -Ensure geotechnical stability of constructed earthen structures and slopes.-	2001 ROD, p. 52

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			-Mitigate erosion and transport of sediment into Wightman Fork and Cropsy Creek. -Control airborne contaminants from the site.	
COD983778432	05	Surface water diversion	-Control and treat surface water, groundwater and leachate, as necessary, to meet State and Federal ARARs. -Re-establish State aquatic use classifications and attainment of water quality numeric criteria in Segment 3c for the Alamosa River and downstream. -Ensure geotechnical stability of constructed earthen structures and slopes. -Mitigate erosion and transport of sediment into Wightman Fork and Cropsy Creek. -Control airborne contaminants from the site.	2001 ROD, p. 52
COD983778432	05	Water treatment-lime	-Control and treat surface water, groundwater and leachate, as necessary, to meet State and Federal ARARs. -Re-establish State aquatic use classifications and attainment of water quality numeric criteria in Segment 3c for the Alamosa River and downstream. -Ensure geotechnical stability of constructed earthen structures and slopes. -Mitigate erosion and transport of sediment into Wightman Fork and Cropsy Creek. -Control airborne contaminants from the site.	2001 ROD, p. 52
MTSFN7578012				
MTSFN7578012	01			
MTSFN7578012	02			
MTSFN7578012	03			
MTSFN7578012	04	On-site disposal (excavation, capping, covering, reveg)	1) Achieve acceptable exposure risks for residents and visitors; 2). Achieve acceptable exposures risks for terrestrial and aquatic species.	ROD OU4, 6/2002, p. 70
MTSFN7578012	04	Other – Engineering/Containment	Achieve acceptable exposures risks for terrestrial and aquatic species.	ROD OU4, 6/2002, p. 70
MTSFN7578012	04	Water treatment-other	1) Protect current and reasonably anticipated future source waters for the Helena water supply system; 2) Achieve acceptable exposure risks for residents and recreational visitors through attainment of surface water quality standards; 3) Achieve acceptable exposure risks to terrestrial and aquatic species through attainment of surface water quality standards.	ROD OU4, 6/2002, p. 70
MTSFN7578012	04	Other – Engineering/Containment	1) Control groundwater contaminant plumes at mine adits and waste source areas through the use of source control measures; 2) Prevent or minimize contaminant loading from the near-stream groundwater underlying mine waste source areas to surface water.	ROD OU4, 6/2002, p. 70
MTSFN7578012	04	Alternative drinking water	Protect current and reasonably anticipated future users of groundwater.	ROD OU4, 6/2002, p. 70
MTSFN7578012	04	Institutional Controls	Protect current and reasonably anticipated future users of groundwater.	ROD OU4, 6/2002, p. 70
MTSFN7578012	05			
MTSFN7578012	06			
MTSFN7578012	07			
MTSFN7578012	08			
COD007063274				
COD007063274	01	On-site disposal (excavation, capping, covering, reveg)	Objectives of the Remedial Action Plan with respect to solid wastes were to: 1) stabilize and control the tailings and other waste materials; 2) minimize radon emissions from the tailings and waste repositories; and 3) conduct soil cleanup in a safe and environmentally sound manner.	2010 FYR, p. 5, 6
COD007063274	01	Impoundment	Objectives of the Remedial Action Plan with respect to water capture were to: 1) Protect surface and ground water resources	2010 FYR, p. 5, 6
UTN000802704				
UTN000802704	01			
CO0002259588				

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
CO0002259588	01	Off-site disposal	The overall RAO is to protect human health. The following OU1 specific RAOs were developed for arsenic and lead in soil: 1) for residents of the VB/I-70 Site, prevent exposure to soil containing arsenic in levels predicted to result in an excess lifetime cancer risk associated with ingestion of soil which exceeds 1 x 10-4, using reasonable maximum exposure assumptions; 2) for residents of the VB/I-70 Site, prevent exposure to soil containing arsenic in levels predicted to result in a chronic or sub-chronic hazard quotient associated with ingestion of soil which exceeds 1, using reasonable maximum exposure assumptions; 3) for children with pica behavior who reside in the VB/I-70 Site, reduce the potential for exposures to arsenic in soil that result in acute effects; and 4) limit exposure to lead in soil such that no more than 5 percent of young children (72 months or younger) who live within the VB/I-70 Site are at risk for having blood lead levels higher than 10 ug/dL from such exposure. This provides 95% confidence that children exposed to lead in soil will be protected.	2003 ROD, pp. 38, 39
CO0002259588	02			
CO0002259588	03			
SDD980717136				
SDD980717136	01	Institutional Controls	The selected remedy protects human health and the environment through restricting access to, and use of, the tailings and contaminated groundwater by implementation of ordinances. This remedy would permanently eliminate the ingestion threat currently posed to residents from contaminated residential soils. It would further limit, but not eliminate, exposure to tailings deposits.	1990 ROD, p. 24
SDD980717136	01	On-site disposal (excavation, capping, covering, reveg)	The response objectives for soil remediation at Whitewood Creek are to control exposure through ingestion of contaminated tailings deposit soils, alluvial soils and residential soils, or downgradient alluvial groundwater. Target cleanup objectives for groundwater are the Maximum Contaminant Levels. Target cleanup objectives for soils were developed based on soil concentrations which correspond to carcinogenic health risks of 1 x 10-4. Acceptable contaminant levels for the chemical of concern (arsenic) in residential soils are 100 mg/kg, based on the 1 x 10-4 target risk levels derived in the Endangerment Assessment. This action level would also reduce non-carcinogenic risk to an acceptable level.	1990 ROD, p. 23
AZD008397127				
AZD008397127	01			
CAD980496863				
CAD980496863	01	Other – Engineering/Containment	1) MINIMIZE CURRENT AND FUTURE AIRBORNE ASBESTOS EMISSIONS FROM THE ATLAS MINE OU; AND 2) LIMIT THE SURFACE WATER TRANSPORT OF ASBESTOS DOWNSTREAM FROM THE ATLAS MINE OU.	ROD 2/14/1991, p. 7
CAD980496863	01	Surface water diversion	1) MINIMIZE CURRENT AND FUTURE AIRBORNE ASBESTOS EMISSIONS FROM THE ATLAS MINE OU; AND 2) LIMIT THE SURFACE WATER TRANSPORT OF ASBESTOS DOWNSTREAM FROM THE ATLAS MINE OU.	ROD 2/14/1991, p. 7
CAD980496863	01	On-site disposal (excavation, capping, covering, reveg)	1) MINIMIZE CURRENT AND FUTURE AIRBORNE ASBESTOS EMISSIONS FROM THE ATLAS MINE OU; AND 2) LIMIT THE SURFACE WATER TRANSPORT OF ASBESTOS DOWNSTREAM FROM THE ATLAS MINE OU.	ROD 2/14/1991, p. 7
CAD980496863	01	Institutional Controls	1) MINIMIZE CURRENT AND FUTURE AIRBORNE ASBESTOS EMISSIONS FROM THE ATLAS MINE OU; AND 2) LIMIT THE SURFACE WATER TRANSPORT OF ASBESTOS DOWNSTREAM FROM THE ATLAS MINE OU.	ROD 2/14/1991, p. 7
CAD980496863	02	On-site disposal (excavation, capping, covering, reveg)	1)ENSURE THAT ASBESTOS/DUST CONTROL MEASURES ARE EFFECTIVE IN CONTAINING FUGITIVE CONTAMINANT EMISSIONS; 2) ENSURE THAT THE REMEDIAL ACTIVITY IS NOT AFFECTING THE SURROUNDING COMMUNITY THROUGH THE SPREAD OF FUGITIVE ASBESTOS FIBERS, AND; 3) DOCUMENT EXPOSURE LEVELS OF SITE PERSONNEL WORK ACTIVITIES TO DETERMINE COMPLIANCE WITH APPROPRIATE LEVELS OF PROTECTION FOR WORKERS.	ROD 7/19/98, p.18
NVD980813646				
NVD980813646	01	Off-site disposal	The remedial action objective for OU-1 of the CRMS is to reduce human health risks by reducing direct exposure to surface soils containing mercury at concentrations equal to or greater than 80 milligrams per kilogram (mg/kg) in residential areas.	ROD 3/30/1995, p.4
NVD980813646	01	Institutional Controls	The remedial action objective for OU-1 of the CRMS is to reduce human health risks by reducing direct exposure to surface soils containing mercury at concentrations equal to or greater than 80 milligrams per kilogram (mg/kg) in residential areas.	ROD 3/30/1995, p.4
NVD980813646	02			
CAD980638860				
CAD980638860	01	Off-site disposal	PREVENT HUMAN EXPOSURE TO SOIL AND WATER THAT IS CONTAMINATED AT CONCENTRATIONS THAT MAY POSE A PUBLIC HEALTH OR ENVIRONMENTAL THREAT.	ROD 9/30/1985, p.4

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
CAD980638860	02	Off-site disposal	1) Remove potential for direct contact; 2) prevent migration to the Trinity River and adjacent fields; 3) provide controls which will be consistent with future remedial actions.	ROD 10/3/1983, p.6
CAD980817217				
CAD980817217	01	On-site disposal (excavation, capping, covering, reveg)	MAINTAIN THE CURRENT EFFECTIVENESS OF THE EXISTING SEDIMENT TRAPPING DAM IN MINIMIZING THE HYDRAULIC TRANSPORT RATE OF ASBESTOS WASTE MATERIAL INTO PINE CANYON CREEK.	ROD 9/21/1990, p.18
CAD980817217	01	Surface water diversion	MAINTAIN THE CURRENT EFFECTIVENESS OF THE EXISTING SEDIMENT TRAPPING DAM IN MINIMIZING THE HYDRAULIC TRANSPORT RATE OF ASBESTOS WASTE MATERIAL INTO PINE CANYON CREEK.	ROD 9/21/1990, p.18
CAD980817217	01	Other – Engineering/Containment	MAINTAIN THE CURRENT EFFECTIVENESS OF THE EXISTING SEDIMENT TRAPPING DAM IN MINIMIZING THE HYDRAULIC TRANSPORT RATE OF ASBESTOS WASTE MATERIAL INTO PINE CANYON CREEK.	ROD 9/21/1990, p.18
CAD980817217	01	Institutional Controls	MAINTAIN THE CURRENT EFFECTIVENESS OF THE EXISTING SEDIMENT TRAPPING DAM IN MINIMIZING THE HYDRAULIC TRANSPORT RATE OF ASBESTOS WASTE MATERIAL INTO PINE CANYON CREEK.	ROD 9/21/1990, p.18
CAD980817217	02	On-site disposal (excavation, capping, covering, reveg)	1) ENSURE THAT ASBESTOS/DUST CONTROL MEASURES ARE EFFECTIVE IN CONTAINING FUGITIVE CONTAMINANT EMISSIONS; 2) ENSURE THAT THE REMEDIAL ACTIVITY IS NOT AFFECTING THE SURROUNDING COMMUNITY THROUGH THE SPREAD OF FUGITIVE ASBESTOS FIBERS; AND 3) DOCUMENT EXPOSURE LEVELS OF SITE PERSONNEL WORK ACTIVITIES TO DETERMINE COMPLIANCE WITH APPROPRIATE LEVELS OF PROTECTION FOR WORKERS.	All Source Material ROD 7/18/1989, p.17
AZ0000309013				
AZ0000309013	01			
CAD980498612				
CAD980498612	01	On-site disposal (excavation, capping, covering, reveg)	PRIMARY OBJECTIVE: 1) IMPLEMENT REMEDIAL ACTIONS TO ACHIEVE THE FOLLOWING EPA WATER QUALITY CRITERIA FOR PROTECTION OF AQUATIC LIFE BELOW KESWICK DAM; 2) MEET REGIONAL BOARD BASIN PLAN OBJECTIVES FOR COPPER, CADMIUM AND ZINC IN THE UPPER SACRAMENTO RIVER; and 3) MEET BACKGROUND LEVELS (ESTABLISHED BY THE WATER QUALITY UPSTREAM OF THE CONFLUENCE OF SPRING CREEK AND THE SACRAMENTO RIVER). SECONDARY OBJECTIVE: 1) REDUCE THE METALS LOADING FROM THE IRON MOUNTAIN MINE SITE TO RECEIVING WATERS.	ROD 10/3/1986, p.16
CAD980498612	01	Surface water diversion	PRIMARY OBJECTIVE: 1) IMPLEMENT REMEDIAL ACTIONS TO ACHIEVE THE FOLLOWING EPA WATER QUALITY CRITERIA FOR PROTECTION OF AQUATIC LIFE BELOW KESWICK DAM; 2) MEET REGIONAL BOARD BASIN PLAN OBJECTIVES FOR COPPER, CADMIUM AND ZINC IN THE UPPER SACRAMENTO RIVER; and 3) MEET BACKGROUND LEVELS (ESTABLISHED BY THE WATER QUALITY UPSTREAM OF THE CONFLUENCE OF SPRING CREEK AND THE SACRAMENTO RIVER). SECONDARY OBJECTIVE: 1) REDUCE THE METALS LOADING FROM THE IRON MOUNTAIN MINE SITE TO RECEIVING WATERS.	ROD 10/3/1986, p.16
CAD980498612	01	Other – Engineering/Containment	PRIMARY OBJECTIVE: 1) IMPLEMENT REMEDIAL ACTIONS TO ACHIEVE THE FOLLOWING EPA WATER QUALITY CRITERIA FOR PROTECTION OF AQUATIC LIFE BELOW KESWICK DAM; 2) MEET REGIONAL BOARD BASIN PLAN OBJECTIVES FOR COPPER, CADMIUM AND ZINC IN THE UPPER SACRAMENTO RIVER; and 3) MEET BACKGROUND LEVELS (ESTABLISHED BY THE WATER QUALITY UPSTREAM OF THE CONFLUENCE OF SPRING CREEK AND THE SACRAMENTO RIVER). SECONDARY OBJECTIVE: 1) REDUCE THE METALS LOADING FROM THE IRON MOUNTAIN MINE SITE TO RECEIVING WATERS.	ROD 10/3/1986, p.16
CAD980498612	02	Water treatment-lime	1. Comply with water quality criteria established under the Clean Water Act and the California Porter-Cologne Water Quality Act (standards are set forth in the Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin [Basin Plan] and statewide plans). These standards were established to protect the valuable Sacramento fishery and aquatic ecosystems. The Basin Plan calls for a water quality standard of 5.6 parts per billion (ppb) dissolved copper as an instantaneous maximum exposure. 2. Reduce the mass discharge of toxic heavy metals through application of appropriate control technologies. 3. Minimize the need to rely on special releases of valuable water resources to dilute continuing IMM contaminant discharges in order to assure attainment of protective water quality criteria.	FYR 7/14/08, p.16
CAD980498612	02	Water treatment-lime	1. Comply with water quality criteria established under the Clean Water Act and the California Porter-Cologne Water Quality Act (standards are set forth in the Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin [Basin Plan] and statewide plans). These standards were established to protect the valuable Sacramento fishery and aquatic ecosystems. The Basin Plan calls for a water quality standard of 5.6 parts per billion (ppb) dissolved copper as an instantaneous maximum exposure. 2. Reduce the mass discharge of toxic heavy metals through	FYR 7/14/08, p.16

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			application of appropriate control technologies. 3. Minimize the need to rely on special releases of valuable water resources to dilute continuing IMM contaminant discharges in order to assure attainment of protective water quality criteria.	
CAD980498612	03	Water treatment-lime	The remedial action objective at the site is to eliminate IMM site discharges that are harmful to the environment. The contaminants of concern identified in the 1986 ROD (U.S. EPA, 1986c) are acidity and toxic metals, which include copper, cadmium, and zinc.	ROD 9/24/1993, p. 21
CAD980498612	03	Water treatment-lime	The remedial action objective at the site is to eliminate IMM site discharges that are harmful to the environment. The contaminants of concern identified in the 1986 ROD (U.S. EPA, 1986c) are acidity and toxic metals, which include copper, cadmium, and zinc.	ROD 9/24/1993, p. 21
CAD980498612	04	Other – Engineering/Containment	1) Comply with the water quality criteria established under the Clean Water Act; 2)Reduce the mass discharge of toxic heavy metals through application of appropriate control technologies. 3) Minimize the need to rely on special releases of California's valuable water resources to ensure compliance with water quality standards in the Sacramento River through special releases of waters to dilute toxic spills of IMM contaminants.	ROD 9/30/1997, p.43
CAD980498612	04	Water treatment-lime	1) Comply with the water quality criteria established under the Clean Water Act; 2)Reduce the mass discharge of toxic heavy metals through application of appropriate control technologies. 3) Minimize the need to rely on special releases of California's valuable water resources to ensure compliance with water quality standards in the Sacramento River through special releases of waters to dilute toxic spills of IMM contaminants.	ROD 9/30/1997, p.43
CAD980498612	05	On-site disposal (excavation, capping, covering, reveg)	1) Protect the Sacramento River ecosystem from releases of heavy metals originating from the Spring Creek Arm, by preventing the mobilization and redeposition of contaminated sediment into important fishery spawning habitats located in the Sacramento River downstream of Keswick Dam. 2) Prevent adverse impacts on water quality and the beneficial uses of the Sacramento River below Keswick Dam, by reducing the metal loads and suspended solids associated with contaminated.	ROD 9/30/2004, p.54
CAD980498612	06			
CA1141190578				
CA1141190578	01			
CA1141190578	02			
CA1141190578	03			
CAD983618893				
CAD983618893	01	Institutional Controls	1)protect against exposures to contaminants in soil, sediment, and surface water via ingestion, inhalation, or direct contact that present an unacceptable risk to human health; 2) remediate contaminants that exceed cleanup goals in soils, sediments, and surface water to the extent technically and economically feasible; 3) restore Little Clipper Creek to its beneficial use as a potential drinking water supply; 4) protect ecological receptors from exposure to contaminants in soils, sediments, and surface water, that pose a significant risk; 5) minimize the potential for migration of contaminants in soil and sediment that pose a threat to the beneficial uses of groundwater and surface water; 6) minimize the potential for release of contaminated tailings during a seismic event producing 60 percent of peak ground acceleration or 0.3 g (i.e. three-tenths the force of gravity); and 7) minimize the potential for release of contaminated soils and sediments during surface water flow events up to the 100-year return frequency event.	ROD 9/28/2004, p.56
CAD983618893	01	Other – Engineering/Containment	1)protect against exposures to contaminants in soil, sediment, and surface water via ingestion, inhalation, or direct contact that present an unacceptable risk to human health; 2) remediate contaminants that exceed cleanup goals in soils, sediments, and surface water to the extent technically and economically feasible; 3) restore Little Clipper Creek to its beneficial use as a potential drinking water supply; 4) protect ecological receptors from exposure to contaminants in soils, sediments, and surface water, that pose a significant risk; 5) minimize the potential for migration of contaminants in soil and sediment that pose a threat to the beneficial uses of groundwater and surface water; 6) minimize the potential for release of contaminated tailings during a seismic event producing 60 percent of peak ground acceleration or 0.3 g (i.e. three-tenths the force of gravity); and 7) minimize the potential for release of contaminated soils and sediments during surface water flow events up to the 100-year return frequency event.	ROD 9/28/2004, p.56
CAD983618893	01	Deconstruction/ decontamination of buildings	1)protect against exposures to contaminants in soil, sediment, and surface water via ingestion, inhalation, or direct contact that present an unacceptable risk to human health; 2) remediate contaminants that exceed cleanup goals in soils, sediments, and surface water to the extent technically and economically feasible; 3) restore Little Clipper Creek to its beneficial use as a potential drinking water supply; 4) protect ecological receptors from exposure to contaminants in soils, sediments, and surface water, that pose a significant risk; 5) minimize the potential for migration of contaminants in soil and sediment that pose a threat to the beneficial uses of groundwater and surface water; 6) minimize the potential for release of contaminated tailings during a seismic event producing 60 percent of peak ground acceleration or 0.3 g (i.e. three-tenths the force of gravity); and 7) minimize the potential for release of contaminated soils and sediments during surface water flow events up to the 100-year return frequency event.	ROD 9/28/2004, p.56
CAD983618893	01	On-site disposal (excavation, capping, covering, reveg)	1)protect against exposures to contaminants in soil, sediment, and surface water via ingestion, inhalation, or direct contact that present an unacceptable risk to human health; 2) remediate contaminants that exceed cleanup goals in soils, sediments, and surface water to the extent technically and economically feasible; 3) restore Little Clipper Creek to its beneficial use as a potential drinking water supply; 4) protect	ROD 9/28/2004, p.56

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			ecological receptors from exposure to contaminants in soils, sediments, and surface water, that pose a significant risk; 5) minimize the potential for migration of contaminants in soil and sediment that pose a threat to the beneficial uses of groundwater and surface water; 6) minimize the potential for release of contaminated tailings during a seismic event producing 60 percent of peak ground acceleration or 0.3 g (i.e. three-tenths the force of gravity); and 7) minimize the potential for release of contaminated soils and sediments during surface water flow events up to the 100-year return frequency event.	
CAD983618893	01	Water treatment-other	1)protect against exposures to contaminants in soil, sediment, and surface water via ingestion, inhalation, or direct contact that present an unacceptable risk to human health; 2) remediate contaminants that exceed cleanup goals in soils, sediments, and surface water to the extent technically and economically feasible; 3) restore Little Clipper Creek to its beneficial use as a potential drinking water supply; 4) protect ecological receptors from exposure to contaminants in soils, sediments, and surface water, that pose a significant risk; 5) minimize the potential for migration of contaminants in soil and sediment that pose a threat to the beneficial uses of groundwater and surface water; 6) minimize the potential for release of contaminated tailings during a seismic event producing 60 percent of peak ground acceleration or 0.3 g (i.e. three-tenths the force of gravity); and 7) minimize the potential for release of contaminated soils and sediments during surface water flow events up to the 100-year return frequency event.	ROD 9/28/2004, p.56
CAD983618893	02	Alternative drinking water	Protect against residential exposure to groundwater contaminated with mine-related arsenic that presents an unacceptable risk to human health. Arsenic is the primary risk driver at the Site and USEPA has selected the arsenic MCL (10 pg/L) as the target to be used to identify residential wells where action is required to be protective of human health and the environment. This is considered an immediate objective that is possible to achieve using a variety of readily implementable technical approaches. This remedial action objective is the primary focus of the Interim Remedy selected in this IROD.	ROD 9/30/2008, p.43
CAD983618893	02	Institutional Controls	Protect against residential exposure to groundwater contaminated with mine-related arsenic that presents an unacceptable risk to human health. Arsenic is the primary risk driver at the Site and USEPA has selected the arsenic MCL (10 pg/L) as the target to be used to identify residential wells where action is required to be protective of human health and the environment. This is considered an immediate objective that is possible to achieve using a variety of readily implementable technical approaches. This remedial action objective is the primary focus of the Interim Remedy selected in this IROD.	ROD 9/30/2008, p.43
CAD983618893	03			
CAD983618893	04			
CAD980673685				
CAD980673685	01			
CAD980893275				
CAD980893275	01			
CAD980893275	02			
CAD980893275	03			
WAD009045279				
WAD009045279	01			
OR0000515759				
OR0000515759	01			
IDD980725832				
IDD980725832	01	Water treatment-lime	Surface Water, Human: (1) Maintain water quality for protection of human health. Surface Water, Aquatic: (1) Reduce direct contact with surface water containing contaminantsof concern in excess of the cleanup levels. (2) Restore and maintain water quality and aquatic biota conditions capable of supporting all life stages of resident salmonids and other fishes in South Fork of Big Deer Creek and Big Deer Creek. (3) Restore and maintain water quality and aquatic biota conditions capable of supporting all life stages of resident and anadromous salmonids and other fishes in Panther Creek. (4) Reduce concentrations of contaminants of concern in Blackbird Creek to improve water quality such that cleanup levels are not exceeded in Panther Creek and to support some aquatic life in Blackbird Creek. (5) Reduce concentrations of contaminants of concern in Bucktail Creek to improve water quality such that cleanup levels are not exceeded in South Fork of Big Deer and Big Deer Creeks. Sediment, Aquatic: (5) Reduce concentrations of contaminants of concern in Blackbird Creek to improve sediment quality such that cleanup levels are not exceeded in Panther Creek and to support some aquatic life in Blackbird Creek. (6) Reduce concentrations of contaminants of concern in Bucktail Creek to improve sediment quality such that cleanup levels are not exceeded in South Fork of Big Deer and Big Deer Creeks.	ROD 2003, Table 8-1
IDD980725832	01	On-site disposal (excavation, capping, covering, reveg)	Soils, Human: (1) Reduce direct contact (i.e., ingestion and dermal contact) with surface soils containing contaminants of concern in excess of the cleanup levels. (2) Reduce migration of metals into the water column of the streams so that the cleanup levels for the contaminants of concern	ROD 2003, Table 8-1

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			established for the streams are not exceeded. Reduce migration of the surface soils to in-stream sediments so that the cleanup levels for the contaminants of concern established for in-stream sediments are not exceeded. Soils, Aquatic: (1) Reduce migration of metals into the water column of the streams so that the cleanup levels for the contaminants of concern established for the streams are not exceeded. (2) Reduce migration of the surface soils to in-stream sediments so that the cleanup levels for the contaminants of concern established for in-stream sediments are not exceeded. Groundwater, Human: (1) Prevent use of contaminated groundwater underlying waste management areas. Surface Water, Human: (1) Maintain water quality for protection of human health. Surface Water, Aquatic: (2) Restore and maintain water quality and aquatic biota conditions capable of supporting all life stages of resident salmonids and other fishes in South Fork of Big Deer Creek and Big Deer Creek. (3) Restore and maintain water quality and aquatic biota conditions capable of supporting all life stages of resident and anadromous salmonids and other fishes in Panther Creek. (5) Reduce concentrations of contaminants of concern in Bucktail Creek to improve water quality such that cleanup levels are not exceeded in South Fork of Big Deer and Big Deer Creeks. Sediment, Aquatic: (6) Reduce concentrations of contaminants of concern in Bucktail Creek to improve sediment quality such that cleanup levels are not exceeded in South Fork of Big Deer and Big Deer Creeks.	
IDD980725832	01	Monitored natural attenuation/recovery	Soils, Human: (3) Reduce migration of the surface soils to in-stream sediments so that the cleanup levels for the contaminants of concern established for in-stream sediments are not exceeded. Soils, Aquatic: (2) Reduce migration of the surface soils to in-stream sediments so that the cleanup levels for the contaminants of concern established for in-stream sediments are not exceeded. Surface Water, Human: (1) Maintain water quality for protection of human health. Surface Water, Aquatic: (1) Reduce direct contact with surface water containing contaminants of concern in excess of the cleanup levels. (2) Restore and maintain water quality and aquatic biota conditions capable of supporting all life stages of resident salmonids and other fishes in South Fork of Big Deer Creek and Big Deer Creek. (3) Restore and maintain water quality and aquatic biota conditions capable of supporting all life stages of resident and anadromous salmonids and other fishes in Panther Creek. (4) Reduce concentrations of contaminants of concern in Blackbird Creek to improve water quality such that cleanup levels are not exceeded in Panther Creek and to support some aquatic life in Blackbird Creek. (5) Reduce concentrations of contaminants of concern in Bucktail Creek to improve water quality such that cleanup levels are not exceeded in South Fork of Big Deer and Big Deer Creeks. Sediment, Aquatic: (1) Reduce direct contact with in-stream sediments containing contaminants of concern in excess of the cleanup levels. (2) Reduce migration of in-stream sediments to downstream areas so that the cleanup levels for the contaminants of concern established for in-stream sediments at those downstream areas are not exceeded. (3) Restore and maintain sediment quality and aquatic biota conditions capable of supporting all life stages of resident salmonids and other fishes in South Fork of Big Deer Creek and Big Deer Creek. (4) Restore and maintain sediment quality and aquatic biota conditions capable of supporting all life stages of resident and anadromous salmonids and other fishes in Panther Creek. (5) Reduce concentrations of contaminants of concern in Blackbird Creek to improve sediment quality such that cleanup levels are not exceeded in Panther Creek and to support some aquatic life in Blackbird Creek. (6) Reduce concentrations of contaminants of concern in Bucktail Creek to improve sediment quality such that cleanup levels are not exceeded in South Fork of Big Deer and Big Deer Creeks.	ROD 2003, Table 8-1
IDD980725832	01	Institutional Controls	Soils, Human: (1) Reduce direct contact (i.e., ingestion and dermal contact) with surface soils containing contaminants of concern in excess of the cleanup levels. (2) Reduce migration of metals into the water column of the streams so that the cleanup levels for the contaminants of concern established for the streams are not exceeded. (3) Reduce migration of the surface soils to in-stream sediments so that the cleanup levels for the contaminants of concern established for in-stream sediments are not exceeded. Soils, Aquatic: (1) Reduce migration of metals into the water column of the streams so that the cleanup levels for the contaminants of concern established for the streams are not exceeded. (2) Reduce migration of the surface soils to in-stream sediments so that the cleanup levels for the contaminants of concern established for in-stream sediments are not exceeded. Groundwater, Human: (1) Prevent use of contaminated groundwater underlying waste management areas. Surface Water, Human: (1) Maintain water quality for protection of human health. Surface Water, Aquatic: (1) Reduce direct contact with surface water containing contaminants of concern in excess of the cleanup levels. (2) Restore and maintain water quality and aquatic biota conditions capable of supporting all life stages of resident salmonids and other fishes in South Fork of Big Deer Creek and Big Deer Creek. (3) Restore and maintain water quality and aquatic biota conditions capable of supporting all life stages of resident and anadromous salmonids and other fishes in Panther Creek. (4) Reduce concentrations of contaminants of concern in Blackbird Creek to improve water quality such that cleanup levels are not exceeded in Panther Creek and to support some aquatic life in Blackbird Creek. (5) Reduce concentrations of contaminants of concern in Bucktail Creek to improve water quality such that cleanup levels are not exceeded in South Fork of Big Deer and Big Deer Creeks. Sediment, Aquatic: (1) Reduce direct contact with in-stream sediments containing contaminants of concern in excess of the cleanup levels. (2) Reduce migration of in-stream sediments to downstream areas so that the cleanup levels for the contaminants of concern established for in-stream sediments at those downstream areas are not exceeded. (3) Restore and maintain sediment quality and aquatic biota conditions capable of	ROD 2003, Table 8-1

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			supporting all life stages of resident salmonids and other fishes in South Fork of Big Deer Creek and Big Deer Creek. (4) Restore and maintain sediment quality and aquatic biota conditions capable of supporting all life stages of resident and anadromous salmonids and other fishes in Panther Creek. (5) Reduce concentrations of contaminants of concern in Blackbird Creek to improve sediment quality such that cleanup levels are not exceeded in Panther Creek and to support some aquatic life in Blackbird Creek. (6) Reduce concentrations of contaminants of concern in Bucktail Creek to improve sediment quality such that cleanup levels are not exceeded in South Fork of Big Deer and Big Deer Creeks.	
IDD048340921				
IDD048340921	01	Off-site disposal	A REMEDIAL ACTION OBJECTIVE FOR THIS OPERABLE UNIT IS TO DECREASE THE EXPOSURE TO LEAD-CONTAMINATED RESIDENTIAL SOILS SUCH THAT 95 PERCENT OR MORE OF THE CHILDREN IN THE AREA HAVE BLOOD LEAD LEVELS BELOW 10 UG/DL AND THAT LESS THAN 1 PERCENT HAVE BLOOD LEADS GREATER THAN 15 UG/DL.	ROD 08/30/1991, p.33
IDD048340921	01	Institutional Controls	A REMEDIAL ACTION OBJECTIVE FOR THIS OPERABLE UNIT IS TO DECREASE THE EXPOSURE TO LEAD-CONTAMINATED RESIDENTIAL SOILS SUCH THAT 95 PERCENT OR MORE OF THE CHILDREN IN THE AREA HAVE BLOOD LEAD LEVELS BELOW 10 UG/DL AND THAT LESS THAN 1 PERCENT HAVE BLOOD LEADS GREATER THAN 15 UG/DL.	ROD 08/30/1991, p.33
IDD048340921	02	On-site disposal (excavation, capping, covering, reveg)	1) Complete the CFP currently being developed by USEPA and IDEQ; 5) USEPA will work with UPRR so that O&M obligations defined in the CD are met to ensure the integrity and protectiveness of the installed barriers. 6) USEPA will rely on oversight assistance from PHD and IDEQ to ensure that appropriate O&M actions are taken;	
IDD048340921	02	Water treatment - Created Wetlands		
IDD048340921	02	Surface water diversion		
IDD048340921	02	Alternative drinking water		
IDD048340921	02	Institutional Controls		
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Human Health: 1) Reduce human exposure to lead-contaminated soils, sediments, and house dust exceeding health risk goals particularly in children up to 84 months of age 2) Reduce human exposure to soils and sediments that would exceed a cancer risk of one in ten thousand 3) Reduce ingestion of groundwater or surface water withdrawn or diverted from a private, unregulated source that contains COCs exceeding drinking water standards and risk-based levels. Ecological: 1) Return the rivers and tributaries to conditions that will fully support healthy fish and other aquatic receptors, with an emphasis on native species, including sensitive native fish such as the westslope cutthroat trout and the bull trout (listed as “threatened” under the ESA); 2) Return the wetland, lake, riparian, riverine, and upland areas to conditions protective of waterfowl, migratory birds, and other plants and animals that live in these areas.	ROD 9/12/2002, p.205
IDD048340921	03	Alternative drinking water	Human Health: 1) Reduce human exposure to lead-contaminated soils, sediments, and house dust exceeding health risk goals particularly in children up to 84 months of age 2) Reduce human exposure to soils and sediments that would exceed a cancer risk of one in ten thousand 3) Reduce ingestion of groundwater or surface water withdrawn or diverted from a private, unregulated source that contains COCs exceeding drinking water standards and risk-based levels. Ecological: 1) Return the rivers and tributaries to conditions that will fully support healthy fish and other aquatic receptors, with an emphasis on native species, including sensitive native fish such as the westslope cutthroat trout and the bull trout (listed as “threatened” under the ESA); 2) Return the wetland, lake, riparian, riverine, and upland areas to conditions protective of waterfowl, migratory birds, and other plants and animals that live in these areas.	ROD 9/12/2002, p.205
IDD048340921	03	Institutional Controls	Human Health: 1) Reduce human exposure to lead-contaminated soils, sediments, and house dust exceeding health risk goals particularly in children up to 84 months of age 2) Reduce human exposure to soils and sediments that would exceed a cancer risk of one in ten thousand 3) Reduce ingestion of groundwater or surface water withdrawn or diverted from a private, unregulated source that contains COCs exceeding drinking water standards and risk-based levels. Ecological: 1) Return the rivers and tributaries to conditions that will fully support healthy fish and other aquatic receptors, with an emphasis on native species, including sensitive native fish such as the westslope cutthroat trout and the bull trout (listed as “threatened” under the ESA); 2) Return the wetland, lake, riparian, riverine, and upland areas to conditions protective of waterfowl, migratory birds, and other plants and animals that live in these areas.	ROD 9/12/2002, p.205
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Human Health: 1) Reduce human exposure to lead-contaminated soils, sediments, and house dust exceeding health risk goals particularly in children up to 84 months of age 2) Reduce human exposure to soils and sediments that would exceed a cancer risk of one in ten thousand 3) Reduce ingestion of groundwater or surface water withdrawn or diverted from a private, unregulated source that contains COCs exceeding drinking water standards and risk-based levels. Ecological: 1) Return the rivers and tributaries to conditions that will fully support healthy fish and other aquatic receptors, with an emphasis on native species, including sensitive native fish such as the westslope cutthroat trout and the bull trout (listed as “threatened” under the ESA); 2) Return the wetland, lake, riparian, riverine, and upland areas to conditions protective of waterfowl, migratory birds, and other plants and animals that live in these areas.	ROD 9/12/2002, p.205
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Human Health: 1) Reduce human exposure to lead-contaminated soils, sediments, and house dust exceeding health risk goals particularly in children up to 84 months of age 2) Reduce human exposure to soils and sediments that would exceed a cancer risk of one in ten thousand 3) Reduce ingestion of groundwater or surface water withdrawn or diverted from a private, unregulated source that contains COCs exceeding drinking water standards and risk-based levels. Ecological: 1) Return the rivers and tributaries to conditions that will fully support healthy fish and	ROD 9/12/2002, p.205

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			other aquatic receptors, with an emphasis on native species, including sensitive native fish such as the westslope cutthroat trout and the bull trout (listed as "threatened" under the ESA); 2) Return the wetland, lake, riparian, riverine, and upland areas to conditions protective of waterfowl, migratory birds, and other plants and animals that live in these areas.	
WAD980726368				
WAD980726368	01	Air Stripping	Reduce contaminant concentrations to meet cleanup levels selected in this amendment to be protective of human health and the environment and to comply with all ARARs at specified points of compliance (ARARs are listed in Section 7.2).	ROD Amend 10/26/2009, p.18
WAD980726368	01	Off-site disposal	Eliminate the risk to human health posed by direct contact with filter cake and contaminated soil at and near the surface still present on the east side of the Time Oil building; Reduce contaminant concentrations to meet cleanup levels selected in this amendment to be protective of human health and the environment and to comply with all ARARs at specified points of compliance (ARARs are listed in Section 7.2).	ROD Amend 10/26/2009, p.18
WAD980726368	01	Other – Treatment Technology	Remove sufficient contaminant mass within the source area to reduce the transport of contaminants from this highly contaminated source material into downgradient groundwater; Reduce contaminant mass discharge by 90% from the source area into the low concentration groundwater treatment zone; Reduce contaminant concentrations to meet cleanup levels selected in this amendment to be protective of human health and the environment and to comply with all ARARs at specified points of compliance (ARARs are listed in Section 7.2); Eliminate risk to human health from exposure to groundwater containing COCs in excess of protective levels.	ROD Amend 10/26/2009, p.18
WAD980726368	01	Soil Vapor Extraction	Prevent or minimize the migration of contamination from the highly contaminated shallow soil and filter cake area into the deeper soils to prevent further degradation of groundwater; Reduce contaminant concentrations to meet cleanup levels selected in this amendment to be protective of human health and the environment and to comply with all ARARs at specified points of compliance (ARARs are listed in Section 7.2); Eliminate risk to human health from exposure to groundwater containing COCs in excess of protective levels.	ROD Amend 10/26/2009, p.18
WAD980726368	01	Thermal Treatment	Remove sufficient contaminant mass within the source area to reduce the transport of contaminants from this highly contaminated source material into downgradient groundwater; Reduce contaminant mass discharge by 90% from the source area into the low concentration groundwater treatment zone; Reduce contaminant concentrations to meet cleanup levels selected in this amendment to be protective of human health and the environment and to comply with all ARARs at specified points of compliance (ARARs are listed in Section 7.2); Eliminate risk to human health from exposure to groundwater containing COCs in excess of protective levels.	ROD Amend 10/26/2009, p.18
WAD980726368	01	Water treatment - Bioreactors (e.g., SRBs)	Remove sufficient contaminant mass within the source area to reduce the transport of contaminants from this highly contaminated source material into downgradient groundwater; Reduce contaminant mass discharge by 90% from the source area into the low concentration groundwater treatment zone; Reduce contaminant concentrations to meet cleanup levels selected in this amendment to be protective of human health and the environment and to comply with all ARARs at specified points of compliance (ARARs are listed in Section 7.2).; Eliminate risk to human health from exposure to groundwater containing COCs in excess of protective levels.	ROD Amend 10/26/2009, p.18
WAD980726368	01	Institutional Controls		
WAD980726368	01	Off-site disposal	The selected remedy is to achieve acceptable sediment quality in a reasonable time frame	FYR 12/23/2009, p. 40
WAD980726368	01	Sediment dredging/ disposal	The selected remedy is to achieve acceptable sediment quality in a reasonable time frame	FYR 12/23/2009, p. 40
WAD980726368	02			
WAD980726368	03			
WAD980726368	04			
WAD980726368	05			
WAD980726368	06			
WAD980726368	07			
WAD980726368	08			
WAD980726368	09			
WAD980726368	10			
WAD980726368	11			
WAD980726368	12			

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
WAD980726368	13			
WAD980726368	14			
WAD980726368	16			
WAD980726368	17			
WAD980726368	18			
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)		ROD 7/14/2000, p.34
WAD980726368	19	Institutional Controls	1) Prevent ingestion of groundwater containing contaminant concentrations above federal maximum contaminant levels (MCLs) or above risk-based goals for those substances for which MCLs have not been established and prevent direct contact with groundwater containing contaminant concentrations above applicable risk- based goals; 2) Prevent discharge to Commencement Bay of groundwater containing contaminants at concentrations exceeding applicable marine surface water quality standards, risk-based levels protective of human health, or background concentrations (if background concentrations are higher than the applicable standards).	ROD 7/14/2000, p.34
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	Restore and preserve aquatic habitats by limiting and/ or preventing the exposure of environmental receptors to sediments with contaminants above Washington State SMS(WAC 173-204).	ROD 7/14/2000, p.34
WAD980726368	19	Sediment dredging/ disposal	Restore and preserve aquatic habitats by limiting and/ or preventing the exposure of environmental receptors to sediments with contaminants above Washington State SMS(WAC 173-204).	ROD 7/14/2000, p.34
WAD980726368	20	On-site disposal (excavation, capping, covering, reveg)	1) Prevent ingestion and inhalation of contaminated soils slag and dust containing contaminants in concentrations above applicable or relevant and appropriate requirements (ARARs) or above risk-based goals when ARARs are not available or protective; 2) Reduce releases of contaminants from soil to ground water by: Removing the source areas where contaminants leach from soil to ground water; and Limiting the surface water that runs into soil and slag; 3) Limit the erosion of slag to the off-shore sediments.	ROD 3/24/1995, p.23
WAD980726368	20	Off-site disposal		
WAD980726368	20	Institutional Controls	1) Prevent ingestion of potable (Class IIB) ground water and On-site surface water (e.g., seeps, puddles) containing contaminants above ARARs or above risk-based levels when ARARs are not available; 2) Reduce contact between contaminated soil, slag or fill and surface water and ground water. 3) Reduce discharge to Commencement Bay of contaminated waters containing contaminants in concentrations above ARARs or risk-based goals when ARARs are not protective or not available; 4) Reduce leaks and spills of contaminated surface water from drainage and sewage systems.	ROD 3/24/1995, p.23
WAD980726368	21	Deconstruction/ decontamination of buildings	1) REMOVE BUILDINGS AND STRUCTURES AT THE SITE WHICH ARE CONTAMINATED AND PRESENT A HAZARD, AND IN ANTICIPATION OF THE NEED TO FURTHER CHARACTERIZE AND REMEDIATE THE SITE; 2) DEMOLISH THE INCREASINGLY UNSTABLE SMELTER CHIMNEY STACK TO ELIMINATE THE THREAT OF A COLLAPSE	ROD 12/31/1990, p.15
WAD980726368	21	On-site disposal (excavation, capping, covering, reveg)	1) REMOVE BUILDINGS AND STRUCTURES AT THE SITE WHICH ARE CONTAMINATED AND PRESENT A HAZARD, AND IN ANTICIPATION OF THE NEED TO FURTHER CHARACTERIZE AND REMEDIATE THE SITE; 2) DEMOLISH THE INCREASINGLY UNSTABLE SMELTER CHIMNEY STACK TO ELIMINATE THE THREAT OF A COLLAPSE	ROD 12/31/1990, p.15
WAD980726368	21	Surface water diversion	CONTROL THE MOVEMENT OF SURFACE WATER COMING ON THE FACILITY FROM ADJACENT AREAS IN ORDER TO REDUCE THE AMOUNT OF WATER RUNNING THROUGH CONTAMINATED SOIL AND SLAG, AND TO MINIMIZE TRANSPORT OF CONTAMINANTS TO GROUNDWATER AND OFFSITE	ROD 12/31/1990, p.15
WAD980726368	22	Off-site disposal		
WAD980726368	22	Off-site disposal		
WAD980726368	23	On-site disposal (excavation, capping, covering, reveg)		
WAD980726368	23	Institutional Controls		
WAD980726368	24			
WAD980726368	25			
WAD980726368	26			
IDD984666610				
IDD984666610	01	Other – Engineering/Containment	FMC and Simplot Plant: 1) Reduce the exposure to radon that would occur in future buildings constructed within the Plant Areas under a future industrial scenario; 2) Prevent external exposure to radionuclides in soils at levels that pose estimated excess cancer risks greater than 1x10 -4, or site specific background levels where that is not practicable; 3) Prevent ingestion or inhalation of soils containing Contaminants of Concern	ROD 6/8/1998, p.48

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
			(COCs)at levels that pose estimated excess risks above 1x10 -4, a non cancer risk HQ of 1,or site-specific background levels where that is not practicable. 4) Reduce the release and migration of COCs to the ground water from facility sources that may result in concentrations in ground water exceeding risk-based concentration (RBCs) or chemical specific Applicable or Relevant and Appropriate Requirement(ARAR), specifically Maximum Contaminant Levels (MCLs); 5) Prevent potential ingestion of ground water containing COCs having concentrations exceeding RBCs or MCLs.	
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	FMC and Simplot Plant: 1) Reduce the exposure to radon that would occur in future buildings constructed within the Plant Areas under a future industrial scenario; 2) Prevent external exposure to radionuclides in soils at levels that pose estimated excess cancer risks greater than 1x10 -4, or site specific background levels where that is not practicable; 3) Prevent ingestion or inhalation of soils containing Contaminants of Concern (COCs)at levels that pose estimated excess risks above 1x10 -4, a non cancer risk HQ of 1,or site-specific background levels where that is not practicable. 4) Reduce the release and migration of COCs to the ground water from facility sources that may result in concentrations in ground water exceeding risk-based concentration (RBCs) or chemical specific Applicable or Relevant and Appropriate Requirement(ARAR), specifically Maximum Contaminant Levels (MCLs); 5) Prevent potential ingestion of ground water containing COCs having concentrations exceeding RBCs or MCLs.	ROD 6/8/1998, p.48
IDD984666610	01	Institutional Controls	FMC and Simplot Plant: 1) Reduce the exposure to radon that would occur in future buildings constructed within the Plant Areas under a future industrial scenario; 2) Prevent external exposure to radionuclides in soils at levels that pose estimated excess cancer risks greater than 1x10 -4, or site specific background levels where that is not practicable; 3) Prevent ingestion or inhalation of soils containing Contaminants of Concern (COCs)at levels that pose estimated excess risks above 1x10 -4, a non cancer risk HQ of 1,or site-specific background levels where that is not practicable. 4) Reduce the release and migration of COCs to the ground water from facility sources that may result in concentrations in ground water exceeding risk-based concentration (RBCs) or chemical specific Applicable or Relevant and Appropriate Requirement(ARAR), specifically Maximum Contaminant Levels (MCLs); 5) Prevent potential ingestion of ground water containing COCs having concentrations exceeding RBCs or MCLs. Off-Plant Area: 1)Prevent future consumption of homegrown produce grown in areas of the site where soil constituents levels result in a potential noncarcinogenic risk exceeding a HQ of 1; 2)Prevent external exposure to radium-226 in soils at levels that pose cumulative estimated excess risks above 1x10 -4; 3) Prevent the potential for future impacts to ecological receptors by monitoring fluoride at the site and surface water at springs. If monitoring data indicates that fluoride levels in the environment are increasing, beyond that observed during the RI sampling, and the potential for an unacceptable ecological risk is indicated, additional actions, including source controls, may be required; 4)Prevent potential ingestion of ground water containing COCs having concentrations exceeding RBCs or MCLs.	ROD 6/8/1998, p.48
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	FMC and Simplot Plant: 1) Reduce the exposure to radon that would occur in future buildings constructed within the Plant Areas under a future industrial scenario; 2) Prevent external exposure to radionuclides in soils at levels that pose estimated excess cancer risks greater than 1x10 -4, or site specific background levels where that is not practicable; 3) Prevent ingestion or inhalation of soils containing Contaminants of Concern (COCs)at levels that pose estimated excess risks above 1x10 -4, a non cancer risk HQ of 1,or site-specific background levels where that is not practicable. 4) Reduce the release and migration of COCs to the ground water from facility sources that may result in concentrations in ground water exceeding risk-based concentration (RBCs) or chemical specific Applicable or Relevant and Appropriate Requirement(ARAR), specifically Maximum Contaminant Levels (MCLs); 5) Prevent potential ingestion of ground water containing COCs having concentrations exceeding RBCs or MCLs.	ROD 6/8/1998, p.48
IDD984666610	03			
IDD984666610	04			
ORN001002616				
ORN001002616	01			
OR7122307658				
OR7122307658	01			
OR7122307658	02	On-site disposal (excavation, capping, covering, reveg)	White King Soils: 1) Reduce exposure to stockpiles and contaminated off-pile soil by humans (ingestion and external exposure) and ecological receptors (ingestion). Demonstrate protectiveness to an excess risk level of 1 x 10-6 for carcinogenic risk (or a non-cancer HQ of 1) based on reasonable maximum exposure for an individual, or background concentration whichever is higher; 2) Reduce and eliminate the release and migration of contaminants from soils to groundwater or surface water via erosion, oxidation, or leaching to protect for beneficial uses (recreational, agricultural, and aquatic habitat); 3) Prevent the removal or use of stockpile soils for any purpose.	ROD 9/21/2001, p.61-65
OR7122307658	02	Water treatment-lime	White King Pond: 1) Protect the potential beneficial use(s) (aquatic life) of the White King pond from exposure to COCs above applicable standards (Oregon's State water quality standards (OAR 340- 41-925), or background concentrations (if background concentrations are higher than the applicable standard); 2) Maintain a neutral pH in the White King pond water in order to reduce the toxicity of the acidic water and lower the concentrations of dissolved metals in the water.	ROD 9/21/2001, p.61-65

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
OR7122307658	02	Institutional Controls	White King Soils: 1) Reduce exposure to stockpiles and contaminated off-pile soil by humans (ingestion and external exposure) and ecological receptors (ingestion). Demonstrate protectiveness to an excess risk level of 1 x 10-6 for carcinogenic risk (or a non-cancer HQ of 1) based on reasonable maximum exposure for an individual, or background concentration whichever is higher; 2) Reduce and eliminate the release and migration of contaminants from soils to groundwater or surface water via erosion, oxidation, or leaching to protect for beneficial uses (recreational, agricultural, and aquatic habitat); 3) Prevent the removal or use of stockpile soils for any purpose. White King Pond: 1) Protect the potential beneficial use(s) (aquatic life) of the White King pond from exposure to COCs above applicable standards (Oregon's State water quality standards (OAR 340- 41-925), or background concentrations (if background concentrations are higher than the applicable standard); 2) Maintain a neutral pH in the White King pond water in order to reduce the toxicity of the acidic water and lower the concentrations of dissolved metals in the water. Lucky Lass Soils: 1) Prevent direct contact with the contaminated soils to reduce potential risks from incidental soil ingestion and threat from external radiation exposure; 2) Prevent any future use of stockpile soils with contaminant concentrations in excess of protective levels. Lucky Lass Mine Groundwater:1) Monitor ground water upgradient and downgradient of the stockpile to ensure that the potential beneficial uses of ground water (discharge to surface water) meet applicable standards (Oregon's State water quality standards (OAR 340-41-925) at the boundary of the waste management area with Augur Creek and/or to establish a trend toward background concentrations. 2) Prevent any human exposure and future use of ground water beneath the stockpile with contaminant concentrations in excess of Federal and State drinking water standards or protective levels.	ROD 9/21/2001, p.61-65
WAD000065508				
WAD000065508	01	On-site disposal (excavation, capping, covering, reveg)	1) prevent potential receptors from coming into direct contact with or ingesting soil and groundwater containing cyanide or fluoride at levels exceeding cleanup criteria; and 2) prevent or minimize groundwater containing cyanide or fluoride at levels above cleanup criteria from migrating to the Little Spokane River.	ROD, 5/1/1992, p.33
WAD000065508	01	Water treatment-other	1) prevent potential receptors from coming into direct contact with or ingesting soil and groundwater containing cyanide or fluoride at levels exceeding cleanup criteria; and 2) prevent or minimize groundwater containing cyanide or fluoride at levels above cleanup criteria from migrating to the Little Spokane River.	ROD, 5/1/1992, p.33
WAD000065508	01	Institutional Controls	1) prevent potential receptors from coming into direct contact with or ingesting soil and groundwater containing cyanide or fluoride at levels exceeding cleanup criteria; and 2) prevent or minimize groundwater containing cyanide or fluoride at levels above cleanup criteria from migrating to the Little Spokane River.	ROD, 5/1/1992, p.33
ORD052221025				
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)		
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)		
ORD052221025	01	Water treatment-other		
ORD052221025	01	Institutional Controls		
ORD052221025	02			
WAD980978753				
WAD980978753	01	On-site disposal (excavation, capping, covering, reveg)	1) Reduce exposure of humans and ecological receptor populations to COCs in and radiation from mining-affected surface materials and sediments to levels that do not result in unacceptable site-related risks. 2) Reduce loadings of COCs from surface materials and sediments to surface water and groundwater so that loadings do not result in unacceptable site-related risks. 3) Reduce environmental transport of mining-affected surface material from the Mined Area to areas outside of the Mined Area. Prevent people from removing mining-affected surface material.	ROD 9/29/2006, p.80
WAD980978753	01	Water treatment-other	1) Reduce exposure of humans and ecological receptor populations to COCs in surface water to levels that do not result in unacceptable site-related risks. 2) Reduce infiltration of surface water into ARD-generating materials and reduce erosion and environmental transport of mining-affected surface materials by surface water. 3) Reduce loadings of COCs from surface water to groundwater so that loadings do not result in unacceptable site-related risks.	ROD 9/29/2006, p.80
WAD980978753	01	Off-site disposal	1) Reduce exposure of humans and ecological receptor populations to COCs in and radiation from mining-affected surface materials and sediments to levels that do not result in unacceptable site-related risks. 2) Reduce loadings of COCs from surface materials and sediments to surface water and groundwater so that loadings do not result in unacceptable site-related risks. 3) Reduce environmental transport of mining-affected surface material from the Mined Area to areas outside of the Mined Area. Prevent people from removing mining-affected surface material.	ROD 9/29/2006, p.80
WAD980978753	01	Surface water diversion	1) Reduce exposure of humans and ecological receptor populations to COCs in surface water to levels that do not result in unacceptable site-related risks. 2) Reduce infiltration of surface water into ARD-generating materials and reduce erosion and environmental transport of mining-affected surface materials by surface water. 3) Reduce loadings of COCs from surface water to groundwater so that loadings do not result in unacceptable site-related risks.	ROD 9/29/2006, p.80

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
WAD980978753	01	Institutional Controls	1) Reduce exposure of humans to COCs in groundwater to levels that do not result in unacceptable site-related risks. 2) Reduce loadings of COCs from groundwater to surface water so that loadings do not result in unacceptable site-related risks.	ROD 9/29/2006, p.80
IDD081830994				
IDD081830994	01	Monitored natural attenuation/recovery	Ensure that groundwater contamination sources have been eliminated and that natural attenuation will eventually restore the groundwater aquifers affected by past releases from the Site	ROD 4/30/1997, p.31
IDD081830994	01	Institutional Controls	Ensure that groundwater contamination sources have been eliminated and that natural attenuation will eventually restore the groundwater aquifers affected by past releases from the Site	ROD 4/30/1997, p.31
IDD081830994	01	Institutional Controls	Prevent external exposure to radionuclides in soils at levels that pose cumulative estimated risks above 3 x 10 -4. Such risks correspond to a radiation effective dose equivalent of approximately 15 mrem/year for the radionuclides of concern at this Site; 3) Prevent ingestion or inhalation of soils containing radionuclides at levels that pose cumulative estimated excess risks above 3 x 10 -4, or metals (arsenic, beryllium) at levels that pose cumulative estimated excess carcinogenic risks that exceed 1 x 10 -5, a non-cancer risk HQ of 1, or Site-specific background levels where that is not practicable.	ROD 4/30/1997, p.31
IDD081830994	01	On-site disposal (excavation, capping, covering, reveg)	Prevent external exposure to radionuclides in soils at levels that pose cumulative estimated risks above 3 x 10 -4. Such risks correspond to a radiation effective dose equivalent of approximately 15 mrem/year for the radionuclides of concern at this Site; 3) Prevent ingestion or inhalation of soils containing radionuclides at levels that pose cumulative estimated excess risks above 3 x 10 -4, or metals (arsenic, beryllium) at levels that pose cumulative estimated excess carcinogenic risks that exceed 1 x 10 -5, a non-cancer risk HQ of 1, or Site-specific background levels where that is not practicable.	ROD 4/30/1997, p.31
ORD009412677				
ORD009412677	01	Off-site disposal	1) Prevent human exposure through direct contact (ingestion inhalation, and dermal contact) with contaminated soil and debris that would result in unacceptable excess lifetime cancer risk or above a Hazard Index of 1 based on industrial exposure scenarios.2) Minimize the migration of contaminants from waste and soils to groundwater, reduce fluoride in shallow and intermediate groundwater, and control migration of contaminant plumes in groundwater.	ROD 9/30/2002, p.17
ORD009412677	01	Off-site disposal	1) Prevent human exposure through direct contact (ingestion inhalation, and dermal contact) with contaminated soil and debris that would result in unacceptable excess lifetime cancer risk or above a Hazard Index of 1 based on industrial exposure scenarios.2) Minimize the migration of contaminants from waste and soils to groundwater, reduce fluoride in shallow and intermediate groundwater, and control migration of contaminant plumes in groundwater.	ROD 9/30/2002, p.17
ORD009412677	01	On-site disposal (excavation, capping, covering, reveg)	1) Prevent human exposure through direct contact (ingestion inhalation, and dermal contact) with contaminated soil and debris that would result in unacceptable excess lifetime cancer risk or above a Hazard Index of 1 based on industrial exposure scenarios.2) Minimize the migration of contaminants from waste and soils to groundwater, reduce fluoride in shallow and intermediate groundwater, and control migration of contaminant plumes in groundwater.	ROD 9/30/2002, p.17
ORD009412677	01	Water treatment-other	1) Restore and maintain use of the intermediate and deep groundwater as a drinking water source. The goal for restoration is the federal and state safe drinking water standard.2) Minimize the migration of contaminants from waste and soils to groundwater, reduce fluoride in shallow and intermediate groundwater, and control migration of contaminant plumes in groundwater.3) Control migration of plumes to control the migration of fluoride to the Sandy River.	ROD 9/30/2002, p.17
ORD009412677	01	Institutional Controls	1) Restore and maintain use of the intermediate and deep groundwater as a drinking water source. The goal for restoration is the federal and state safe drinking water standard.2) Minimize the migration of contaminants from waste and soils to groundwater, reduce fluoride in shallow and intermediate groundwater, and control migration of contaminant plumes in groundwater.3) Control migration of plumes to control the migration of fluoride to the Sandy River.	ROD 9/30/2002, p.17
ORD009412677	02	Institutional Controls		
ORD009412677	02	Other – Engineering/Containment	1) Restore and maintain use of the groundwater (except the shallow silt zone) as a drinking water source. The restoration goal is the federal and state safe drinking water standard (MCL). 2) Minimize the migration of contaminants from waste and soils to groundwater at concentrations that are protective for underlying drinking water, reduce the fluoride mass in shallow and intermediate groundwater, and control migration of fluoride and other constituents of concern in groundwater. 3) Reduce and control the migration of fluoride in groundwater to the Sandy River.	ROD 9/29/2006, p.27
ORD009412677	02	On-site disposal (excavation, capping, covering, reveg)	Reduce human exposure through direct contact (ingestion, inhalation, and dermal contact) with contaminated soil and debris that would result in unacceptable excess lifetime cancer risk or above a Hazard Index of 1.0 for the reasonably anticipated (non-residential) future land uses.	ROD 9/29/2006, p.27

EPA ID	OU	Selected Remedy (Q7)	Remedial Action Objectives (Q6)	Ref (Q6)
AK0001897602				
AK0001897602	01			
WAD980722789				
WAD980722789	01	On-site disposal (excavation, capping, covering, reveg)		
WAD980722789	01	Institutional Controls		
IDD980665459				
IDD980665459	01			
ORD050955848				
ORD050955848	01	Water treatment-other	1) Prevent people from drinking groundwater containing contaminant levels above federal or state drinking water standards. 2) Prevent contaminated groundwater above federal or state drinking water standards from leaving the TWCA property boundary. 3) Reduce the concentrations of TWCA-related organic, inorganic, or radionuclide compounds in groundwater to concentrations below federal or state drinking water standards or other risk-based levels. 4) Prevent groundwater containing TWCA-related organic, inorganic, or radionuclide compounds above federal or state standards from discharging into nearby surface waters.	ROD 6/10/1994, p.43
ORD050955848	01	On-site disposal (excavation, capping, covering, reveg)	1) Prevent TWCA-related contaminants from moving into sediments, and from sediments into surface water. 2) Prevent sediments containing TWCA-related contaminants from leaving the site. 3) Prevent aquatic organisms from coming in contact with contaminated sediments. 4) Reduce concentrations of TWCA-related compounds in sediments where necessary, to protect aquatic organisms 5) Ensure that non-permitted discharges to surface water from the TWCA facility do not exceed federal or state water quality standards.	ROD 6/10/1994, p.43
ORD050955848	01	Institutional Controls		
ORD050955848	02	Off-site disposal	Not specified in ROD.	ROD 12/28/1989
ORD050955848	03	Off-site disposal		
ORD050955848	03	Institutional Controls		
ORD050955848	04			

Table C-8 – Site and Operating Unit Detail at the 126 Site Universe (Part 8)

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
MED980524128										
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Groundwater	2009 ROD, p19-20	Both Eco and Human	2009 ROD p98	Yes	2009 ROD p98 (wetland passive treatment system included in remedy)	$4,331,000	2009 ROD p 105 (Capital Costs Only)
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)		Human	2009 ROD p105-6	No		$22,839,900	2009 ROD p 105 (OU 1 Costs Only)
MED980524128	01	Off-site disposal	Direct Exposure (waste/soils)		Human	2009 ROD p105	No			
MED980524128	01	Sediment dredging/ disposal	Surface Water/ Sediment/wetland		Ecological	2009 ROD p106	No			
MED980524128	01	Institutional Controls	Direct Exposure (waste/soils)				No		$31,000	2009 ROD p 105 (Capital Costs Only)
MED980524128	02									
MED980524128	03									
VTD988366621										
VTD988366621	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	2006 ROD p3	Human	2006 ROD p3-4	No		$700,000	2006 ROD p 57-8 (cost does not include on-site disposal of sources involved in SW diversion remedy)
VTD988366621	01	Surface water diversion	Surface Water/ Sediment/wetland	2006 ROD p21	Ecological	2006 ROD p21	No			
VTD988366621	01	Monitored natural attenuation/recovery	Surface Water/ Sediment/wetland	2006 ROD p58	Ecological	2006 ROD p58	No		$400,000	2006 ROD p58
VTD988366621	01	Institutional Controls	Groundwater	2006 ROD p5	Human	2006 ROD p5	No		$770,000	2006 ROD p44-46 (cost includes remedy IA-4 and SW-2 with some monitoring)
VTD988366571										
VTD988366571	01									
VTD988366571	02									
VTD988366720										
VTD988366720	01									
NJD980785646										
NJD980785646	01	Off-site disposal	Direct Exposure (waste/soils)	1989 ROD p2	Human	1989 ROD p5	No		$53,000,000	1989 ROD p9 (total cost of all OU1 remedies; cost includes OU1 for Montclair/West Orange

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
										Radium site NJD980785653)
NJD980785646	01	Other – Engineering/Containment	Direct Exposure (waste/soils)	1990 ROD p2	Human	1990 ROD p5	No			
NJD980785646	01	Institutional Controls	Direct Exposure (waste/soils)	1991 ROD p2	Human	1991 ROD p5	No			
NJD980785646	02	No action					No			
NJD980785646	03	Off-site disposal	Direct Exposure (waste/soils)	1990 ROD p5-6	Human	1990 ROD p17	No		$295,700,000	1990 ROD p18 (cost combined with site costs for Montclair/West Orange NPL site NJD980785653)
NYD986882660										
NYD986882660	01	Off-site disposal	Air	1999 ROD p6	Human	1999 ROD p6	No		$14,445,000	1999 ROD p42
NYD986882660	01	Institutional Controls	Groundwater	2005 FYR p16	Human	2005 FYR p16	No			
NYD986882660	02	Off-site disposal	Air				No		$13,597,000	1999 ROD p44
NYD986882660	02	Institutional Controls	Direct Exposure (waste/soils)				No			
NYD986882660	03									
NYD986882660	04	Sediment dredging/ disposal	Surface Water/ Sediment/wetland	2005 ROD p3	Human	2005 ROD p3	No		$2,979,269	2005 ROD p19
NJD980529762										
NJD980529762	01									
NJD980529762	02	Off-site disposal	Direct Exposure (waste/soils)	ROD, 9/22/2003, p.31	Human	ROD, 9/22/2003, p.22	No	ROD, 9/22/2003, p.31	$254,000,000	ROD, 9/22/2003, p.32 (costs for entire remedy)
NJD980529762	02	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/22/2003, p.31	Human	ROD, 9/22/2003, p.22	No	ROD, 9/22/2003, p.31	$254,000,000	ROD, 9/22/2003, p.32 (costs for entire remedy)
NJD980529762	02	Deconstruction/ decontamination of buildings	Direct Exposure (waste/soils)	ROD, 9/22/2003, p.31	Human	ROD, 9/22/2003, p.22	No	ROD, 9/22/2003, p.31	$254,000,000	ROD, 9/22/2003, p.32 (costs for entire remedy)
NJD980529762	03									
NJD980785653										
NJD980785653	01	Off-site disposal	Direct Exposure (waste/soils)	1989 ROD p2	Human	1989 ROD p5	No		$53,000,000	1989 ROD p9 (total cost of all OU1 remedies; cost includes OU1 for Glen Ridge Radium NJD980785646)
NJD980785653	02	No action								
NJD980785653	03	Off-site disposal	Direct Exposure (waste/soils)	1990 ROD p5-6	Human	1990 ROD p17	No		$295,700,000	1990 ROD p18 (cost combined with site costs for Glen Ridge Radium NJD980785646)

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
NJD002365930										
NJD002365930	01	Air Stripping	Groundwater	1996 ROD p11	Human	1996 ROD p11	No		$170,000	1996 ROD p17 (cost is only for air stripping, not for GW extraction)
NJD002365930	01	Water treatment-other	Groundwater	1996 ROD p11	Human	1996 ROD p11	No		$6,200,000	1996 ROD p18
NJD002365930	02									
NJD002365930	03									
NJD980654172										
NJD980654172	01	Off-site disposal	Direct Exposure (waste/soils)	1993 ROD p10	Human	1993 ROD p10	No		$14,190,000	1993 ROD p12
NJD980654172	02	Off-site disposal	Direct Exposure (waste/soils)	1995 ROD p12	Human	1995 ROD p12	No		$22,030,000	1995 ROD p16
NJD980654172	03	No action					No			
NJ1891837980										
NJ1891837980	01	Off-site disposal	Direct Exposure (waste/soils)	2000 ROD p51	Human	2000 ROD p51	No		$33,747,000	2000 ROD p38 (cost is approximate and equals full remedy cost minus GW treatment cost as separate remedy)
NJ1891837980	01	Water treatment-other	Groundwater		Human	2008 FYR p15	No		$281,000	2000 ROD p38
NJ1891837980	01	Institutional Controls	Direct Exposure (waste/soils)		Human	2008 FYR p15	No			
PAD987341716										
PAD987341716	01	Off-site disposal	Direct Exposure (waste/soils)	ROD, 06/27/1994, p.2	Human	ROD, 06/27/1994, p.2	No	ROD, 06/27/1994, p.2 (eco-risk not addressed in ROD)	$23,100,000	ROD, 06/27/1994, p.16 (soil only)
PAD987341716	01	Resident relocation	Direct Exposure (waste/soils)	ROD, 06/27/1994, p.2	Human	ROD, 06/27/1994, p.2	No	ROD, 06/27/1994, p.2 (eco-risk not addressed in ROD)	$504,000	ROD, 06/27/1994, p.16 (24,000 per year multiplied by 21 households affected); FYR 12/21/2000, p.4
PAD987341716	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 06/27/1994, p.2	Human	ROD, 06/27/1994, p.2	No	ROD, 06/27/1994, p.2 (eco-risk not addressed in ROD)		
PAD987341716	02	No action								
PAD077087989										
PAD077087989	01	Off-site disposal	Direct Exposure (waste/soils)	ROD, 3/31/2006, p. 22	Human	ROD, 3/31/2006, p. 21-26	No	ROD, 3/31/2006, p. 4, 33-35, 52-55	$13,936,000	ROD, 3/31/2006, p. 50
PAD077087989	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 3/31/2006, p. 22	Both Eco and Human	ROD, 3/31/2006, p. 21-26	No	ROD, 3/31/2006, p. 4, 33-35, 52-55		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
PAD077087989	01	Other – Treatment Technology	Groundwater	ROD, 3/31/2006, p. 22, 26	Both Eco and Human	ROD, 3/31/2006, p. 21-26	No	ROD, 3/31/2006, p. 4, 33-35, 52-55		
PAD077087989	01	Institutional Controls	Groundwater	ROD, 3/31/2006, p. 22, 26	Both Eco and Human	ROD, 3/31/2006, p. 21-26	No	ROD, 3/31/2006, p. 4, 33-35, 52-55		
PASFN0305549										
PASFN0305549	01									
PASFN0305549	02									
PAD980829493										
PAD980829493	01	Off-site disposal	Direct Exposure (waste/soils)	FYR, 4/28/2006, p. 6	Both Eco and Human	ROD, 9/30/1997, p. 9-12	No	ROD, 9/30/1997, p. 2, 19; ESD, 4/19/2001, p. 2	$12,500,000	ROD, 9/30/1997, p. 19
PAD980829493	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	FYR, 4/28/2006, p. 6	Both Eco and Human	ROD, 9/30/1997, p. 9-12	No	ROD, 9/30/1997, p. 2, 19; ESD, 4/19/2001, p. 2		
PAD980829493	01	Institutional Controls	Direct Exposure (waste/soils)	FYR, 4/28/2006, p. 6	Both Eco and Human	ROD, 9/30/1997, p. 9-12	No	ROD, 9/30/1997, p. 2, 19		
PAD002395887										
PAD002395887	01	Soil Amendments	Direct Exposure (waste/soils)	ROD, 9/4/1987, p. 2	Ecological	ROD, 9/4/1987, p. 2	Yes	ROD, 9/4/1987, p. 2, 6, 8-9		
PAD002395887	02	Water treatment-lime	Surface Water/ Sediment/wetland	ROD, 6/29/1988, p. 9	Ecological	ROD, 6/29/1988, p. 7-8	No	ROD, 6/29/1988, p. 2, 9		
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 6/29/1988, p. 9	Ecological	ROD, 6/29/1988, p. 7-8	No	ROD, 6/29/1988, p. 2, 9		
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 6/29/1988, p. 9	Ecological	ROD, 6/29/1988, p. 7-8	No	ROD, 6/29/1988, p. 2, 9		
PAD002395887	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 10/29/2001, p. 11-12	Human	ROD, 10/9/2001, p. 2	No	ROD, 10/9/2001, p. 35-39	$13,656,000	ROD, 10/9/2001, p. 43
PAD002395887	03	Off-site disposal	Direct Exposure (waste/soils)	ROD, 10/29/2001, p. 11-12	Human	ROD, 10/9/2001, p. 2	No	ROD, 10/9/2001, p. 37		
PAD002395887	03	Institutional Controls	Direct Exposure (waste/soils)	ROD, 10/29/2001, p. 11-12	Human	ROD, 10/9/2001, p. 2	No	ROD, 10/9/2001, p. 39		
PAD002395887	04									
VAD980705404										
VAD980705404	01	Water treatment-lime	Groundwater		Ecological	ROD, 11/21/1989, p. 14, 21	No	ROD, 11/21/1989, p. 22, 25-26, 27-28; ESD, 9/26/1990, p. 5	$5,673,000	ESD, 9/26/1990, p. 6
VAD980705404	01	Water treatment - Created Wetlands	Surface Water/ Sediment/wetland		Ecological	ROD, 11/21/1989, p. 14, 21	Yes	ROD, 11/21/1989, p. 22-23	$431,000	ROD, 11/21/1989, p. 36

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
VAD980705404	01	Surface water diversion	Surface Water/ Sediment/wetland		Ecological	ROD, 11/21/1989, p. 14, 21	No	ROD, 11/21/1989, p. 27-28	$1,192,000	ROD, 11/21/1989, p. 36
VAD980705404	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)		Ecological	ROD, 11/21/1989, p. 14, 21	No	ROD, 11/21/1989, p. 31	$147,000	ROD, 11/21/1989, p. 36
VAD980705404	01	Institutional Controls	Groundwater	ESD, 9/25/2002, p. 5-6	Both Eco and Human	ESD, 9/25/2002, p. 5-6	No	ESD, 9/25/2002, p. 5-6		
SCN000407714										
SCN000407714	01									
SCD987577913										
SCD987577913	01	Water treatment-lime	Surface Water/ Sediment/wetland	ROD, 9/25/2005, p. 21	Both Eco and Human	ROD, 9/25/2005, p. 21	No	ROD, 9/25/2005, p. 3, 31-32	$2,861,600	ROD, 9/25/2005, p. 38
TND987768546										
TND987768546	01									
TN0001890839										
TN0001890839	01									
TN0001890839	02									
TN0001890839	03									
TN0001890839	04									
TN0001890839	05									
TN0001890839	06									
TN0001890839	07									
TN0001890839	08									
TN0001890839	09									
TN0001890839	10									
TN0001890839	11									
TN0001890839	12									
TN0001890839	13									
TN0001890839	14									
TN0001890839	15									
TN0001890839	16									
TN0001890839	17									
FLD001704741										
FLD001704741	01									
FLD001704741	02									
SCN000407376										
SCN000407376	01									
SCD003360476										

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
SCD003360476	01	Water treatment-other	Groundwater	ROD, 8/21/2002, p. 45	Both Eco and Human	ROD, 8/21/2002, p. 49-50, 60	Yes	ROD, 8/21/2002, p. 11, 84	$2,053,000	ROD, 8/21/2002, p. 85
SCD003360476	01	Sediment dredging/ disposal	Surface Water/ Sediment/wetland	ROD, 8/21/2002, p. 45	Both Eco and Human	ROD, 8/21/2002, p. 49-50, 60	No	ROD, 8/21/2002, p. 11, 93	$492,000	ROD, 8/21/2002, p. 94
SCD003360476	01	Soil Amendments	Direct Exposure (waste/soils)	ROD, 8/21/2002, p. 45	Both Eco and Human	ROD, 8/21/2002, p. 49-50, 60	Yes	ROD, 8/21/2002, p. 11, 73-74	$7,883,000	ROD, 8/21/2002, p. 74
SCD003360476	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 8/21/2002, p. 45	Both Eco and Human	ROD, 8/21/2002, p. 49-50, 60	No	ROD, 8/21/2002, p. 11, 72		
SCD003360476	01	Off-site disposal	Direct Exposure (waste/soils)	ROD, 8/21/2002, p. 45	Both Eco and Human	ROD, 8/21/2002, p. 49-50, 60	No	ROD, 8/21/2002, p. 12, 80	$15,000	ROD, 8/21/2002, p. 80
SCD003360476	01	Surface water diversion	Surface Water/ Sediment/wetland	ROD, 8/21/2002, p. 45	Both Eco and Human	ROD, 8/21/2002, p. 49-50, 60	No	ROD, 8/21/2002, p. 12, 94	$1,256,000	ROD, 8/21/2002, p. 95
KYD049062375										
KYD049062375	00	Institutional Controls	Direct Exposure (waste/soils)	ROD, 7/6/2000, p. 20	Both Eco and Human	ROD, 7/6/2000, p. 26, 61	No	ROD, 7/6/2000, p. 6-7, 117-130	$3,000	ROD, 7/6/2000, p. 131-132
KYD049062375	00	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 7/6/2000, p. 20	Both Eco and Human	ROD, 7/6/2000, p. 26, 61	No	ROD, 7/6/2000, p. 6-7, 117-130	$23,115,736	ROD, 7/6/2000, p. 131-132
KYD049062375	00	Off-site disposal	Direct Exposure (waste/soils)	ROD, 7/6/2000, p. 20	Both Eco and Human	ROD, 7/6/2000, p. 26, 61	No	ROD, 7/6/2000, p. 6-7, 117-130		
KYD049062375	01	Water treatment-other	Groundwater	ROD, 2/19/1993, p. 20	Human	ROD, 2/19/1993, p. 20	No	ROD, 2/19/1993, p. 2, 26-27	$13,100,000	FYR, 8/2/2001, p. 9
KYD049062375	02									
NCN000409895										
NCN000409895	01									
FLD010596013										
FLD010596013	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 7/2/1998, p. 17, 24	Both Eco and Human	ROD, 7/2/1998, p. 17, 24	No	ROD, 7/2/1998, p. 3, 46-49	$9,356,000	ROD, 7/2/1998, p. 46
FLD010596013	01	Solidification	Direct Exposure (waste/soils)	ROD, 7/2/1998, p. 17, 24	Both Eco and Human	ROD, 7/2/1998, p. 17, 24	No	ROD, 7/2/1998, p. 3, 46-49		
FLD010596013	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 7/2/1998, p. 17, 24	Both Eco and Human	ROD, 7/2/1998, p. 17, 24	No	ROD, 7/2/1998, p. 3, 46-49		
FLD010596013	02									
ILN000508170										
ILN000508170	01									
ILN000508170	02									
ILD050231976										
ILD050231976	01									
ILD062340641										

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
ILD062340641	01	Sediment dredging/ disposal	Surface Water/ Sediment/wetland	ROD, 10/3/2001. p. 2	Both Eco and Human	ROD, 10/3/2001. pp. 6-9	No		$1,895,000	ROD, 10/3/2001. pp. 16,24
ILD062340641	02									
ILD062340641	03									
ILD062340641	04									
ILD062340641	05									
ILD980606941										
ILD980606941	01	Deconstruction/ decontamination of buildings	Direct Exposure (waste/soils)	ROD 6/16/2009, pp.23,24	Both Eco and Human	ROD 6/16/2009, pp.17, 18	No		$3,728,842	ROD 6/16/2009, p. 25
ILD980606941	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 6/16/2009, pp.23,24	Both Eco and Human	ROD 6/16/2009, pp.17, 18	No			
ILD980606941	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 6/16/2009, pp.23,24	Both Eco and Human	ROD 6/16/2009, pp.17, 18	No			
ILD980606941	02									
ILN000508134										
ILN000508134	01									
ILN000508134	02									
ILN000508134	03									
IL0000064782										
IL0000064782	01									
IL0000064782	02									
OHD004379970										
OHD004379970	01	Chemical Oxidation	Groundwater	ROD 9/12/1994 p. 23	Human	ROD 9/12/1994 p. 23	No	ROD 9/12/1994 pp. 2,3, 23, 36; FYR 5/6/2002 p. 7	$17,400,000	ROD 9/12/1994 p. 22
OHD004379970	01	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 9/12/1994 pp. 8,23	Both Eco and Human	ROD 9/12/1994 pp. 10,36	No	ROD 9/12/1994 pp. 2,3, 19		
OHD004379970	01	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 9/12/1994 p. 23	Both Eco and Human	ROD 9/12/1994 pp. 10,36	No	ROD 9/12/1994 pp. 2,3, 20; FYR 5/6/2002 p. 7		
OHD004379970	01	Soil flushing/washing	Groundwater	ROD 9/12/1994 p. 8	Both Eco and Human	ROD 9/12/1994 p. 9-11, 36	No	ROD 9/12/1994 pp. 2,3		
OHD004379970	01	On-site disposal (excavation, capping, covering, reveg)	Groundwater	ROD 9/12/1994 p. 8	Both Eco and Human	ROD 9/12/1994 p. 36	No	ROD 9/12/1994 pp. 2,3; FYR 5/6/2002 p. 7		
OHD004379970	01	Sediment dredging/ disposal	Direct Exposure (waste/soils)	ROD 9/12/1994 p. 23	Both Eco and Human	ROD 9/12/1994 p. 23	No	ROD 9/12/1994 pp. 2,3, 23, 36; FYR 5/6/2002 p. 7		
OHD004379970	01	Institutional Controls	Groundwater		Both Eco and Human		No	ROD 9/12/1994 pp. 2,3; FYR 5/62002, p.7		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
MID980901946										
MID980901946	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/30/1992 pp. 12-13	Both Eco and Human	ROD 9/30/1992 pp. 14-17	No	ROD 9/30/1992, p. 2; FYR 3/27/2008 p. 23, 55	$3,258,000	ROD 9/30/1992 p. 24
MID980901946	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 9/30/1992 pp. 12-13	Both Eco and Human	ROD 9/30/1992 pp. 14-17	No	ROD 9/30/1992, p. 2; FYR 3/27/2008 p. 23, 55		ROD 9/30/1992 p. 24
MID980901946	01	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD 9/30/1992 pp. 12-13	Both Eco and Human	ROD 9/30/1992 pp. 14-17	No	ROD 9/30/1992, pp. 2-3; FYR 3/27/2008 pp. 23-25, 55		ROD 9/30/1992 p. 24
MID980901946	02	No action	Surface Water/ Sediment/wetland	ROD 3/31/1994 pp.2-3	Ecological	ROD 3/31/1994 pp.2-3	No	ROD 3/31/1994 p. 2		
MID980901946	03	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/30/1992 pp. 12-13	Both Eco and Human	ROD 9/30/1992 pp. 14-17	No	ROD 9/30/1992, p. 2; FYR 3/27/2008 p. 23, 55	$2,868,000	ROD 9/30/1992 p. 24
MID980901946	03	Off-site disposal	Direct Exposure (waste/soils)	ROD 9/30/1992 pp. 12-13	Both Eco and Human	ROD 9/30/1992 pp. 14-17	No	ROD 9/30/1992, p. 2; FYR 3/27/2008 p. 23, 55		ROD 9/30/1992 p. 24
MID980901946	03	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD 9/30/1992 pp. 12-13	Both Eco and Human	ROD 9/30/1992 pp. 14-17	No	ROD 9/30/1992, pp. 2-3; FYR 3/27/2008 pp. 24-25, 55		ROD 9/30/1992 p. 24
MID980901946	03	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 9/30/1992 pp. 12-13	Both Eco and Human	ROD 9/30/1992 pp. 14-17	No	FYR 3/27/2008 p. 25, 55		
MID980901946	03	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD 9/30/1992 pp. 12-13	Both Eco and Human	ROD 9/30/1992 pp. 14-17	No	FYR 3/27/2008 p. 25, 55		
MID980901946	04									
MID980901946	05									
MID980901946	06									
IND047030226										
IND047030226	01									
NMD002899094										
NMD002899094	00	Off-site disposal	Direct Exposure (waste/soils)	ROD 12/20/2010 p. 2-442	Human	ROD 12/20/2010 p. 2-443	No		$2,549,000	ROD 12/20/2010 p. 2-690
NMD002899094	00	On-site disposal (excavation, capping, covering, reveg)	Groundwater	ROD 12/20/2010 pp. 2-76, 2-77	Both Eco and Human	ROD 12/20/2010 pp. 2-448, 2-449, 2-599, 2-600	No		$347,331,000	ROD 12/20/2010 p. 2-690
NMD002899094	00	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD 12/20/2010 p. 2-452	Both Eco and Human	ROD 12/20/2010 p. 2-452, 453	No		$347,331,000	ROD 12/20/2010 p. 2-690

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
NMD002899094	00	Water treatment-lime	Groundwater	ROD 12/20/2010 pp.2-444 to 2-446, 2-450, 2-451	Both Eco and Human	ROD 12/20/2010 pp.2-444 to 2-446, 2-450, 2-451	No		$86,530,000	ROD 12/20/2010 p. 2-690
NMD002899094	00	Sediment dredging/ disposal	Surface Water/ Sediment/wetland	ROD 12/20/2010 pp.2-456, 2-457	Both Eco and Human	ROD 12/20/2010 pp. 2-456, 2-457	No		$1,538,000	ROD 12/20/2010 p. 2-690
NMD002899094	00	Institutional Controls	Groundwater	ROD 12/20/2010 pp.2-708, 2-740	Human	ROD 12/20/2010 p.2-280	No			
NMD980749378										
NMD980749378	01	Water treatment-other	Groundwater	ROD 9/21/1990 pp.7-8	Human	ROD 9/21/1990 pp.7-8	No	ROD 9/21/1990 p. 21	$95,000	ROD 9/21/1990 p. 21
NMD980749378	01	Institutional Controls	Groundwater	ROD 9/21/1990 pp.7-8	Human	ROD 9/21/1990 pp.7-8	No	ROD 9/21/1990 pp. 21-22; FYR 7/31/2008 p. 16		
NMD980749378	02	Solidification	Direct Exposure (waste/soils)	ROD 9/6/1991 p. 6, 16	Both Eco and Human	ROD 9/6/1991 p. 6-9, 16	No	ROD 9/6/1991 p. 10, 16; FYR 7/31/2008, p. 10	$79,000	ROD 9/6/1991 p. 13
NMD980749378	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/6/1991 p. 6, 16	Both Eco and Human	ROD 9/6/1991 p. 6-9, 16	No	ROD 9/6/1991 pp. 10-11; FYR 7/7/2003. p. 7; FYR 7/31/2008, p. 10		
NMD980749378	02	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/6/1991 p. 6, 16	Both Eco and Human	ROD 9/6/1991 p. 6-9, 16	No	FYR 7/31/2008, pp. EX-2, 10		
NMD981155930										
NMD981155930	01	No action	Direct Exposure (waste/soils)	AMD 9/20/1999 p. 13	Both Eco and Human	ROD 9/27/1993 pp. 18-25	No	AMD 9/20/1999 pp. 2, 8-9; ROD 9/27/1993 pp. 48-53		
NMD981155930	01	Institutional Controls	Direct Exposure (waste/soils)	AMD 9/20/1999 p. 13	Both Eco and Human	ROD 9/27/1993 pp. 18-25	No	AMD 9/20/1999 p. 12-13		
NMD007860935										
NMD007860935	01	Water treatment-other	Groundwater	FYR 9/27/2001 p. 10	Human	FYR 9/27/2001 p. ES-5	No	FYR 9/27/2001 ES-2	$3,000,000	FYR 9/27/2001 37
NMD007860935	02	Other – Engineering/Containment	Groundwater	FYR 9/27/2001 p. 10	Human	FYR 9/27/2001 p. ES-5	No	FYR 9/27/2001 pp. ES-2, ES-3		
NMD007860935	03	No action					No			
OKD000829440										
OKD000829440	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 12/13/1994 p. 8	Human	ROD 12/13/1994 p. 4	No		$32,600,000	ROD 12/13/1994 p. 26
OKD000829440	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 12/13/1994 p. 8	Human	ROD 12/13/1994 p. 4	No			ROD 12/13/1994 p. 26
OKD000829440	02	Off-site disposal	Surface Water/ Sediment/wetland	ROD 10/02/1997 p. 2	Ecological	ROD 10/02/1997 p. 2	No		$2,800,000	ROD 10/02/1997 p. 13
OKD980629844										

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
OKD980629844	01	Other – Engineering/Containment	Groundwater	ROD 6/6/1984 pp. 3-5	Human	ROD 6/6/1984 p. 5	No		$2,000,000	ROD 6/6/1984 p. 12
OKD980629844	01	Surface water diversion	Surface Water/ Sediment/wetland	ROD 6/6/1984 pp. 3-5	Human	ROD 6/6/1984 p. 5	No		$2,000,000	ROD 6/6/1984 p. 12
OKD980629844	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 8/27/1997 pp. 15-18	Human	ROD 8/27/1997 pp. 15-18	No		$139,212,216	ESD 8/30/2007 p. 5
OKD980629844	02	Institutional Controls	Direct Exposure (waste/soils)	ROD 8/27/1997 pp. 15-18	Human	ROD 8/27/1997 pp. 15-18	No			
OKD980629844	03	No action					No			
OKD980629844	04	Resident relocation	Direct Exposure (waste/soils)	ROD 2/20/2008 p. 45	Human	ROD 2/20/2008 p. 45	No		$167,287,857	ROD 2/20/2008 Table 11
OKD980629844	04	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 2/20/2008 pp. 24-26	Both Eco and Human	ROD 2/20/2008 pp. 24-26	No			
OKD980629844	04	Alternative drinking water	Groundwater	ROD 2/20/2008 pp. 24-26	Human	ROD 2/20/2008 pp. 24-26	No			
OKD980629844	04	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD 2/20/2008 pp. 24-26	Both Eco and Human	ROD 2/20/2008 pp. 24-26	No			
OKD980629844	04	Institutional Controls	Direct Exposure (waste/soils)	ROD 2/20/2008 pp. 24-26	Both Eco and Human	ROD 2/20/2008 pp. 24-26	No			
OKD980629844	04	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 2/20/2008 pp. 24-26	Both Eco and Human	ROD 2/20/2008 pp. 24-26	Yes	ROD 2/20/2008 p. 32		
OKD980629844	05									
TXD062113329										
TXD062113329	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 5/17/1999 pp. 38-44	Human	ROD 5/17/1999 pp. 16, 53	No		$27,115,000	AMD 9/28/2000 pp. 42-54
TXD062113329	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 5/17/1999 pp. 38-44	Human	ROD 5/17/1999 pp. 16, 53	No			
TXD062113329	01	Other – Engineering/Containment	Groundwater	ROD 5/17/1999 pp. 38-44	Human	ROD 5/17/1999 pp. 16, 53	No			
TXD062113329	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 5/17/1999 pp. 38-44	Human	ROD 5/17/1999 pp. 16, 53	No			
TXD062113329	02	No action	Direct Exposure (waste/soils)	FYR 9/30/2003 p. 6	Both Eco and Human	FYR 9/30/2003 p. 7	No			
TXD062113329	03	No action					No			
TXD062113329	04	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 9/27/2001 pp. 13-14	Ecological	ROD 9/27/2001 pp. 13-14	No		$6,834,563	ROD 9/27/2001 pp. 23-24
OKD987096195										
OKD987096195	01									
NMD030443303										
NMD030443303	01	Water treatment-other	Groundwater	ROD 9/30/1988 p. 7	Human	ROD 9/30/1988 p. 7	No		$17,000,000	ROD 9/30/1988 p. 17
MO0000958611										

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
MO0000958611	01	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 9/29/2005 p. 12	Both Eco and Human	ROD 9/29/2005 p. 12	No	ROD 9/29/2005 p. 19	$320,000	9/29/2005 p. 17
MO0000958611	01	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 9/29/2005 p. 12	Both Eco and Human	ROD 9/29/2005 p. 12	No	ROD 9/29/2005 p. 19		
MO0000958611	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/29/2005 p. 11	Both Eco and Human	ROD 9/29/2005 p. 11	No	ROD 9/29/2005 pp.13-14, 19		
MO0000958611	02	No action	Surface Water/ Sediment/wetland	ROD 6/8/2007, p.3			No	ROD 6/8/2007, p.1		
MO0000958611	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 6/29/2007, pp. 12-13	Human	ROD 6/29/2007, p. 12	No	ROD 6/29/2007, p. 1		
MOD981126899										
MOD981126899	01									
MOD981126899	02									
MOD981126899	03									
KSD980741862										
KSD980741862	01	Alternative drinking water	Groundwater	ROD 12/21/1987 pp.7-8	Human	ROD 12/21/1987 pp.7-8	No	ROD 9/28/1995 p. 7; FYR 9/30/2010 p. 7	$8,295,215	ROD 9/28/1995 p. 3
KSD980741862	02									
KSD980741862	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	AMD 9/29/2006 p. 12	Both Eco and Human	AMD 9/29/2006 p. 12-13	No	AMD 9/29/2006 p. 14	$66,404,002	AMD 9/29/2006 p. 61
KSD980741862	03	Other – Engineering/Containment	Direct Exposure (waste/soils)	AMD 9/29/2006 p. 12	Both Eco and Human	AMD 9/29/2006 p. 12-13	Yes	AMD 9/29/2006 p. 14		
KSD980741862	03	Institutional Controls	Direct Exposure (waste/soils)	AMD 9/29/2006 p. 12	Both Eco and Human	AMD 9/29/2006 p. 12-13	No	AMD 9/29/2006 pp. 14-15		
KSD980741862	04									
KSD980741862	05	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/18/1989, p.19	Both Eco and Human	ROD 9/18/1989, p.9; FYR 9/30/2005 p. 17	No	ROD 9/18/1989, p. 3; FYR 9/30/2010 p. 12	$8,295,215	ROD 9/18/1989, pp.3,23
KSD980741862	05	Deconstruction/ decontamination of buildings	Direct Exposure (waste/soils)	FYR 9/30/2005 p. 17	Both Eco and Human	FYR 9/30/2005 p. 17	No	FYR 9/30/2005 p. 14; FYR 9/30/2010 p. 12		
KSD980741862	05	Surface water diversion	Surface Water/ Sediment/wetland	ROD 9/18/1989, p. 18	Both Eco and Human	ROD 9/18/1989, p.15	No	ROD 9/18/1989, p. 3		
KSD980741862	06	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/30/2004. p. 19	Both Eco and Human	ROD 9/30/2004. p. 19	No	ROD 9/30/2004 pp. 1-2, 13, 16	$7,000,000	ROD 9/30/2004, p. 1
KSD980741862	06	Other – Engineering/Containment	Groundwater	ROD 9/30/2004. pp. 19-20	Both Eco and Human	ROD 9/30/2004. pp. 19-20	No	ROD 9/30/2004 p. 13		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
KSD980741862	07	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 7/29/1996 p. 3	Both Eco and Human	ROD 7/29/1996 p. 3	No	ROD 7/29/1996 p. 5	$6,154,060	ROD 7/29/1996 p. 8, Table 2
KSD980741862	07	Institutional Controls	Direct Exposure (waste/soils)	ROD 7/29/1996 p. 3	Both Eco and Human	ROD 7/29/1996 p. 3	No	ROD 7/29/1996 p. 5; FYR 9/28/2000 p. 7		
MOD098633415										
MOD098633415	01									
MOD098633415	02									
MOD098633415	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 7/31/2008 p. 25	Human	ROD 7/31/2008 p. 25	No	ROD 7/31/2008 p. 2, 32	$22,446,000	ROD 7/31/2008, Table 9
MOD098633415	03	Institutional Controls	Direct Exposure (waste/soils)	ROD 7/31/2008 p. 25	Human	ROD 7/31/2008 p. 25	No	ROD 7/31/2008 p. 2, 32		
MOD098633415	04									
MOD098633415	05									
MOD098633415	06									
MOD981507585										
MOD981507585	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 6/21/2010 pp. 6-7	Both Eco and Human	ROD 6/21/2010 pp. 6-7	No		$19,533,253	ROD 6/21/2010 Table 11
MOD981507585	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 6/21/2010 pp. 6-7, 26-27	Both Eco and Human	ROD 6/21/2010 pp. 6-7, 28	No			
MOD981507585	02									
MOD981507585	03									
NESFN0703481										
NESFN0703481	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 12/15/2004 pp.11-13	Human	ROD 12/15/2004 pp. 11-13	No		$77,370,700	ROD 12/15/2004 pp. 37-40
NESFN0703481	02	Off-site disposal	Direct Exposure (waste/soils)	ROD 5/13/2009 pp. 19-21	Human	ROD 5/13/2009 pp. 19-21	No		$236,609,110	ROD 5/13/2009 p. 65
NESFN0703481	02	Institutional Controls	Direct Exposure (waste/soils)	ROD 5/13/2009 pp. 19-21	Human	ROD 5/13/2009 pp. 19-21	No			ROD 5/13/2009 p. 65
MOD980686281										
MOD980686281	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/30/2004 pp. 7-9	Both Eco and Human	ROD 9/30/2004 pp. 7-9	No		$56,693,332	ROD 9/30/2004 Table 12
MOD980686281	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/30/2004 p. 31	Human	ROD 9/30/2004 p. 31	No		$1,850,000	ROD 9/30/2004 Table 12
MOD980686281	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 8/1/1996 p. 10	Human	ROD 8/1/1996 p. 10	No		$28,600,000	ROD 8/1/1996 p. 28, Table 7
MOD980686281	02	Institutional Controls	Direct Exposure (waste/soils)	ROD 8/1/1996 p. 10	Human	ROD 8/1/1996 p. 10	No			
MOD980686281	03									
MOD980686281	04	Alternative drinking water	Groundwater	ROD 7/29/1998 pp. 10-11	Human	ROD 7/29/1998 pp. 10-11	No		$2,694,125	ROD 7/29/1998 p. 21

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
MOD980686281	04	Water treatment-other	Groundwater	ROD 7/29/1998 pp. 10-11	Human	ROD 7/29/1998 pp. 10-11	No			ROD 7/29/1998 p. 21
MOD980686281	04	Institutional Controls	Groundwater	ROD 7/29/1998 pp. 10-11	Human	ROD 7/29/1998 pp. 10-11	No			ROD 7/29/1998 p. 21
MOD980686281	05									
MON000705443										
MON000705443	01									
MON000705443	02									
MON000705443	03									
MON000705443	04									
MON000705443	05									
MON000705443	06									
MON000705842										
MON000705842	01									
MON000705842	02									
MON000705842	03									
MON000705027										
MON000705027	01									
MON000705027	02									
MON000705027	03									
MON000705027	04									
MON000705023										
MON000705023	01									
MON000705023	02									
MON000705023	03									
MON000705023	04									
MON000705032										
MON000705032	01									
MON000705032	02									
MON000705032	03									
MON000705032	04									
MTD093291599										
MTD093291599	01									
MTD093291656										
MTD093291656	01									
MTD093291656	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	FYR, 11/24/1994, p.16			No	FYR, 11/24/1994, p.16		
MTD093291656	04	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/29/1998, p.28-40	Both Eco and Human	ROD, 9/29/1998, p.28-40	No	ROD, 9/29/1998, p.4-5, 22-26	$162,555,000	ROD, 9/29/1998, p. 73

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
MTD093291656	04	Monitored natural attenuation/recovery	Groundwater	ROD, 9/29/1998, p.28-40	Both Eco and Human	ROD, 9/29/1998, p.28-40	No	ROD, 9/29/1998, p.5, 22-26		
MTD093291656	04	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/29/1998, p.28-40	Both Eco and Human	ROD, 9/29/1998, p.28-40	No	ROD, 9/29/1998, p.5, 22-26		
MTD093291656	07	Institutional Controls	Direct Exposure (waste/soils)	ROD, 3/8/1994, p.23,27	Both Eco and Human	ROD, 3/8/1994, p.22-27	No	ROD, 3/8/1994, p.4-5, 38	$11,400,000	ROD, 3/8/1994, p.30,31
MTD093291656	07	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 3/8/1994, p.23,27	Both Eco and Human	ROD, 3/8/1994, p.22-27	Yes	ROD, 3/8/1994, p.4-5, 37-38		
MTD093291656	07	Surface water diversion	Direct Exposure (waste/soils)	ROD, 3/8/1994, p.23,27	Both Eco and Human	ROD, 3/8/1994, p.22-27	No	ROD, 3/8/1994, p.4-5, 37-38		
MTD093291656	09	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	FYR, 11/24/1994, p.14			No	FYR, 11/24/1994, p.14		
MTD093291656	11	Solidification	Direct Exposure (waste/soils)	ROD, 9/23/1991, p. 6	Human	ROD, 9/23/1991, p. 8	No	ROD, 9/23/1991, p.13	$21,896,000	ROD, 9/23/1991, p. 21
MTD093291656	11	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/23/1991, p. 6	Human	ROD, 9/23/1991, p. 8	No	ROD, 9/23/1991, p.13		
MTD093291656	11	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/23/1991, p. 6	Human	ROD, 9/23/1991, p. 8	No	ROD, 9/23/1991, p.13		
MTD093291656	12	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	FYR, 11/24/1994, p.14			No	FYR, 11/24/1994, p.14		
MTD093291656	14									
MTD093291656	15	Resident relocation	Direct Exposure (waste/soils)	ROD, 10/2/1987, p.5-6	Human	ROD, 10/2/1987, p.5-6	No	ROD, 10/2/1987, p.5-6	$15,240,000	ROD, 10/2/1987, p.12
MTD093291656	15	Deconstruction/ decontamination of buildings	Direct Exposure (waste/soils)	ROD, 10/2/1987, p.5-6	Human	ROD, 10/2/1987, p.5-6	No	ROD, 10/2/1987, p.5-6		
MTD093291656	15	Institutional Controls	Direct Exposure (waste/soils)	ROD, 10/2/1987, p.5-6	Human	ROD, 10/2/1987, p.5-6	No	ROD, 10/2/1987, p.5-6		
MTD093291656	15	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 10/2/1987, p.5-6	Human	ROD, 10/2/1987, p.5-6	No	ROD, 10/2/1987, p.5-6		
MTD093291656	16	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/30/1996, p. 22	Human	ROD, 9/30/1996, p. 22	No	ROD, 9/30/1996, p.5, 36-37	$2,300,000	ROD, 9/30/1996, p.40
MTD093291656	16	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/30/1996, p. 22	Human	ROD, 9/30/1996, p. 22	No	ROD, 9/30/1996, p.5, 36-38		
COD007063530										
COD007063530	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 2/18/1983, p.89; FYR, 2/26/1999, p.5	Human	ROD, 2/18/1983, p.89	No	ROD, 2/18/1983, p.89	$5,293,000	ROD, 2/18/1983, p. 90

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
COD007063530	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 2/18/1983, p.89; FYR, 2/26/1999, p.5	Human	ROD, 2/18/1983, p.89	No	ROD, 2/18/1983, p.89		
COD007063530	02	Other – Engineering/Containment	Groundwater	ROD, 2/18/1983, p. 90	Human	ROD, 2/18/1983, p. 90	No	ROD, 2/18/1983, p. 90	$5,224,000	ROD, 2/18/1983, p. 94
COD007063530	02	On-site disposal (excavation, capping, covering, reveg)	Groundwater	ROD, 2/18/1983, p. 90	Human	ROD, 2/18/1983, p. 90	No	ROD, 2/18/1983, p. 93		
COD007063530	02	Institutional Controls	Groundwater	ROD, 2/18/1983, p. 90	Human	ROD, 2/18/1983, p. 90	No	ROD, 2/18/1983, p. 93		
COD007063530	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 2/18/1983, p. 14	Human	ROD, 2/18/1983, p. 14	No	ROD, 2/18/1983, p. 96	$12,000,000	ROD, 2/18/1983, p. 99
COD007063530	03	Institutional Controls	Direct Exposure (waste/soils)	ROD, 2/18/1983, p. 14	Human	ROD, 2/18/1983, p. 14	No	ROD, 2/18/1983, p. 97		
COD007063530	04	Other – Treatment Technology	Air	ROD, 2/18/1983, p. 100	Human	ROD, 2/18/1983, p. 14	No	ROD, 2/18/1983, p. 100	$3,425,000	ROD, 2/18/1983, p. 104
COD007063530	04	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 2/18/1983, p. 103-104	Human	ROD, 2/18/1983, p. 14	No	ROD, 2/18/1983, p. 103	$8,864,000	ROD, 2/18/1983, p. 104
COD007063530	04	Institutional Controls	Direct Exposure (waste/soils)	ROD, 2/18/1983, p. 103-104	Human	ROD, 2/18/1983, p. 14	No	ROD, 2/18/1983, p. 103		
MT6122307485										
MT6122307485	01									
MT6122307485	02									
MTD982572562										
MTD982572562	01	Off-site disposal	Direct Exposure (waste/soils)		Human		No		$3,876,200	ROD 2001, p 65
MTD982572562	01	Institutional Controls	Direct Exposure (waste/soils)		Human		No			
MTD982572562	02									
MTD982572562	03									
MTD982572562	04									
MTD982572562	05									
MTD982572562	06									
COD980717938										
COD980717938	01	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD, 3/29/1988, p. 5	Both Eco and Human	ROD, 3/29/1988, p. 6	No	ROD, 3/29/1988, p.17-20	$23,900,000	ROD, 3/29/1988, p.71?
COD980717938	01	Water treatment-other	Surface Water/ Sediment/wetland	ROD, 3/29/1988, p. 5	Both Eco and Human	ROD, 3/29/1988, p. 6	No	ROD, 3/29/1988, p.17-20		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
COD980717938	02	No action	Direct Exposure (waste/soils)	ROD, 9/30/1999, p. 26,34,37	Human	ROD, 9/30/1999, p. 26,34,37	No	ROD, 9/30/1999, p. 3, 50-51		
COD980717938	03	No action					No	ROD, 5/6/1998, p. 4, 18		
COD980717938	04	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 3/31/1998, p. 28	Both Eco and Human	ROD, 3/31/1998, p. 27-31	No	ROD, 5/6/1998, p.17-27	$2,323,630	ROD, 5/6/1998, p.82-122
COD980717938	04	Surface water diversion	Direct Exposure (waste/soils)	ROD, 3/31/1998, p. 28	Both Eco and Human	ROD, 3/31/1998, p. 27-31	No	ROD, 5/6/1998, p.17-27	$1,152,629	ROD, 5/6/1998, p.82-122
COD980717938	05	Institutional Controls	Direct Exposure (waste/soils)	ROD, 10/31/2000, p. 24	Human	ROD, 10/31/2000, p. 27	No	ROD, 10/31/2000, p. 5, 35-36	$85,496	ROD, 10/31/2000, p. 36
COD980717938	06	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/25/2003, p. 28	Ecological	ROD, 9/25/2003, p. 29, 31	No	ROD, 9/25/2003, p. 43-44	$18,458,043	ROD, 9/25/2003, p. 45; AMD, 9/28/2010, p. 18
COD980717938	06	Water treatment-other	Surface Water/ Sediment/wetland	ROD, 9/25/2003, p. 28	Ecological	ROD, 9/25/2003, p. 29, 31	No	ROD, 9/25/2003, p. 44		
COD980717938	06	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/25/2003, p. 28	Ecological	ROD, 9/25/2003, p. 29	No	ROD, 9/25/2003, p. 44-45		
COD980717938	06	Surface water diversion	Direct Exposure (waste/soils)	ROD, 9/25/2003, p. 28	Ecological	ROD, 9/25/2003, p. 29	No	ROD, 9/25/2003, p. 44-45		
COD980717938	07	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 6/6/2000, p. 36-40	Both Eco and Human	ROD, 6/6/2000, p. 36-40	No	ROD, 6/6/2000, p. 42, 54-55	$4,078,000	ROD, 6/6/2000, p. 45
COD980717938	07	Surface water diversion	Direct Exposure (waste/soils)	ROD, 6/6/2000, p. 36-40	Both Eco and Human	ROD, 6/6/2000, p. 36-40	No	ROD, 6/6/2000, p. 42, 54-55, 58-60		
COD980717938	07	Institutional Controls	Direct Exposure (waste/soils)	ROD, 6/6/2000, p. 36-40	Both Eco and Human	ROD, 6/6/2000, p. 36-40	No	ROD, 6/6/2000, p. 43, 54-55, 58-60		
COD980717938	08	Surface water diversion	Direct Exposure (waste/soils)	ROD, 9/29/2000, p. 37, 39	Both Eco and Human	ROD, 9/29/2000, p. 37, 39	No	ROD, 9/29/2000, p. 7, 20, 59	$3,000,000	ROD, 9/29/2000, p. 61
COD980717938	08	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/29/2000, p. 37, 39	Both Eco and Human	ROD, 9/29/2000, p. 37, 39	No	ROD, 9/29/2000, p. 58	$107,000	ROD, 9/29/2000, p. 61
COD980717938	08	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/29/2000, p. 37, 39	Both Eco and Human	ROD, 9/29/2000, p. 37, 39	No	ROD, 9/29/2000, p. 7, 20, 58		
COD980717938	09	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/2/1999, p. 22	Human	ROD, 9/2/1999, p. 7, 19, 23-25	No	ROD, 9/2/1999, p. 35-36	$4,839,250	ROD, 9/2/1999, p. 29
COD980717938	09	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/2/1999, p. 22	Human	ROD, 9/2/1999, p. 7, 19, 23-25	No	ROD, 9/2/1999, p. 33-34		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
COD980717938	10	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD, 8/8/1997, p. 16	Ecological	ROD, 8/8/1997, p. 19	No	ROD, 8/8/1997, p. 4-5, 31-32	$2,540,000	ROD, 8/8/1997, p. 24
COD980717938	10	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD, 8/8/1997, p. 16	Ecological	ROD, 8/8/1997, p. 19	No	ROD, 8/8/1997, p. 4-5, 31-32		
COD980717938	11	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/28/2005, p. 25-26, 28	Both Eco and Human	ROD, 9/28/2005, p. 25-26, 28	No	ROD, 9/28/2005, p. 7, 34-37, 46-49	$5,140,987	ROD, 9/28/2005, p. 34-37, Table 8
COD980717938	11	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/28/2005, p. 25-26, 28	Both Eco and Human	ROD, 9/28/2005, p. 25-26, 28	No	ROD, 9/28/2005, p. 7, 34-37, 46-49	$75,314	ROD, 9/28/2005, p. 34-37, Table 8
COD980717938	12	Institutional Controls	Surface Water/ Sediment/wetland	ROD, 9/22/2009, p. 39	Ecological	ROD, 9/22/2009, p. 39	No	ROD, 9/22/2009, p. 4, 42, 56-57	$3,785,000	ROD, 9/22/2009, p. 57
COD981551427										
COD981551427	01	Water treatment - Bioreactors (e.g., SRBs)	Surface Water/ Sediment/wetland	ROD, 9/29/2008, p. 47, 56-61	Both Eco and Human	ROD, 9/29/2008, p. 47	Yes	ROD, 9/29/2008, p. 94, 125-141	$10,399,000	ROD, 9/29/2008, p. 103
COD981551427	01	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD, 9/29/2008, p. 47, 56-61	Both Eco and Human	ROD, 9/29/2008, p. 47	No	ROD, 9/29/2008, p. 95-96, 120-125	$1,250,000	ROD, 9/29/2008, p. 101
COD981551427	01	Institutional Controls	Surface Water/ Sediment/wetland	ROD, 9/29/2008, p. 47, 56-61	Both Eco and Human	ROD, 9/29/2008, p. 47	No	ROD, 9/29/2008, p. 99		
MT0001096353										
MT0001096353	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 4/26/2009, p. 52-53	Human	ROD, 4/26/2009, p. 69-70	No	ROD, 4/26/2009, p. 16-17, 80, 91-94	$11,616,261	ROD, 4/26/2009, p. 80, Table 5
MT0001096353	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 4/26/2009, p. 52-53	Ecological	ROD, 4/26/2009, p. 69-70	No	ROD, 4/26/2009, p. 16-17, 80, 94-98	$191,739	ROD, 4/26/2009, p. 80, Table 5
MT0001096353	02									
MT0001096353	03									
COD980717557										
COD980717557	01	Water treatment - Created Wetlands	Surface Water/ Sediment/wetland	ROD, 9/30/1987, p. 2-3	Both Eco and Human	ROD, 9/30/1987, p. 2-3	Yes	ROD, 9/30/1987, p. 9-10	$2,549,000	ROD, 9/30/1987, Table 5
COD980717557	02	Surface water diversion	Air	ROD, 3/31/1988, p. 2	Both Eco and Human	ROD, 3/31/1988, p. 2	No	ROD, 3/31/1998, p. 14-15	$718,700	ROD, 3/31/1998, Table 3
COD980717557	02	On-site disposal (excavation, capping, covering, reveg)	Air	ROD, 3/31/1988, p. 2	Both Eco and Human	ROD, 3/31/1988, p. 2	No	ROD, 3/31/1998, p. 14-15	$670,900	ROD, 3/31/1998, Table 3; ESD, 9/1/1999, p. 6
COD980717557	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/30/1991, p. 8-12	Both Eco and Human	ROD, 9/30/1991, p. 8-12	No	ROD, 9/20/1991, p. 17-18	$23,510,000	ROD, 9/30/1991, p. 18
COD980717557	03	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/30/1991, p. 8-12	Both Eco and Human	ROD, 9/30/1991, p. 8-12	No	ROD, 9/20/1991, p. 17-18	$23,510,000	ROD, 9/30/1991, p. 18

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
COD980717557	03	Water treatment-other	Surface Water/ Sediment/wetland	ROD, 9/30/1991, p. 8-12	Both Eco and Human	ROD, 9/30/1991, p. 8-12	No	ROD, 9/20/1991, p. 17-18		
COD980717557	03	Alternative drinking water	Groundwater	ROD, 9/30/1991, p. 8-12	Both Eco and Human	ROD, 9/30/1991, p. 8-12	No	ROD, 9/20/1991, p. 17-18		
COD980717557	03	Water treatment - Created Wetlands	Surface Water/ Sediment/wetland	ROD, 9/30/1991, p. 8-12	Both Eco and Human	ROD, 9/30/1991, p. 8-12	Yes	ROD, 9/20/1991, p. 17-18		
COD980717557	04	Water treatment - Bioreactors (e.g., SRBs)	Surface Water/ Sediment/wetland	ROD, 9/29/2004, p. 18	Both Eco and Human	ROD, 9/29/2004, p. 20, 29, 32-33	Yes	ROD, 9/29/2004, p. 4	$23,329,000	ROD, 9/29/2004, p. 61
COD980717557	04	Water treatment-other	Surface Water/ Sediment/wetland	ROD, 9/29/2004, p. 18	Both Eco and Human	ROD, 9/29/2004, p. 20, 29, 32-33	No	ROD, 9/29/2004, p. 4	$13,310,000	AMD, 4/29/2010, p. 13
COD980717557	04	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD, 9/29/2004, p. 18	Both Eco and Human	ROD, 9/29/2004, p. 20, 29, 32-33	No	ROD, 9/29/2004, p. 4		
COD980717557	04	Surface water diversion	Surface Water/ Sediment/wetland	ROD, 9/29/2004, p. 18	Both Eco and Human	ROD, 9/29/2004, p. 20, 29, 32-33	No	ROD, 9/29/2004, p. 4		
COD980717557	04	Institutional Controls	Surface Water/ Sediment/wetland	ROD, 9/29/2004, p. 18	Both Eco and Human	ROD, 9/29/2004, p. 20, 29, 32-33	No	ROD, 9/29/2004, p. 4		
UTD988075719										
UTD988075719	01	Off-site disposal	Direct Exposure (waste/soils)	ROD, 9/30/2002, p. 13	Human	ROD, 9/30/2002, p. 13	No	ROD, 9/30/2002, p. 4-5, 34, 40-43	$9,717,000	ROD, 9/30/2002, p. 38-39
UTD988075719	01	Other – Engineering/Containment	Air	ROD, 9/30/2002, p. 13	Human	ROD, 9/30/2002, p. 13	No	ROD, 9/30/2002, p. 4-5, 34, 40-43		
UTD988075719	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/30/2002, p. 13	Human	ROD, 9/30/2002, p. 13	No	ROD, 9/30/2002, p. 4-5, 34, 40-43		
UTD988075719	02	Off-site disposal	Direct Exposure (waste/soils)	ROD, 9/16/2009, p. 15-16	Both Eco and Human	ROD, 9/16/2009, p. 15-16, 23-29	No	ROD, 9/16/2009, p. 4, 46-54	$2,201,000	ROD, 9/16/2009, p. 50,54
UTD988075719	02	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/16/2009, p. 15-16	Both Eco and Human	ROD, 9/16/2009, p. 15-16, 23-29	No	ROD, 9/16/2009, p. 4, 46-54		
UTD988075719	03	Off-site disposal	Direct Exposure (waste/soils)	ROD, 9/30/2002, p. 13	Human	ROD, 9/30/2002, p. 13	No	ROD, 9/30/2002, p. 4-5, 34, 40-43		Not quantified in the ESD, 11/15/2005
COD980716955										
COD980716955	01	Off-site disposal	Air	ROD, 9/29/1987, p. 3	Human	ROD, 9/29/1987, p. 3-4	No	ROD, 9/29/1987, p. 11	$3,702,800	ROD, 9/29/1987, p. 11

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
COD980716955	02	Off-site disposal	Air	ROD, 9/29/1987, p. 4-5	Human	ROD, 9/29/1987, p. 4-5	No	ROD, 9/29/1987, p. 11-12; FYR, 9/12/1994, p.7		No value provided
COD980716955	02	Institutional Controls	Air	ROD, 9/29/1987, p. 4-5	Human	ROD, 9/29/1987, p. 4-5	No	ROD, 9/29/1987, p. 11-12; FYR, 9/12/1994, p.7		
COD980716955	03	Off-site disposal	Air	ROD, 9/29/1987, p. 2	Human	ROD, 9/29/1987, p. 2	No	ROD, 9/29/1987, p. 11-12; FYR, 9/12/1994, p.15	$3,406,100	ROD, 9/29/1987, p. 12
COD980716955	03	Institutional Controls	Air	ROD, 9/29/1987, p. 2	Human	ROD, 9/29/1987, p. 2	No	ESD, 12/13/1993, p. 5		
COD980716955	04	Off-site disposal	Air	ROD, 9/30/1986, p. 6	Human	ROD, 9/30/1986, p. 6	No	ROD, 9/30/1986, p. 15		No value provided
COD980716955	04	Institutional Controls	Air	ROD, 9/30/1986, p. 6	Human	ROD, 9/30/1986, p. 6	No	ROD, 9/30/1986, p. 15		No value provided
COD980716955	05									
COD980716955	06	Off-site disposal	Air	ROD, 9/29/1987, p. 8	Human	ROD, 9/29/1987, p. 8	No	ROD, 9/29/1987, p. 16-18	$807,100	ROD, 9/29/1987, p. 3
COD980716955	06	Institutional Controls	Air	ROD, 9/29/1987, p. 8	Human	ROD, 9/29/1987, p. 8	No	ROD, 9/29/1987, p. 16-18		
COD980716955	07	Institutional Controls	Air	ROD, 3/24/1986, p. 5	Human	ROD, 3/24/1986, p. 5	No	ROD, 3/24/1986, p.10;		
COD980716955	08	Off-site disposal	Air	ROD, 1/28/1992, p. 15	Human	ROD, 1/28/1992, p. 15	No	ROD, 1/28/1992, p. 2, 30-40	$26,600,000	ROD, 1/28/1992, p. 29
COD980716955	08	Solidification	Air	ROD, 1/28/1992, p. 15	Human	ROD, 1/28/1992, p. 15	No	ROD, 1/28/1992, p. 2, 30-40		
COD980716955	08	Institutional Controls	Air	ROD, 1/28/1992, p. 15	Human	ROD, 1/28/1992, p. 15	No	ROD, 1/28/1992, p. 2, 30-40		
COD980716955	09	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 12/23/1991, p. 6-7	Human	ROD, 12/23/1991, p. 6-7	No	ROD, 12/23/1991, p. 17-18	$1,701,900	ROD, 12/23/1991, p. 16
COD980716955	09	Institutional Controls	Direct Exposure (waste/soils)	ROD, 12/23/1991, p. 6-7	Human	ROD, 12/23/1991, p. 6-7	No	ROD, 12/23/1991, p. 17-18		
COD980716955	10	Off-site disposal	Air	ROD, 6/30/1987, p. 12-15	Human	ROD, 6/30/1987, p. 12-15	No	ROD, 6/30/1987, p. 2, 28,32	$1,237,500	ROD, 6/30/1987, p. 3-4
COD980716955	11	Off-site disposal	Air	ROD, 9/29/1987, p. 8	Human	ROD, 9/29/1987, p. 8	No	ROD, 9/29/1987, p. 16-18	$147,600	ROD, 9/29/1987, p. 3, 33
COD980716955	11	Institutional Controls	Air	ROD, 9/29/1987, p. 8	Human	ROD, 9/29/1987, p. 8	No	ROD, 9/29/1987, p. 16-18		
COD081961518										
COD081961518	01	Water treatment-lime	Groundwater	ROD, 3/29/1993, p. 10	Both Eco and Human	ROD, 3/29/1993, p. 3, 15-16	No	ROD, 3/29/1993, p. 3-4, 32-36	$17,374,000	ROD, 3/29/1993, p. 39

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
COD081961518	01	Surface water diversion	Surface Water/ Sediment/wetland	ROD, 3/29/1993, p. 10	Both Eco and Human	ROD, 3/29/1993, p. 3, 15-16	No	ROD, 3/29/1993, p. 3-4, 32-36		
COD081961518	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 3/29/1993, p. 10	Both Eco and Human	ROD, 3/29/1993, p. 3, 15-16	No	ROD, 3/29/1993, p. 3-4, 32-36		
COD081961518	01	Alternative drinking water	Groundwater	ROD, 3/29/1993, p. 10	Both Eco and Human	ROD, 3/29/1993, p. 3, 15-16	No	ROD, 3/29/1993, p. 3-4, 32-36		
COD081961518	01	Institutional Controls	Groundwater	ROD, 3/29/1993, p. 10	Both Eco and Human	ROD, 3/29/1993, p. 3, 15-16	No	ROD, 3/29/1993, p. 3-4, 32-36		
COD081961518	02	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/3/1998, p. 6	Human	ROD, 9/3/1998, p. 6-7	No	ROD, 9/3/1998, p. 3, 8		
COD081961518	03									
COD081961518	04									
MTD006230346										
MTD006230346	01	Water treatment-other	Groundwater	ROD 11/22/1989, p.13	Both Eco and Human	ROD 11/22/1989, p.60	No	ROD 11/22/1989, p.13		
MTD006230346	01	Other – Treatment Technology	Surface Water/ Sediment/wetland	ROD 11/22/1989, p.13	Both Eco and Human	ROD 11/22/1989, p.60	No	ROD 11/22/1989, p.13		
MTD006230346	01	Other – Treatment Technology	Surface Water/ Sediment/wetland	ROD 11/22/1989, p.13	Both Eco and Human	ROD 11/22/1989, p.60	No	ROD 11/22/1989, p.13		
MTD006230346	02	Off-site disposal	Direct Exposure (waste/soils)	ROD 9/17/2009, p.5	Both Eco and Human	ROD 9/17/2009, p.107	No		$1,800,000	ROD 9/17/2009, p.156
MTD006230346	02	Off-site disposal	Direct Exposure (waste/soils)	ROD 9/17/2009, p.5	Both Eco and Human	ROD 9/17/2009, p.107	No		$4,600,000	ROD 9/17/2009, p.156
MTD006230346	02	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/17/2009, p.152	Both Eco and Human	ROD 9/17/2009, p.107	No			
UT0002240158										
UT0002240158	00	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/30/2002, p. 19	Human	ROD, 9/30/2002, p. 19	No	ROD, 9/30/2002, p. 3, 72-76	$62,395,310	ROD, 9/30/2002, p. 80-81
UT0002240158	00	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/30/2002, p. 19	Human	ROD, 9/30/2002, p. 19	No	ROD, 9/30/2002, p. 3, 72-76		
UT0002240158	01									
UT0002240158	02									
UT0002240158	03									
UT0002240158	04									
MT0012694970										

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
MT0012694970	01									
MT0012694970	02									
MT0012694970	03									
CO0001093392										
CO0001093392	00									
SDD987673985										
SDD987673985	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/29/2008, Sect. 7	Both Eco and Human	ROD, 9/29/2008, Sect. 7	No	ROD, 9/29/2008, 9-5	$244,992	ROD, 9/29/2008, Table 12-1
SDD987673985	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/29/2008, Sect. 7	Both Eco and Human	ROD, 9/29/2008, Sect. 7	No	ROD, 9/29/2008, 9-6	$233,720	ROD, 9/29/2008, Table 12-1
SDD987673985	01	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD, 9/29/2008, Sect. 7	Both Eco and Human	ROD, 9/29/2008, Sect. 7	No	ROD, 9/29/2008, 9-5	$320,608	ROD, 9/29/2008, Table 12-1
SDD987673985	01	Water treatment-lime	Surface Water/ Sediment/wetland	ROD, 9/29/2008, Sect. 7	Both Eco and Human	ROD, 9/29/2008, Sect. 7	No	ROD, 9/29/2008, 9-5	$3,336,386	ROD, 9/29/2008, Table 12-1
SDD987673985	01	Monitoring (all media and as separate remedy)	Surface Water/ Sediment/wetland	ROD, 9/29/2008, Sect. 7	Both Eco and Human	ROD, 9/29/2008, Sect. 7	No	ROD, 9/29/2008, 9-7	$520,000	ROD, 9/29/2008, Table 12-1
SDD987673985	02	Water treatment-lime	Surface Water/ Sediment/wetland	ROD, 4/23/2001, 2-22	Both Eco and Human	ROD, 4/23/2001, 2-22	No	ROD, 4/23/2001, 2-21, 22	$5,030,000	ROD, 4/23/2001, 2-20
SDD987673985	02	Impoundment	Direct Exposure (waste/soils)	ROD, 4/23/2001, 2-22	Both Eco and Human	ROD, 4/23/2001, 2-22	No	ROD, 4/23/2001, 2-21, 22		ROD, 4/23/2001, 2-20
UTD093120921										
UTD093120921	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 9/27/2007, p. 29	Both Eco and Human	ROD, 9/27/2007, p. 30	No	ROD, 9/27/2007, p. 3-4, 62-64, 72-75	$1,500,000	ROD, 9/27/2007, p. 65, 75
UTD093120921	01	Monitoring (all media and as separate remedy)	Direct Exposure (waste/soils)	ROD, 9/27/2007, p. 29	Both Eco and Human	ROD, 9/27/2007, p. 30	No	ROD, 9/27/2007, p. 3-4, 62-64, 72-75	$3,000,000	ROD, 9/27/2007, p. 65, 75
UT0002391472										
UT0002391472	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 7/29/1999, p. 22-32	Human	ROD, 7/29/1999, p. 22-32	No	ROD, 7/29/1999, p. 4, 38, 53-55	$13,689,000	ROD, 7/29/1999, p. 47
UT0002391472	01	Off-site disposal	Direct Exposure (waste/soils)	ROD, 7/29/1999, p. 22-32	Human	ROD, 7/29/1999, p. 22-32	No	ROD, 7/29/1999, p. 4, 38, 53-55		
UT0002391472	02									
UT0002391472	03									
UT0002391472	04									
UT0002391472	05									
UTD070926811										
UTD070926811	01									
UTD070926811	02									

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
UTD070926811	03									
UTD070926811	04									
UTD070926811	05									
UTD070926811	06									
UTD070926811	07									
UTD070926811	08	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 133	Ecological	ROD, 9/26/2002, p. 16-38, 133	No	ROD, 9/26/2002, p. 135		
UTD070926811	09	No action	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 69	Human	ROD, 9/26/2002, p. 16-38, 74	No	ROD, 9/26/2002, p. 75		
UTD070926811	10									
UTD070926811	11									
UTD070926811	12									
UTD070926811	13	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 108-111	Both Eco and Human	ROD, 9/26/2002, p. 16-38	No	ROD, 9/26/2002, p. 108-111		
UTD070926811	13	Surface water diversion	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 108-111	Both Eco and Human	ROD, 9/26/2002, p. 16-38	No	ROD, 9/26/2002, p. 108-111		
UTD070926811	13	Deconstruction/ decontamination of buildings	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 108-111	Both Eco and Human	ROD, 9/26/2002, p. 16-38	No	ROD, 9/26/2002, p. 108-111		
UTD070926811	13	Off-site disposal	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 108-111	Both Eco and Human	ROD, 9/26/2002, p. 16-38	No	ROD, 9/26/2002, p. 108-111		
UTD070926811	14	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 124	Both Eco and Human	ROD, 9/26/2002, p. 16-38	No	ROD, 9/26/2002, p. 120, 124-126		
UTD070926811	14	Deconstruction/ decontamination of buildings	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 124	Both Eco and Human	ROD, 9/26/2002, p. 16-38	No	ROD, 9/26/2002, p. 124-126		
UTD070926811	15	On-site disposal (excavation, capping, covering, reveg)	Groundwater	ROD, 9/26/2002, p. 61	Both Eco and Human	ROD, 9/26/2002, p. 16-38	No	ROD, 9/26/2002, p. 65-68		
UTD070926811	16									
UTD070926811	17									
UTD070926811	18	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 211	Ecological	ROD, 9/26/2002, p. 16-38, 210	No	ROD, 9/26/2002, p. 211		
UTD070926811	19	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 198, 201	Ecological	ROD, 9/26/2002, p. 16-38, 197-198, 201	No	ROD, 9/26/2002, p. 203-204		
UTD070926811	19	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 198, 201	Ecological	ROD, 9/26/2002, p.	No	ROD, 9/26/2002, p. 203-204		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
						16-38, 197-198, 201				
UTD070926811	20	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 211	Ecological	ROD, 9/26/2002, p. 16-38, 210	No	ROD, 9/26/2002, p. 211		
UTD070926811	21									
UTD070926811	22	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD, 9/26/2002, p. 158	Both Eco and Human	ROD, 9/26/2002, p. 16-38, 153	No	ROD, 9/26/2002, p. 160		
UTD070926811	22	Surface water diversion	Surface Water/ Sediment/wetland	ROD, 9/26/2002, p. 158	Both Eco and Human	ROD, 9/26/2002, p. 16-38, 153	No	ROD, 9/26/2002, p. 160		
UTD070926811	23	Water treatment - Bioreactors (e.g., SRBs)	Groundwater	ROD, 9/26/2002, p. 162	Ecological	ROD, 9/26/2002, p. 16-38, 169	Yes	ROD, 9/26/2002, p. 187- 189	$6, 674	ROD, 9/26/2002, p. 190
UTD000826404										
UTD000826404	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 11/3/1998, p. 31	Human	ROD 11/3/1998, p. 31	No			
UTD000826404	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 11/3/1998, p. 31	Human	ROD 11/3/1998, p. 31	No			
UTD000826404	02	Water treatment-lime	Groundwater	ROD 12/13/00, p.19	Both Eco and Human	ROD 12/13/00, p.19	No		$197,000,000	ROD 12/13/00, p. 68 (total net present value for all gw remedies in ROD; ESD changes in cost not provided, so unable to list individually of each of the remedies below)
UTD000826404	02	Water treatment-other	Groundwater	ROD 12/13/00, p.19	Both Eco and Human	ROD 12/13/00, p.19	No			
UTD000826404	02	Monitored natural attenuation/recovery	Groundwater	ROD 12/13/00, p.19	Both Eco and Human	ROD 12/13/00, p.19	No			
UTD000826404	02	Water treatment-other	Groundwater	ROD 12/13/00, p.19	Both Eco and Human	ROD 12/13/00, p.19	No			
UTD000826404	02	Alternative drinking water	Groundwater	ROD 12/13/00, p.19	Both Eco and Human	ROD 12/13/00, p.19	No			
UTD000826404	02	Institutional Controls	Groundwater	ROD 12/13/00, p.19	Both Eco and Human	ROD 12/13/00, p.19	No			
UTD000826404	03	Institutional Controls	Direct Exposure (waste/soils)	ROD - 9/28/2001, page 14	Human	ROD - 9/28/2001, pages 14 - 16	No	ROD - 9/28/2001, page 6.		
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD - 9/28/2001, page 46	Human	ROD - 9/28/2001, page 46	No	ROD - 9/28/2001, page 46		
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD - 9/28/2001, page 46	Human	ROD - 9/28/2001, page 46	No	ROD - 9/28/2001, page 46		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
UTD000826404	04	On-site disposal (excavation, capping, covering, reveg)	Groundwater	ROD 11/3/1998, p. 9			No			
UTD000826404	04	Other – Engineering/Containment	Groundwater	ROD 11/3/1998, p. 9			No			
UTD000826404	05	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 11/3/1998, p. 5	Both Eco and Human	ROD 11/3/1998, p. 36	No			
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD - 9/28/2001, page 25	Human	ROD - 9/28/2001, pages 14 - 16	No	ROD - 9/28/2001: page 26		
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD - 9/28/2001, page 25	Human	ROD - 9/28/2001, pages 14 - 16	No	ROD - 9/28/2001: page 26		
UTD000826404	06	Surface water diversion	Surface Water/ Sediment/wetland	ROD - 9/28/2001: page 27	Human	ROD - 9/28/2001, pages 14 - 16	No	ROD - 9/28/2001: page 27		
UTD000826404	06	Water treatment - Created Wetlands	Surface Water/ Sediment/wetland	ROD - 9/28/2001: page 27	Human	ROD - 9/28/2001, pages 14 - 16	Yes	ROD - 9/28/2001: page 27		
UTD000826404	06	Soil Amendments	Direct Exposure (waste/soils)	ROD - 9/28/2001: page 27	Human	ROD - 9/28/2001, pages 14 - 16	Yes	ROD - 9/28/2001: page 27		
UTD000826404	06	Sediment dredging/ disposal	Surface Water/ Sediment/wetland	ROD - 9/28/2001: page 27	Human	ROD - 9/28/2001, pages 14 - 16	No	ROD - 9/28/2001: page 27		
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD - 9/28/2001: page 32	Human	ROD - 9/28/2001, pages 14 - 16	No	ROD - 9/28/2001: page 32		
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD - 9/28/2001: page 32	Human	ROD - 9/28/2001, pages 14 - 16	No	ROD - 9/28/2001: page 32		
UTD000826404	08									
UTD000826404	09									
UTD000826404	10	Institutional Controls	Direct Exposure (waste/soils)	ROD 11/3/1998, p. 33	Human	ROD 11/3/1998, p. 33	No			
UTD000826404	11	Institutional Controls	Direct Exposure (waste/soils)							
UTD000826404	12									
UTD000826404	13									
UTD000826404	14									
UTD000826404	15									
UTD000826404	16									
UTD000826404	17	Institutional Controls	Direct Exposure (waste/soils)	ROD 11/3/1998, p. 33	Human	ROD 11/3/1998, p. 33	No			
UTD000826404	18									

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
UTD000826404	19									
UTD000826404	20									
UTD000826404	21									
UTD000826404	22									
UTD000826404	23									
UTD000826404	24									
UTD000826404	24	Deconstruction/ decontamination of buildings	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 217	Both Eco and Human	ROD, 9/26/2002, p. 217	No	ROD, 9/26/2002, p. 219-220		
UTD000826404	24	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 9/26/2002, p. 217	Both Eco and Human	ROD, 9/26/2002, p. 217	No	ROD, 9/26/2002, p. 219-220		
MT0009083840										
MT0009083840	01	On-site disposal (excavation, capping, covering, reveg)	Air	2010 ROD p5-4, 5-5	Human	2010 ROD p7-10	No		$3,447,000	2010 ROD p12-5 (cost includes all OU1 remedies)
MT0009083840	01	Off-site disposal	Air	2010 ROD p5-4, 5-5	Human	2010 ROD p7-10	No			
MT0009083840	01	Institutional Controls	Air	2010 ROD p5-4, 5-5	Human	2010 ROD p7-10	No			
MT0009083840	02	On-site disposal (excavation, capping, covering, reveg)	Air	2010 ROD p5-5, 5-6	Human	2010ROD p5-5	No		$695,000	2010 ROD p10-3 (cost includes all OU2 remedies)
MT0009083840	02	Off-site disposal	Air	2010 ROD p5-5, 5-6	Human	2010ROD p5-5	No			
MT0009083840	02	Institutional Controls	Air	2010 ROD p5-5, 5-6	Human	2010ROD p5-5	No			
MT0009083840	03									
MT0009083840	04									
MT0009083840	05									
MT0009083840	06									
MT0009083840	07									
MT0009083840	08									
COD042167858										
COD042167858	01	Impoundment	Direct Exposure (waste/soils)	ROD, 1/3/2002, p. 2	Human	FYR, 9/2007, p. 14	No			
COD042167858	01	Permeable Reactive Barrier	Groundwater	ROD, 1/3/2002, p. 5-5	Human	FYR, 9/2007, p. 14	Yes	FYR, 9/2007, p. 14		
COD042167858	02	Monitoring (all media and as separate remedy)	Groundwater	ROD, 1/3/2002, p. 7-2	Human	ROD, 1/3/2002, p. 7-2	No			
UTD081834277										
UTD081834277	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	FYR, 10/2003, p.4-1	Human	FYR, 10/2003, p.4-1	No		$2,577,000	ROD, 4/28/1995, p. 26
UTD081834277	01	Monitoring (all media and as separate remedy)	Groundwater	FYR, 10/2003, p.4-1	Human	FYR, 10/2003, p.4-1	No		$9,670	ROD, 4/28/1995, p. 26
UTD081834277	01	Institutional Controls	Direct Exposure (waste/soils)	FYR, 10/2003, p.4-1	Human	FYR, 10/2003, p.4-1	No		$10,000	ROD, 4/28/1995, p. 26

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
UTD081834277	02	Off-site disposal	Direct Exposure (waste/soils)	ROD, 12/2008, p. 9	Human	ROD, 12/2008, p. 9	No		$13,811,100	ROD, 12/2008, p.. 192
UTD081834277	02	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD, 12/2008, p. 9	Human	ROD, 12/2008, p. 9	No		$16,419,972	ROD, 12/2008, p.. 192
UTD081834277	02	Institutional Controls	Other Exposure Pathway	ROD, 12/2008, p. 9	Human	ROD, 12/2008, p. 9	No		$70,000	ROD, 12/2008, p.. 192
UTD081834277	02	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD, 12/2008, p. 9	Human	ROD, 12/2008, p. 9	No		$1,246,928	ROD, 12/2008, p.. 94
UTD081834277	02	Monitoring (all media and as separate remedy)	Groundwater	ROD, 12/2008, p. 9	Human	ROD, 12/2008, p. 9	No		$3,377,100	ROD, 12/2008, p.. 94
MTD980717565										
MTD980717565	01	Alternative drinking water	Groundwater	ROD, 4/14/1984, p. 3	Human	ROD, 4/14/1984, p. 3	No		$274,989	ROD, 4/14/1984, p. 5
MTD980717565	02	Sediment dredging/ disposal	Groundwater	ROD, 12/2004, PT 2, p.11	Human	ROD, 12/2004, PT 2, p.11	No		$139,500,000	ROD, 12/2004, PT. 6., p. 35
MTD980717565	02	On-site disposal (excavation, capping, covering, reveg)	Groundwater	ROD, 12/2004, PT 2, p.11	Human	ROD, 12/2004, PT 2, p.11	No			see above (cost covers all OU2 remedies)
MTD980717565	03									
UT3890090035										
UT3890090035	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD OU 1/2, 08/22/1990, p. 6	Human	ROD OU 1/2, 08/22/1990, p. 6	No		$42,346,400	ROD OU 1/2, 08/22/1990, p. 23
UT3890090035	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD OU 1/2, 08/22/1990, p. 6	Human	ROD OU 1/2, 08/22/1990, p. 6	No	ROD OU 1/2, 08/22/1990, p. 6		
UT3890090035	02	Institutional Controls	Direct Exposure (waste/soils)	ROD OU 1/2, 08/22/1990, p. 6	Human	ROD OU 1/2, 08/22/1990, p. 6	No	ROD OU 1/2, 08/22/1990, p. 6		
UT3890090035	03	Monitoring (all media and as separate remedy)	Groundwater				No		$1,489,000	ROD Interim OU3, 9/2004, p. 24 (pdf)
UT3890090035	03	Permeable Reactive Barrier	Groundwater	ROD OU3, 9/1998, p. 19	Both Eco and Human	ROD OU3, 9/1998, p. 19	Yes	ROD OU3, 9/1998, p. 27	$2,203,000	ROD OU3, 9/1998, p.27 (capital costs)
UT3890090035	03	Institutional Controls	Groundwater	ROD OU3, 9/1998, p. 19	Both Eco and Human	ROD OU3, 9/1998, p. 19	No		$20,000	ROD OU3, 9/1998, p.27
UTD980667208										
UTD980667208	01	Off-site disposal	Direct Exposure (waste/soils)	ROD, OU1, 1989, p.5	Human	ROD, OU1, 1989, p.5	No			
UTD980667208	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, OU1, 1989, p.5	Human	ROD, OU1, 1989, p.5	No			
UTD980667208	01	Deconstruction/ decontamination of buildings	Direct Exposure (waste/soils)	ROD, OU1, 1989, p.5	Human	ROD, OU1, 1989, p.5	No			
UTD980667208	02									
UTD980667208	03	Monitored natural attenuation/recovery	Direct Exposure (waste/soils)				No		$1,443,888	IRAR, OU3, 2004, p. 24

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
UTD980667208	03	Institutional Controls	Direct Exposure (waste/soils)				No			
UTD980667208	03	Permeable Reactive Barrier	Groundwater				Yes	IRAR, OU3, 2004, p. 12		
UTD980667208	04									
UTD980667208	05									
UTD980667208	06									
UTD980667208	07									
UTD980667208	08									
MTD021997689										
MTD021997689	01	Monitored natural attenuation/recovery	Surface Water/ Sediment/wetland	FYR 2008, p. 5	Ecological	FYR 2008, p. 5	No			
MTD021997689	01	Soil Amendments	Direct Exposure (waste/soils)	FYR 2008, p. 17	Ecological	FYR 2008, p. 5	Yes	FYR, 2008, p. 6		
MTD021997689	01	Off-site disposal	Direct Exposure (waste/soils)	FYR 2008, p. 17	Ecological	FYR 2008, p. 5	No			
MTD021997689	01	Institutional Controls	Direct Exposure (waste/soils)		Ecological	FYR 2008, p. 5	No			
CON000802630										
CON000802630	01									
CON000802630	02									
UTD980952840										
UTD980952840	01	Impoundment	Surface Water/ Sediment/wetland	ROD, OU1, 7/2005, p. 40	Ecological	ROD, OU1, 7/2005, p. 26	No		$3,675,868	ROD, OU1, 7/2005, p. 53
UTD980952840	01	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD, OU1, 7/2005, p. 40	Ecological	ROD, OU1, 7/2005, p. 26	No			see above
UTD980952840	01	Institutional Controls	Surface Water/ Sediment/wetland	ROD, OU1, 7/2005, p. 40	Ecological	ROD, OU1, 7/2005, p. 26	No			see above
UTD980952840	02									
UTD980951388										
UTD980951388	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD OU1, 12/1993, p. 12	Human	ROD OU1, 12/1993, p. 22	No		$49,560,000	ROD OU1, 12/1993, p.33
UTD980951388	01	Soil Amendments	Direct Exposure (waste/soils)	ROD OU1, 12/1993, p. 12	Human	ROD OU1, 12/1993, p. 22	Yes	ROD OU1, 12/1993, p. 29		see above for total OU1 cost
UTD980951388	01	Sediment dredging/ disposal	Surface Water/ Sediment/wetland	ROD OU1, 12/1993, p.30	Ecological	ROD OU1, 12/1993, p.23	No			see above for total OU1 cost
UTD980951388	01	Institutional Controls	Direct Exposure (waste/soils)	ROD OU1, 12/1993, p. 12	Human	ROD OU1, 12/1993, p. 22	No			see above for total OU1 cost
UTD980951388	01	Monitoring (all media and as separate remedy)	Groundwater				No			see above for total OU1 cost
UTD980951388	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD OU2, 9/1990, p.12	Human	ROD OU2, 9/1990, p.12	No			
UTD980951388	02	Institutional Controls	Direct Exposure (waste/soils)	ROD OU2, 9/1990, p.12	Human	ROD OU2, 9/1990, p.12	No			

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MTD980502777										
MTD980502777	01	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD, 11/29/1995, p. 73	Both Eco and Human	ROD, 11/29/1995, pp. 37, 38	No		$46,000,000	ROD, 11/29/1995, p. 71
MTD980502777	01	Soil Amendments	Surface Water/ Sediment/wetland	ROD, 11/29/1995, p. 73	Both Eco and Human	ROD, 11/29/1995, pp. 37, 38	Yes	ROD, 11/29/1995, pp. 63-66		see above for OU1 total cost
MTD980502777	01	Sediment dredging/ disposal	Surface Water/ Sediment/wetland	ROD, 11/29/1995, p. 73	Both Eco and Human	ROD, 11/29/1995, pp. 37, 38	No			see above for OU1 total cost
MTD980502777	01	Institutional Controls	Surface Water/ Sediment/wetland	ROD, 11/29/1995, p. 73	Both Eco and Human	ROD, 11/29/1995, pp. 37, 38	No			see above for OU1 total cost
MTD980502777	02									
MTD980502777	03	Water treatment-lime	Groundwater	FYR Vol. 3, 6/28/2011, p. 3-2	Both Eco and Human	ROD, 9/29/1994, pp. 18, 19	No		$55,000,000	ROD, 9/29/1994, p. 33
MTD980502777	03	Institutional Controls	Groundwater	FYR Vol. 3, 6/28/2011, p. 3-2	both Eco and Human	ROD, 9/29/1994, pp. 18, 19	No			
MTD980502777	04	Water treatment-lime	Surface Water/ Sediment/wetland	1990 ROD p18-20	Human	1990 ROD p8	No		$57,416,000	1990 ROD p18 (cost is for all remedies at OU)
MTD980502777	04	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	1990 ROD p18-20	Human	1990 ROD p8	No			
MTD980502777	04	Other – Engineering/Containment	Surface Water/ Sediment/wetland	1990 ROD p18-20	Human	1990 ROD p8	No			
MTD980502777	04	Surface water diversion	Surface Water/ Sediment/wetland	1990 ROD p18-20	Human	1990 ROD p8	No			
MTD980502777	04	Institutional Controls	Surface Water/ Sediment/wetland	1990 ROD p18-20	Human	1990 ROD p8	No			
MTD980502777	05									
MTD980502777	06									
MTD980502777	07	On-site disposal (excavation, capping, covering, reveg)	Groundwater	1995 ROD p3	Human	1995 ROD p3	Yes	1995 ROD p32 "The addition of iron to adsorb and immobilize arsenic is considered by the Agency to be an innovative treatment technology."	$5,400,000	1995 ROD p32 (total cost for all remedies for OU)
MTD980502777	07	Water treatment-other	Groundwater	1995 ROD p3	Human	1995 ROD p3	Yes	1995 ROD p33 "Treatment of contaminated groundwater by such an in-situ technology is		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
								considered an innovative technology by EPA"		
MTD980502777	07	Solidification	Groundwater	1995 ROD p3	Human	1995 ROD p3	No			
MTD980502777	07	Off-site disposal	Groundwater	1995 ROD p3	Human	1995 ROD p3	No			
MTD980502777	07	Alternative drinking water	Groundwater	1995 ROD p3	Human	1995 ROD p5	No			
MTD980502777	07	Monitored natural attenuation/recovery	Groundwater	1995 ROD p3	Human	1995 ROD p5	No			
MTD980502777	07	Institutional Controls	Groundwater	1995 ROD p3	Human	1995 ROD p5	No			
MTD980502777	08									
MTD980502777	09									
MTD980502777	10									
MTD980502777	11									
MTD980502777	12	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	1992 ROD p20	Human	1992 ROD p20	No		$18,100,000	1992 ROD p28 (total cost for all remedies in OU)
MTD980502777	12	Surface water diversion	Surface Water/ Sediment/wetland	1992 ROD p20	Human	1992 ROD p20	No			
MTD980502777	12	Other – Engineering/Containment	Surface Water/ Sediment/wetland	1992 ROD p20	Human	1992 ROD p20	No			
MTD980502777	12	Water treatment-lime	Surface Water/ Sediment/wetland	1992 ROD p20 (potential pathways are possible if the ground water contamination is not contained and the ground water is used. The ground water also flows into nearby surface water, which has recreational, wildlife, and public uses.)	Human	1992 ROD p20	No			
MTD980502777	12	Impoundment	Surface Water/ Sediment/wetland	1992 ROD p20	Human	1992 ROD p20	No			
MTD980502777	12	Monitoring (all media and as separate remedy)	Surface Water/ Sediment/wetland	1992 ROD p20	Human	1992 ROD p20	No			
MTD980502777	12	Institutional Controls	Surface Water/ Sediment/wetland	1992 ROD p20	Human	1992 ROD p20	No			
MTD980502777	13									
COD983769738										
COD983769738	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	FYR, 9/2010, p. 18			No			
COD983769738	01	Institutional Controls	Direct Exposure (waste/soils)	FYR, 9/2010, p. 18			No			

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
COD983769738	01	Monitored natural attenuation/recovery	Groundwater	FYR, 9/2010, p. 18			No			
COD983769738	02	Institutional Controls	Groundwater	ROD OU2, 6/1998, p. 51	Both Eco and Human	ROD OU2, 6/1998, p. 25	No		$293,500	ROD OU2, 6/1998, p. 49
COD983769738	02	Monitored natural attenuation/recovery	Groundwater	ROD OU2, 6/1998, p. 51	Both Eco and Human	ROD OU2, 6/1998, p. 25	No			ROD OU2, 6/1998, p. 49
COD983769738	02	Off-site disposal	Groundwater	ROD OU2, 6/1998, p. 51	Both Eco and Human	ROD OU2, 6/1998, p. 25	No			ROD OU2, 6/1998, p. 49
COD983769738	03	Alternative drinking water	Groundwater				No			
COD980806277										
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	FYR, 11,/1997, p. 2			No		$1,847,450	ROD OU1, 9/1986, p. 18 (total cost)
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	FYR, 11,/1997, p. 2			No			see above for OU1
COD980806277	01	Monitoring (all media and as separate remedy)	Groundwater	FYR, 11,/1997, p. 2			No			see above for OU1
COD980806277	01	Alternative drinking water	Groundwater	FYR, 11,/1997, p. 2			No			see above for OU1
COD980806277	01	Institutional Controls	Direct Exposure (waste/soils)	FYR, 11,/1997, p. 2			No			see above for OU1
COD980806277	02	Surface water diversion	Surface Water/ Sediment/wetland	FYR, 11,/1997, p. 2			No			
COD980806277	02	Other – Engineering/Containment	Air	FYR, 11,/1997, p. 2			No			
CO0002378230										
CO0002378230	00									
COD983778432										
COD983778432	00	Water treatment-other	Surface Water/ Sediment/wetland	1994 ROD, p 36	Ecological	1994 ROD, p 27-28	No	1994 ROD, p 36	$25,264,691	1994 ROD, p 35-36
COD983778432	00	Other – Engineering/Containment	Surface Water/ Sediment/wetland	1994 ROD, p 36	Ecological	1994 ROD, p 27-28	No	1994 ROD, p 36	$1,610,000	1994 ROD, p 35-36
COD983778432	01	Water treatment-other	Surface Water/ Sediment/wetland	1994 ROD, p 20	Ecological	1994 ROD, p 20	No	1994 ROD, p 31	$18,929,000	1994 ROD, p 36
COD983778432	01	Other – Engineering/Containment	Surface Water/ Sediment/wetland	1994 ROD, p 20	Ecological	1994 ROD, p 20	No	1994 ROD, p 31		1994 ROD, p 36
COD983778432	01	Water treatment - Bioreactors (e.g., SRBs)	Surface Water/ Sediment/wetland	1994 ROD, p 20	Ecological	1994 ROD, p 20	Yes	1994 ROD, p 31		1994 ROD, p 36
COD983778432	01	Monitoring (all media and as separate remedy)	Surface Water/ Sediment/wetland	1994 ROD, p 20	Ecological	1994 ROD, p 20	No	1994 ROD, p 31		1994 ROD, p 36
COD983778432	02	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	1994 ROD, p 30	Human	1994 ROD, p 30	No		$40,800,000	1994 ROD, p 73
COD983778432	03									
COD983778432	04	Other – Engineering/Containment	Surface Water/ Sediment/wetland	1994 ROD, p 34	Both Eco and Human	1994 ROD, p 39	No		$4,324,000	1994 ROD, p 39
COD983778432	05	Impoundment	Surface Water/ Sediment/wetland	2001 ROD, p. 33-34	Both Eco and Human	2001 ROD, p. 38-50	No	2001 ROD, p. 71	$9,062,616	2001 ROD, Table 7-1

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
COD983778432	05	Monitoring (all media and as separate remedy)	Surface Water/ Sediment/wetland	2001 ROD, p. 33-34	Both Eco and Human	2001 ROD, p. 38-50	No	2001 ROD, p. 72	$10,193,616	2001 ROD, Table 7-1
COD983778432	05	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	2001 ROD, p. 33-34	Both Eco and Human	2001 ROD, p. 38-50	No	2001 ROD, p. 71	$5,243,616	2001 ROD, Table 7-1
COD983778432	05	Surface water diversion	Surface Water/ Sediment/wetland	2001 ROD, p. 33-34	Both Eco and Human	2001 ROD, p. 38-50	No	2001 ROD, p. 71	$12,126,613	2001 ROD, Table 7-1
COD983778432	05	Water treatment-lime	Surface Water/ Sediment/wetland	2001 ROD, p. 33-34	Both Eco and Human	2001 ROD, p. 38-50	No	2001 ROD, p. 71	$193,626,616	2001 ROD, Table 7-1
MTSFN7578012										
MTSFN7578012	01									
MTSFN7578012	02									
MTSFN7578012	03									
MTSFN7578012	04	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD OU4, 6/2002, p. 5, 6	Both Eco and Human	ROD OU4, 6/2002, p.56	No	ROD OU4, 6/2002, p. 5	$21,511,000	ROD OU4, 6/2002, p. 110 (entire OU)
MTSFN7578012	04	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD OU4, 6/2002, p. 5	Both Eco and Human	ROD OU4, 6/2002, p.56	No	ROD OU4, 6/2002, p. 5		
MTSFN7578012	04	Water treatment-other	Surface Water/ Sediment/wetland	ROD OU4, 6/2002, p. 5	Both Eco and Human	ROD OU4, 6/2002, p.56	Yes	ROD OU4, 6/2002, p. 5		
MTSFN7578012	04	Other – Engineering/Containment	Groundwater	ROD OU4, 6/2002, p. 5	Both Eco and Human	ROD OU4, 6/2002, p.56	No	ROD OU4, 6/2002, p. 5 (ground water)		
MTSFN7578012	04	Alternative drinking water	Groundwater	ROD OU4, 6/2002, p. 5	Both Eco and Human	ROD OU4, 6/2002, p.56	No	ROD OU4, 6/2002, p. 110 (ground water)	$495,000	ROD OU4, 6/2002, p. 110
MTSFN7578012	04	Institutional Controls	Groundwater	ROD OU4, 6/2002, p. 5	Both Eco and Human	ROD OU4, 6/2002, p.56	No	ROD OU4, 6/2002, p. 5 (ground water)		
MTSFN7578012	05									
MTSFN7578012	06									
MTSFN7578012	07									
MTSFN7578012	08									
COD007063274										
COD007063274	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	2010 FYR, p. 6	Both Eco and Human	2010 FYR, p. 7	No			
COD007063274	01	Impoundment	Groundwater	2010 FYR, p. 6	Both Eco and Human	2010 FYR, p. 7	No			
UTN000802704										
UTN000802704	01									
CO0002259588										
CO0002259588	01	Off-site disposal	Direct Exposure (waste/soils)	2003 ROD, p. 24	Human	2003 ROD, p. 24	No		$31,800,000	
CO0002259588	02									
CO0002259588	03									

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
SDD980717136										
SDD980717136	01	Institutional Controls	Direct Exposure (waste/soils)	1990 ROD, p. 12	Human	1990 ROD, p. 13	No			
SDD980717136	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	1990 ROD, p. 12	Human	1990 ROD, p. 13	No		$1,028,000	1990 ROD, p. 44
AZD008397127										
AZD008397127	01									
CAD980496863										
CAD980496863	01	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 2/14/1991, p.9	Human	ROD 2/14/1991, p.9	No	ROD 2/14/1991, p.21	$4,286,000	Cost is for entire OU. ROD 2/14/1991, p.16
CAD980496863	01	Surface water diversion	Surface Water/ Sediment/wetland	ROD 2/14/1991, p.9	Human	ROD 2/14/1991, p.9	No	ROD 2/14/1991, p.21		
CAD980496863	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 2/14/1991, p.9	Human	ROD 2/14/1991, p.9	No	ROD 2/14/1991, p.21		
CAD980496863	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 2/14/1991, p.9	Human	ROD 2/14/1991, p.9	No	ROD 2/14/1991, p.21		
CAD980496863	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 7/19/98, p.8	Human	ROD 7/19/98, p.8	No	ROD 7/19/98, p.18	$2,000,000	ROD 7/19/98, p.19
NVD980813646										
NVD980813646	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 3/30/1995, p.39	Human	ROD 3/30/1995, p.12	No	ROD 3/30/1995, p.39	$829,834	ROD 3/30/1995, p.39
NVD980813646	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 3/30/1995, p.39	Human	ROD 3/30/1995, p.12	No	ROD 3/30/1995, p.40		
NVD980813646	02									
CAD980638860										
CAD980638860	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 9/30/1985, p.4	Human	ROD 9/30/1985, p.4	No	ROD 9/30/1985		
CAD980638860	02	Off-site disposal	Direct Exposure (waste/soils)	ROD 10/3/1983, p.8	Human	ROD 10/3/1983	No	ROD 10/3/1983	$340,000	ROD 10/3/1983, p.11
CAD980817217										
CAD980817217	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/21/1990, p.7	Human	ROD 9/21/1990, p.7	No	ROD 9/21/1990, p.18	$3,092,000	Total cost for all remedies ROD 9/21/1990, p.12
CAD980817217	01	Surface water diversion	Direct Exposure (waste/soils)	ROD 9/21/1990, p.7	Human	ROD 9/21/1990, p.7	No	ROD 9/21/1990, p.18		
CAD980817217	01	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD 9/21/1990, p.7	Human	ROD 9/21/1990, p.7	No	ROD 9/21/1990, p.18		
CAD980817217	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/21/1990, p.7	Human	ROD 9/21/1990, p.7	No	ROD 9/21/1990, p.18		
CAD980817217	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	All Source Material ROD 7/19/1989, p.8	Human	All Source Material ROD 7/19/1989, p.8	No	ROD 7/19/1989, p.17 (All Source Material)	$2,000,000	All Source Material ROD 7/19/1989, p.12
AZ0000309013										

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
AZ0000309013	01									
CAD980498612										
CAD980498612	01	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 10/3/1986, p.14	Human	ROD 10/3/1986, p.14	No	ROD 10/3/1986, p.25	$85,100,000	ROD 10/3/1986, p.28
CAD980498612	01	Surface water diversion	Surface Water/ Sediment/wetland	ROD 10/3/1986, p.14	Human	ROD 10/3/1986, p.14	No	ROD 10/3/1986, p.25		
CAD980498612	01	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 10/3/1986, p.14	Human	ROD 10/3/1986, p.14	No	ROD 10/3/1986, p.25		
CAD980498612	02	Water treatment-lime	Direct Exposure (waste/soils)	ROD 9/30/92, p. 25	Ecological	ROD 9/30/92, p. 25	No	ROD 9/30/92, p. 40		Not provided
CAD980498612	02	Water treatment-lime	Direct Exposure (waste/soils)	ROD 9/30/92, p. 25	Ecological	ROD 9/30/92, p. 25	No	ROD 9/30/92, p. 41		
CAD980498612	03	Water treatment-lime	Direct Exposure (waste/soils)	ROD 9/24/1993, p. 21	Ecological	ROD 9/24/1993, p. 19	No	ROD 9/24/1993, p. 31	$1,700,000	ROD 10/3/1986, p.29
CAD980498612	03	Water treatment-lime	Direct Exposure (waste/soils)	ROD 9/24/1993, p. 21	Ecological	ROD 9/24/1993, p. 19	No	ROD 9/24/1993, p. 31		
CAD980498612	04	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 9/30/1997, p.39	Both Eco and Human	ROD 9/30/1997, p.39	No	ROD 9/30/1997, p.93	$21,200,000	ROD 9/30/1997, p.50
CAD980498612	04	Water treatment-lime	Surface Water/ Sediment/wetland	ROD 9/30/1997, p.39	Both Eco and Human	ROD 9/30/1997, p.39	No	ROD 9/30/1997, p.93		
CAD980498612	05	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 9/30/2004, p.42	Both Eco and Human	ROD 9/30/2004, p.42	No	ROD 9/30/2004, p.76	$21,112,000	ROD 9/30/2004, p.84
CAD980498612	06									
CA1141190578										
CA1141190578	01									
CA1141190578	02									
CA1141190578	03									
CAD983618893										
CAD983618893	01	Institutional Controls	Surface Water/ Sediment/wetland	ROD 9/28/2004, p.35	Both Eco and Human	ROD 9/28/2004, p.35	No	ROD 9/28/2004, p. 101	$14,100,000	ROD 9/28/2004, p. 116
CAD983618893	01	Other – Engineering/Containment	Surface Water/ Sediment/wetland	ROD 9/28/2004, p.35	Both Eco and Human	ROD 9/28/2004, p.35	No	ROD 9/28/2004, p. 101		
CAD983618893	01	Deconstruction/ decontamination of buildings	Surface Water/ Sediment/wetland	ROD 9/28/2004, p.35	Both Eco and Human	ROD 9/28/2004, p.35	No	ROD 9/28/2004, p. 101		
CAD983618893	01	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 9/28/2004, p.35	Both Eco and Human	ROD 9/28/2004, p.35	No	ROD 9/28/2004, p. 101		
CAD983618893	01	Water treatment-other	Surface Water/ Sediment/wetland	ROD 9/28/2004, p.35	Both Eco and Human	ROD 9/28/2004, p.35	No	ROD 9/28/2004, p. 103		
CAD983618893	02	Alternative drinking water	Direct Exposure (waste/soils)	ROD 9/30/2008, p.31	Human	ROD 9/30/2008, p.42	No	ROD 9/30/2008, p.57	$3,790,000	ROD 9/30/2008, p.59 (remedy cost for entire OU)

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
CAD983618893	02	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/30/2008, p.31	Human	ROD 9/30/2008, p.42	No	ROD 9/30/2008, p.57		
CAD983618893	03									
CAD983618893	04									
CAD980673685										
CAD980673685	01									
CAD980893275										
CAD980893275	01									
CAD980893275	02									
CAD980893275	03									
WAD009045279										
WAD009045279	01									
OR0000515759										
OR0000515759	01									
IDD980725832										
IDD980725832	01	Water treatment-lime	Surface Water/ Sediment/wetland	ROD 2003, p. 7-4	Both Eco and Human	ROD 2003, p. 7-7, 7-14, 7-15	No	ROD 2003, p. 12-6	$6,800,000	ROD 2003, p. 9-7 (in situ, passive water treatment option - includes all remedies in Blackbird Creek Drainage Basin)
IDD980725832	01	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 2003, p. 7-4	Both Eco and Human	ROD 2003, p. 7-7, 7-14, 7-15	No	ROD 2003, p. 12-2		See Water Treatment Remedy (this remedy is in Blackbird Creek Basin)
IDD980725832	01	Monitored natural attenuation/recovery	Surface Water/ Sediment/wetland	ROD 2003, p. 7-4	Both Eco and Human	ROD 2003, p. 7-7, 7-14, 7-15	No	ROD 2003, p. 12-1, 12-2		
IDD980725832	01	Institutional Controls	Surface Water/ Sediment/wetland	ROD 2003, p. 7-4	Both Eco and Human	ROD 2003, p. 7-7, 7-14, 7-15	No	ROD 2003, p. 12-1, 12-2		
IDD048340921										
IDD048340921	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 08/30/1991, p.17	Human	ROD 08/30/1991, p.18	No	ROD 08/30/1991, p. 30	$40,600,000	ROD 08/30/1991, p.42
IDD048340921	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 08/30/1991, p.17	Human	ROD 08/30/1991, p.18	No	ROD 08/30/1991, p. 31		
IDD048340921	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/22/1992, p.38	Both Eco and Human	ROD 9/22/1992, p.40	No	ROD 9/22/1992, p.52	$56,600,000	ROD 9/22/1992, p.65 (cost for entire OU)
IDD048340921	02	Water treatment - Created Wetlands	Surface Water/ Sediment/wetland	ROD 9/22/1992, p.38	Both Eco and Human	ROD 9/22/1992, p.40	Yes	ROD 9/22/1992, p.52		
IDD048340921	02	Surface water diversion	Surface Water/ Sediment/wetland	ROD 9/22/1992, p.38	Both Eco and Human	ROD 9/22/1992, p.40	No	ROD 9/22/1992, p.54		
IDD048340921	02	Alternative drinking water	Groundwater	ROD 9/22/1992, p.38	Both Eco and Human	ROD 9/22/1992, p.40	No	ROD 9/22/1992, p.60		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
IDD048340921	02	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/22/1992, p.38	Both Eco and Human	ROD 9/22/1992, p.40	No	ROD 9/22/1992, p.61		
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/12/2002, p.276	Both Eco and Human	ROD 9/12/2002, p.119	No			
IDD048340921	03	Alternative drinking water	Surface Water/ Sediment/wetland	ROD 9/12/2002, p.280	Both Eco and Human	ROD 9/12/2002, p.119	No			
IDD048340921	03	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/12/2002, p.281	Both Eco and Human	ROD 9/12/2002, p.119	No			
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 9/12/2002, p.375-376	Both Eco and Human	ROD 9/12/2002, p.119	No			
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 9/12/2002, p.396	Both Eco and Human	ROD 9/12/2002, p.119	No		$4,500,000	ROD 9/12/2002, p.396
WAD980726368										
WAD980726368	01	Air Stripping	Groundwater	ROD Amend 10/26/2009, p.18	Both Eco and Human	ROD Amend 10/26/2009, p.18	Yes	ROD Amend 10/26/2009, p.14		
WAD980726368	01	Off-site disposal	Direct Exposure (waste/soils)	ROD Amend 10/26/2009, p.18	Both Eco and Human	ROD Amend 10/26/2009, p.18	No			
WAD980726368	01	Other – Treatment Technology	Groundwater	ROD Amend 10/26/2009, p.18	Both Eco and Human	ROD Amend 10/26/2009, p.18	No			
WAD980726368	01	Soil Vapor Extraction	Groundwater	ROD Amend 10/26/2009, p.18	Both Eco and Human	ROD Amend 10/26/2009, p.18	No			
WAD980726368	01	Thermal Treatment	Groundwater	ROD Amend 10/26/2009, p.18	Both Eco and Human	ROD Amend 10/26/2009, p.18	No			
WAD980726368	01	Water treatment - Bioreactors (e.g., SRBs)	Groundwater	ROD Amend 10/26/2009, p.18	Both Eco and Human	ROD Amend 10/26/2009, p.18	Yes	ROD Amend 10/26/2009, p.16		
WAD980726368	01	Institutional Controls	Direct Exposure (waste/soils)	ROD Amend 10/26/2009, p.16	Both Eco and Human	ROD Amend 10/26/2009, p.16	No			
WAD980726368	01	Off-site disposal	Surface Water/ Sediment/wetland	FYR 12/23/2009, p. 40	Both Eco and Human	FYR 12/23/2009, p. 40	No			
WAD980726368	01	Sediment dredging/ disposal	Surface Water/ Sediment/wetland	FYR 12/23/2009, p. 40	Both Eco and Human	FYR 12/23/2009, p. 40	No			
WAD980726368	02									
WAD980726368	03									
WAD980726368	04									

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
WAD980726368	05									
WAD980726368	06									
WAD980726368	07									
WAD980726368	08									
WAD980726368	09									
WAD980726368	10									
WAD980726368	11									
WAD980726368	12									
WAD980726368	13									
WAD980726368	14									
WAD980726368	16									
WAD980726368	17									
WAD980726368	18									
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 7/14/2000, p.30	Both Eco and Human	ROD 7/14/2000, p.30	No		$19,200,000	ROD 7/14/2000, p.60 (entire OU)
WAD980726368	19	Institutional Controls	Surface Water/ Sediment/wetland	ROD 7/14/2000, p.30	Both Eco and Human	ROD 7/14/2000, p.30	No			
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 7/14/2000, p.30	Both Eco and Human	ROD 7/14/2000, p.30	No			
WAD980726368	19	Sediment dredging/ disposal	Surface Water/ Sediment/wetland	ROD 7/14/2000, p.30	Both Eco and Human	ROD 7/14/2000, p.30	No			
WAD980726368	20	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 3/24/1995, p. 16	Both Eco and Human	ROD 3/24/1995, p. 21	No		$45,300,000	ROD 3/24/1995, p. 49 (entire OU)
WAD980726368	20	Off-site disposal	Surface Water/ Sediment/wetland	ROD 3/24/1995, p. 16	Both Eco and Human	ROD 3/24/1995, p. 21	No			
WAD980726368	20	Institutional Controls	Surface Water/ Sediment/wetland	ROD 3/24/1995, p. 16	Both Eco and Human	ROD 3/24/1995, p. 21	No			
WAD980726368	21	Deconstruction/ decontamination of buildings	Direct Exposure (waste/soils)	ROD 12/31/1990, p.6	Human	1990 ROD p6	No		$9,912,500	1990 ROD p22 (includes building/structures and stack demolition and monitoring)
WAD980726368	21	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 12/31/1990, p.6	Human	1990 ROD p6	No		$2,037,000	1990 ROD p22 (includes incineration and temporary storage)
WAD980726368	21	Surface water diversion	Surface Water/ Sediment/wetland	ROD 12/31/1990, p.6	Human	1990 ROD p6	No		$2,891,600	1990 ROD p22
WAD980726368	22	Off-site disposal	Direct Exposure (waste/soils)	ROD 6/16/1993, p.2	Both Eco and Human	ROD 6/16/1993, p.17	No		$70,000,000	ROD 6/16/1993, p.23 (entire OU)
WAD980726368	22	Off-site disposal	Direct Exposure (waste/soils)	ROD 6/16/1993, p.2	Both Eco and Human	ROD 6/16/1993, p.17	No			

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
WAD980726368	23	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 12/30/1987, p.8	Human	ROD 12/30/1987, p.8	No		$3,400,000	ROD 12/30/1987, p.14 (entire OU)
WAD980726368	23	Institutional Controls	Direct Exposure (waste/soils)	ROD 12/30/1987, p.8	Human	ROD 12/30/1987, p.8	No			
WAD980726368	24									
WAD980726368	25									
WAD980726368	26									
IDD984666610										
IDD984666610	01	Other – Engineering/Containment	Direct Exposure (waste/soils)	ROD 6/8/1998, p.34	Both Eco and Human	ROD 6/8/1998, p.44	No	ROD 6/8/1998, p.61	$6,531,000	ROD 6/8/1998, p.64, 68 ($1,683,000 cost for Simplot portion of OU2; $4,848,000 for FMC portion of OU2)
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 6/8/1998, p.34	Both Eco and Human	ROD 6/8/1998, p.44	No	ROD 6/8/1998, p.61, p.66		
IDD984666610	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 6/8/1998, p.34	Both Eco and Human	ROD 6/8/1998, p.44	No	ROD 6/8/1998, p.61, p.66		
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 6/8/1998, p.34	Both Eco and Human	ROD 6/8/1998, p.44	No	ROD 6/8/1998, p.66		
IDD984666610	03									
IDD984666610	04									
ORN001002616										
ORN001002616	01									
OR7122307658										
OR7122307658	01									
OR7122307658	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/21/2001, p.42	Both Eco and Human	ROD 9/21/2001, p.41	No	ROD 9/21/2001, p.105, 115	$7,900,376	ROD 9/21/2001, p.117 (entire remedy)
OR7122307658	02	Water treatment-lime	Surface Water/ Sediment/wetland	ROD 9/21/2001, p.107 - 116	Both Eco and Human	ROD 9/21/2001, p.41	No	ROD 9/21/2001, p.97		
OR7122307658	02	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/21/2001, p.107 - 116	Both Eco and Human	ROD 9/21/2001, p.41	No	ROD 9/21/2001, p.107 - 116		
WAD000065508										
WAD000065508	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD, 5/1/1992, p.24	Human	ROD, 5/1/1992, p.13 Based on current & future land use. Eco risk no specified	No	ROD, 5/1/1992, p.38		
WAD000065508	01	Water treatment-other	Groundwater	ROD, 5/1/1992, p.24	Human	ROD, 5/1/1992, p.13 Based on current & future land use.	No	ROD, 5/1/1992, p.43		

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
						Eco risk no specified				
WAD000065508	01	Institutional Controls	Direct Exposure (waste/soils)	ROD, 5/1/1992, p.24	Human	ROD, 5/1/1992, p.13 Based on current & future land use. Eco risk no specified	No	ROD, 5/1/1992, p.45		
ORD052221025										
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)		Both Eco and Human	ROD, 9/29/1988, p.13	No	ROD, 9/29/1988, p.24	$6,707,400	ROD, 9/29/1988, p.18 (entire remedy)
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)		Both Eco and Human	ROD, 9/29/1988, p.13	No	ROD, 9/29/1988, p.24		
ORD052221025	01	Water treatment-other	Surface Water/ Sediment/wetland		Both Eco and Human	ROD, 9/29/1988, p.13	Yes	FYR, 6/30/2005, p.25		
ORD052221025	01	Institutional Controls	Direct Exposure (waste/soils)		Both Eco and Human	ROD, 9/29/1988, p.13	No	ROD, 9/29/1988, p.26		
ORD052221025	02									
WAD980978753										
WAD980978753	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/29/2006, p.13	Both Eco and Human	ROD 9/29/2006, p.72	No	ROD 9/29/2006, p.13	$123,010,000	ROD 9/29/2006, p.129 (entire OU including O&M)
WAD980978753	01	Water treatment-other	Surface Water/ Sediment/wetland	ROD 9/29/2006, p.13	Both Eco and Human	ROD 9/29/2006, p.72	No	ROD 9/29/2006, p.13		
WAD980978753	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 9/29/2006, p.13	Both Eco and Human	ROD 9/29/2006, p.72	No	ROD 9/29/2006, p.13		
WAD980978753	01	Surface water diversion	Surface Water/ Sediment/wetland	ROD 9/29/2006, p.13	Both Eco and Human	ROD 9/29/2006, p.72	No	ROD 9/29/2006, p.13		
WAD980978753	01	Institutional Controls	Groundwater	ROD 9/29/2006, p.14	Both Eco and Human	ROD 9/29/2006, p.72	No	ROD 9/29/2006, p.14		
IDD081830994										
IDD081830994	01	Monitored natural attenuation/recovery	Groundwater	ROD 4/30/1997, p.31	Human	ROD 4/30/1997, p.29	No	ROD 4/30/1997, p.44		
IDD081830994	01	Institutional Controls	Groundwater	ROD 4/30/1997, p.31	Human	ROD 4/30/1997, p.29	No	ROD 4/30/1997, p.44		
IDD081830994	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 4/30/1997, p.31	Human	ROD 4/30/1997, p.29	No	ROD 4/30/1997, p.45		
IDD081830994	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 4/30/1997, p.31	Human	ROD 4/30/1997, p.29	No	ROD 4/30/1997, p.45		
ORD009412677										
ORD009412677	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 9/30/2002, p.25	Both Eco and Human	ROD 9/30/2002, p.16	No			
ORD009412677	01	Off-site disposal	Direct Exposure (waste/soils)	ROD 9/30/2002, p.25	Both Eco and Human	ROD 9/30/2002, p.16	No			

EPA ID	OU	Selected Remedy (Q7)	Primary Pathway/Media Impacted (4)	Ref (Q4)	Primary Receptor (Eco/Human) (5)	Ref (Q5)	Innovative Technologies? (12)	Ref (Q12)	Projected Cost of Selected Remedy (13)	Ref (Q13)
ORD009412677	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/30/2002, p.25	Both Eco and Human	ROD 9/30/2002, p.16	No			
ORD009412677	01	Water treatment-other	Groundwater	ROD 9/30/2002, p.25	Both Eco and Human	ROD 9/30/2002, p.16	No			
ORD009412677	01	Institutional Controls	Groundwater	ROD 9/30/2002, p.27	Both Eco and Human	ROD 9/30/2002, p.16	No			
ORD009412677	02	Institutional Controls	Groundwater	ROD 9/29/2006, p.35	Both Eco and Human	ROD 9/29/2006, p.26	No			
ORD009412677	02	Other – Engineering/Containment	Groundwater	ROD 9/29/2006, p.35	Both Eco and Human	ROD 9/29/2006, p.26	No			
ORD009412677	02	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 9/29/2006, p.10	Both Eco and Human	ROD 9/29/2006, p.26	No			
AK0001897602										
AK0001897602	01									
WAD980722789										
WAD980722789	01	On-site disposal (excavation, capping, covering, reveg)	Direct Exposure (waste/soils)	ROD 3/27/1990, p.9	Human	ROD 3/27/1990, p.9	No			
WAD980722789	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 3/27/1990, p.9	Human	ROD 3/27/1990, p.9	No			
IDD980665459										
IDD980665459	01									
ORD050955848										
ORD050955848	01	Water treatment-other	Groundwater	ROD 6/10/1994, p.60	Both Eco and Human	ROD 6/10/1994, p.40	No	ROD 6/10/1994, p.60		
ORD050955848	01	On-site disposal (excavation, capping, covering, reveg)	Surface Water/ Sediment/wetland	ROD 6/10/1994, p.60	Both Eco and Human	ROD 6/10/1994, p.40	No	ROD 6/10/1994, p.60		
ORD050955848	01	Institutional Controls	Direct Exposure (waste/soils)	ROD 6/10/1994, p.60	Both Eco and Human	ROD 6/10/1994, p.40	No	ROD 6/10/1994, p.60		
ORD050955848	02	Off-site disposal	Direct Exposure (waste/soils)	ROD 12/28/1989, p.6	Human	ROD 12/28/1989, p.6	No	ROD 12/28/1989, p.14	$10,716,000	ROD 12/28/1989, p.14
ORD050955848	03	Off-site disposal	Direct Exposure (waste/soils)	ROD 9/27/1995, p. 40	Human	ROD 9/27/1995, p. 40	No		$110,000	ROD 9/27/1995, p. 75 (entire OU)
ORD050955848	03	Institutional Controls	Direct Exposure (waste/soils)	ROD 9/27/1995, p. 40	Human	ROD 9/27/1995, p. 40	No			
ORD050955848	04									

Table C-9 – Site and Operating Unit Detail at the 126 Site Universe (Part 9)

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
MED980524128							
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
MED980524128	01	Off-site disposal	No FYR				
MED980524128	01	Sediment dredging/ disposal	No FYR				
MED980524128	01	Institutional Controls	No FYR				
MED980524128	02						
MED980524128	03						
VTD988366621							
VTD988366621	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
VTD988366621	01	Surface water diversion	No FYR				
VTD988366621	01	Monitored natural attenuation/recovery	No FYR				
VTD988366621	01	Institutional Controls	No FYR				
VTD988366571							
VTD988366571	01						
VTD988366571	02						
VTD988366720							
VTD988366720	01						
NJD980785646							
NJD980785646	01	Off-site disposal	No FYR				
NJD980785646	01	Other – Engineering/Containment	No FYR				
NJD980785646	01	Institutional Controls	No FYR				
NJD980785646	02	No action	No FYR				
NJD980785646	03	Off-site disposal	No FYR				
NYD986882660							
NYD986882660	01	Off-site disposal	Yes				2010 FYR
NYD986882660	01	Institutional Controls	Yes				2010 FYR
NYD986882660	02	Off-site disposal	Yes				2010 FYR
NYD986882660	02	Institutional Controls	Yes				2010 FYR
NYD986882660	03						
NYD986882660	04	Sediment dredging/ disposal	Yes				2010 FYR
NJD980529762							

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
NJD980529762	01						
NJD980529762	02	Off-site disposal	No, partial	1) The selected remedy for soils and buildings as outlined in the 2003 OU2 ROD has not been fully implemented. Additional remedial actions and ICs are needed; 2) Remedial actions were undertaken by DOE and USACE prior to the 2003 ROD, utilizing cleanup criteria that in some instances were less stringent than the 2003 OU2 ROD criteria.	1) Implement Land Use Control Implementation Plan to fulfill the IC requirements for any property where radioactivity remains about the OU2 ROD unrestricted use cleanup criteria for soil where inaccessible soil contamination remains in place; 2) Include properties that were not addressed in the 2003 OU2 ROD in future CERCLA decision document. Complete additional property evaluations as recommended in this FYR report for six Phase I properties.	The OU2 remedy is expected to be protective of human health and the environment once fully implemented; however, long-term protectiveness of the remedy will require ICs for any property where radioactivity remains about the 2003 ROD unrestricted use cleanup criterial for soil or where remediation of accessible soil is deferred until it is rendered accessible in the future. In the interim, protectiveness is being achieved through access controls, property owner notifications, monitoring, existing zoning ordinances, and communication with local officials.	FYR, 9/25/2009, p.10
NJD980529762	02	Institutional Controls	No, partial	1) The selected remedy for soils and buildings as outlined in the 2003 OU2 ROD has not been fully implemented. Additional remedial actions and ICs are needed; 2) Remedial actions were undertaken by DOE and USACE prior to the 2003 ROD, utilizing cleanup criteria that in some instances were less stringent than the 2003 OU2 ROD criteria.	1) Implement Land Use Control Implementation Plan to fulfill the IC requirements for any property where radioactivity remains about the OU2 ROD unrestricted use cleanup criteria for soil where inaccessible soil contamination remains in place; 2) Include properties that were not addressed in the 2003 OU2 ROD in future CERCLA decision document. Complete additional property evaluations as recommended in this FYR report for six Phase I properties.	The OU2 remedy is expected to be protective of human health and the environment once fully implemented; however, long-term protectiveness of the remedy will require ICs for any property where radioactivity remains about the 2003 ROD unrestricted use cleanup criterial for soil or where remediation of accessible soil is deferred until it is rendered accessible in the future. In the interim, protectiveness is being achieved through access controls, property owner notifications, monitoring, existing zoning ordinances, and communication with local officials.	FYR, 9/25/2009, p.10
NJD980529762	02	Deconstruction/ decontamination of buildings	No, partial	1) The selected remedy for soils and buildings as outlined in the 2003 OU2 ROD has not been fully implemented. Additional remedial actions and ICs are needed; 2) Remedial actions were undertaken by DOE and USACE prior to the 2003 ROD, utilizing cleanup criteria that in some instances were less stringent than the 2003 OU2 ROD criteria.	1) Implement Land Use Control Implementation Plan to fulfill the IC requirements for any property where radioactivity remains about the OU2 ROD unrestricted use cleanup criteria for soil where inaccessible soil contamination remains in place; 2) Include properties that were not addressed in the 2003 OU2 ROD in future CERCLA decision document. Complete additional property evaluations as recommended in this FYR report for six Phase I properties.	The OU2 remedy is expected to be protective of human health and the environment once fully implemented; however, long-term protectiveness of the remedy will require ICs for any property where radioactivity remains about the 2003 ROD unrestricted use cleanup criterial for soil or where remediation of accessible soil is deferred until it is rendered accessible in the future. In the interim, protectiveness is being achieved through access controls, property owner notifications, monitoring, existing zoning ordinances, and communication with local officials.	FYR, 9/25/2009, p.10
NJD980529762	03						
NJD980785653							
NJD980785653	01	Off-site disposal	No FYR				
NJD980785653	02	No action	No FYR				
NJD980785653	03	Off-site disposal	No FYR				

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
NJD002365930							
NJD002365930	01	Air Stripping	No FYR				
NJD002365930	01	Water treatment-other	No FYR				
NJD002365930	02						
NJD002365930	03						
NJD980654172							
NJD980654172	01	Off-site disposal	No FYR				
NJD980654172	02	Off-site disposal	No FYR				
NJD980654172	03	No action	No FYR				
NJ1891837980							
NJ1891837980	01	Off-site disposal	Yes			Remedy has left all groundwater and soils suitable for use without restriction, except for two suspected subsoil areas which are currently not accessible. In order for the remedy to be protective in the long-term, any remaining contamination in these two areas should be removed or a permanent institutional control implemented to address these areas	2008 FYR p16
NJ1891837980	01	Water treatment-other	Yes			Remedy has left all groundwater and soils suitable for use without restriction, except for two suspected subsoil areas which are currently not accessible. In order for the remedy to be protective in the long-term, any remaining contamination in these two areas should be removed or a permanent institutional control implemented to address these areas	2008 FYR p16
NJ1891837980	01	Institutional Controls	Not specified		USACE is working with the county to implement IC as may be required to prohibit road work without prior notification of USACE	Remedy has left all groundwater and soils suitable for use without restriction, except for two suspected subsoil areas which are currently not accessible. In order for the remedy to be protective in the long-term, any remaining contamination in these two areas should be removed or a permanent institutional control implemented to address these areas	2008 FYR p16
PAD987341716							
PAD987341716	01	Off-site disposal	Yes	n/a	None	The remedy for OU1 is protective of human health and the environment. All structures and soils in residential areas were cleaned up standards that are suitable for unrestricted use. All soils in nonresidential areas and areas unlikely to become residential were cleaned up to standards deemed protective of human health and the environment. The small portion of	FYR, 12/21/2000, p.14

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
						subsurface radiologically contaminated soils inside the SEPTA right of way, falls within the cleanup standard for the site. The SEPTA right of way and set-backs dictated by building codes act as institutional controls restricting or limiting access or disturbance to these soils.	
PAD987341716	01	Resident relocation	Yes	n/a	None	The remedy for OU1 is protective of human health and the environment. All structures and soils in residential areas were cleaned up standards that are suitable for unrestricted use. All soils in nonresidential areas and areas unlikely to become residential were cleaned up to standards deemed protective of human health and the environment. The small portion of subsurface radiologically contaminated soils inside the SEPTA right of way, falls within the cleanup standard for the site. The SEPTA right of way and set-backs dictated by building codes act as institutional controls restricting or limiting access or disturbance to these soils.	FYR, 12/21/2000, p.14
PAD987341716	01	Institutional Controls	Yes	n/a	None	The remedy for OU1 is protective of human health and the environment. All structures and soils in residential areas were cleaned up standards that are suitable for unrestricted use. All soils in nonresidential areas and areas unlikely to become residential were cleaned up to standards deemed protective of human health and the environment. The small portion of subsurface radiologically contaminated soils inside the SEPTA right of way, falls within the cleanup standard for the site. The SEPTA right of way and set-backs dictated by building codes act as institutional controls restricting or limiting access or disturbance to these soils.	FYR, 12/21/2000, p.14
PAD987341716	02	No action	Yes				
PAD077087989							
PAD077087989	01	Off-site disposal	No FYR				
PAD077087989	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
PAD077087989	01	Other – Treatment Technology	No FYR				
PAD077087989	01	Institutional Controls	No FYR				
PASFN0305549							

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
PASFN0305549	01						
PASFN0305549	02						
PAD980829493							
PAD980829493	01	Off-site disposal	Yes				FYR, 4/28/2006, p. 17
PAD980829493	01	On-site disposal (excavation, capping, covering, reveg)	Yes			The cap is providing an effective barrier preventing direct exposure to the underlying materials and preventing releases of contamination from the consolidated soils. The most contaminated soils beneath the cap were stabilized/solidified which further limits their potential for migration. The protectiveness of the cap is confirmed by the Site monitoring data collected and the observations thatthe cap is continuing to function effectively. The surface water, fish and biota monitoring data are indicative of background conditions. The sediment data from September 2005 show the concentration is still above cleanup standards of 110 ppm. However, the EPA does not have sufficient rounds of data for assessment of the sediment cleanup. The EPA will be monitoring the subsequent rounds of sediment samples.	FYR, 4/28/2006, p. 17
PAD980829493	01	Institutional Controls	No	The institutional controls should be finalized to assure restricted use of the capped area, limited use of areas on Site to industrial use only, prevent use of groundwater on-Site from the Site (prevent installation of wells on Site), limit disturbance of soil underneath H & H Trucking Building and the Main Krentzman Building, so that the remedy is protective in the long-term. The EPA is currently working with the attorney from the Responsible Party to get these institutional controls in place at the Jacks Creek Site.			FYR, 4/28/2006, p. 6
PAD002395887							
PAD002395887	01	Soil Amendments	Yes		1. Monitor and evaluate the completed portion of Blue Mountain for long term vegetation survivability and translocation of contaminants (OU 1). 2. Sample and analyze appropriate plant species for metals to determine if translocation is occurring (OU 1) and if it is causing adverse effects. 3. Periodically, on an as-needed basis, if	EPA/USACE will continue to evaluate the success of the interim remedy applied to the first 1,000 acre area of Blue Mountain, Operable Unit # 1. EPA/USACE will also continue to explore current and future methods of reforestation with the PRPs to meet the tree establishment and other requirements in the remedial design. The	FYR, 9/26/1996, p. 3; FYR, 9/28/2007, p. 8, 10

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
					appropriate, remove volunteer tree species with high metal uptake (i.e., Birch, Poplar, etc.) (OU 1), repair areas of vegetative die off, or apply soil amendments to minimize contaminant uptake. 4. Utilize a revegetation approach that has minimum metal uptake on the remaining acreage of Blue Mountain (OU 1) to ensure long term survivability and minimize translocation of contaminants, if it is shown to be a problem. ***Develop Institutional controls implementation plan. Complete revegetation of Blue Mountain on NFS and PA Game Commission property and continue to utilize a revegetation approach that has minimum metal uptake on the remaining acreage of Blue Mountain (OU 1) to ensure long term survivability. Monitor and evaluate the completed portion of Blue Mountain for long-term vegetation survivability and translocation.	issue of maintaining adequate in-situ stabilization of hazardous metals in the soil to prevent potential recontamination of the food chain will also be a part of this effort. ***The remedy is expected to be protective of human health. The final protectiveness determination with regard to ecological risks will be made upon completion of the updated ERA included in OU4.	
PAD002395887	02	Water treatment-lime	Yes			The remedy has been completed and is protective of human health and the environment in the short term, however, follow-up action concerning the burning area of the Cinder Bank and continued access control evaluation is needed to insure long term protectiveness.	FYR, 9/28/2007, p. 8
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	No	Violations of various environmental statutes, including the Clean Water Act ("CWA"). The basis for the CWA violations was exceedences of National Pollutant Discharge Elimination System ("NPDES") permit limits from outfalls along the Cinder Bank. The consent decree which settled that action provided for remediation of the Cinder Bank, among other things, and many of the tasks performed and to be performed pursuant to the consent decree are consistent with the remedy selected in the 1988 ROD.	EPA/USACE will also continue to explore current and future methods of reforestation with the PRPs to meet the tree establishment and other requirements in the remedial design. The issue of maintaining adequate in-situ stabilization of hazardous metals in the soil to prevent potential recontamination of the food chain will also be a part of this effort. Address access restrictions and long term O&M of burning areas of Cinder Bank.		FYR, 9/26/1996, p. 3; ESD, 8/27/2002, p. 2
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	Yes		Complete construction of Metal Reduction Zones (MRZs) and remaining revegetation on the Cinder Bank. Continue O&M of cinder bank. Continue to assess access issues. Once areas of cinder bank stop burning, develop a plan to vegetate the areas.	The remedy has been completed and is protective of human health and the environment in the short term, however, follow-up action concerning the burning area of the Cinder Bank and continued access control evaluation is needed to insure long term protectiveness.	FYR, 7/1/2002, p. 9; FYR, 9/28/2007, p. 8, 10

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
PAD002395887	03	On-site disposal (excavation, capping, covering, reveg)	Yes			The remedy has been completed and is protective of human health and the environment.	FYR, 9/28/2007, p. 8
PAD002395887	03	Off-site disposal	Yes			The remedy has been completed and is protective of human health and the environment.	FYR, 9/28/2007, p. 8
PAD002395887	03	Institutional Controls	Yes			The remedy has been completed and is protective of human health and the environment.	FYR, 9/28/2007, p. 8
PAD002395887	04						
VAD980705404							
VAD980705404	01	Water treatment-lime	Yes			By eliminating most of the sources of acidic discharge into the river, the remedial action is preventing future fish kills and has stopped further leaching of metals and continued degradation of the Piney River.	FYR, 3/24/2005, p. 4
VAD980705404	01	Water treatment - Created Wetlands	No	Did not effectively treat the contaminated groundwater	Treating Area 1 soils and copperas using ex-situ neutralization; treating groundwater in an above-ground treatment system, followed by iron precipitation in a surface impoundment prior to effluent discharge into the Piney River.		ESD, 9/25/2000, p. 5
VAD980705404	01	Surface water diversion	Yes			By eliminating most of the sources of acidic discharge into the river, the remedial action is preventing future fish kills and has stopped further leaching of metals and continued degradation of the Piney River.	FYR, 3/24/2005, p. 4
VAD980705404	01	On-site disposal (excavation, capping, covering, reveg)	Yes			Acidic soils have been neutralized and capped, thus eliminating the direct contact exposure pathway.	FYR, 3/24/2005, p. 4
VAD980705404	01	Institutional Controls	Yes			The institutional controls have been implemented. The Restrictive Covenants executed by the Piney River Recovery Corporation and Nelson County accomplish the following: ensure that drinking water supply wells are not installed or used on,-site; that on-site activities do not adversely affect or interfere with the selected remedy; and, (public use ofthe site is limited or restricted to areas that are considered safe and appropriate for 'general use.	FYR, 3/24/2010, p. 4
SCN000407714							
SCN000407714	01						
SCD987577913							
SCD987577913	01	Water treatment-lime	No FYR				
TND987768546							
TND987768546	01						

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
TN0001890839							
TN0001890839	01						
TN0001890839	02						
TN0001890839	03						
TN0001890839	04						
TN0001890839	05						
TN0001890839	06						
TN0001890839	07						
TN0001890839	08						
TN0001890839	09						
TN0001890839	10						
TN0001890839	11						
TN0001890839	12						
TN0001890839	13						
TN0001890839	14						
TN0001890839	15						
TN0001890839	16						
TN0001890839	17						
FLD001704741							
FLD001704741	01						
FLD001704741	02						
SCN000407376							
SCN000407376	01						
SCD003360476							
SCD003360476	01	Water treatment-other	No	Groundwater-MW054R: Elevated concentrations of total chromium above the groundwater cleanup goal were reported at MW054R, during Event 8 in April 2009. This well could not be re-sampled, nor concentrations verified during Event 9 sampling in October 2009 as the well was obstructed with road fill. MW054R is located on property owned by Sonoco. This property contains deed restrictions that require Sonoco to be respectful of the remediation system.	Groundwater-MWOS4R: Locate, assess condition, and re-sample MWOS4R if possible. Raise flush mount casing to accommodate future road elevation changes. MWOS4R is located on property owned by Sonoco. This property contains deed restrictions that require Sonoco to be respectful of the remediation system. The costs to find, and potentially repair MWOS4R should be the responsibility of Sonoco. Continue long term effectiveness groundwater monitoring on semiannual basis for next two years and then annually thereafter, depending on results.		FYR, 6/27/2010, p. 12, 71
SCD003360476	01	Sediment dredging/ disposal	Yes		During the five-year review period, one area was recommended for repair. As described in Section 4.2.3, a portion of the cap near Transect 3 had exposed geotextile fabric and was repaired in December 2008.		FYR, 6/27/2010, p. 12, 57

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					Subsequently, the June 2009 measurement event indicated the repaired portion of the cap was stable and in good condition. During the October 2009 First Five-Year Site Inspection, SCDHEC and EPA recommended future measurements to continue every other year (2011 and 2013) until the second five-year review.		
SCD003360476	01	Soil Amendments	Yes			The remedy is functioning as intended by the decision documents. In accordance to the ROD, the performance of the soil remedy is evaluated by groundwater monitoring.	FYR, 6/27/2010, p. 12, 71
SCD003360476	01	Institutional Controls	Yes			Institutional controls have been placed on the Site to restrict land use and groundwater use.	FYR, 6/27/2010, p. 12, 72
SCD003360476	01	Off-site disposal	Yes			Based on the performance standards and quality control presented in the FRAR, cleanup goals were attained by this remedial action. All soil and debris that were identified in the Final Design with elevated levels of gamma radiation was excavated and disposed of offsite at the time of the remedial action.	FYR, 6/27/2010, p. 12, 67
SCD003360476	01	Surface water diversion	Yes		Evaluate vegetation and sediment buildup in the storm water management system and clean if necessary.		FYR, 6/27/2010, p. 12
KYD049062375							
KYD049062375	00	Institutional Controls	Yes			The 2006 FYR only discusses the Interim ROD from 1993.	
KYD049062375	00	On-site disposal (excavation, capping, covering, reveg)	Yes			The 2006 FYR only discusses the Interim ROD from 1993.	
KYD049062375	00	Off-site disposal	Yes				
KYD049062375	01	Water treatment-other	Yes		The following recommendations are made: A. Filter Press - Investigation of the feasibility of retrofitting the filter press with a drip pan is recommended. B. Plume Capture 1. Pumping Rate. The adequacy of the plume capture at the current pumping rate should be determined. 2. Upgrade Lamella Clarifier, CL2. If the current pumping scheme is not achieving optimum plume capture, the potential for modification, paralleling or replacement of CL2 should be investigated. C. Plume - Influent cyanide concentrations are relatively stable but declining. D. ARAR Recs - Groundwater extraction and		FYR, 8/2/2001, p. 23-24; FYR, 9/14/2006, p. 5

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					treatment should be discontinued when the influent concentrations of cyanide and metals reach the goals. If the concentrations become constant, the system should be thoroughly examined to determine if operation should be continued. E. If the waste generated from the treatment unit did not fail ICR or TCLP analysis, the waste could be handled as a non-hazardous waste and disposal and management costs could be greatly reduced. If the waste did fail ICR/TCLP analysis, it would then be subject to land disposal restrictions and would have to meet the universal treatment standards of 40 CFR 268.48 prior to disposal. It is recommended that the PRPs and EPA re-evaluate how they wish to classify the waste generated from the groundwater treatment plant. It may be more beneficial to use the CWA treatment unit exclusion approach to handling wastes generated by the system. F. Extraction Well - A specialist in water well rehabilitation and maintenance should be contacted and potential remedies and preventive maintenance options examined to prevent biofouling in the extraction well. Continue to operate pump and treat system at least through another review period; Update operations and maintenance manual for the project; Evaluate the need for, and if appropriate, conduct a groundwater modeling study to ensure the project is operating effectively relative to contaminant capture zone.; Follow up on the KPDES permit renewal with the Kentucky; The existing decision documents should be reconciled with respect to clearly identifying all COCs and cleanup goals; Sediment and water samples should be collected from the ditch observed near the site to evaluate the possibility of overflow from the adjacent slurry pond during inclement weather; A specialist in extraction system maintenance should be contacted to examine preventive maintenance options for the facility; Implement the pending final remedy for the site.		

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
KYD049062375	02						
NCN000409895							
NCN000409895	01						
FLD010596013							
FLD010596013	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
FLD010596013	01	Solidification	No FYR				
FLD010596013	01	Institutional Controls	No FYR				
FLD010596013	02						
ILN000508170							
ILN000508170	01						
ILN000508170	02						
ILD050231976							
ILD050231976	01						
ILD062340641							
ILD062340641	01	Sediment dredging/ disposal	Yes			ROD specified RAOs and ensure short-term effectiveness at OU1; In order for the remedy at OU1 to be protective in the long term, the remedy selection process for OU5 must be completed and implemented. Also, a determination ofthe need for ICs for the site needs to be made for long-term protectiveness.	FYR, 6/25/2010, p. 22
ILD062340641	02						
ILD062340641	03						
ILD062340641	04						
ILD062340641	05						
ILD980606941							
ILD980606941	01	Deconstruction/ decontamination of buildings	No FYR			No FYR to date	
ILD980606941	01	Off-site disposal	No FYR			No FYR to date	
ILD980606941	01	On-site disposal (excavation, capping, covering, reveg)	No FYR			No FYR to date	
ILD980606941	02						
ILN000508134							
ILN000508134	01						
ILN000508134	02						
ILN000508134	03						
IL0000064782							
IL0000064782	01						
IL0000064782	02						
OHD004379970							

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
OHD004379970	01	Chemical Oxidation	Yes		Fluoride concentrations in plume near FDP-5 have increased recenctly; gw monitoring downgradient of FDP-5 will be monitored closely.		FYR 5/42007 p.19
OHD004379970	01	Other – Engineering/Containment	Yes				FYR 5/4/2007 pp. 17-20
OHD004379970	01	Other – Engineering/Containment	Yes		CMSD landfill cover needs to be reparied and its maintenance improved.		FYR 5/4/2007 p. 19
OHD004379970	01	Soil flushing/washing	Yes				FYR 5/4/2007 pp. 17-20
OHD004379970	01	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR 5/4/2007 pp. 17-20
OHD004379970	01	Sediment dredging/ disposal	Yes				FYR 5/4/2007 pp. 17-20
OHD004379970	01	Institutional Controls	No, partial	Current Ics (deed restrictions) cover only the Site property and not the contaminated gw under the manufacturing portion of the facility.	Change the form of the Ics and place some restrictions on the rest of the reduction plant.		FYR 5/4/2007 pp. 19-20
MID980901946							
MID980901946	01	Institutional Controls	No	Newly exposed stampsands and other mining related wastes (such those containing lead, arsenic and PCBs at Lake Linden) appearing in certain areas due to declining Lake Superior water levels that affect Lake Torch need to be evaluated and addressed.	Continue to seek documentation from landowners at the Site to verify proper deed restrictions have been put in place, and if they are not, work with the landowners and/or county to ensure deed restrictions are put in place.		FYR 3/27/2008 pp. 45-48, 50-51
MID980901946	01	Off-site disposal	No	Newly exposed stampsands and other mining related wastes (such those containing lead, arsenic and PCBs at Lake Linden) appearing in certain areas due to declining Lake Superior water levels that affect Lake Torch need to be evaluated and addressed.	Further assessment, evaluation and remediation of newly exposed areas as necessary		FYR 3/27/2008 pp. 45-48, 52
MID980901946	01	Other – Engineering/Containment	No	Newly exposed stampsands and other mining related wastes (such those containing lead, arsenic and PCBs at Lake Linden) appearing in certain areas due to declining Lake Superior water levels that affect Lake Torch need to be evaluated and addressed.	Further assessment, evaluation and remediation of newly exposed areas as necessary		FYR 3/27/2008 pp. 45-48, 52
MID980901946	02	No action	No	There may be drinking water wells screened in mine tailings.	Evaluate groundwater data and uses at the Site; develop a plan for periodic on-Site inspections of groundwater use and work		FYR 3/27/2008

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					with county officials to evaluate the effectiveness of the county well permitting process in preventing the installation of drinking water wells in tailings. Also, 2004 MDEQ monitoring data suggests that the time needed for the natural recovery of area water bodies may be unacceptably long (estimated recovery time is over several hundred years). An assessment of alternative approaches and additional data collection needs to be discussed.		p. 51, 53-54
MID980901946	03	Institutional Controls	No	Deed restrictions in slag area of Quincy Smelter not implemented.	Continue to seek documentation from landowners at the Site to verify proper deed restrictions have been put in place, and if they are not, work with the landowners and/or county to ensure deed restrictions are put in place.		FYR 3/27/2008 pp. 45-48, 50-51
MID980901946	03	Off-site disposal	No	Further assessment, evaluation and remediation of additional areas as necessary.	Address newly exposed stampsands appearing in certain areas due to declining Lake Superior water levels that affect Lake Torch. Further assessment, evaluation and remediation of additional areas as necessary.		FYR 3/27/2008 pp. 45-48
MID980901946	03	Other – Engineering/Containment	No	Vegetative cover at Quincy Smelter property not implemented (ROD excluded area); ROD expected this area to be developed as a National Historic park	Address newly exposed stampsands appearing in certain areas due to declining Lake Superior water levels that affect Lake Torch. Further assessment, evaluation and remediation of additional areas as necessary. Implement vegetative cover at Quincy Smelter after it has been documented via a ROD Amendment.		FYR 3/27/2008 pp. 45-48, 53
MID980901946	03	Other – Engineering/Containment	Yes				FYR 3/27/2008 p. 30
MID980901946	03	Other – Engineering/Containment	Not specified				
MID980901946	04						
MID980901946	05						
MID980901946	06						
IND047030226							
IND047030226	01						
NMD002899094							
NMD002899094	00	Off-site disposal	No FYR				
NMD002899094	00	On-site disposal (excavation, capping, covering, reveg)	No FYR				

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NMD002899094	00	Other – Engineering/Containment	No FYR				
NMD002899094	00	Water treatment-lime	No FYR				
NMD002899094	00	Sediment dredging/ disposal	No FYR				
NMD002899094	00	Institutional Controls	No FYR				
NMD980749378							
NMD980749378	01	Water treatment-other	Yes		Monitoring wells at OU I are not protected from external damage. Also, the State has expressed concerns that residual contamination in the unsaturated zone could continue to be released to the ground water resulting in possible expansion of the plume. EPA will discuss with N'MED establishing data quality objectives for their ground water monitoring program that could provide them assurance that residual cyanide mass in the vadose zone will not re-charge the ground water to the: extent it expands the plume beyond the property boundary. Recommendations include: Install bollards to protect the wells from vehicle traffic; install markers to identify the comers of the treated soil impoundments; construct a new wcll to an appropriate depth. or modify the existing well on the north side of the soil impoundment.		FYR 7/31/2008 pp. SF-2, 35, 40-41
NMD980749378	01	Institutional Controls	Yes				FYR 7/31/2008 pp. SF-2, 40-41
NMD980749378	02	Solidification	Yes		The State has difficulty in monitoring the condition of the treated soil impoundments at OU2 due to lack of markers or any other identifying features. FYR 2008 recommended action is to install permanent markers to identify the corners of the treated soil impoundments.		FYR 7/7/2003. p. 7; FYR 7/31/2008 pp. EX-2, 31, 40-41
NMD980749378	02	On-site disposal (excavation, capping, covering, reveg)	Yes		At OU2 the monitoring well located in the position downgradient of the treated soil impoundment is dry; this diminishes the integrity of the monitoring system. FYR 2008 recommended action is to construct a new well to an appropriate depth or modify		FYR 7/31/2008 pp. 40-41

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					the existing well at the north side of the impoundment.		
NMD980749378	02	Institutional Controls	Yes				FYR 7/31/2008 p. 42
NMD981155930							
NMD981155930	01	No action	Yes				FYR 8/20/2007 pp. 10-12
NMD981155930	01	Institutional Controls	Yes				FYR 8/20/2007 pp. 10-12
NMD007860935							
NMD007860935	01	Water treatment-other	No, partial	The second and final phase of reclamation of the tailing impoundments and evaporation ponds will be implemented following completion of the ground water restoration program.			FYR 9/27/2001 p. ES-2; FYR 9/26/2006 pp.52- 53
NMD007860935	02	Other – Engineering/Containment	No, partial	To ensure the continued long-term protectiveness of the ongoing remedy, it is recommended that use of ground water as a primary source of drinking water by local residents and landowners in those areas where concentrations exceed MCLs be restricted, regardless of whether the source of contamination is site-related or due to background conditions.			FYR 9/27/2001 p. 9; FYR 9/26/2006 pp. 52-53
NMD007860935	03	No action	Yes				FYR 9/27/2001 pp. ES-3, ES-4
OKD000829440							
OKD000829440	01	Off-site disposal	No, partial	As of FYR 11/22/2006, there are no issues except that a small portion of the SK&O railroad and the BNSF railroad right of way remain unremediated.			FYR 11/22/2006 pp.8, 22, 26-28
OKD000829440	01	Institutional Controls	Yes				FYR 11/22/2006 pp. 27,28
OKD000829440	02	Off-site disposal	Yes			RAOs were also issued for agricultural soils in OU2 but in Nov 1997, PRP issued a letter to DEQ stating that the agricultural COPCs were already below the agricultural	FYR 11/22/2006 pp. 18, 19; FYR

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						remediation levels. DEQ concluded in Feb 1998, no further action for agricultural soils.	10/15/2001 p. 5
OKD980629844							
OKD980629844	01	Other – Engineering/Containment	No, partial	1) A determination regarding the effectiveness of the well plugging program, which was intended to prevent mine water infiltration into the Roubidoux aquifer has not been completed; 2) ODEQ research has found references to 19 abandoned wells that need to be assessed for plugging.	1) Complete evaluation of the effectiveness of the well plugging program by Sept 2014; 2) Undertake field work to determine whether the 19 wells that ODEQ found in literature actually exist, and evaluate whether plugging any wells found is warranted or feasible; complete by Sept 2012.		FYR 9/29/2010 pp. 33-36, Tables 6 and 7
OKD980629844	01	Surface water diversion	No, partial	1) No O&M Plan exists for the dike and diversion channel for the Admiralty Mine Site. Plan was made in 1987 and new facts make it outdated. 2) An assessment of the surface water and sediment data for Tar Creek should be completed to verify that a threat to human health does not exist as stated in the OU1 ROD. Recent ODEQ data have demonstrated that potential risk to human health exists through consumption of fish caught from Tar Creek, the Spring and Neosho Rivers, and Grand Lake. Advanced SLERA documented a moderate to high risk to ecological receptors from sediment and surface water contamination associated with the site.	1) The O&M Plan prepared for the Admiralty Mine Site should be updated. Maintenance needs to be performed to the dike at the Admiralty site. The maintenance items identified during the FYR site inspection should be performed. To be completed no later than September 2012. 2) EPA should complete the evaluation of current surface water and sediment data for Tar Creek to verify that no unacceptable risks to human health and the environment exist in Tar Creek. The risk assessment portion of this follow-up action should be completed by September 2012. If necessary, an evaluation of remedial alternatives should be completed by September 2014. Also, the passive treatment pilot study (through constructed wetlands) being conducted under the Oklahoma Plan for Tar Creek by Oklahoma University is still ongoing. A determination regarding the feasibility of using passive treatment technology to address the environmental risks associated with surface water has yet to be made.		FYR 9/29/2010 pp. 31, 33-36, Tables 6 and 7
OKD980629844	02	On-site disposal (excavation, capping, covering, reveg)	No, partial	While significant progress has been made, there is work remaining before the OU2 RA is complete Chat has been identified in driveways and alleyways in Miami and in other areas of Ottawa County outside of the mining area. The footprints of homes demolished and removed as part of the OU4 voluntary relocation, the footprints of homes demolished in Miami due to flooding issues, and the footprints of homes demolished as part of work performed in Commerce have not been assessed to	Remaining actions should be taken to complete the OU2 RA by Sept 2015.	The cost of pre-1997 ROD removal action activities was $7,679,617 (not including EPA administrative costs). Completion of the remediation of the original 1,300 properties occurred in July of 2000. The cost for remedial action cleanup work from 1997 to 2000 was approximately $29,222,559 (not including USACE and EPA administrative costs). Surface soil lead concentrations exceeding 500 parts lead per million parts soil (ppm) were detected in more than 1,300 properties.	ESD 8/30/2007 pp. 2-4; FYR 9/29/2010 pp. 33-36, Tables 6 and 7

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				determine if additional remediation is required.			
OKD980629844	02	Institutional Controls	No, partial			The cost of pre-1997 ROD removal action activities was $7,679,617 (not including EPA administrative costs). Completion of the remediation of the original 1,300 properties occurred in July of 2000. The cost for remedial action cleanup work from 1997 to 2000 was approximately $29,222,559 (not including USACE and EPA administrative costs). Surface soil lead concentrations exceeding 500 parts lead per million parts soil (ppm) were detected in more than 1,300 properties.	ESD 8/30/2007 pp. 2-4
OKD980629844	03	No action	No FYR				
OKD980629844	04	Resident relocation	No FYR				
OKD980629844	04	On-site disposal (excavation, capping, covering, reveg)	No FYR				
OKD980629844	04	Alternative drinking water	No FYR				
OKD980629844	04	Other – Engineering/Containment	No FYR				
OKD980629844	04	Institutional Controls	No	ICs restricting the use of shallow ground water have not been put in place as called for in the OU4 ROD.	The IC restricting potable and domestic use of shallow ground water including the Boone aquifer as specified in the OU4 ROD should be implemented by Sept 2011.		FYR 9/29/2010 pp. 33-36, Tables 6 and 7
OKD980629844	04	Other – Engineering/Containment	No FYR				
OKD980629844	05						
TXD062113329							
TXD062113329	01	On-site disposal (excavation, capping, covering, reveg)	No, partial	1) Approx. 1/2 acre of land between the Wah Chang Ditch and the NORM Disposal Cell and the northeast comer of the Consolidation Cell (Pond 2) has bare spots that need to be re-vegetated. 2) Potential blockage of letdown channel.	Re-vegetation of Caps - At OU 1, approximately 1/2 acre of land between the Wah Chang Ditch and the NORM Disposal Cell needs to be re-vegetated. The northeast comer of the Consolidation Cell (Pond 2) has bare spots and needs to be re-vegetated. 2) Potential Blockage of Letdown Channel - The tree growing in the letdown channel along the east site of the Consolidation Cell at OU 1 should be removed to prevent future blockage of surface water flow.		FYR 9/21/2010 pp. 2-3
TXD062113329	01	Off-site disposal	Yes				FYR 9/21/2010 pp. 26, 27
TXD062113329	01	Other – Engineering/Containment	No, partial	1) At OU 1 concentration trends for gross alpha and combined radium (Ra) 226/228 are difficult to discern since laboratory analytical methods were changed in 2007.	1) Increase of Radionuclide Concentrations -The monitoring of radionuclides within the deep transmissive zone (DTZ) at OU 1 should continue. If concentrations continue		FYR 9/21/2010 pp. 2-3

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				However, gross alpha and combined Ra 226/228 were above their respective PALs in the DTZ monitoring wells during the 2008 sampling event. Except for this one instance, historical concentrations have always been below the PALs. 2) The site monitoring requirements were not adjusted to reflect new standards; therefore, it was not noted that arsenic exceeded the PAL in MW-23D at OU 1 .	to exceed perimeter action levels (PALs) in the DTZ monitoring wells during the next monitoring event, then additional measures may be necessary. 2) Update PALs - The PALs for arsenic and chloroform listed in the OU 1 Annual Monitoring Report groundwater analytical result tables for the DTZ should be revised to incorporate the new MCLs.		
TXD062113329	01	Institutional Controls	Yes				FYR 9/21/2010 pp. 49-50
TXD062113329	02	No action	No, partial	1) The site monitoring requirements were not adjusted to reflect new standards; therefore, it was not noted that arsenic exceeded the PCL in MW-52S, MW-56S, and MW-64S at OU 2. 2) Turbidity measurements were initially collected for OU 2, although it is unclear if samples that had a turbidity measurement of 10 nephelometric turbidity units (NTU) were filtered. However, it is understood that TCEQ requires samples unfiltered. Additionally, turbidity measurements were not collected during the last two annual sampling events at OU 2 in 2007 and 2008. Documents reviewed did not indicate that turbidity measurements were collected during the sampling of OU 2.	1) The protective concentration levels (PCLs) for arsenic in the OU 2 Annual Monitoring Reports should be revised to incorporate the updated PCL. 2) Turbidity Measurements - Collect turbidity measurements for OU2 during annual groundwater monitoring. Also, recommended (minor) actions include: ensuring that monitoring wells are locked and replacing locks as needed; repairing surface erosion as needed and monitoring areas to ensure that minor surface erosion does not increase; and replacing faded signs along the slurry wall alignment.	FYR 9/30/03 for OU2 finds the 'no action' remedy protective of human health and the environment.	FYR 9/30/2003 pp. 3, 7; FYR 9/21/2010 pp.2- 3
TXD062113329	03	No action	No FYR			FYR not needed for OU3	FYR 9/21/2010 p. ES-2
TXD062113329	04	Other – Engineering/Containment	No FYR				
OKD987096195							
OKD987096195	01						
NMD030443303							
NMD030443303	01	Water treatment-other	No	The only gw extraction system being operated is for Zone 3; Zone 1 and South Alluvium systems are shut off. In 2008, UNC drilled new wells further downgradient of Zone 3 to slow the seepage-infected gw. UNC continues to monitor ground-water chemistry in all three zones. UNC has evaluated the technical impracticability (TI) of achieving cleanup standards for sulfate, TDS and manganese		Groundwater remediation coupled with source control remedial action required by NRC will allow further improvements in groundwater quality at the site. NRC-required source control measures, which address surficial contamination from windblown tailings solids and control of groundwater evaporation residues, are expected to eliminate significant potential risks to human health and the environment	ROD 9/30/1988 p. 8, FYR 9/18/2003, pp. 62-73, http://www.epa.gov/region6/6sf/pdffiles/0

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				and recommended that EPA invoke a TI waiver for these constituents. UNC has also recommended the establishment of ICs to prevent the use of contaminated ground water in specific areas located off the UNC property on Navajo Tribal Trust and Indian Allotment lands. On January 23, 2008, EPA initiated a third Five-Year Review. The review was completed and a 5-Year Review Report was signed on September 17, 2008 (SRA is unable to access this FYR). EPA directed UNC to perform a Site-wide Supplemental Feasibility Study (SFS) in order to investigate and evaluate possible ground water remedial alternatives and to support a possible ROD Amendment or ESD, as appropriate. UNC provided Part 1 and Part 2 of the FS as separate documents, and based on comments and follow-up discussions, these 2 parts were combined in a revised document submitted April 2011. This portion of the SFS is currently under review.		via the direct contact, air emissions, or surface exposure routes.	600819.pdf
MO0000958611							
MO0000958611	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
MO0000958611	01	Other – Engineering/Containment	No FYR				
MO0000958611	01	Institutional Controls	No FYR				
MO0000958611	02	No action	No FYR				ROD 6/8/2007, p.10
MO0000958611	03	On-site disposal (excavation, capping, covering, reveg)	No FYR				ROD 6/29/2007, p. 14
MOD981126899							
MOD981126899	01						
MOD981126899	02						
MOD981126899	03						
KSD980741862							
KSD980741862	01	Alternative drinking water	Yes				FYR 9/30/2010 pp. 18, 22
KSD980741862	02						

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
KSD980741862	03	On-site disposal (excavation, capping, covering, reveg)	No, partial	Remedy construction to be completed and underway.			FYR 9/30/2010 pp.19-20, 22
KSD980741862	03	Other – Engineering/Containment	Not specified				FYR 9/28/2000, FYR 9/30/2005, FYR 9/30/2010
KSD980741862	03	Institutional Controls	No, partial	Remedy construction to be completed and underway.			FYR 9/30/2010 p. 22
KSD980741862	04						
KSD980741862	05	On-site disposal (excavation, capping, covering, reveg)	No, partial	Cannot determine protectiveness of remedy until additional information is obtained. PRP remedy for smelter grounds area under construction.	Vegetation and engineering enhancement studies will be conducted in 20 I I and 2012.		FYR 9/30/2010 pp. 11, 22
KSD980741862	05	Deconstruction/ decontamination of buildings	No, partial	The former Eagle-Picher smelter buildings have been successfully decontaminated and are being beneficially reused by a local business. Design work is ongoing for the impacted areas surrounding the smelter buildings. PRP remedy for smelter grounds area under construction.			FYR 9/30/2010 pp. 15, 22
KSD980741862	05	Surface water diversion	No, partial	Major concern is the severe slope on several sites and subsequent ongoing erosion due to lack of vegetation necessary to stabilize the cover in place.	The total areas of concern consist of approximately 200 acres that will require various engineering (reduced slope/grade, addition of terraces) and revegetation (addition of soils/nutrients/fertilizers, refined seed mixtures) activities		FYR 9/30/2010 p. 11
KSD980741862	06	On-site disposal (excavation, capping, covering, reveg)	No, partial	Cleanup is ongoing under EPA-lead at Badger and Lawton subsites and under PRP-lead at Crestline subsite, and joint EPA/PRP lead at Waco subsite. To date, 1,425,000 cyd of wastes have been remediated.			FYR 9/30/2010 p. 12
KSD980741862	06	Other – Engineering/Containment	Not specified				FYR 9/30/2010 pp. 9,12
KSD980741862	07	On-site disposal (excavation, capping, covering, reveg)	Yes				ROD 7/29/1996 np. 8; FYR 9/30/2010 p. 22
KSD980741862	07	Institutional Controls	Yes				FYR 9/30/2010 p. 22

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
MOD098633415							
MOD098633415	01						
MOD098633415	02						
MOD098633415	03	On-site disposal (excavation, capping, covering, reveg)	No FYR				
MOD098633415	03	Institutional Controls	No FYR				
MOD098633415	04						
MOD098633415	05						
MOD098633415	06						
MOD981507585							
MOD981507585	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
MOD981507585	01	Institutional Controls	No FYR				
MOD981507585	02						
MOD981507585	03						
NESFN0703481							
NESFN0703481	01	Off-site disposal	No, partial	Cleanup is ongoing.			ROD 5/13/2009 p. 7
NESFN0703481	02	Off-site disposal	No FYR				
NESFN0703481	02	Institutional Controls	No FYR				
MOD980686281							
MOD980686281	01	On-site disposal (excavation, capping, covering, reveg)	No	Remedial design for OU1 is underway; however, the mining wastes still present a significant risk to the environment and to small children living adjacent to mining wastes that may recreate on the piles. Only minimal cleanup in the Highway 249 corridor has occurred in the mining waste.			FYR 8/27/2007 pp. 6, 14-15
MOD980686281	01	Institutional Controls	No	Remedial design for OU1 is underway; however, the mining wastes still present a significant risk to the environment and to small children living adjacent to mining wastes that may recreate on the piles. Only minimal cleanup in the Highway 249 corridor has occurred in the mining waste.			FYR 8/27/2007 pp. 6, 14-15

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
MOD980686281	02	On-site disposal (excavation, capping, covering, reveg)	No, partial	Cleanup levels were achieved in all but a few residential yards where owners (approx 30) denied access for cleanup. EPA completed soil removal and replacement actions at 2,192 yards by September 2001.	At homes where owners denied access for cleanup and yard soil > 1,200 ppm lead, EPA will order owners to allow cleanup of the soil. Where soil concentrations are <1,200 ppm lead but > 800 ppm, EPA will be placing deed notices in the Recorder of Deeds Office or place other property controls to notify potential buyers of the presence of lead contamination.		FYR 8/27/2007 pp. iv, 10, 13
MOD980686281	02	Institutional Controls	Yes				FYR 8/27/2007 pp. iv, 10-12, 14
MOD980686281	03						
MOD980686281	04	Alternative drinking water	Yes				FYR 8/27/2007 p. 14
MOD980686281	04	Water treatment-other	No	During the design phase, EPA was able to expand the extent of public water supply to include all but two of the homes which are specified in the ROD to receive a whole-house treatment unit. For these two homes, MDNR installed new drinking water wells into the deep aquifer to eliminate the maintenance requirements of treatment units. All water systems planned for the Site were completed by October 2006.			FYR 8/27/2007 pp. 14,21
MOD980686281	04	Institutional Controls	Yes				FYR 8/27/2007 p. 14
MOD980686281	05						
MON000705443							
MON000705443	01						
MON000705443	02						
MON000705443	03						
MON000705443	04						
MON000705443	05						
MON000705443	06						

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
MON000705842							
MON000705842	01						
MON000705842	02						
MON000705842	03						
MON000705027							
MON000705027	01						
MON000705027	02						
MON000705027	03						
MON000705027	04						
MON000705023							
MON000705023	01						
MON000705023	02						
MON000705023	03						
MON000705023	04						
MON000705032							
MON000705032	01						
MON000705032	02						
MON000705032	03						
MON000705032	04						
MTD093291599							
MTD093291599	01						
MTD093291656							
MTD093291656	01						
MTD093291656	03	On-site disposal (excavation, capping, covering, reveg)	No FYR				FYR, 11/24/1994, p.16
MTD093291656	04	On-site disposal (excavation, capping, covering, reveg)	No, partial	The existing cover atop the Cashman concentrate pile is severely degraded.	The pile is located to areas accessed by the public and has the potential to release		FYR, 12/30/199

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					contaminants via blowing dust. Since the remedial action for the Cashman concentrate may not occur for several years, a temporary cover should be placed on the concentrate pile until final remediation is conducted under the ARWWS OU. This action should be conducted under the ARWWS remedial design. Provide additional monitoring and/or maintenance of the vegetation at the Drag Strip Sub area of the OW/EADA OU; Evaluate the redevelopment potential and the use of temporary covers at the Red Sands Subarea of the OW/EADA OU; Provide additional monitoring and/or maintenance of the dike face soil covers at the Anaconda Ponds; Investigate the potential for additional beryllium and /or hazardous waste at the East Anaconda Yards and/or evaluate the use of institutional controls to ensure protectiveness at the time of redevelopment; Characterize the uncapped portion of th e East Anaconda Yards and/or evaluate the use of institutional controls to ensure protectiveness at the time of redevelopment; Determine final disposition of repository leachates; Develop pr tocol to address concerns with attic dust; and Provide air quality monitoring in the community of Opportunity.		9, p. 28-29; FYR, 9/29/2005, p. 7, 39-42; FYR, 9/30/2010, p.5
MTD093291656	04	Monitored natural attenuation/recovery	Yes				FYR, 12/30/1999, p. 28-29; FYR, 9/29/2005, p. 7, 39-42; FYR, 9/30/2010, p.5
MTD093291656	04	Institutional Controls	Yes		2005: Develop long term implementation plan for Ins titutional Controls		FYR, 12/30/1999, p. 28-29; FYR, 9/29/2005, p. 7, 39-42; FYR,

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							9/30/2010, p.5
MTD093291656	07	Institutional Controls	Yes		For the remedy to be protective in the long-term, final IC's must be completed.		FYR, 11/23/1994, p.13; FYR, 12/30/1999, p.7; FYR, 9/29/2005, p. 6, 30-33; FYR, 9/30/2010, p. 4
MTD093291656	07	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR, 11/23/1994, p.13; FYR, 12/30/1999, p.7; FYR, 9/29/2005, p. 6, 30-33
MTD093291656	07	Surface water diversion	Yes				FYR, 11/23/1994, p.13; FYR, 12/30/1999, p.7; FYR, 9/29/2005, p. 6, 30-33
MTD093291656	09	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR, 11/24/1994, p.15; FYR, 12/30/1999, p.6; FYR, 9/29/2005, p.5, 13, 17-19
MTD093291656	11	Solidification	Yes				FYR, 11/23/1994, p.11; FYR, 12/30/1999, p.6; FYR,

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							9/29/2005, p.5, 21-23
MTD093291656	11	On-site disposal (excavation, capping, covering, reveg)	Yes		It is recommend that additional action be taken to determine if the repository liner and cap are functioning as designed and determine if additional remedial action is necessary		FYR, 11/23/1994, p.11; FYR, 12/30/1999, p.6; FYR, 9/29/2005, p.5, 21-23; FYR, 9/30/2010, p. 4
MTD093291656	11	Institutional Controls	Yes				FYR, 11/23/1994, p.11; FYR, 12/30/1999, p.6; FYR, 9/29/2005, p.5, 21-23
MTD093291656	12	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR, 11/24/1994, p.15; FYR, 12/30/1999, p.6; FYR, 9/29/2005, p.5, 24-26
MTD093291656	14						
MTD093291656	15	Resident relocation	Yes				FYR, 11/23/1994, p. 10; FYR, 12/30/1999, p. 7
MTD093291656	15	Deconstruction/ decontamination of buildings	Yes				FYR, 11/23/1994, p. 10; FYR, 12/30/1999, p. 7
MTD093291656	15	Institutional Controls	Yes				FYR, 11/23/1994, p. 10; FYR,

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							12/30/1999, p. 7
MTD093291656	15	On-site disposal (excavation, capping, covering, reveg)	Yes		To be further addressed in a subsequent ROD		FYR, 11/23/1994, p. 10; FYR, 12/30/1999, p. 7
MTD093291656	16	Institutional Controls	Yes		Interim controls include the County's Community Protective Measures Program to communicate risk/protectiveness information related to remaining contaminants to residents. However, there is concern that the remaining contaminants especially lead, may pose an unacceptable risk. It is recommended that additional action be taken to determine if these remaining soil and dust contaminants pose an unacceptable risk to residents and to determine if additional remedial action is necessary. It is expected that this action will be completed next year, at which time a protectiveness determination will be made. Additionally, for the remedy to be protective in the long-term, final IC's must be completed.		FYR, 12/30/1996, p. 7, 29; FYR, 9/29/2005, p. 6, 35-38; FYR, 9/30/2010, p.4
MTD093291656	16	On-site disposal (excavation, capping, covering, reveg)	Yes		Interim controls include the County's Community Protective Measures Program to communicate risk/protectiveness information related to remaining contaminants to residents. However, there is concern that the remaining contaminants especially lead, may pose an unacceptable risk. It is recommended that additional action be taken to determine if these remaining soil and dust contaminants pose an unacceptable risk to residents and to determine if additional remedial action is necessary. It is expected that this action will be completed next year, at which time a protectiveness determination will be made. Additionally, for the remedy to be protective in the long-term, final IC's must be completed.		FYR, 12/30/1996, p. 7, 29; FYR, 9/29/2005, p. 6, 35-38; FYR, 9/30/2010, p.4
COD007063530							
COD007063530	01	On-site disposal (excavation, capping, covering, reveg)	No, partial	The remedy is going to be implemented as soon as the Asarco Bankruptcy Trust is set up. In the interim, exposure pathways that would result in unacceptable risks are being			FYR. 9/29/2004, p. 3; FYR,

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				controlled by maintaining a clean soil cover graded for proper drainage. Until the remedy is implemented, contaminated groundwater continues to be added to the system requiring extraction from the Terrace Drain and treatment in the Waste Water Treatment Plant.			9/25/2009, p. 5
COD007063530	01	Institutional Controls	No, partial	The remedy is going to be implemented as soon as the Asarco Bankruptcy Trust is set up. In the interim, exposure pathways that would result in unacceptable risks are being controlled by maintaining a clean soil cover graded for proper drainage. Until the remedy is implemented, contaminated groundwater continues to be added to the system requiring extraction from the Terrace Drain and treatment in the Waste Water Treatment Plant.			FYR. 9/29/2004, p. 3; FYR, 9/25/2009, p. 5
COD007063530	02	Other – Engineering/Containment	Yes		Exposure pathways that could result in unacceptable risk to people drinking contaminated groundwater are expected to be controlled when the remedy is complete. A process is being formulated with the Engineers office to notify the Colorado Department of Public Health and Environment before permits are issued for wells. The area to the east of the Globe Plant Site to the Platte River has been identified as having contaminated groundwater.		FYR. 9/29/2004, p. 3; FYR, 9/25/2009, p. 5
COD007063530	02	On-site disposal (excavation, capping, covering, reveg)	Yes		Exposure pathways that could result in unacceptable risk to people drinking contaminated groundwater are expected to be controlled when the remedy is complete. A process is being formulated with the Engineers office to notify the Colorado Department of Public Health and Environment before permits are issued for wells. The area to the east of the Globe Plant Site to the Platte River has been identified as having contaminated groundwater.		FYR. 9/29/2004, p. 3; FYR, 9/25/2009, p. 5
COD007063530	02	Institutional Controls	Yes		Exposure pathways that could result in unacceptable risk to people drinking contaminated groundwater are expected to be controlled when the remedy is complete. A process is being formulated with the Engineers office to notify the Colorado Department of Public Health and		FYR. 9/29/2004, p. 3; FYR, 9/25/2009, p. 5

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
					Environment before permits are issued for wells. The area to the east of the Globe Plant Site to the Platte River has been identified as having contaminated groundwater.		
COD007063530	03	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR, 9/29/2004, p.3; FYR, 9/25/2009, p. 6
COD007063530	03	Institutional Controls	Yes				FYR, 9/29/2004, p.3; FYR, 9/25/2009, p. 6
COD007063530	04	Other – Treatment Technology	No, partial	Because the remedial action for surface soils and buildings has not yet been completed, the site is not protective of human health and the environment. Additional placement of community soils on the Plant will ensure protectiveness.			FYR, 9/29/2004, p.3; FYR, 9/25/2009, p. 6
COD007063530	04	On-site disposal (excavation, capping, covering, reveg)	No, partial	Because the remedial action for surface soils and buildings has not yet been completed, the site is not protective of human health and the environment. Additional placement of community soils on the Plant will ensure protectiveness.			FYR, 9/29/2004, p.3; FYR, 9/25/2009, p. 6
COD007063530	04	Institutional Controls	No, partial	Because the remedial action for surface soils and buildings has not yet been completed, the site is not protective of human health and the environment. Additional placement of community soils on the Plant will ensure protectiveness.			FYR, 9/29/2004, p.3; FYR, 9/25/2009, p. 6
MT6122307485							
MT6122307485	01						
MT6122307485	02						
MTD982572562							
MTD982572562	01	Off-site disposal	Yes				
MTD982572562	01	Institutional Controls	No	Response actions carried out for the Town of Basin OU1 have addressed the immediate threats, but the remedy is not yet fully protective until institutional controls are fully implemented.			FYR, 2008, p ES-10
MTD982572562	02						
MTD982572562	03						
MTD982572562	04						
MTD982572562	05						

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MTD982572562	06						
COD980717938							
COD980717938	01	Other – Engineering/Containment	Yes				FYR, 9/29/2001, p. 20
COD980717938	01	Water treatment-other	Yes		Additional new influent waters to the Yak Treatment Plant include waters are being pumped from the Black Cloud Mine. Pumping from the Black Cloud Mine is intended to lower water levels in the Yak Tunnel above the suspected blockage. The contingency plan calls for one year of continuous pumping to assess how water levels respond.		FYR, 9/29/2001, p. 20; FYR, 9/28/2007, p. 30
COD980717938	02	No action	Yes		An Institutional Control Overlay (ICO) District was established to meet post-reclamation land use restriction requirements. However, the ICO District was repealed by Lake County in 2006. As a result, concerns remain regarding protectiveness of the remedy. Although this is not a formalized IC, it allows the remedy to be protective until an IC is formalized.		FYR, 9/29/2001, p. 25, 27; FYR, 9/28/2007, p. 39, 40
COD980717938	03	No action	Yes		No ICs exist (or were called for in the ROD) to ensure protection of human health in the event of changes in zoning. An Institutional Control Overlay (ICO) District was established to meet land use restriction requirements. However, the ICO District was repealed by Lake County in 2006. As a result, concerns remain regarding protectiveness of the remedy. Although this is not a formalized IC, it allows the remedy to be protective until an IC is formalized.		FYR, 9/29/2001, p. 34; FYR, 9/28/2007, p. 45-47
COD980717938	04	On-site disposal (excavation, capping, covering, reveg)	No	RAO's articulated in the ROD requiring, among other things, control of leaching and migration of metals from contaminated materials into the surface water may not have been achieved to the degree originally intended. This issue will be addressed under OU12 as specified in the 1994 CD.	No ICs exist (or were called for in the ROD) to ensure protection of human health in the event of changes in zoning or to prevent disturbance of engineered remedies as a result of development consistent with current zoning. An Institutional Control Overlay (ICO) District was established to meet post-response action land use restriction requirements. However, the ICO District was repealed by Lake County in 2006. As a result, concerns remain regarding protectiveness of the remedy.		ESD, 3/17/2004; 9/28/2007, p. 53
COD980717938	04	Surface water diversion	No	RAO's articulated in the ROD requiring, among other things, control of leaching and	Complete remedy implementation		FYR, 9/29/2001,

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				migration of metals from contaminated materials into the surface water may not have been achieved to the degree originally intended. This issue will be addressed under OU12 as specified in the 1994 CD.			p. 45; FYR, 9/28/2007, p. 53
COD980717938	05	Institutional Controls	No	Remedies at the Arkansas Valley Smelter and Colorado Zinc-Lead Mill is incomplete. Need to still establish ICs to warn of potential hazards and to maintain the effectiveness of the remedy by limiting access to or use of the property.			FYR, 9/28/2007, p. 58
COD980717938	06	On-site disposal (excavation, capping, covering, reveg)	No	Given the remedy remains incomplete, it is not fully functioning as intended by the decision documents.	The absence of ICs to preclude disturbance of the remedy under current zoning and to identify properties where special precautions may be necessary has not impacted past or current protectiveness as the remedies were undisturbed at the time of this Five-Year Review. However, the potential exists for future impacts on remedy protectiveness if such an IC is not developed and implemented.		FYR, 9/28/2007, p. 66-67
COD980717938	06	Water treatment-other	No	Given the remedy remains incomplete, it is not fully functioning as intended by the decision documents.	The absence of ICs to preclude disturbance of the remedy under current zoning and to identify properties where special precautions may be necessary has not impacted past or current protectiveness as the remedies were undisturbed at the time of this Five-Year Review. However, the potential exists for future impacts on remedy protectiveness if such an IC is not developed and implemented.		FYR, 9/28/2007, p. 66-67
COD980717938	06	Institutional Controls	No	Given the remedy remains incomplete, it is not fully functioning as intended by the decision documents.	The absence of ICs to preclude disturbance of the remedy under current zoning and to identify properties where special precautions may be necessary has not impacted past or current protectiveness as the remedies were undisturbed at the time of this Five-Year Review. However, the potential exists for future impacts on remedy protectiveness if such an IC is not developed and implemented.		FYR, 9/28/2007, p. 66-67
COD980717938	06	Surface water diversion	No	Given the remedy remains incomplete, it is not fully functioning as intended by the decision documents.	Perfom remedial action of the mine pool. The absence of ICs to preclude disturbance of the remedy under current zoning and to identify properties where special precautions may be necessary has not impacted past or current protectiveness as the remedies were undisturbed at the time of this Five-Year Review. However, the		FYR, 9/28/2007, p. 66-67

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					potential exists for future impacts on remedy protectiveness if such an IC is not developed and implemented.		
COD980717938	07	On-site disposal (excavation, capping, covering, reveg)	Yes		Implement ICO District		FYR, 9/28/2007, p. 73-74
COD980717938	07	Surface water diversion	Yes		Implement ICO District		FYR, 9/28/2007, p. 73-74
COD980717938	07	Institutional Controls	Yes		Implement ICO District		FYR, 9/28/2007, p. 73-74
COD980717938	08	Surface water diversion	Yes				FYR, 9/28/2007, p. 81
COD980717938	08	On-site disposal (excavation, capping, covering, reveg)	No	The condition of FTS-2 suggests that the tailings are vulnerable to erosion and remain a source for metal loading to California Gulch. Recent surface water monitoring data (2003 through 2005) suggests that an unacceptable level of metal loading occurs in the vicinity of FTS-2 in the spring, during the period when the Arkansas River is most sensitive to metal loads.	The affected portion of the FTS-2 remedy requires repair or replacement in order to meet the intent of the decision documents. EPA recognizes that limited spatial data density precludes a definitive estimate of metal loading from FTS-2. In addition, some of the distressed areas (with ponded ARD) lie within the boundaries of OU5 where the remedy remains under construction.		FYR, 9/28/2007, p. 81
COD980717938	08	Institutional Controls	No	An ICO District was established to meet post-response action land use restriction requirements. However, the ICO District was repealed by Lake County in 2006. As a result, concerns remain regarding protectiveness of the remedy.	Development and implement the IC		FYR, 9/28/2007, p. 82
COD980717938	09	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR, 9/29/2001, p. 84; FYR, 9/28/2007, p. 89
COD980717938	09	Institutional Controls	Yes				FYR, 9/28/2007, p. 88
COD980717938	10	On-site disposal (excavation, capping, covering, reveg)	No	One new seep emanating from the toe of the embankment was identified during the Summer of 2006. This seep reportedly has been intercepted (as of September 2006) and the flow conveyed to the Yak Tunnel Water Treatment Plant. RAO's articulated in the ROD requiring, among other things, control of leaching and migration of metals from contaminated	Continued monitoring will be required for the potential for seeps from the toe of and down gradient from the impoundment. This issue will be addressed under either OU10 or OU12 as specified in the 1994 CD. Implement ICO District.		FYR, 9/29/2001, p. 92; FYR, 9/28/2007, p. 97

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				materials into the surface water, may not have been achieved to the degree originally intended. This is indicated by metal loading and concentration trends at a surface water monitoring station in Oregon Gulch for the period 1995 through 2005. The frequent appearance of contaminated seepage from the toe of the constructed embankment may be indicative of lower than expected performance of the cover system installed on the tailings.			
COD980717938	10	Other – Engineering/Containment	Yes		Implement ICO District.		FYR, 9/29/2001, p. 92; FYR, 9/28/2007, p. 97
COD980717938	11	On-site disposal (excavation, capping, covering, reveg)	No	The remedy for Operable Unit 11 (OU11) selected in the 2005 ROD has not been implemented. Therefore, this OU was not subjected to the Five-Year Review process.			FYR, 9/28/2007, p. 100
COD980717938	11	Institutional Controls	No	The remedy for Operable Unit 11 (OU11) selected in the 2005 ROD has not been implemented. Therefore, this OU was not subjected to the Five-Year Review process.			FYR, 9/28/2007, p. 100
COD980717938	12	Institutional Controls	No	The OU12 Remedial Investigation and Feasibility Study were underway at the time of this Five-Year Review with a ROD anticipated to be released in 2008.			FYR, 9/28/2007, p. 104
COD981551427							
COD981551427	01	Water treatment - Bioreactors (e.g., SRBs)	No FYR				
COD981551427	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
COD981551427	01	Institutional Controls	No FYR				
MT0001096353							
MT0001096353	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
MT0001096353	01	Institutional Controls	No FYR				
MT0001096353	02						
MT0001096353	03						
COD980717557							
COD980717557	01	Water treatment - Created Wetlands	No, partial	The pilot studies of man-made wetlands showed that in order to be effective shallow wetlands require a large land area, land which is not readily available in Idaho Springs near the Argo tunnel. Appears to be			FYR, 3/23/1994, p. 16; ESD, May

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				effective for the remaining four tunnels. Big Five Tunnel discharge will now be collected and sent to the ARGO WWTP.			2005, p. 1-2
COD980717557	02	Surface water diversion	Yes		Continue to perform periodic cleaning of the National and Gregory Incline pipelines to remove sediment buildup		FYR, 9/29/2004, p. 21
COD980717557	02	On-site disposal (excavation, capping, covering, reveg)	No	A Baseline Risk Assessment was completed for the Site and human health action levels were established for lead and arsenic in soil. The established action levels were 500 parts per million (ppm) for lead and 130 ppm for arsenic. Since the Big Five and Argo mine waste piles exhibited soil concentrations of lead and arsenic greater than the risk-based action levels, an Explanation of Significant Differences was issued to incorporate capping into the remedy at these two piles. However, due to concerns of the local State Historic Preservation Office and the property owner, the Argo waste pile was not capped. Access to the pile is controlled, and therefore human exposure is limited.	Further work will have to be conducted at the Argo tailings pile in order to make the OU #2 remedy consistent with OU #3. Operations and Maintenance (O&M) is required at several of the waste piles.		FYR, 3/26/1999, p.14; FYR, 9/29/2004, p. 21; FYR, 9/29/2009, p. 40
COD980717557	03	On-site disposal (excavation, capping, covering, reveg)	Yes		Complete remdial activities.		FYR, 3/26/1999, p.18; FYR, 9/29/2004, p. 27; FYR, 9/29/2009, p. 40
COD980717557	03	Institutional Controls	Yes		Evaluate the effectiveness of institutional controls where waste was left in place. Develop a database to consolidate the information.		FYR, 9/29/2004, p. 38
COD980717557	03	Water treatment-other	Yes		Complete remdial activities		FYR, 9/29/2004, p. 27; FYR, 9/29/2009, p. 40
COD980717557	03	Alternative drinking water	Yes				FYR, 9/29/2004, p. 26
COD980717557	03	Water treatment - Created Wetlands	No	After three years of operation and data collection, the agencies concluded that a number of factors prevented the system from efficiently removing dissolved zinc from the Burleigh discharge: (1) restricted biological activity during the winter, (2)	No Action Alternative as the selected remedial action alternative for the Burleigh Tunnel.		AMD, 6/5/2003, p. 7, 9

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				increased concentrations of dissolved oxygen during spring adversely affected the anaerobic conditions of the system, and (3) inconsistencies in the hydraulics of the wetlands created fluctuations in the residence time of the discharge in the wetland reducing zinc removal.			
COD980717557	04	Water treatment - Bioreactors (e.g., SRBs)	No	Awaiting construction of new pipeline system to WWTP.	National Tunnel discharge will now be collected and sent to a new WWTP. A new pipeline system will be built.		AMD, 4/29/2010, p. 3
COD980717557	04	Water treatment-other	No	The Gregory Incline, National Tunnel and Quartz Hill discharges remain the major sources of metals loading to the North Fork of Clear Creek. These three discharges have been identified for treatment per the OU4 ROD. The surge event protection evaluation as recommended by the RSE should be conducted. If it is determined that surge protection is warranted a ROD change documentation under OU4 would be necessary as this feature is not currently a ROD component	The collected water will now be sent to a newly constructed WWTP, not the privately owned plant. The private plant cannot or does not have the capacity to support mine dewatering and remediation activites. It would require 550 gpm capcity. The new WWTP will have 450 gmp capacity, and a new pipeline system will be built. Design and build WTP to treat discharges. Conduct investigations within the Argo Tunnel to identify location for construction of the bulkhead. Evaluate feasibility, design and construct bulkhead.		AMD, 4/29/2010, p. 3; FYR, 9/29/2009, p. 42
COD980717557	04	On-site disposal (excavation, capping, covering, reveg)	No	The Quartz Hill tailings pile has been identified for capping or other response action under OU4. This task will need to be completed to finalize OU4 tasks at the Site. North Fork of Clear Creek improvements CDOT to widen SH 119, remediate waste piles, reconstruct portions of the channel and stabilize the channel	Execute plan with casino developer(s) to address pile or agencies implement a remedy to cap pile. Continue to work with and monitor CDOT's progress on their SH 119/North Fork improvement project.		FYR, 9/29/2009, p. 42
COD980717557	04	Surface water diversion	Yes				FYR, 9/29/2009, p. 42
COD980717557	04	Institutional Controls	Yes				FYR, 9/29/2009, p. 42
UTD988075719							
UTD988075719	01	Off-site disposal	No FYR				
UTD988075719	01	Other – Engineering/Containment	No FYR				
UTD988075719	01	Institutional Controls	No FYR				
UTD988075719	02	Off-site disposal	No FYR				
UTD988075719	02	Institutional Controls	No FYR				
UTD988075719	03	Off-site disposal	No FYR				
COD980716955							

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COD980716955	01	Off-site disposal	Yes				FYR, 9/30/2003, p. 46
COD980716955	02	Off-site disposal	Yes				FYR, 9/12/1994, p. 8; FYR, 9/30/2003, p. 26; FYR, 9/30/2008, p. 21
COD980716955	02	Institutional Controls	Yes				FYR, 9/12/1994, p. 8; FYR, 9/30/2003, p. 26; FYR, 9/30/2008, p. 21
COD980716955	03	Off-site disposal	Yes				FYR, 9/12/1994, p. 16; FYR, 9/30/2003, p. 26; FYR, 9/30/2008, p. 32
COD980716955	03	Institutional Controls	Yes				FYR, 9/12/1994, p. 16; FYR, 9/30/2003, p. 26; FYR, 9/30/2008, p. 32
COD980716955	04	Off-site disposal	Yes		An application to the supplemental standards (40 CFR Part 192) is being prepared for the radiological contamination which remains on the Site. This contamination is located below the long-term average depth to groundwater.		FYR, 9/12/1994, p. 19; FYR, 9/30/2003, p. 29-30; FYR, 9/30/2008, p. 33
COD980716955	04	Institutional Controls	Yes				FYR, 9/12/1994, p. 19;

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							FYR, 9/30/2003, p. 29-30; FYR, 9/30/2008, p. 33
COD980716955	05						
COD980716955	06	Off-site disposal	Yes				FYR, 9/12/1994, p. 25; FYR, 9/30/2003, p. 34-35; FYR, 9/30/2008, p. 33
COD980716955	06	Institutional Controls	Yes				FYR, 9/12/1994, p. 25; FYR, 9/30/2003, p. 34-35; FYR, 9/30/2008, p. 33
COD980716955	07	Institutional Controls	Yes				FYR, 9/12/1994, p. 26; FYR, 9/30/2003, p. 37-38; FYR, 9/30/2008, p. 29
COD980716955	08	Off-site disposal	Yes				FYR, 9/30/2003, p. 40-41; FYR, 9/30/2008, p. 33
COD980716955	08	Solidification	Yes				FYR, 9/30/2003, p. 40-41; FYR, 9/30/2008, p. 33
COD980716955	08	Institutional Controls	Yes				FYR, 9/30/2003, p. 40-41;

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							FYR, 9/30/2008, p. 33
COD980716955	09	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR, 9/12/1994, p. 25; FYR, 9/30/2003, p. 34-35; FYR, 9/30/2008, p. 33
COD980716955	09	Institutional Controls	Yes				FYR, 9/12/1994, p. 25; FYR, 9/30/2003, p. 34-35; FYR, 9/30/2008, p. 33
COD980716955	10	Off-site disposal	Yes				FYR, 9/12/1994, p. 25; FYR, 9/30/2003, p. 34-35; FYR, 9/30/2008, p. 33
COD980716955	11	Off-site disposal	Yes				FYR, 9/12/1994, p. 25; FYR, 9/30/2003, p. 34-35; FYR, 9/30/2008, p. 33
COD980716955	11	Institutional Controls	Yes				FYR, 9/12/1994, p. 25; FYR, 9/30/2003, p. 34-35; FYR, 9/30/2008, p. 33
COD081961518							

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COD081961518	01	Water treatment-lime	Yes				FYR, 9/21/2000, p. 20; FYR, 9/27/2005, p. 11; FYR, 9/30/2008, p. 37
COD081961518	01	Surface water diversion	No	The Site does not comply with the standards and will not in the future without further reductions in zinc loading through additional response actions.	Water Quality Standards for the segments of the Eagle River associated with the Site have not been finalized. Thus far, the recovery of the Eagle River that has resulted from OU1 remedy implementation has only been measured qualitatively since appropriate performance standards for the Eagle River were not defined in the two CDs currently in place. The State and EPA will continue to pursue the establishment of appropriate surface water quality standards through the Colorado Water Quality Control Commission (WQCC). - STANDARDS WERE SET JUNE 2008		FYR, 9/21/2000, p. 20; FYR, 9/27/2005, p. 8; FYR, 9/30/2008, p. 7
COD081961518	01	On-site disposal (excavation, capping, covering, reveg)	Yes		Repair cover to reestablish surface drainage; repair the geomembrane cover that is in poor condition		FYR, 9/21/2000, p. 13, 15; FYR, 9/27/2005, p. 11; FYR, 9/30/2008, p. 11
COD081961518	01	Alternative drinking water	Yes				FYR, 9/27/2005, p. 7; FYR, 9/30/2008, p. 7
COD081961518	01	Institutional Controls	No	Institutional controls prohibiting new wells required under the OU1 ROD have not been implemented. Physical limits of OU1 and OU2 have not been defined. Therefore, the area over which OU-specific ICs apply is unclear.	Prepare an ESD or ROD Amendment identifying the need for ICs and the form the ICs will take. This may include environmental covenants (Colorado Environmental Covenant Law, C.R.S. §§ 25-15-317 to 25-15-327) for areas of the Site where the land owner is willing to enter into such agreements, County ordinances or other mechanism to maximize the likelihood that appropriate government entities control and/or oversee changes in land use. Define OU boundaries		FYR, 9/27/2005, p. 10; FYR, 9/30/2008, p. 9, 11

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COD081961518	02	Institutional Controls	No, partial	ICs were required under the OU2 ROD but were not formally implemented. Physical limits of OU1 and OU2 have not been defined. Therefore, the area over which OU-specific ICs apply is unclear.	Prepare an ESD or ROD Amendment identifying the need for ICs and the form the ICs will take. This may include environmental covenants (Colorado Environmental Covenant Law, C.R.S. §§ 25-15-317 to 25-15-327) for areas of the Site where the land owner is willing to enter into such agreements, County ordinances or other mechanism to maximize the likelihood that appropriate government entities control and/or oversee changes in land use Define OU boundaries		FYR, 9/27/2005, p. 10; FYR, 9/30/2008, p. 7, 9, 11
COD081961518	03						
COD081961518	04						
MTD006230346							
MTD006230346	01	Water treatment-other	No	The prescribed standards for surface water in Lower Lake have not been met.	Lower Lake water should be treated in the HDS facility until it reaches prescribed standards, as recommended by a 1993 ESD. If this approach is deemed invalid, an evaluation should be conducted to determine the most appropriate treatment method.		FYR 3/31/2006, p.4, 5
MTD006230346	01	Other – Treatment Technology	Not specified				FYR 3/31/2006, p.4, 5
MTD006230346	01	Other – Treatment Technology	Not specified				FYR 3/31/2006, p.4, 5
MTD006230346	02	Off-site disposal	No	EPA believes that the response actions being carried out for residential soils are addressing the immediate threats, but the remedy is not yet fully protective. Responses in marginal areas will continue as needed, thus enhancing protectiveness overall.	Continue response actions as needed.		FYR 9/27/99, p.28
MTD006230346	02	Off-site disposal	Not specified				FYR 9/27/99, p.28
MTD006230346	02	Institutional Controls	Not specified				FYR 9/27/99, p.28
UT0002240158							
UT0002240158	00	On-site disposal (excavation, capping, covering, reveg)	No, partial	Contruction is not fully complete, but seeing improvements; Fences are being vandalized.	Address erosion issues for all waste piles. In regard to the Gemini waste pile and its regrading, for the remedy to remain protective in the long-term, operation and maintenance activities should be	Mine waste piles were capped	FYR, 9/26/2008, p. 11, 35

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					implemented including the surveying of the retaining wall to ensure it has not shifted.		
UT0002240158	00	Institutional Controls	No	Not yet implemented	Filing of the unrecorded Envrinomental Covenants with the Juab County Recorder's office.	Should be implemented soon.	FYR, 9/26/2008, p. 11, 24
UT0002240158	01						
UT0002240158	02						
UT0002240158	03						
UT0002240158	04						
MT0012694970							
MT0012694970	01						
MT0012694970	02						
MT0012694970	03						
CO0001093392							
CO0001093392	00						
SDD987673985							
SDD987673985	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
SDD987673985	01	Institutional Controls	No FYR				
SDD987673985	01	Other – Engineering/Containment	No FYR				
SDD987673985	01	Water treatment-lime	No FYR				
SDD987673985	01	Monitoring (all media and as separate remedy)	No FYR				
SDD987673985	02	Water treatment-lime	No	Several remedy elements are not performing at optimum efficiency. These include the ability of the water treatment facility to operate at 250 gallons per minute when the influent stream consists exclusively of the highest sulfate waters present at the Site.			5yr, 4/10/2007, 2
SDD987673985	02	Impoundment	Yes				
UTD093120921							
UTD093120921	01	Institutional Controls	No FYR				
UTD093120921	01	Monitoring (all media and as separate remedy)	No FYR				
UT0002391472							
UT0002391472	01	Institutional Controls	No	The Town of Stockton's ordinance governing excavation and development within the Jacobs Smelter cleanup area is difficult to understand and enforce and does not accurately reflect the post cleanup status of OU1.	The Stockton Ordinance should be evaluated and rewritten to more accurately reflect post remedial conditions and to be more workable and easier to understand.		FYR, 9/30/2005, p. 6; FYR, 9/22/2010, p. 7
UT0002391472	01	Off-site disposal	Yes			The excavation and off Site disposal of the top 18 inches of contaminated soil performed during the Emergency Removal	FYR, 9/30/2005, p. 7; FYR,

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						and Remedial Action construction activities for OU1 have effectively eliminated the majority of the risk associated with the Jacobs Smelter. The risk associated with the contaminated soil remaining after excavation is effectively reduced by the 18 inches of clean fill and topsoil and the landscaping placed on each property.	9/22/2010, p. 7
UT0002391472	02						
UT0002391472	03						
UT0002391472	04						
UT0002391472	05						
UTD070926811							
UTD070926811	01						
UTD070926811	02						
UTD070926811	03						
UTD070926811	04						
UTD070926811	05						
UTD070926811	06						
UTD070926811	07						
UTD070926811	08	On-site disposal (excavation, capping, covering, reveg)	No FYR				
UTD070926811	09	No action	No FYR				
UTD070926811	10						
UTD070926811	11						
UTD070926811	12						
UTD070926811	13	On-site disposal (excavation, capping, covering, reveg)	No FYR				
UTD070926811	13	Surface water diversion	No FYR				
UTD070926811	13	Deconstruction/ decontamination of buildings	No FYR				
UTD070926811	13	Off-site disposal	No FYR				
UTD070926811	14	On-site disposal (excavation, capping, covering, reveg)	No FYR				
UTD070926811	14	Deconstruction/ decontamination of buildings	No FYR				
UTD070926811	15	On-site disposal (excavation, capping, covering, reveg)	No FYR				
UTD070926811	16						
UTD070926811	17						
UTD070926811	18	On-site disposal (excavation, capping, covering, reveg)	No FYR				

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UTD070926811	19	On-site disposal (excavation, capping, covering, reveg)	No FYR				
UTD070926811	19	Other – Engineering/Containment	No FYR				
UTD070926811	20	On-site disposal (excavation, capping, covering, reveg)	No FYR				
UTD070926811	21						
UTD070926811	22	On-site disposal (excavation, capping, covering, reveg)	No FYR				
UTD070926811	22	Surface water diversion	No FYR				
UTD070926811	23	Water treatment - Bioreactors (e.g., SRBs)	No FYR				
UTD000826404							
UTD000826404	01	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR 06/01/2004, pp. 28
UTD000826404	01	Institutional Controls	yes				FYR 06/01/2004, pp. 28
UTD000826404	02	Water treatment-lime	No FYR	No FYR completed at this site.	Treated acid waters to be kept by Kennecott for use in milling processes.		ESD 6/23/2003, p. 3
UTD000826404	02	Water treatment-other	No FYR	No FYR completed at this site.			
UTD000826404	02	Monitored natural attenuation/recovery	No FYR	No FYR completed at this site.			
UTD000826404	02	Water treatment-other	No FYR	No FYR completed at this site.			
UTD000826404	02	Alternative drinking water	No FYR	No FYR completed at this site.			
UTD000826404	02	Institutional Controls	No FYR	No FYR completed at this site.			
UTD000826404	03	Institutional Controls	No, partial	See remedy optomization recommendations.	1. Identify performance standards for residual metals concentrations in soil. If residual contamination meets performance standards, the area will be identified as UU/UE. If residual contamination exceeds performance standards, institutional controls must be implemented. 2. Develop ICs program to control future land use changes. 3. Perform a ARARs analysis.		FYR - 9/30/2009, page 39
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	No, partial	See remedy optomization recommendations.	1. Ensure compliance with DWQ permits for the waste rock dumps, during subsequent FYR investigations. 2. Coordinate with the City of Herriman to ascertain if maps, of the residential properties with elevated COCs exist below current surface grade, are held by the City Planning & Zoning Department. 3. Assure that pasture lot and “extended		FYR - 9/30/2009, page 53

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					backyard" redevelopment falls within the scope of oversight by the City of Herriman under the City's ICs program. 4. Provide the City of Herriman with comments concerning information and procedural gaps observed by UDEQ in the proposed revised ICs program. 5. Initiate negotiations with the Salt Lake County Engineering and Planning Divisions to assist with the development of appropriate ICs program. 6. Perform a limited screening (via collected soil samples and/or X-ray Fluorescence soil screening) to ascertain the lead and arsenic concentration in surface and near surface soils at selective properties.		
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	No, partial	See remedy optomization recommendations.	1. Ensure compliance with DWQ permits for the waste rock dumps, during subsequent FYR investigations. 2. Coordinate with the City of Herriman to ascertain if maps, of the residential properties with elevated COCs exist below current surface grade, are held by the City Planning & Zoning Department. 3. Assure that pasture lot and "extended backyard" redevelopment falls within the scope of oversight by the City of Herriman under the City's ICs program. 4. Provide the City of Herriman with comments concerning information and procedural gaps observed by UDEQ in the proposed revised ICs program. 5. Initiate negotiations with the Salt Lake County Engineering and Planning Divisions to assist with the development of appropriate ICs program. 6. Perform a limited screening (via collected soil samples and/or X-ray Fluorescence soil screening) to ascertain the lead and arsenic concentration in surface and near surface soils at selective properties.		FYR - 9/30/2009, page 53
UTD000826404	04	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR 06/01/2004, pp. 32
UTD000826404	04	Other – Engineering/Containment	Yes				FYR 06/01/2004, pp. 32

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UTD000826404	05	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR 06/01/2004, pp. 37
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	Yes		1. Identify performance standards for residual metals concentrations in soil. If residual contamination meets performance standards, the area will be identified as UU/UE. If residual contamination exceeds performance standards, institutional controls must be implemented. 2. Develop ICs program to control future land use changes. 3. Perform a ARARs analysis.		FYR - 9/30/2009, page 41
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)	Yes		1. Identify performance standards for residual metals concentrations in soil. If residual contamination meets performance standards, the area will be identified as UU/UE. If residual contamination exceeds performance standards, institutional controls must be implemented. 2. Develop ICs program to control future land use changes. 3. Perform a ARARs analysis.		FYR - 9/30/2009, page 41
UTD000826404	06	Surface water diversion	Yes		1. Identify performance standards for residual metals concentrations in soil. If residual contamination meets performance standards, the area will be identified as UU/UE. If residual contamination exceeds performance standards, institutional controls must be implemented. 2. Develop ICs program to control future land use changes. 3. Perform a ARARs analysis.		FYR - 9/30/2009, page 41
UTD000826404	06	Water treatment - Created Wetlands	Yes		1. Identify performance standards for residual metals concentrations in soil. If residual contamination meets performance standards, the area will be identified as UU/UE. If residual contamination exceeds performance standards, institutional controls must be implemented. 2. Develop ICs program to control future land use changes. 3. Perform a ARARs analysis.		FYR - 9/30/2009, page 41
UTD000826404	06	Soil Amendments	Yes		1. Identify performance standards for residual metals concentrations in soil. If residual contamination meets performance standards, the area will be identified as UU/UE. If residual contamination exceeds performance standards, institutional controls		FYR - 9/30/2009, page 41

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					must be implemented. 2. Develop ICs program to control future land use changes. 3. Perform a ARARs analysis.		
UTD000826404	06	Sediment dredging/ disposal	Yes		1. Identify performance standards for residual metals concentrations in soil. If residual contamination meets performance standards, the area will be identified as UU/UE. If residual contamination exceeds performance standards, institutional controls must be implemented. 2. Develop ICs program to control future land use changes. 3. Perform a ARARs analysis.		FYR - 9/30/2009, page 41
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR - 9/30/2009, page vi
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR - 9/30/2009, page vi
UTD000826404	08						
UTD000826404	09						
UTD000826404	10	Institutional Controls	Yes				FYR 06/01/2004, pp. 39
UTD000826404	11	Institutional Controls	Yes		2005 EPA evalution conducted between 2001 and 2010 FYRs refers to forthcoming ESD to address 3 historic facilities that were not buried.		FYR 06/01/2004, pp. 42; FYR 9/29/2010, pp. 31-32
UTD000826404	12						
UTD000826404	13						
UTD000826404	14						
UTD000826404	15						
UTD000826404	16						
UTD000826404	17	Institutional Controls	Yes		Land use changed to include residential (lead 700 ppm and arsenic 100 pm ALs) upon removal actions in 2006-2007; no further FYR deemed necessary.		FYR 06/01/2004, pp. 42-43; FYR 9/30/2009, p. vi
UTD000826404	18						
UTD000826404	19						
UTD000826404	20						
UTD000826404	21						

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
UTD000826404	22						
UTD000826404	23						
UTD000826404	24						
UTD000826404	24	Deconstruction/ decontamination of buildings	No FYR				
UTD000826404	24	On-site disposal (excavation, capping, covering, reveg)	No FYR				
MT0009083840							
MT0009083840	01	On-site disposal (excavation, capping, covering, reveg)	No FYR				
MT0009083840	01	Off-site disposal	No FYR				
MT0009083840	01	Institutional Controls	No FYR				
MT0009083840	02	On-site disposal (excavation, capping, covering, reveg)	No FYR				
MT0009083840	02	Off-site disposal	No FYR				
MT0009083840	02	Institutional Controls	No FYR				
MT0009083840	03						
MT0009083840	04						
MT0009083840	05						
MT0009083840	06						
MT0009083840	07						
MT0009083840	08						
COD042167858							
COD042167858	01	Impoundment	Yes				ROD, 1/3/2002, p. 2
COD042167858	01	Permeable Reactive Barrier	No	PRTW was originally intended to remove contaminants in groundwater through a chemical process. Therefore, the PRTW is not operating as originally intended	As a result of fouling of the zero valent iron core of the PRTW, the PRTW was retrofitted to allow for recovery of untreated groundwater impounded behind the PRTW.		FYR, 9/2007, p. 15
COD042167858	02	Monitoring (all media and as separate remedy)	Yes				FYR, 9/2007, p. 12
UTD081834277							
UTD081834277	01	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR, 10/2003, p. 6-8
UTD081834277	01	Monitoring (all media and as separate remedy)	No	Additional monitoring well was not installed as part of the RA and the semi-annual groundwater monitoring of this well and other wells stipulated in the ROD was not conducted	Incorporate OU2 groundwater RAO's on OU1.		FYR, 10/2003, p. 6-8

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
UTD081834277	01	Institutional Controls	No	IC's not implemented	The potential for residential land use - and associated questions of protectiveness - need to be considered for much of OU1. Although EPA would not perform additional remediation to allow for residential uses, appropriate cleanup levels and remediation requirements would need to be developed. The City of Midvale has passed a zoning ordinance that will control excavation of contaminated soils, however there is currently no enforceable document or agreement in place to support the need for the excavation ordinance to apply to the OU1 remedy.		FYR, 10/2003, p. 7-2
UTD081834277	02	Off-site disposal	Yes			Total Remedy: $34,925,100	FYR, 12/2008, p. 24
UTD081834277	02	Other – Engineering/Containment	Yes				FYR, 12/2008, p. 24
UTD081834277	02	Institutional Controls	No, partial	The UDWR website does not display the correct boundaries of the Sharon Steel Restricted Area. Portions of OU1 and OU2 are incorrectly excluded from the Restricted Area			FYR, 12/2008, p. 24/25
UTD081834277	02	Other – Engineering/Containment	No	remedy construction was initiated in November 2008 and is expected to be completed in 2009. In addition, groundwater sampling conducted in 2004 revealed that contaminant concentrations were below performance standards (ACLs).			FYR, 12/2008, p. 25
UTD081834277	02	Monitoring (all media and as separate remedy)	No	remedy construction was initiated in November 2008 and is expected to be completed in 2009. In addition, groundwater sampling conducted in 2004 revealed that contaminant concentrations were below performance standards (ACLs).			FYR, 12/2008, p. 25
MTD980717565							
MTD980717565	01	Alternative drinking water	No FYR				
MTD980717565	02	Sediment dredging/ disposal	No FYR	No FYR completed at this site.			
MTD980717565	02	On-site disposal (excavation, capping, covering, reveg)	No FYR	No FYR completed at this site.			
MTD980717565	03						
UT3890090035							
UT3890090035	01	On-site disposal (excavation, capping, covering, reveg)	Yes			The remedies for OUs I and II are protective of human health and the environment. The remedy	FYR 6/2007. p. 7

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
						is functioning as intended, exposure assumptions, clean-up levels, and remedial action objectives remain valid, and no new information or changing site conditions compromise the protectiveness of the remedy.	
UT3890090035	02	On-site disposal (excavation, capping, covering, reveg)	Yes			The remedies for OUs I and II are protective of human health and the environment. The remedy is functioning as intended, exposure assumptions, clean-up levels, and remedial action objectives remain valid, and no new information or changing site conditions compromise the protectiveness of the remedy.	FYR 6/2007. p. 7
UT3890090035	02	Institutional Controls	Yes			The remedies for OUs I and II are protective of human health and the environment. The remedy is functioning as intended, exposure assumptions, clean-up levels, and remedial action objectives remain valid, and no new information or changing site conditions compromise the protectiveness of the remedy.	FYR 6/2007. p. 7
UT3890090035	03	Monitoring (all media and as separate remedy)	No, partial	The selected remedy is expected to achieve site remediation goals by the year 2045 through natural hydrological and geochemical processes identified in the OU III alluvial ground water system.			ROD Interim OU3, 9/2004, p. 12 (pdf)
UT3890090035	03	Permeable Reactive Barrier	No, partial	The selected remedy is expected to achieve site remediation goals by the year 2045 through natural hydrological and geochemical processes identified in the OU III alluvial ground water system.	PRB selected as part of DOE-LM actions. ROD calls for phase-out of PRB.	ROD Interim OU3, 9/2004, p. 11 (pdf)	ROD Interim OU3, 9/2004, p. 12 (pdf)
UT3890090035	03	Institutional Controls	No, partial	The selected remedy is expected to achieve site remediation goals by the year 2045 through natural hydrological and geochemical processes identified in the OU III alluvial ground water system.			ROD Interim OU3, 9/2004, p. 12 (pdf)
UTD980667208							

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
UTD980667208	01	Off-site disposal	Yes		1. Review and amend the existing Radiological and Engineering Assessments and remedial designs for any property where new evidence suggests that previous remedial work may have left contamination in place at levels exceeding the cleanup standards. 2. Add the Resource Conservation and Recovery Act and the Utah Solid and Hazardous Waste Act, together with appropriate regulations implementing them, to the ARARs for the site. These additions reflect the adoption of a double-liner design for the repository at the Monticello Mill Tailings Site and the subsequent decision to allow disposal of nonradiological wastes in the repository. 4. Finish developing the cleanup standards for non-radiological contaminants as a priority task so that the cleanup work is not delayed. 4. Finalize decisions as to whether supplemental standards will be used and where they will be used.		FYR OU1, 1997, p. 7
UTD980667208	01	On-site disposal (excavation, capping, covering, reveg)	Yes				FRY OU1, 2002, p. 22
UTD980667208	01	Deconstruction/ decontamination of buildings	Yes				FRY OU1, 2002, p. 22
UTD980667208	02						
UTD980667208	03	Monitored natural attenuation/recovery	No FYR			It is expected that the remedial action objectives for OU III surface water and ground water will	IRAR, OU3, 2004, p. 20
UTD980667208	03	Institutional Controls	No FYR			be achieved by year 2045.	IRAR, OU3, 2004, p. 20
UTD980667208	03	Permeable Reactive Barrier	No FYR				
UTD980667208	04						
UTD980667208	05						
UTD980667208	06						
UTD980667208	07						
UTD980667208	08						
MTD021997689							

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
MTD021997689	01	Monitored natural attenuation/recovery	Not specified		Although not required under the decision documents, EPA agreed to monitor selected wells on an annual basis for a period of 30-years	The removal actions as implemented are currently protective of human health and the environment. Protectiveness is achieved through the meeting of ground and surface water performance standards at the POCs. Additional protection is achieved through ground water and land use restrictions within the area that contains treated soil materials	FRY, 2008, p. 7, 11
MTD021997689	01	Soil Amendments	Not specified		Develop Post-Removal Site Control plans. These plans will be required before Site deletion and will define the location of any wells to be monitored as well as sampling frequency and duration. The plans should also include a provision for evaluating the protectiveness of the removal actions as land use changes.		FYR 2008, p. 28
MTD021997689	01	Off-site disposal	Not specified		Develop Post-Removal Site Control plans. These plans will be required before Site deletion and will define the location of any wells to be monitored as well as sampling frequency and duration. The plans should also include a provision for evaluating the protectiveness of the removal actions as land use changes.		FYR 2008, p. 28
MTD021997689	01	Institutional Controls	Not specified		Develop Post-Removal Site Control plans. These plans will be required before Site deletion and will define the location of any wells to be monitored as well as sampling frequency and duration. The plans should also include a provision for evaluating the protectiveness of the removal actions as land use changes.		FYR 2008, p. 28
CON000802630							
CON000802630	01						
CON000802630	02						
UTD980952840							
UTD980952840	01	Impoundment	Not specified				
UTD980952840	01	Other – Engineering/Containment	Not specified				
UTD980952840	01	Institutional Controls	Not specified				
UTD980952840	02						
UTD980951388							

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
UTD980951388	01	On-site disposal (excavation, capping, covering, reveg)	Yes		both remedies for OU1 and OU2 are functioning as intended by the RODs and subsequent ESDs. The OU1 and OU2 remedies were constructed in accordance with the requirements of the RODs and ESDs. Currently the site is functioning as intended by the decision documents and remains protective of human health and the environment.		FYR, 9/2004, p. 5
UTD980951388	01	Soil Amendments	Yes		both remedies for OU1 and OU2 are functioning as intended by the RODs and subsequent ESDs. The OU1 and OU2 remedies were constructed in accordance with the requirements of the RODs and ESDs. Currently the site is functioning as intended by the decision documents and remains protective of human health and the environment.		FYR, 9/2004, p. 5
UTD980951388	01	Sediment dredging/ disposal	Yes		both remedies for OU1 and OU2 are functioning as intended by the RODs and subsequent ESDs. The OU1 and OU2 remedies were constructed in accordance with the requirements of the RODs and ESDs. Currently the site is functioning as intended by the decision documents and remains protective of human health and the environment.		FYR, 9/2004, p. 5
UTD980951388	01	Institutional Controls	Yes		both remedies for OU1 and OU2 are functioning as intended by the RODs and subsequent ESDs. The OU1 and OU2 remedies were constructed in accordance with the requirements of the RODs and ESDs. Currently the site is functioning as intended by the decision documents and remains protective of human health and the environment.		FYR, 9/2004, p. 5
UTD980951388	01	Monitoring (all media and as separate remedy)	Yes		both remedies for OU1 and OU2 are functioning as intended by the RODs and subsequent ESDs. The OU1 and OU2 remedies were constructed in		FYR, 9/2004, p. 5

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
					accordance with the requirements of the RODs and ESDs. Currently the site is functioning as intended by the decision documents and remains protective of human health and the environment.		
UTD980951388	02	On-site disposal (excavation, capping, covering, reveg)	Yes		both remedies for OU1 and OU2 are functioning as intended by the RODs and subsequent ESDs. The OU1 and OU2 remedies were constructed in accordance with the requirements of the RODs and ESDs. Currently the site is functioning as intended by the decision documents and remains protective of human health and the environment.		FYR, 9/2004, p. 5
UTD980951388	02	Institutional Controls	Yes		both remedies for OU1 and OU2 are functioning as intended by the RODs and subsequent ESDs. The OU1 and OU2 remedies were constructed in accordance with the requirements of the RODs and ESDs. Currently the site is functioning as intended by the decision documents and remains protective of human health and the environment.		FYR, 9/2004, p. 5
MTD980502777							
MTD980502777	01	On-site disposal (excavation, capping, covering, reveg)	No	To be protective, the remedy must be more completely implemented, data gaps must be filled, enforceable ICs put in place, and the monitoring and maintenance plan updated and implemented.			FYR Vol. 2, 6/28/2011, p. 10-1
MTD980502777	01	Soil Amendments	No	To be protective, the remedy must be more completely implemented, data gaps must be filled, enforceable ICs put in place, and the monitoring and maintenance plan updated and implemented.			FYR Vol. 2, 6/28/2011, p. 10-1
MTD980502777	01	Sediment dredging/ disposal	No	To be protective, the remedy must be more completely implemented, data gaps must be filled, enforceable ICs put in place, and the monitoring and maintenance plan updated and implemented.			FYR Vol. 2, 6/28/2011, p. 10-1
MTD980502777	01	Institutional Controls	No	To be protective, the remedy must be more completely implemented, data gaps must be filled, enforceable ICs put in place, and the monitoring and maintenance plan updated and implemented.			FYR Vol. 2, 6/28/2011, p. 10-1

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
MTD980502777	02						
MTD980502777	03	Water treatment-lime	No, partial	The remedy at BMFOU is expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could cause unacceptable risk are being controlled.	1 Conduct an additional performance test to investigate solutions to exceedance of the final pH standard prior to the next five-year review. 2 Conduct an additional performance test to investigate solutions to gypsum supersaturation issues prior to the next five-year review. 3 Conduct an additional performance test to investigate solutions to ensure reliable cadmium compliance prior to the next five year review. 4 Conduct an additional performance test to treat Berkeley Pit water prior to the next five year review. 5 Conduct an additional performance test to investigate the effect of scale inhibitors on metals removal prior to the next five-year review. 6 Perform WET testing on representative effluent prior to the next five-year review. 7 Determine a more practical approach to analyzing radionuclides to determine compliance with the beta-photon emitter discharge criteria.		FYR Vol. 3, 6/28/2011, 10-1
MTD980502777	03	Institutional Controls	No, partial	the remedy at BMFOU is expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could cause unacceptable risk are being controlled.	1 Conduct an additional performance test to investigate solutions to exceedance of the final pH standard prior to the next five-year review. 2 Conduct an additional performance test to investigate solutions to gypsum supersaturation issues prior to the next five-year review. 3 Conduct an additional performance test to investigate solutions to ensure reliable cadmium compliance prior to the next five year review. 4 Conduct an additional performance test to treat Berkeley Pit water prior to the next five year review. 5 Conduct an additional performance test to investigate the effect of scale inhibitors on metals removal prior to the next five-year review. 6 Perform WET testing on representative effluent prior to the next five-year review. 7 Determine a more practical approach to analyzing radionuclides to determine		fire Vol. 3, 6/28/2011, 10-1

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
					compliance with the beta-photon emitter discharge criteria.		
MTD980502777	04	Water treatment-lime	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).		2011 FYR p15, 18, 19
MTD980502777	04	On-site disposal (excavation, capping, covering, reveg)	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).		2011 FYR p15, 18, 19
MTD980502777	04	Other – Engineering/Containment	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).		2011 FYR p15, 18, 19
MTD980502777	04	Surface water diversion	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).		2011 FYR p15, 18, 19
MTD980502777	04	Institutional Controls	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).		2011 FYR p15, 18, 19
MTD980502777	05						
MTD980502777	06						

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
MTD980502777	07	On-site disposal (excavation, capping, covering, reveg)	No, partial	Rebounds of arsenic concentrations below the repository are greater than expected in groundwater. Increasing arsenic concentrations in shallow well RH-44 adjacent to Silver Bow Creek may indicate groundwater impacts to surface water. This is a data gap.			2011 FYR p15-16, 19
MTD980502777	07	Water treatment-other	No, partial	construction activities in the adjacent Streamside Tailings OU could impact groundwater conditions at the Rocker OU (2005 FYR p79)		construction activities and the rebound in arsenic concentrations prompted the development of a supplemental treatment plan to be implemented prior to and contemporaneous with SST OU construction activities adjacent to the Rocker OU. Injection of reagents by ½ -inch PVC pipe, with the bottom four feet slotted, inserted into each delivery port to distribute reagent amendments throughout the water column. Alternating deliveries of potassium permanganate and ferrous sulfate, at approximately seven day intervals, until four deliveries of each reagent had been performed. (late September through early November 2001; August to December 2002) [2005 FYR] (1) Evaluate whether additional treatment or a TI waiver is needed. Review the TI waiver petition submitted in 2007. (2) Follow up to ensure Town Pump continues to use the community water supply and not groundwater (3) Evaluate the current or potential contribution, if any, of arsenic contamination to Silver Bow Creek from shallow groundwater. (4) Evaluate the protectiveness and continuation of the ¼-mile radius well ban. [2011 FYR]	2005 FYR p5-31, 5-32; 2011 FYR p15-16
MTD980502777	07	Solidification	Yes				2011 FYR p19
MTD980502777	07	Off-site disposal	Yes				2011 FYR p19
MTD980502777	07	Alternative drinking water	No, partial	Rebounds of arsenic concentrations below the repository are greater than expected in groundwater. The Town Pump well exceeds the recently-promulgated 10 micrograms per liter (μg/L) drinking water standard for arsenic. While the facility has switched to the community alternative water supply, there is no requirement for the facility to stay on the alternative water supply.		Follow up to ensure Town Pump continues to use the community water supply and not groundwater	2011 FYR p15-16
MTD980502777	07	Monitored natural attenuation/recovery	Yes				2011 FYR p19

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
MTD980502777	07	Institutional Controls	Yes			Evaluate the protectiveness and continuation of the ¼-mile radius well ban.	2011 FYR p15-16
MTD980502777	08						
MTD980502777	09						
MTD980502777	10						
MTD980502777	11						
MTD980502777	12	On-site disposal (excavation, capping, covering, reveg)	No, partial	Meeting arsenic standards for surface water will require an additional treatment step (beyond lime addition and settling) because the ponds are operating at their maximum efficiency and capacity. The cost-benefit of additional treatment to meet lower arsenic standards could be examined, keeping in mind that the upstream SST and BPS OU remedial actions will decrease influent loading, improving treatment performance, and that significant additional arsenic loads are discharged by the Mill-Willow Bypass. [2005 FYR] Arsenic standard seasonally exceeded in effluent. [2011 FYR] The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).	RAOs not provided in ROD or FYR. References cited are "remediation goals" and it is unclear which remediation goal goes with which remedy.	2005 FYR p8-1; 2011 FYR p15, 18, 19
MTD980502777	12	Surface water diversion	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).	RAOs not provided in ROD or FYR. References cited are "remediation goals" and it is unclear which remediation goal goes with which remedy.	2011 FYR p15, 18, 19
MTD980502777	12	Other – Engineering/Containment	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).	RAOs not provided in ROD or FYR. References cited are "remediation goals" and it is unclear which remediation goal goes with which remedy.	2011 FYR p15, 18, 19
MTD980502777	12	Water treatment-lime	No, partial	Meeting arsenic standards for surface water will require an additional treatment step	2011 FYR action: Complete arsenic treatment optimization studies, and then	RAOs not provided in ROD or FYR. References cited are "remediation goals"	2005 FYR p8-1; 2011

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
				(beyond lime addition and settling) because the ponds are operating at their maximum efficiency and capacity. The cost-benefit of additional treatment to meet lower arsenic standards could be examined, keeping in mind that the upstream SST and BPS OU remedial actions will decrease influent loading, improving treatment performance, and that significant additional arsenic loads are discharged by the Mill-Willow Bypass [2005 FYR] Arsenic standard seasonally exceeded in effluent. [2011 FYR] The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).	and it is unclear which remediation goal goes with which remedy.	FYR p15, 18, 19
MTD980502777	12	Impoundment	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).	RAOs not provided in ROD or FYR. References cited are "remediation goals" and it is unclear which remediation goal goes with which remedy.	2011 FYR p15, 18, 19
MTD980502777	12	Monitoring (all media and as separate remedy)	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	Continued monitoring of trends in tissue metal concentrations should be performed to determine if risks are significant to fish or wildlife inhabiting the WSP. [2005 FYR] New exposure pathways for wildlife/aquatic life may now be present. These have not yet been evaluated [2011 FYR] 2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).	RAOs not provided in ROD or FYR. References cited are "remediation goals" and it is unclear which remediation goal goes with which remedy.	2005 FYR p8-1; 2011 FYR p15, 18, 19
MTD980502777	12	Institutional Controls	No, partial	The remedy at OUs 04 and 12 is not protective because aquatic life criteria are not met in the Pond discharge. In order to ensure protectiveness, remedy implementation must progress at other OUs	2011 FYR action: Complete arsenic treatment optimization studies, and then determine if meeting Remedial Action Objectives (RAOs) is feasible. Evaluate contaminant pathways. Begin forward	RAOs not provided in ROD or FYR. References cited are "remediation goals" and it is unclear which remediation goal goes with which remedy.	2011 FYR p15, 18, 19

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
				upstream. Further, it is unknown if additional human or wildlife exposures are occurring within these OUs. [FYR 2011 p19]	planning for the final ROD (including data collection efforts, updated risk assessments, and feasibility studies).		
MTD980502777	13						
COD983769738							
COD983769738	01	On-site disposal (excavation, capping, covering, reveg)	Yes				
COD983769738	01	Institutional Controls	Yes				
COD983769738	01	Monitored natural attenuation/recovery	Yes				
COD983769738	02	Institutional Controls	Yes				
COD983769738	02	Monitored natural attenuation/recovery	Yes				
COD983769738	02	Off-site disposal	Yes				
COD983769738	03	Alternative drinking water	No FYR				
COD980806277							
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR, 6/2007, p. 26
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR, 6/2007, p. 26
COD980806277	01	Monitoring (all media and as separate remedy)	Yes				FYR, 6/2007, p. 26
COD980806277	01	Alternative drinking water	Yes				FYR, 6/2007, p. 26
COD980806277	01	Institutional Controls	Yes				FYR, 6/2007, p. 26
COD980806277	02	Surface water diversion	Yes				FYR, 6/2007, p. 26
COD980806277	02	Other – Engineering/Containment	Yes				FYR, 6/2007, p. 26
CO0002378230							
CO0002378230	00						
COD983778432							
COD983778432	00	Water treatment-other	No	The adits will require rehabilitation and regular maintenance for continued safe access. This work is planned to be performed this summer and in the future, as needed.	Improvements over the past five years (2005 to 2010) to the existing plant infrastructure and process has resulted in an increase of the plant capacity from 1,000 to 1,400 gpm. An additional turnout (A3-1)	This 2005 review has found that the interim remedies being implemented at the Summitville Mine Superfund Site may not be completely protective of the environment. This will be evaluated in the	5yr 2000, p. 19-23 5yr 2010, p. 47-51

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
				Although water quality in the Alamosa River downstream of the Summitville Mine has significantly improved since the implementation of emergency response and interim remedial actions, aquatic life in the Alamosa River is not currently protected. Existing WTP facilities originally constructed as temporary structures. Upgrades are required to meet OSHA standards, upgrade the infrastructure and improve process Existing WTP design capacity on 1,000 gpm is inadequate.	was added to the North Waste Dump ditch system in 2008, although the ability to turnout water from this structure has not been exercised to date. This issue is ongoing. The construction of the new WTP with a capacity of 1,600 gpm and the raise of the SDI spillway which will increase its capacity by approximately 10 million gallons are intended to alleviate the site water balance issue.	Site-Wide remedial Investigation/Feasibility Study. Any further remedial action necessary to protect the environment will be included in the Site-Wide proposed plan and ROD. The 2010 review defers protectiveness because more information is needed to make a determination.	
COD983778432	00	Other – Engineering/Containment	No	Although water quality in the Alamosa River downstream of the Summitville Mine has significantly improved since the implementation of emergency response and interim remedial actions, aquatic life in the Alamosa River is not currently protected. Seepage from the SDI provides a large non-point metals load to Wightman Fork.	This seepage was originally intended to be captured and pumped back to the SDI as part of the 2008-2010 Wightman Fork Diversion/SDI Spillway Improvement project. However, design investigations discovered that bedrock conditions were not were as assumed based on BOR documents, and that the cost to design and construct the system would exceed the budgeted amount. Additional funding is being sought to address this source of non-point metals loading.	This 2005 review has found that the interim remedies being implemented at the Summitville Mine Superfund Site may not be completely protective of the environment. This will be evaluated in the Site-Wide remedial Investigation/Feasibility Study. Any further remedial action necessary to protect the environment will be included in the Site-Wide proposed plan and ROD. The 2010 review defers protectiveness because more information is needed to make a determination.	5yr 2000, p. 19-23 5yr 2010, p. 47-51
COD983778432	01	Water treatment-other	No	Although water quality in the Alamosa River downstream of the Summitville Mine has significantly improved since the implementation of emergency response and interim remedial actions, aquatic life in the Alamosa River is not currently protected.	Annual monitoring of the inclinometers on the downstream HLP embankment (Dike No. 1) and observations of the downstream face the Dike No. 1 embankment indicates the continued stability of the structure. Water quality samples collected in 2009 from wells and seeps downgradient of the HLP did not detect anomalous levels of cyanide related compounds. Within the HLP, the water level and pH have remained relatively constant over the past five-years.	This 2005 review has found that the interim remedies being implemented at the Summitville Mine Superfund Site may not be completely protective of the environment. This will be evaluated in the Site-Wide remedial Investigation/Feasibility Study. Any further remedial action necessary to protect the environment will be included in the Site-Wide proposed plan and ROD. The 2010 review states that the remedy is protective of human health and the environment.	5yr 2000, p. 19-23 5yr 2010, p. 47-51
COD983778432	01	Other – Engineering/Containment	No	Although water quality in the Alamosa River downstream of the Summitville Mine has significantly improved since the implementation of emergency response and interim remedial actions, aquatic life in the Alamosa River is not currently protected.	Annual monitoring of the inclinometers on the downstream HLP embankment (Dike No. 1) and observations of the downstream face the Dike No. 1 embankment indicates the continued stability of the structure. Water quality samples collected in 2009 from wells and seeps downgradient of the HLP did not detect anomalous levels of cyanide related compounds. Within the	This 2005 review has found that the interim remedies being implemented at the Summitville Mine Superfund Site may not be completely protective of the environment. This will be evaluated in the Site-Wide remedial Investigation/Feasibility Study. Any further remedial action necessary to protect the environment will be included in the Site-Wide proposed plan and ROD.	5yr 2000, p. 19-23 5yr 2010, p. 47-51

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
					HLP, the water level and pH have remained relatively constant over the past five-years.	The 2010 review states that the remedy is protective of human health and the environment.	
COD983778432	01	Water treatment - Bioreactors (e.g., SRBs)	No	Although water quality in the Alamosa River downstream of the Summitville Mine has significantly improved since the implementation of emergency response and interim remedial actions, aquatic life in the Alamosa River is not currently protected.	Annual monitoring of the inclinometers on the downstream HLP embankment (Dike No. 1) and observations of the downstream face the Dike No. 1 embankment indicates the continued stability of the structure. Water quality samples collected in 2009 from wells and seeps downgradient of the HLP did not detect anomalous levels of cyanide related compounds. Within the HLP, the water level and pH have remained relatively constant over the past five-years.	This 2005 review has found that the interim remedies being implemented at the Summitville Mine Superfund Site may not be completely protective of the environment. This will be evaluated in the Site-Wide remedial Investigation/Feasibility Study. Any further remedial action necessary to protect the environment will be included in the Site-Wide proposed plan and ROD. The 2010 review states that the remedy is protective of human health and the environment.	5yr 2000, p. 19-23 5yr 2010, p. 47-51
COD983778432	01	Monitoring (all media and as separate remedy)	No	It appears that the water within the Heap Leach Pad may be in contact with the local groundwater table. If this is true, the water within the Heap Leach Pad is likely to chemically evolve. Although water quality in the Alamosa River downstream of the Summitville Mine has significantly improved since the implementation of emergency response and interim remedial actions, aquatic life in the Alamosa River is not currently protected.	Annual monitoring of the inclinometers on the downstream HLP embankment (Dike No. 1) and observations of the downstream face the Dike No. 1 embankment indicates the continued stability of the structure. Water quality samples collected in 2009 from wells and seeps downgradient of the HLP did not detect anomalous levels of cyanide related compounds. Within the HLP, the water level and pH have remained relatively constant over the past five-years.	This 2005 review has found that the interim remedies being implemented at the Summitville Mine Superfund Site may not be completely protective of the environment. This will be evaluated in the Site-Wide remedial Investigation/Feasibility Study. Any further remedial action necessary to protect the environment will be included in the Site-Wide proposed plan and ROD. The 2010 review states that the remedy is protective of human health and the environment.	5yr 2000, p. 19-23 5yr 2010, p. 47-51
COD983778432	02	On-site disposal (excavation, capping, covering, reveg)	No	The Beaver Mud Dump contains seeps and several slump block type earth movement which have become a debris flow down-slope toward the SDI. Although water quality in the Alamosa River downstream of the Summitville Mine has significantly improved since the implementation of emergency response and interim remedial actions, aquatic life in the Alamosa River is not currently protected.	Annually monitor slope stability, revegetation and seeps chemistry.	This 2005 review has found that the interim remedies being implemented at the Summitville Mine Superfund Site may not be completely protective of the environment. This will be evaluated in the Site-Wide remedial Investigation/Feasibility Study. Any further remedial action necessary to protect the environment will be included in the Site-Wide proposed plan and ROD. The remedy is found to be protective in the 2010 review.	5yr 2000, p. 19-23 5yr 2010, p. 47-51
COD983778432	03						
COD983778432	04	Other – Engineering/Containment	No	Copper loading from the Cropsy Creek basin within the site. Although water quality in the Alamosa River downstream of the Summitville Mine has significantly improved since the implementation of emergency response and	In summer 2010, surface water from the upper Cropsy Creek basin was diverted back into the Cropsy Creek Diversion which will reduce flow of water through the site. Additionally, discussion is underway to reclaim the Campbell Quarry where pyrite-bearing quartz latite veins are exposed and	This 2005 review has found that the interim remedies being implemented at the Summitville Mine Superfund Site may not be completely protective of the environment. This will be evaluated in the Site-Wide remedial Investigation/Feasibility Study. Any further remedial action	5yr 2000, p. 19-23 5yr 2010, p. 47-51

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
				interim remedial actions, aquatic life in the Alamosa River is not currently protected.	potentially degrade Ditch R waters that flow through the quarry prior to entering Cropsy Creek. The construction of the new WTP and the increased storage capacity in the SDI may negate some of this extra water requiring treatment.	necessary to protect the environment will be included in the Site-Wide proposed plan and ROD. The 2010 review efers protectiveness because more information is needed to make a determination.	
COD983778432	05	Impoundment	No	Seepage from the SDI provides a large non-point metals load to Wightman Fork. Issues with the mine pool management.	This seepage was originally intended to be captured and pumped back to the SDI as part of the 2008-2010 Wightman Fork Diversion/SDI Spillway Improvement project. However, design investigations discovered that bedrock conditions were not were as assumed based on BOR documents, and that the cost to design and construct the system would exceed the budgeted amount. Additional funding is being sought to address this source of non-point metals loading.		5yr 2010, p. 47-51
COD983778432	05	Monitoring (all media and as separate remedy)	No	Groundwater underflow to Wightman Fork adjacent to the North Waste Dump is a large non-point source of metals loading at the site.	This will be addressed in the next five-year review. Monitor all on-site and offsite remedial elements and affected media. Status of groundwater system and seep releases. Explore permanent, passive or semi-passive remedies to control contaminant sources. Monitor all on-site and offsite remedial elements and affected media. Status of groundwater system and seep releases. Status of water-quality, sediment and aquatic life sampling Prepare a Use Attainability Analysis (UAA) for the Water Quality Control Commission (WQCC) to change the Alamosa River underlying aluminum standard		5yr 2010, p. 47-51
COD983778432	05	On-site disposal (excavation, capping, covering, reveg)	Yes			Approximately 1,520 million gallons of water and generated approximately 500,000 cubic feet of sludge (Table 7-13). These totals correlate to an average rate of 332 cubic feet of sludge generated for every million gallons of treated water.	5yr 2010, p.77
COD983778432	05	Surface water diversion	No	Seepage from the SDI provides a large non-point metals load to Wightman Fork.	Revise the site hydraulic model and water balance: conduct for Wightman Fork Diversion and SDI spillway channel. This seepage was originally intended to be captured and pumped back to the SDI as part of the 2008-2010 Wightman Fork		5yr 2010, p. 47-51

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
					Diversion/SDI Spillway Improvement project. However, design investigations discovered that bedrock conditions were not were as assumed based on BOR documents, and that the cost to design and construct the system would exceed the budgeted amount. Additional funding is being sought to address this source of non-point metals loading.		
COD983778432	05	Water treatment-lime	No	Construction of new WTP not started	Construction of a large capacity water treatment plant and continue to evaluate the SDI capacity will be addressed in next Five-Year Review. New WTP under construction; anticipated commissioning date in spring 2012. Design to raise SDI spillway is complete and has been approved by the State Engineer; anticipated construction in 2010.		5yr 2010, p. 47-51
MTSFN7578012							
MTSFN7578012	01						
MTSFN7578012	02						
MTSFN7578012	03						
MTSFN7578012	04	On-site disposal (excavation, capping, covering, reveg)	No	1) Remediation of some residential properties is under construction. However, for many of these properties, sufficient work has been done to create a condition that is protective of human health. The remaining partially remediated properties and properties that have not undergone any remediation (but were targeted for remedial action) are not protective of human health. 2) Rimini Road remains unremediated. However, as a temporary measure to suppress fugitive dust, at least four-inches of road-base was applied during 2007.	Perform response action for Rimini Road. Continue to work with landowners and local government to secure property access for the purpose of completing remedial action, as necessary to protect human health. However, access limitations may preclude completion of all yards. Continue outreach and education of residents about their exposure risks.		FYR, OU4, 7/30/2008, p.29, 30
MTSFN7578012	04	Other – Engineering/Containment	No	Many of the remedy components intended to address surface and ground water quality have not been fully implemented (remedy element Nos. 1, 2 and 4; pg 14). However, the ROD anticipated a minimum tenyear implementation period of which five-years has elapsed.	Continue Response Actions.		FYR, OU4, 7/30/2008, p.29, 30
MTSFN7578012	04	Water treatment-other	Not specified				FYR, OU4,

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
							7/30/2008, p.29, 30
MTSFN7578012	04	Other – Engineering/Containment	No	Many of the remedy components intended to address surface and ground water quality have not been fully implemented (remedy element Nos. 1, 2 and 4; pg 14). However, the ROD anticipated a minimum tenyear implementation period of which five-years has elapsed.	Continue Response Actions.		FYR, OU4, 7/30/2008, p.29, 30
MTSFN7578012	04	Alternative drinking water	No	There is potential that Landmark or Rimini residential water supply(s) may contain contaminants above MCLs at homes where landowners have declined offers of either bottled water or point of use water treatment systems.	Continue to work with landowners to allow provision of alternative water supply. Continue outreach and education of residents about their exposure risks.		FYR, OU4, 7/30/2008, p.29, 30
MTSFN7578012	04	Institutional Controls	No	Institutional controls on future ground water wells have not been implemented.	Implement institutional controls.		FYR, OU4, 7/30/2008, p.29, 30
MTSFN7578012	05						
MTSFN7578012	06						
MTSFN7578012	07						
MTSFN7578012	08						
COD007063274							
COD007063274	01	On-site disposal (excavation, capping, covering, reveg)	Yes		Evaluate the site to determine if institutional controls restricting land use should be implemented.	Because an agreement for remediation of the site was reached quickly, no remedial investigation and feasibility study (RI/FS) was completed for the site. Instead, the RAP and CD, completed in October 1986, were intended to serve as the functional equivalent of an RI/FS and ROD. The United States District Court for the District of Colorado approved the RAP and CD on February 12, 1987.	2010 FYR, p. 6, Table 9
COD007063274	01	Impoundment	Yes		Evaluate the site to determine if institutional controls restricting ground water use should be implemented.	Because an agreement for remediation of the site was reached quickly, no remedial investigation and feasibility study (RI/FS) was completed for the site. Instead, the RAP and CD, completed in October 1986, were intended to serve as the functional equivalent of an RI/FS and ROD. The United States District Court for the District of Colorado approved the RAP and CD on February 12, 1987.	2010 FYR, p. 6, Table 9

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
UTN000802704							
UTN000802704	01						
CO0002259588							
CO0002259588	01	Off-site disposal	No	Institutional Controls need to be added to ROD and no remedial action had taken place at the time of the FYR, although some properties had been remediated using time-critical removal authority.	Need to add ICs to ROD.		2009 FYR, pp. 1,7
CO0002259588	02						
CO0002259588	03						
SDD980717136							
SDD980717136	01	Institutional Controls	No, partial	Instances of unauthorized development within the 100 ppm Tailings Impacted Area suggest that the county land use ordinances and the annual education program institutional controls are not functioning effectively. Based on the available information, the state well ban regulation is functioning effectively.	Based on a review of the remedy, the following institutional controls require optimization: 1) Follow up with property owners where development has occurred to ensure that these activities are in compliance with county development guidelines and state well regulations, where applicable; 2) Information on/review of the county ordinance development requirements with both residents and county officials, and the affected areas of the Site were these guidelines are applicable.		2002 FYR, p. 6-5; 2007 FYR, p. 6-6
SDD980717136	01	On-site disposal (excavation, capping, covering, reveg)	Yes				2002 FYR, p. 6-5; 2007 FYR, p. 6-6
AZD008397127							
AZD008397127	01						
CAD980496863							
CAD980496863	01	Other – Engineering/Containment	Yes				FYR 9/28/2006, p.5-2
CAD980496863	01	Surface water diversion	Yes				FYR 9/28/2006, p.5-2
CAD980496863	01	On-site disposal (excavation, capping, covering, reveg)	Yes		The recommendation in the prior FYR for more frequent revegetation was not performed. This decision was based on the very limited success of the revegetation pilot project at the site and the fact that new vegetation is evident both within and outside of the boundaries of the pilot project. Enhanced vegetation has resulted from natural processes of vegetation dispersal, especially during wet years. It is assumed that natural processes will		FYR 9/28/2006, p.5-2

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
					continue, however, if it does not, then revegetation efforts may be reconsidered.		
CAD980496863	01	Institutional Controls	Yes		The recommendation in the prior FY to place deed restrictions on property and develop access control agreement has not been implemented. DTSC is currently working with Northrop Grumman to develop the deed restriction for their privately owned property at the Atlas Mine Site.		FYR 9/28/2006, p.5-2
CAD980496863	02	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR 5/16/1996 p.15
NVD980813646							
NVD980813646	01	Off-site disposal	Yes				FYR 9/30/2008, p.23
NVD980813646	01	Institutional Controls	No	The site boundaries are not well defined to focus on the areas of concern; the LTSRP does not address developments of less than five residential units or less than five acres; the LTSRP is still a draft document; ICs for properties remediated under the LTSRP are not readily accessible by individual parcel number to current or future property owners, developers or users.	1) Improve CRMS boundary maps to better define areas of concern; 2) Revise the LTSRP to address developments less than five residential units or less than five acres; 3) Adopt a final LTSRP; 4) Work with Lyon County to assure that ICs information for properties is accessibly to current and future property owners, users, and developers; 5) Work with NDEP and Lyon County to develop and implement appropriate ICs for the four remediated areas and an inspection program.		ROD 3/30/1995, p.23
NVD980813646	02						
CAD980638860							
CAD980638860	01	Off-site disposal	No, partial	Sampling events in 1995 and 1996 resulted in 5 out of 40 samples containing elevated levels of metals. One soil sample taken in 1999 indicated that cadmium was detected above the cleanup goal in the former facility hillside soils. In addition two other potential issues were found: 1) orange stained sediments intermittently appear in Trinity River's gravel bar, and no visible connection to a source has been identified. The area was sampled in 1998 and 2001 and no contaminants were found, however the stains were not present at that time; and 2) salts of an unknown origin have crystalized in a small patch between the river access road and the base of the hillside during periods of hot weather. Soil samples have	The Hoopa Indian Tribe should alert EPA when orange stains appear on the gravel bar. In doing so, EPA can continue to monitor these occurrences and perhaps identify their origin. Excavation on a case by case basis could be a possibility, but currently remediation is not possible because the stains are not present. The hillside area where vegetative growth is absent will be sampled by EPA. If elevated levels of ROD contaminants are found, the area will be excavated and backfilled with clean fill. The excavated material will be disposed of appropriately.		ROD 9/30/1985, p.17

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				resulted in levels above ROD cleanup standards. Salts were not present during the 2001 site visit but the area remains void of vegetation.			
CAD980638860	02	Off-site disposal	No FYR	FYR not yet complete for OU2.	FYR not yet complete for OU2.		
CAD980817217							
CAD980817217	01	On-site disposal (excavation, capping, covering, reveg)	Yes		No remedy optimization recommendations were made. No activities have occurred at the site other than regular O&M activities.		FYR 9/27/01, p. 21, 22; FYR 9/28/06, p.5-3
CAD980817217	01	Surface water diversion	Yes		No remedy optimization recommendations were made. No activities have occurred at the site other than regular O&M activities.		FYR 9/27/01, p. 21, 22
CAD980817217	01	Other – Engineering/Containment	Yes		No remedy optimization recommendations were made. No activities have occurred at the site other than regular O&M activities.		FYR 9/27/01, p. 21, 22
CAD980817217	01	Institutional Controls	Yes		No remedy optimization recommendations were made. No activities have occurred at the site other than regular O&M activities.		FYR 9/27/01, p. 21, 22
CAD980817217	02	On-site disposal (excavation, capping, covering, reveg)	Yes		No further actions are required at this time, however soil sampling may be done in a future Five Year Review if resources are available.		FYR 4/26/1996, p.15
AZ0000309013							
AZ0000309013	01						
CAD980498612							
CAD980498612	01	On-site disposal (excavation, capping, covering, reveg)	Yes		No remedy optiomizations are recommended for OU1.		FYR 7/14/08, p.30
CAD980498612	01	Surface water diversion	Yes		No remedy optiomizations are recommended for OU1.		FYR 7/14/08, p.30
CAD980498612	01	Other – Engineering/Containment	Yes		No remedy optiomizations are recommended for OU1.		FYR 7/14/08, p.30
CAD980498612	02	Water treatment-lime	Yes		No remedy optiomizations are recommended for OU2.		FYR 7/14/08, p.30
CAD980498612	02	Water treatment-lime	Yes		No remedy optiomizations are recommended for OU2.		FYR 7/14/08, p.30

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
CAD980498612	03	Water treatment-lime	Yes		No remedy optiomizations are recommended for OU3.		FYR 7/14/08, p.30
CAD980498612	03	Water treatment-lime	Yes		No remedy optiomizations are recommended for OU3.		FYR 7/14/08, p.30
CAD980498612	04	Other – Engineering/Containment	Yes		No remedy optiomizations are recommended for OU4.		FYR 7/14/08, p.30
CAD980498612	04	Water treatment-lime	Yes		No remedy optiomizations are recommended for OU4.		FYR 7/14/08, p.30
CAD980498612	05	On-site disposal (excavation, capping, covering, reveg)	Yes		No remedy optiomizations are recommended for OU5.		FYR 7/14/08, p.30
CAD980498612	06						
CA1141190578							
CA1141190578	01						
CA1141190578	02						
CA1141190578	03						
CAD983618893							
CAD983618893	01	Institutional Controls	No FYR	FYR documents not available.			
CAD983618893	01	Other – Engineering/Containment	No FYR	FYR documents not available.			
CAD983618893	01	Deconstruction/ decontamination of buildings	No FYR	FYR documents not available.			
CAD983618893	01	On-site disposal (excavation, capping, covering, reveg)	No FYR	FYR documents not available.			
CAD983618893	01	Water treatment-other	No FYR	FYR documents not available.			
CAD983618893	02	Alternative drinking water	No FYR	FYR documents not available.			
CAD983618893	02	Institutional Controls	No FYR	FYR documents not available.			
CAD983618893	03						
CAD983618893	04						
CAD980673685							
CAD980673685	01						
CAD980893275							
CAD980893275	01						
CAD980893275	02						
CAD980893275	03						
WAD009045279							
WAD009045279	01						

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
OR0000515759							
OR0000515759	01						
IDD980725832							
IDD980725832	01	Water treatment-lime	Yes		EPA will direct the Blackbird Mine Site Group to evaluate alternatives for additional measures to reduce the release of materials during high flow events in Blackbird Creek.		FYR 2008, p. 63
IDD980725832	01	On-site disposal (excavation, capping, covering, reveg)	Yes		Possibly more removal actions along Panther Creek bank.		FYR 2008, p. 63
IDD980725832	01	Monitored natural attenuation/recovery	No	Not enough time yet to be complete.			
IDD980725832	01	Institutional Controls	No	ICs have not yet been fully implemented.	EPA will consult with the USFS and seek to modify its MOU with the USFS to get assurances that administrative procedures are put in place on properties under the control of the USFS to assure protectiveness.		FYR 2008, p. 63
IDD048340921							
IDD048340921	01	Off-site disposal	No, partial	The remedy currently being implemented in OU 1 is expected to be protective of human health and the environment where response actions have already been taken, provided that the remedy optimization recommendations are implemented.	1) Alternative House Dust Lead Source(s): Alternative source(s) may contribute to high dust lead concentrations that persist in some homes following completion of residential soil remediation. In many cases, it is likely that the elevated levels can be attributed to other sources of contamination including soils/sediments from the Coeur d'Alene River Basin where many residents recreate, hillsides within OU 1, occupational sources, lead-based paint, and/or personal activities, occupations, or hobbies. 2) One-Time Interior Cleaning: Results of two pilot studies indicate that house dust lead concentrations return to pre-cleaning levels within one year of cleaning, regardless of the cleaning method. Recent data confirm that house dust led concentrations have achieved the community mean of 500 mg/kg and the number of homes exceeding 1,000 mg./kg lead in house dust is declining.		FYR 11/18/2010, p.28
IDD048340921	01	Institutional Controls	No, partial	The remedy currently being implemented in OU 1 is expected to be protective of human health and the environment where response actions have already been taken, provided that the remedy optimization recommendations are implemented.	ICP Funding and Resources: Permanent funding of the ICP is needed to ensure success of the remedy, including consideration of adequate staff and information management support to ensure the long-term effectiveness of the program.		FYR 11/18/2010, p.28

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
IDD048340921	02	On-site disposal (excavation, capping, covering, reveg)	No, partial	The remedy currently being implemented in OU 2 is expected to be protective of human health and the environment where response actions have already been taken, provided that follow-up recommendations are implemented. In the interim, exposure pathways that could result in unacceptable risks are being controlled or addressed in locations where remedial work has been completed.	Continue to develop a comprehensive O&M and Site Closure Plan for the Page Repository.		FYR 11/18/2010, p.39-40
IDD048340921	02	Water treatment - Created Wetlands	No, partial	The remedy currently being implemented in OU 2 is expected to be protective of human health and the environment where response actions have already been taken, provided that follow-up recommendations are implemented. In the interim, exposure pathways that could result in unacceptable risks are being controlled or addressed in locations where remedial work has been completed.	Continue discussions/negotiations with the mine owner to redirect the adit flows in the Milo drainage to the CTP for treatment. Subsequent to redirection of the adit flows, evaluate stability of the 4-foot x 4-foot structure; Continue to work with the site-wide water quality monitoring program (i.e., forthcoming revised Basin Environmental Monitoring Plan) to integrate special considerations at the Page Pond.		FYR 11/18/2010, p.39-40
IDD048340921	02	Surface water diversion	No, partial	The remedy currently being implemented in OU 2 is expected to be protective of human health and the environment where response actions have already been taken, provided that follow-up recommendations are implemented. In the interim, exposure pathways that could result in unacceptable risks are being controlled or addressed in locations where remedial work has been completed.	Continue discussions/negotiations with the mine owner to redirect the adit flows in the Milo drainage to the CTP for treatment. Subsequent to redirection of the adit flows, evaluate stability of the 4-foot x 4-foot structure; Continue to work with the site-wide water quality monitoring program (i.e., forthcoming revised Basin Environmental Monitoring Plan) to integrate special considerations at the Page Pond; Continue working with the Basin Commission and other stakeholders to evaluate and plan actions relative to addressing SFCDR and Pine Creek flooding issues.		FYR 11/18/2010, p.39-40
IDD048340921	02	Alternative drinking water	No, partial	The remedy currently being implemented in OU 2 is expected to be protective of human health and the environment where response actions have already been taken, provided that follow-up recommendations are implemented. In the interim, exposure pathways that could result in unacceptable risks are being controlled or addressed in locations where remedial work has been completed.	Determine whether additional measures should be undertaken to reduce the potential for contaminant migration from the gypsum to groundwater in accordance with the remedy objective as described in the remedial design report (RDR);		FYR 11/18/2010, p.39-40
IDD048340921	02	Institutional Controls	No, partial	The remedy currently being implemented in OU 2 is expected to be protective of human health and the environment where response actions have already been taken, provided that follow-up recommendations are	ICP Funding and Resources: Secure permanent funding for the ICP, including consideration of adequate staff and information management support to ensure the long-term effectiveness of the program.		FYR 11/18/2010, p.39-40

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
				implemented. In the interim, exposure pathways that could result in unacceptable risks are being controlled or addressed in locations where remedial work has been completed.			
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	No, partial	The remedy currently being implemented in OU 3 is expected to be protective of human health and the environment where response actions have already been taken, provided that remedy optimization recommendations are implemented.	Long-Term Disposal Need from ICP: Establish process with community planners to identify timing and quantity of waste soils to be hauled to repositories from ICP-regulated activities.		FYR 11/18/2010, p.44
IDD048340921	03	Alternative drinking water	No, partial	The remedy currently being implemented in OU 3 is expected to be protective of human health and the environment where response actions have already been taken, provided that remedy optimization recommendations are implemented.			FYR 11/18/2010, p.31
IDD048340921	03	Institutional Controls	No, partial	The remedy currently being implemented in OU 3 is expected to be protective of human health and the environment where response actions have already been taken, provided that remedy optimization recommendations are implemented.	ICP Funding and Resources: Secure adequate funding of the ICP to ensure success of the remedy, including consideration of sufficient staff and information management support to ensure the long-term effectiveness of the program.		FYR 11/18/2010, p.43
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	No, partial	The remedy currently being implemented in OU 3 is expected to be protective of human health and the environment where response actions have already been taken, provided that remedy optimization recommendations are implemented.			FYR 11/18/2010, p.31
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	No, partial	The remedy currently being implemented in OU 3 is expected to be protective of human health and the environment where response actions have already been taken, provided that remedy optimization recommendations are implemented.			FYR 11/18/2010, p.31
WAD980726368							
WAD980726368	01	Air Stripping	Not specified				
WAD980726368	01	Off-site disposal	Not specified				
WAD980726368	01	Other – Treatment Technology	Not specified				
WAD980726368	01	Soil Vapor Extraction	Not specified				
WAD980726368	01	Thermal Treatment	Not specified				
WAD980726368	01	Water treatment - Bioreactors (e.g., SRBs)	Not specified				

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
WAD980726368	01	Institutional Controls	Not specified				
WAD980726368	01	Off-site disposal	No	Recent fish tissue data for bioaccumulative chemicals have not been collected in Commencement Bay. Thus, it is not known whether contaminant levels in fish tissues have been reduced since the remedies have been implemented, particularly for PCBs (which have a human-health based Sediment Quality Objective), and whether fish advisories should be continued, modified, or removed.	Develop and implement a sampling plan for collection and analysis of bay-wide fish tissue data for bioaccumulative chemicals (particularly for PCBs, which have a human-health based Sediment Quality Objective). Provide results to appropriate state and local agencies to evaluate protectiveness of health-based fish consumption advisories for Commencement Bay.		FYR 12/23/2009, p. 157
WAD980726368	01	Sediment dredging/ disposal	No	Recent fish tissue data for bioaccumulative chemicals have not been collected in Commencement Bay. Thus, it is not known whether contaminant levels in fish tissues have been reduced since the remedies have been implemented, particularly for PCBs (which have a human-health based Sediment Quality Objective), and whether fish advisories should be continued, modified, or removed.	Develop and implement a sampling plan for collection and analysis of bay-wide fish tissue data for bioaccumulative chemicals (particularly for PCBs, which have a human-health based Sediment Quality Objective). Provide results to appropriate state and local agencies to evaluate protectiveness of health-based fish consumption advisories for Commencement Bay.		FYR 12/23/2009, p. 157
WAD980726368	02						
WAD980726368	03						
WAD980726368	04						
WAD980726368	05						
WAD980726368	06						
WAD980726368	07						
WAD980726368	08						
WAD980726368	09						
WAD980726368	10						
WAD980726368	11						
WAD980726368	12						
WAD980726368	13						
WAD980726368	14						

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
WAD980726368	16						
WAD980726368	17						
WAD980726368	18						
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	No	Remedial actions for the Asarco Sediments are expected to be protective of human health and the environment when the remedy is completed. For the area of sediments offshore of the Smelter where capping has been done, the remedy is already protective of human health and the environment. For the remaining sediments offshore of the Smelter and the Yacht Basin, implementation of the remedy is expected to occur in the next two to three years using money obtained from the Asarco bankruptcy settlement.	EPA will need to determine whether the habitat basin should be repaired or left as it is.		FYR 12/23/2009, p. 163
WAD980726368	19	Institutional Controls	No	Remedial actions for the Asarco Sediments are expected to be protective of human health and the environment when the remedy is completed. For the area of sediments offshore of the Smelter where capping has been done, the remedy is already protective of human health and the environment. For the remaining sediments offshore of the Smelter and the Yacht Basin, implementation of the remedy is expected to occur in the next two to three years using money obtained from the Asarco bankruptcy settlement.	EPA will need to determine whether the habitat basin should be repaired or left as it is.		FYR 12/23/2009, p. 163
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	No	Remedial actions for the Asarco Sediments are expected to be protective of human health and the environment when the remedy is completed. For the area of sediments offshore of the Smelter where capping has been done, the remedy is already protective of human health and the environment. For the remaining sediments offshore of the Smelter and the Yacht Basin, implementation of the remedy is expected to occur in the next two to three years using money obtained from the Asarco bankruptcy settlement.	EPA will need to determine whether the habitat basin should be repaired or left as it is.		FYR 12/23/2009, p. 163
WAD980726368	19	Sediment dredging/ disposal	No	Remedial actions for the Asarco Sediments are expected to be protective of human health and the environment when the remedy is completed. For the area of	EPA will need to determine whether the habitat basin should be repaired or left as it is.		FYR 12/23/2009, p. 163

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
				sediments offshore of the Smelter where capping has been done, the remedy is already protective of human health and the environment. For the remaining sediments offshore of the Smelter and the Yacht Basin, implementation of the remedy is expected to occur in the next two to three years using money obtained from the Asarco bankruptcy settlement.			
WAD980726368	20	On-site disposal (excavation, capping, covering, reveg)	No FYR				
WAD980726368	20	Off-site disposal	No FYR				
WAD980726368	20	Institutional Controls	No FYR				
WAD980726368	21	Deconstruction/ decontamination of buildings	No FYR				
WAD980726368	21	On-site disposal (excavation, capping, covering, reveg)	No FYR				
WAD980726368	21	Surface water diversion	No FYR				
WAD980726368	22	Off-site disposal	No	Remedial actions for the Ruston/North Tacoma Study Area are expected to be protective of human health and the environment when the remedy is completed. In the interim, exposure pathways on the unremediated properties are only controlled through the compliance with the education program (hand washing, wetting soil, etc).	1) Review ongoing site and area development and ensure that changes in the area do not impact remedy protectiveness; 2) Resample a subset of properties to ensure that recontamination has not occurred; 3) EPA will document these activities; 4) EPA has agreed to conduct a more in depth review of the remedy for the site to ensure its protectiveness. This review will be completed by July 27, 2010. The review will use the criteria in the “Comprehensive Five-Year Review Guidance (OSWER No. 9355.7-03B-P, June 2001 and also consider strategies that Ecology has developed for addressing arsenic and lead throughout the State and within the Tacoma Smelter Plume.		FYR 12/23/2009, p. 163
WAD980726368	22	Off-site disposal	No	Remedial actions for the Ruston/North Tacoma Study Area are expected to be protective of human health and the environment when the remedy is completed. In the interim, exposure pathways on the unremediated properties are only controlled through the compliance with the education program (hand washing, wetting soil, etc).	1) Review ongoing site and area development and ensure that changes in the area do not impact remedy protectiveness; 2) Resample a subset of properties to ensure that recontamination has not occurred; 3) EPA will document these activities; 4) EPA has agreed to conduct a more in depth review of the remedy for the site to ensure its protectiveness. This review will be completed by July 27, 2010. The review will use the criteria in the “Comprehensive		FYR 12/23/2009, p. 163

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
					Five-Year Review Guidance (OSWER No. 9355.7-03B-P, June 2001 and also consider strategies that Ecology has developed for addressing arsenic and lead throughout the State and within the Tacoma Smelter Plume.		
WAD98072636 8	23	On-site disposal (excavation, capping, covering, reveg)	No FYR				
WAD98072636 8	23	Institutional Controls	No FYR				
WAD98072636 8	24						
WAD98072636 8	25						
WAD98072636 8	26						
IDD984666610							
IDD984666610	01	Other – Engineering/Containment	No FYR	No FYR's completed at this site.			
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	No FYR	No FYR's completed at this site.			
IDD984666610	01	Institutional Controls	No FYR	No FYR's completed at this site.			
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	No FYR	No FYR's completed at this site.			
IDD984666610	03						
IDD984666610	04						
ORN001002616							
ORN001002616	01						
OR7122307658							
OR7122307658	01						
OR7122307658	02	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR 5/18/2010, p.41
OR7122307658	02	Water treatment-lime	Yes		Continued neutralization of the White King Pond on approximately a five-year interval in order to maintain stable pH.		FYR 5/18/2010, p.41
OR7122307658	02	Institutional Controls	Yes				FYR 5/18/2010, p.41
WAD00006550 8							
WAD00006550 8	01	On-site disposal (excavation, capping, covering, reveg)	No FYR	No FYR completed at this site.			
WAD00006550 8	01	Water treatment-other	No FYR	No FYR completed at this site.			
WAD00006550 8	01	Institutional Controls	No FYR	No FYR completed at this site.			

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
ORD052221025							
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	Not specified				FYR, 6/30/2005, p.25
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)	No	In order to demonstrate a downward trend of fluoride and sulfate, sampling at MW-29S should be increased from the current five-year frequency to an annual event. Because this monitoring well is located at the facility boundary, groundwater monitoring would need to be supplemented with effective institutional controls outside the facility, such as an annual notice of groundwater quality to downgradient entities and a survey of properties to determine if drinking water wells have been installed.			FYR, 6/30/2005, p.25
ORD052221025	01	Water treatment-other	No	1) Surface application treatment call into question whether all groundwater pathways end up in the leachate collection system; 2) From the DEQ Notice of Noncompliance in March 2004, it was determined that Cyanide Destruction System tank discharges should be done in discrete batches with a sample confirming the leachate meets treatment standards. A draft batch protocol has been submitted and currently followed. It needs to be reviewed, commented, and made enforceable. 4) Arcadis has proposed that the high temperature high pressure equipment unit is no longer needed and should be dismantled. The exceedance discharge in Early 2004 brings into question whether this is prudent.	1) Per the EPA/ DEQ MOA, the batch protocol should be finalized and via permit modification made enforceable. 2) After the pilot studies are completed, the RCRA permit will be modified to incorporate treatments that will become permanent. If this issue becomes part of a permit modification, this issue can be addressed then per the EPA/DEQ MOA.		FYR, 6/30/2005, p.25
ORD052221025	01	Institutional Controls	No	See remedy optomization recommendations.	Additional groundwater monitoring and improved Ics are needed.		FYR, 6/30/2005, p.25
ORD052221025	02						
WAD980978753							
WAD980978753	01	On-site disposal (excavation, capping, covering, reveg)	No FYR	Five-Year Review not yet complete.			
WAD980978753	01	Water treatment-other	No FYR	Five-Year Review not yet complete.			

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
WAD980978753	01	Off-site disposal	No FYR	Five-Year Review not yet complete.			
WAD980978753	01	Surface water diversion	No FYR	Five-Year Review not yet complete.			
WAD980978753	01	Institutional Controls	No FYR	Five-Year Review not yet complete.			
IDD081830994							
IDD081830994	01	Monitored natural attenuation/recovery	No	Selenium and other cae concentrations are increasing in some groundwater wells and springs which calls into question whether the MNA remedy can achieve cleanup goals throughout the Site in a reasonable timeframe.	Annual groundwater and surface water monitoring should continue and MNA effectiveness should continue to be evaluated over the next five years, and if not effective, additional remedial actions need to be evaluated.		FYR 9/18/2008, p.43
IDD081830994	01	Institutional Controls	No	Selenium and other cae concentrations are increasing in some groundwater wells and springs which calls into question whether the MNA remedy can achieve cleanup goals throughout the Site in a reasonable timeframe.	Annual groundwater and surface water monitoring should continue and MNA effectiveness should continue to be evaluated over the next five years, and if not effective, additional remedial actions need to be evaluated.		FYR 9/18/2008, p.43
IDD081830994	01	Institutional Controls	No	Wind dispersal of dust and particulates may be contributing to offsite contamination. While Monsanto has made some changes at the facility and submitted to EPA a SOP to control wind dispersal of dust and particulates originating from the on-site material piles to EPA, the plan must be finalized, approved by EPA, and prove over time to be effective.	Monsanto's wind dispersal prevention plan was submitted to EPA on July 3, 2008. The plan must be finalized, approved by EPA, and prove over time to be effective.		FYR 9/18/2008, p.43
IDD081830994	01	On-site disposal (excavation, capping, covering, reveg)	No	Wind dispersal of dust and particulates may be contributing to offsite contamination. While Monsanto has made some changes at the facility and submitted to EPA a SOP to control wind dispersal of dust and particulates originating from the on-site material piles to EPA, the plan must be finalized, approved by EPA, and prove over time to be effective.	Monsanto's wind dispersal prevention plan was submitted to EPA on July 3, 2008. The plan must be finalized, approved by EPA, and prove over time to be effective.		FYR 9/18/2008, p.43
ORD009412677							
ORD009412677	01	Off-site disposal	Yes				FYR 7/21/2008, p.7
ORD009412677	01	Off-site disposal	Yes				FYR 7/21/2008, p.7
ORD009412677	01	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR 7/21/2008, p.7

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
ORD009412677	01	Water treatment-other	Yes				FYR 7/21/2008, p.7
ORD009412677	01	Institutional Controls	Yes		Four additional properties were identified where ICs need to be implemented. EPA will ensure compliance with PRPs for property that is owned or controlled by parties other than PRPs where access and land and water restrictions are needed.		FYR 7/21/2008, p.7
ORD009412677	02	Institutional Controls	Yes		Four additional properties were identified where ICs need to be implemented. EPA will ensure compliance with PRPs for property that is owned or controlled by parties other than PRPs where access and land and water restrictions are needed.		FYR 7/21/2008, p.7
ORD009412677	02	Other – Engineering/Containment	Yes				FYR 7/21/2008, p.7
ORD009412677	02	On-site disposal (excavation, capping, covering, reveg)	Yes				FYR 7/21/2008, p.7
AK0001897602							
AK0001897602	01						
WAD980722789							
WAD980722789	01	On-site disposal (excavation, capping, covering, reveg)	Yes		Conduct annual inspections.	Remedy currently protective. Implementation of recommendations needed to remain protective in future.	FYR 9/14/2007, p.17, 18
WAD980722789	01	Institutional Controls	Yes		1) Monitor fence. Fence should be replaced if adjacent owners fence fails or is in disrepair; 2) Consider conducting a title search for the site; and 3) Consider and investigate establishment of a deed under the Uniform Environmental Covenant Act.	Remedy currently protective. Implementation of recommendations needed to remain protective in future.	FYR 9/14/2007, p.17, 18
IDD980665459							
IDD980665459	01						
ORD050955848							
ORD050955848	01	Water treatment-other	No	Remedy optimization recommendations need implementing for remedial action objectives to be met.	1) Evaluate the use of groundwater flushing as a new remedial action; 2) Evaluate the use of enhanced bioremediation as a new remedial action in the South Extraction Area; 3) Enhance Groundwater Extraction and Treatment System (GETS) by installing new extraction well FW-8 (Section 8.2). 4) Optimize GETS by increasing groundwater pumping rates at FW-3 due to change in VOC treatment from granular activated carbon (GAC) to cooling tower. 5) Continue		FYR 1/8/2008, p.95 -99

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
					semi-annual groundwater sampling and analysis; 6) Optimize GETS by increasing discharge at FW-2 by replacing existing pneumatic pump with a new electric submersible pump; change VOC treatment from GAC to cooling tower; and conduct maintenance and development on extraction well's well screens; 7) Continued groundwater monitoring on a semi-annual basis through 2010 at Fabrication area; 8) Continue groundwater monitoring semiannually. Sample and analyze for applicable and relevant water quality indicators to evaluate MNA through 2010; 9) Compare EPA chemical-specific applicable and relevant and appropriate requirements (ARARs) to Oregon's AWQCs for protection in groundwater and surface water of human health water and fish ingestion; 10) Work with DEQ RCRA Program to ensure that SWMUs closures are Wah Chang with Cleaning Area (CCA) Solid consistent with the groundwater remedy; 11) Determine the nature and extent of VOCs in reconnaissance borings; 12) Continue to evaluate groundwater VOCs concentrations in areas where potential exposures could occur; 13) Continued groundwater monitoring on a semi-annual basis through 2010 at the Solids area; 14) Continued groundwater monitoring on a annual basis through 2010 at the Farm Pond areas.		
ORD050955848	01	On-site disposal (excavation, capping, covering, reveg)	No	Remedy optimization recommendations need implementing for remedial action objectives to be met.	1) Conduct supplemental surface water sampling at Truax Creek and groundwater sampling from applicable western perimeter wells in March 2008. Evaluate risks of exposure to human health and the environment via the surface water pathway. 2) Evaluate if fish consumption pathway is complete by end of calendar year 2008. 3) Conduct sediment sampling and analysis in a manner consistent with approved EPA Work Plan 4) Work with Wah Chang to further assess potential PCBs impacts to groundwater.		FYR 1/8/2008, p.95 -99
ORD050955848	01	Institutional Controls	No	Remedy optimization recommendations need implementing for remedial action objectives to be met.	Complete Title Search for all parcels for entire site by end of calendar year 2008.		FYR 1/8/2008, p.95 -99

EPA ID	OU	Selected Remedy (Q7)	Were Remedial Action Objectives Met? (14)	If RAOs Not Met, Why? (14a)	RAO Remedy Optimization Recommendations? (14b)	RAO Comments (14c)	Ref (Q14)
ORD050955848	02	Off-site disposal	Yes		None.		FYR 1/8/2008, p.95, 101
ORD050955848	03	Off-site disposal	Yes		Amend the SOW to incorporate applicable requirements of the Soil ESD by calendar year 2009.		FYR 1/8/2008, p.95, 102
ORD050955848	03	Institutional Controls	Yes		Radon testing will be conducted in the CoGen Building by end of calendar year 2008. All other buildings constructed on areas of the main plant where residual radiological contamination would lead to an increased risk of radon exposure will require testing. Radon testing will be conducted to evaluate risk to human health and if mitigation is necessary.		FYR 1/8/2008, p.95, 102
ORD050955848	04						

Table C-10 – Site and Operating Unit Detail at the 126 Site Universe (Part 10)

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
MED980524128							
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)					
MED980524128	01	On-site disposal (excavation, capping, covering, reveg)					
MED980524128	01	Off-site disposal					
MED980524128	01	Sediment dredging/ disposal					
MED980524128	01	Institutional Controls					
MED980524128	02						
MED980524128	03						
VTD988366621							
VTD988366621	01	On-site disposal (excavation, capping, covering, reveg)					
VTD988366621	01	Surface water diversion					
VTD988366621	01	Monitored natural attenuation/recovery					
VTD988366621	01	Institutional Controls					
VTD988366571							
VTD988366571	01						
VTD988366571	02						
VTD988366720							
VTD988366720	01						
NJD980785646							
NJD980785646	01	Off-site disposal					
NJD980785646	01	Other – Engineering/Containment					
NJD980785646	01	Institutional Controls					
NJD980785646	02	No action					
NJD980785646	03	Off-site disposal					
NYD986882660			$12,577,860	REMOVAL	$3,089,521	REMOVAL	$2,500,000
NYD986882660	01	Off-site disposal	$7,134,005	REMEDIAL ACTION	$4,367,322	COMBINED RI/FS	$266,342
NYD986882660	01	Institutional Controls	$7,134,005	REMEDIAL ACTION	$4,367,322	COMBINED RI/FS	$266,342
NYD986882660	02	Off-site disposal	$32,474,313	REMEDIAL ACTION	$30,911,987	COMBINED RI/FS	$721,233
NYD986882660	02	Institutional Controls	$32,474,313	REMEDIAL ACTION	$30,911,987	COMBINED RI/FS	$721,233
NYD986882660	03		$187,712	COMBINED RI/FS	$111,312	HEALTH ASSESSMENT	$65,000
NYD986882660	04	Sediment dredging/ disposal	$4,679,996	REMEDIAL ACTION	$3,638,590	REMEDIAL DESIGN	$842,817
NJD980529762							
NJD980529762	01						
NJD980529762	02	Off-site disposal					
NJD980529762	02	Institutional Controls					
NJD980529762	02	Deconstruction/ decontamination of buildings					
NJD980529762	03						

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
NJD980785653							
NJD980785653	01	Off-site disposal					
NJD980785653	02	No action					
NJD980785653	03	Off-site disposal					
NJD002365930			$221,374	RECORDS MANAGEMENT	$3,082	RECORDS MANAGEMENT	$1,664
NJD002365930	01	Air Stripping	$249,775	PRP RD	$18,484	PRP RD	$4,776
NJD002365930	01	Water treatment-other	$249,775	PRP RD	$18,484	PRP RD	$4,776
NJD002365930	02		$63,069				
NJD002365930	03						
NJD980654172							
NJD980654172	01	Off-site disposal					
NJD980654172	02	Off-site disposal					
NJD980654172	03	No action					
NJ1891837980							
NJ1891837980	01	Off-site disposal					
NJ1891837980	01	Water treatment-other					
NJ1891837980	01	Institutional Controls					
PAD987341716							
PAD987341716	01	Off-site disposal					
PAD987341716	01	Resident relocation					
PAD987341716	01	Institutional Controls					
PAD987341716	02	No action					
PAD077087989			$457,817	COMMUNITY INVOLVEMENT	$29,992	LABORATORY SUPPORT	$20,211
PAD077087989	01	Off-site disposal	$759,682	PRP RA	$372,539	PRP RI/FS	$22,408
PAD077087989	01	On-site disposal (excavation, capping, covering, reveg)	$759,682	PRP RA	$372,539	PRP RI/FS	$22,408
PAD077087989	01	Other – Treatment Technology	$759,682	PRP RA	$372,539	PRP RI/FS	$22,408
PAD077087989	01	Institutional Controls	$759,682	PRP RA	$372,539	PRP RI/FS	$22,408
PASFN0305549			$3,917,701	REMOVAL	$3,464,338	NPL RP SEARCH	$36,990
PASFN0305549	01		$285,962	COMBINED RI/FS	$179,751	REMEDIAL DESIGN	$17,027
PASFN0305549	02						
PAD980829493							
PAD980829493	01	Off-site disposal					
PAD980829493	01	On-site disposal (excavation, capping, covering, reveg)					
PAD980829493	01	Institutional Controls					
PAD002395887			$14,260,956	REMOVAL	$462,844	SECTION 107 LITIGATION	$82,792
PAD002395887	01	Soil Amendments	$1,989,949	PRP RA	$159,458	COMBINED RI/FS	$1,342
PAD002395887	02	Water treatment-lime	$303,092	PRP RI/FS	$158,238	COMMUNITY INVOLVEMENT	$21,822
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	$303,092	PRP RI/FS	$158,238	COMMUNITY INVOLVEMENT	$21,822
PAD002395887	02	On-site disposal (excavation, capping, covering, reveg)	$303,092	PRP RI/FS	$158,238	COMMUNITY INVOLVEMENT	$21,822
PAD002395887	03	On-site disposal (excavation, capping, covering, reveg)	$1,798,324	COMBINED RI/FS	$342,190	COMBINED RI/FS	$73,738

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
PAD002395887	03	Off-site disposal	$1,798,324	COMBINED RI/FS	$342,190	COMBINED RI/FS	$73,738
PAD002395887	03	Institutional Controls	$1,798,324	COMBINED RI/FS	$342,190	COMBINED RI/FS	$73,738
PAD002395887	04		$851,262	COMBINED RI/FS	$219,293	COMBINED RI/FS	$128,375
VAD980705404							
VAD980705404	01	Water treatment-lime					
VAD980705404	01	Water treatment - Created Wetlands					
VAD980705404	01	Surface water diversion					
VAD980705404	01	On-site disposal (excavation, capping, covering, reveg)					
VAD980705404	01	Institutional Controls					
SCN000407714			$5,117,239	REMOVAL	$4,383,061	REMOVAL	$271,327
SCN000407714	01		$300,100	COMBINED RI/FS	$300,100		
SCD987577913			$5,946,967	REMOVAL	$5,116,911	NPL RP SEARCH	$18,034
SCD987577913	01	Water treatment-lime	$4,425,757	REMEDIAL ACTION	$2,016,066	COMBINED RI/FS	$1,045,534
TND987768546			$1,445,312	ADMIN ORDER ON CONSENT	$148		
TND987768546	01						
TN0001890839			$2,880,781	COMMUNITY INVOLVEMENT	$248,975	COMMUNITY INVOLVEMENT	$147,678
TN0001890839	01		$5,896,360	COMBINED RI/FS	$5,850,857	REMEDIAL DESIGN	$20,000
TN0001890839	02		$101,489	PRP REMOVAL	$75,000		
TN0001890839	03		$103,893	TECHNICAL ASSISTANCE	$41,376	PRP REMOVAL	$28,365
TN0001890839	04		$2,305,265	COMBINED RI/FS	$582,281	PRP RI/FS	$363,172
TN0001890839	05		$3,988,053	COMBINED RI/FS	$2,053,993	COMBINED RI/FS	$1,366,316
TN0001890839	06						
TN0001890839	07						
TN0001890839	08						
TN0001890839	09						
TN0001890839	10						
TN0001890839	11						
TN0001890839	12						
TN0001890839	13						
TN0001890839	14						
TN0001890839	15						
TN0001890839	16						
TN0001890839	17						
FLD001704741							
FLD001704741	01						
FLD001704741	02						
SCN000407376							
SCN000407376	01						
SCD003360476			$2,675,659	LABORATORY SUPPORT	$96,157	MANAGEMENT ASSISTANCE	$74,280
SCD003360476	01	Water treatment-other	$11,517,541	PRP RA	$10,594,494	PRP RI/FS	$204,410
SCD003360476	01	Sediment dredging/ disposal	$11,517,541	PRP RA	$10,594,494	PRP RI/FS	$204,410

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
SCD003360476	01	Soil Amendments	$11,517,541	PRP RA	$10,594,494	PRP RI/FS	$204,410
SCD003360476	01	Institutional Controls	$11,517,541	PRP RA	$10,594,494	PRP RI/FS	$204,410
SCD003360476	01	Off-site disposal	$11,517,541	PRP RA	$10,594,494	PRP RI/FS	$204,410
SCD003360476	01	Surface water diversion	$11,517,541	PRP RA	$10,594,494	PRP RI/FS	$204,410
KYD049062375			$904,879	FIVE YEAR REMEDY ASSESSMENT	$19,957	MANAGEMENT ASSISTANCE	$15,524
KYD049062375	00	Institutional Controls	$904,879	FIVE YEAR REMEDY ASSESSMENT	$19,957	MANAGEMENT ASSISTANCE	$15,524
KYD049062375	00	On-site disposal (excavation, capping, covering, reveg)	$904,879	FIVE YEAR REMEDY ASSESSMENT	$19,957	MANAGEMENT ASSISTANCE	$15,524
KYD049062375	00	Off-site disposal	$904,879	FIVE YEAR REMEDY ASSESSMENT	$19,957	MANAGEMENT ASSISTANCE	$15,524
KYD049062375	01	Water treatment-other	$90,107	PRP RA	$55,840	COMBINED RI/FS	$18,818
KYD049062375	02						
NCN000409895							
NCN000409895	01						
FLD010596013			$1,357,670	TECHNICAL ASSISTANCE GRANT	$82,134	COMBINED RI/FS	$20,000
FLD010596013	01	On-site disposal (excavation, capping, covering, reveg)	$432,204	PRP RD	$169,545	PRP RI/FS	$49,998
FLD010596013	01	Solidification	$432,204	PRP RD	$169,545	PRP RI/FS	$49,998
FLD010596013	01	Institutional Controls	$432,204	PRP RD	$169,545	PRP RI/FS	$49,998
FLD010596013	02		$44,847	TECHNICAL ASSISTANCE	$21,833	PRP RI/FS	$19,946
ILN000508170			$629,059	REMOVAL	$118,668	MANAGEMENT ASSISTANCE	$68,391
ILN000508170	01		$111,459	PRP RI/FS	$82,213		
ILN000508170	02						
ILD050231976							
ILD050231976	01						
ILD062340641			$101,594	RECORDS MANAGEMENT	$1,940	RECORDS MANAGEMENT	$47
ILD062340641	01	Sediment dredging/ disposal					
ILD062340641	02						
ILD062340641	03						
ILD062340641	04						
ILD062340641	05						
ILD980606941			$518,689	MANAGEMENT ASSISTANCE	$113,075	REMOVAL	$43,355
ILD980606941	01	Deconstruction/ decontamination of buildings	$329,769	PRP RI/FS	$142,750	PRP RI/FS	$94,006
ILD980606941	01	Off-site disposal	$329,769	PRP RI/FS	$142,750	PRP RI/FS	$94,006
ILD980606941	01	On-site disposal (excavation, capping, covering, reveg)	$329,769	PRP RI/FS	$142,750	PRP RI/FS	$94,006
ILD980606941	02		$979				
ILN000508134							
ILN000508134	01						
ILN000508134	02						
ILN000508134	03						
IL0000064782			$823,127	REMOVAL	$90,488	FORWARD PLNG ACTIVITY/MGT AST	$75,000

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
IL0000064782	01		$312,967	PRP RI/FS	$203,164	COMMUNITY INVOLVEMENT	$11,352
IL0000064782	02		$2,433,753	COMBINED RI/FS	$1,750,901	COMBINED RI/FS	$44,094
OHD004379970			$1,131,635	MANAGEMENT ASSISTANCE	$10,086	MANAGEMENT ASSISTANCE	$1,201
OHD004379970	01	Chemical Oxidation	$120,306	PRP RA	$117,651	COMMUNITY INVOLVEMENT	$2,334
OHD004379970	01	Other – Engineering/Containment	$120,306	PRP RA	$117,651	COMMUNITY INVOLVEMENT	$2,334
OHD004379970	01	Other – Engineering/Containment	$120,306	PRP RA	$117,651	COMMUNITY INVOLVEMENT	$2,334
OHD004379970	01	Soil flushing/washing	$120,306	PRP RA	$117,651	COMMUNITY INVOLVEMENT	$2,334
OHD004379970	01	On-site disposal (excavation, capping, covering, reveg)	$120,306	PRP RA	$117,651	COMMUNITY INVOLVEMENT	$2,334
OHD004379970	01	Sediment dredging/ disposal	$120,306	PRP RA	$117,651	COMMUNITY INVOLVEMENT	$2,334
OHD004379970	01	Institutional Controls	$120,306	PRP RA	$117,651	COMMUNITY INVOLVEMENT	$2,334
MID980901946							
MID980901946	01	Institutional Controls					
MID980901946	01	Off-site disposal					
MID980901946	01	Other – Engineering/Containment					
MID980901946	02	No action					
MID980901946	03	Institutional Controls					
MID980901946	03	Off-site disposal					
MID980901946	03	Other – Engineering/Containment					
MID980901946	03	Other – Engineering/Containment					
MID980901946	03	Other – Engineering/Containment					
MID980901946	04						
MID980901946	05						
MID980901946	06						
IND047030226			$1,593,751	REMOVAL	$811,835	COMBINED RI/FS	$102,281
IND047030226	01		$3,873	COMMUNITY INVOLVEMENT	$2,233	COMMUNITY INVOLVEMENT	$1,640
NMD002899094							
NMD002899094	00	Off-site disposal					
NMD002899094	00	On-site disposal (excavation, capping, covering, reveg)					
NMD002899094	00	Other – Engineering/Containment					
NMD002899094	00	Water treatment-lime					
NMD002899094	00	Sediment dredging/ disposal					
NMD002899094	00	Institutional Controls					
NMD980749378			$3,311,974	REMEDIAL ACTION	$323,979	LONG TERM RESPONSE ACTION	$182,414
NMD980749378	01	Water treatment-other					
NMD980749378	01	Institutional Controls					

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
NMD980749378	02	Solidification					
NMD980749378	02	On-site disposal (excavation, capping, covering, reveg)					
NMD980749378	02	Institutional Controls					
NMD981155930							
NMD981155930	01	No action					
NMD981155930	01	Institutional Controls					
NMD007860935			$679,539	MANAGEMENT ASSISTANCE	$37,624	COMMUNITY INVOLVEMENT	$34,710
NMD007860935	01	Water treatment-other					
NMD007860935	02	Other – Engineering/Containment					
NMD007860935	03	No action					
OKD000829440			$4,633,773	GENERAL SUPP/MGT	$28,832	RECORDS MANAGEMENT	$17,227
OKD000829440	01	Off-site disposal					
OKD000829440	01	Institutional Controls					
OKD000829440	02	Off-site disposal					
OKD980629844							
OKD980629844	01	Other – Engineering/Containment					
OKD980629844	01	Surface water diversion					
OKD980629844	02	On-site disposal (excavation, capping, covering, reveg)					
OKD980629844	02	Institutional Controls					
OKD980629844	03	No action					
OKD980629844	04	Resident relocation					
OKD980629844	04	On-site disposal (excavation, capping, covering, reveg)					
OKD980629844	04	Alternative drinking water					
OKD980629844	04	Other – Engineering/Containment					
OKD980629844	04	Institutional Controls					
OKD980629844	04	Other – Engineering/Containment					
OKD980629844	05						
TXD062113329			$10,819,297	REMEDIAL ACTION	$1,805,161	REMOVAL	$429,459
TXD062113329	01	On-site disposal (excavation, capping, covering, reveg)	$244				
TXD062113329	01	Off-site disposal	$244				
TXD062113329	01	Other – Engineering/Containment	$244				
TXD062113329	01	Institutional Controls	$244				
TXD062113329	02	No action					
TXD062113329	03	No action					
TXD062113329	04	Other – Engineering/Containment					
OKD987096195							
OKD987096195	01						
NMD030443303			$3,025,221	MANAGEMENT ASSISTANCE	$143,055	ADMINISTRATIVE RECORDS	$58,020
NMD030443303	01	Water treatment-other					
MO0000958611							
MO0000958611	01	On-site disposal (excavation, capping, covering, reveg)					

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
MO0000958611	01	Other – Engineering/Containment					
MO0000958611	01	Institutional Controls					
MO0000958611	02	No action					
MO0000958611	03	On-site disposal (excavation, capping, covering, reveg)					
MOD981126899							
MOD981126899	01						
MOD981126899	02						
MOD981126899	03						
KSD980741862							
KSD980741862	01	Alternative drinking water					
KSD980741862	02						
KSD980741862	03	On-site disposal (excavation, capping, covering, reveg)					
KSD980741862	03	Other – Engineering/Containment					
KSD980741862	03	Institutional Controls					
KSD980741862	04						
KSD980741862	05	On-site disposal (excavation, capping, covering, reveg)					
KSD980741862	05	Deconstruction/ decontamination of buildings					
KSD980741862	05	Surface water diversion					
KSD980741862	06	On-site disposal (excavation, capping, covering, reveg)					
KSD980741862	06	Other – Engineering/Containment					
KSD980741862	07	On-site disposal (excavation, capping, covering, reveg)					
KSD980741862	07	Institutional Controls					
MOD098633415							
MOD098633415	01						
MOD098633415	02						
MOD098633415	03	On-site disposal (excavation, capping, covering, reveg)					
MOD098633415	03	Institutional Controls					
MOD098633415	04						
MOD098633415	05						
MOD098633415	06						
MOD981507585							
MOD981507585	01	On-site disposal (excavation, capping, covering, reveg)					
MOD981507585	01	Institutional Controls					
MOD981507585	02						
MOD981507585	03						
NESFN0703481			$27,392,781	REMOVAL	$15,829,361	REMOVAL	$4,898,634
NESFN0703481	01	Off-site disposal	$73,880,108	REMEDIAL ACTION	$55,329,735	REMEDIAL DESIGN	$7,677,622
NESFN0703481	02	Off-site disposal	$18,585,752	REMEDIAL ACTION	$17,362,609	COMBINED RI/FS	$417,953
NESFN0703481	02	Institutional Controls	$18,585,752	REMEDIAL ACTION	$17,362,609	COMBINED RI/FS	$417,953
MOD980686281							
MOD980686281	01	On-site disposal (excavation, capping, covering, reveg)					
MOD980686281	01	Institutional Controls					

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
MOD980686281	02	On-site disposal (excavation, capping, covering, reveg)					
MOD980686281	02	Institutional Controls					
MOD980686281	03						
MOD980686281	04	Alternative drinking water					
MOD980686281	04	Water treatment-other					
MOD980686281	04	Institutional Controls					
MOD980686281	05						
MON000705443							
MON000705443	01						
MON000705443	02						
MON000705443	03						
MON000705443	04						
MON000705443	05						
MON000705443	06						
MON000705842			$3,427,470	REMOVAL	$2,351,485	REMOVAL ASSESSMENT	$525,690
MON000705842	01						
MON000705842	02						
MON000705842	03						
MON000705027							
MON000705027	01						
MON000705027	02						
MON000705027	03						
MON000705027	04						
MON000705023							
MON000705023	01						
MON000705023	02						
MON000705023	03						
MON000705023	04						
MON000705032							
MON000705032	01						
MON000705032	02						
MON000705032	03						
MON000705032	04						
MTD093291599							
MTD093291599	01						
MTD093291656			$27,010,307	TECHNICAL ASSISTANCE	$3,195,868	RD/RA NEGOTIATIONS	$2,125,979
MTD093291656	01		$804,711	MANAGEMENT ASSISTANCE	$235,000	REMEDIAL ACTION	$10,307
MTD093291656	03	On-site disposal (excavation, capping, covering, reveg)					
MTD093291656	04	On-site disposal (excavation, capping, covering, reveg)	$8,368,593	PRP RD	$2,178,069	PRP RA	$883,206
MTD093291656	04	Monitored natural attenuation/recovery	$8,368,593	PRP RD	$2,178,069	PRP RA	$883,206
MTD093291656	04	Institutional Controls	$8,368,593	PRP RD	$2,178,069	PRP RA	$883,206
MTD093291656	07	Institutional Controls	$1,045,657	REMEDIAL ACTION	$456,453	PRP RA	$283,900

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
MTD093291656	07	On-site disposal (excavation, capping, covering, reveg)	$1,045,657	REMEDIAL ACTION	$456,453	PRP RA	$283,900
MTD093291656	07	Surface water diversion	$1,045,657	REMEDIAL ACTION	$456,453	PRP RA	$283,900
MTD093291656	09	On-site disposal (excavation, capping, covering, reveg)	$427				
MTD093291656	11	Solidification	$295				
MTD093291656	11	On-site disposal (excavation, capping, covering, reveg)	$295				
MTD093291656	11	Institutional Controls	$295				
MTD093291656	12	On-site disposal (excavation, capping, covering, reveg)	$257				
MTD093291656	14		$1,277				
MTD093291656	15	Resident relocation					
MTD093291656	15	Deconstruction/ decontamination of buildings					
MTD093291656	15	Institutional Controls					
MTD093291656	15	On-site disposal (excavation, capping, covering, reveg)					
MTD093291656	16	Institutional Controls	$1,405,847	PRP RA	$752,600	PRP RD	$439,005
MTD093291656	16	On-site disposal (excavation, capping, covering, reveg)	$1,405,847	PRP RA	$752,600	PRP RD	$439,005
COD007063530							
COD007063530	01	On-site disposal (excavation, capping, covering, reveg)					
COD007063530	01	Institutional Controls					
COD007063530	02	Other – Engineering/Containment					
COD007063530	02	On-site disposal (excavation, capping, covering, reveg)					
COD007063530	02	Institutional Controls					
COD007063530	03	On-site disposal (excavation, capping, covering, reveg)					
COD007063530	03	Institutional Controls					
COD007063530	04	Other – Treatment Technology					
COD007063530	04	On-site disposal (excavation, capping, covering, reveg)					
COD007063530	04	Institutional Controls					
MT6122307485							
MT6122307485	01						
MT6122307485	02						
MTD982572562							
MTD982572562	01	Off-site disposal					
MTD982572562	01	Institutional Controls					
MTD982572562	02						
MTD982572562	03						
MTD982572562	04						
MTD982572562	05						
MTD982572562	06						
COD980717938							
COD980717938	01	Other – Engineering/Containment					
COD980717938	01	Water treatment-other					
COD980717938	02	No action					
COD980717938	03	No action					
COD980717938	04	On-site disposal (excavation, capping, covering, reveg)					

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
COD980717938	04	Surface water diversion					
COD980717938	05	Institutional Controls					
COD980717938	06	On-site disposal (excavation, capping, covering, reveg)					
COD980717938	06	Water treatment-other					
COD980717938	06	Institutional Controls					
COD980717938	06	Surface water diversion					
COD980717938	07	On-site disposal (excavation, capping, covering, reveg)					
COD980717938	07	Surface water diversion					
COD980717938	07	Institutional Controls					
COD980717938	08	Surface water diversion					
COD980717938	08	On-site disposal (excavation, capping, covering, reveg)					
COD980717938	08	Institutional Controls					
COD980717938	09	On-site disposal (excavation, capping, covering, reveg)					
COD980717938	09	Institutional Controls					
COD980717938	10	On-site disposal (excavation, capping, covering, reveg)					
COD980717938	10	Other – Engineering/Containment					
COD980717938	11	On-site disposal (excavation, capping, covering, reveg)					
COD980717938	11	Institutional Controls					
COD980717938	12	Institutional Controls					
COD981551427			$1,317,953	REMOVAL	$414,459	REMOVAL	$221,206
COD981551427	01	Water treatment - Bioreactors (e.g., SRBs)	$1,420,592	COMBINED RI/FS	$1,232,811	REMEDIAL DESIGN	$54,114
COD981551427	01	On-site disposal (excavation, capping, covering, reveg)	$1,420,592	COMBINED RI/FS	$1,232,811	REMEDIAL DESIGN	$54,114
COD981551427	01	Institutional Controls	$1,420,592	COMBINED RI/FS	$1,232,811	REMEDIAL DESIGN	$54,114
MT0001096353							
MT0001096353	01	On-site disposal (excavation, capping, covering, reveg)					
MT0001096353	01	Institutional Controls					
MT0001096353	02						
MT0001096353	03						
COD980717557							
COD980717557	01	Water treatment - Created Wetlands					
COD980717557	02	Surface water diversion					
COD980717557	02	On-site disposal (excavation, capping, covering, reveg)					
COD980717557	03	On-site disposal (excavation, capping, covering, reveg)					
COD980717557	03	Institutional Controls					
COD980717557	03	Water treatment-other					
COD980717557	03	Alternative drinking water					
COD980717557	03	Water treatment - Created Wetlands					
COD980717557	04	Water treatment - Bioreactors (e.g., SRBs)					
COD980717557	04	Water treatment-other					
COD980717557	04	On-site disposal (excavation, capping, covering, reveg)					
COD980717557	04	Surface water diversion					
COD980717557	04	Institutional Controls					

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
UTD988075719							
UTD988075719	01	Off-site disposal					
UTD988075719	01	Other – Engineering/Containment					
UTD988075719	01	Institutional Controls					
UTD988075719	02	Off-site disposal					
UTD988075719	02	Institutional Controls					
UTD988075719	03	Off-site disposal					
COD980716955							
COD980716955	01	Off-site disposal					
COD980716955	02	Off-site disposal					
COD980716955	02	Institutional Controls					
COD980716955	03	Off-site disposal					
COD980716955	03	Institutional Controls					
COD980716955	04	Off-site disposal					
COD980716955	04	Institutional Controls					
COD980716955	05						
COD980716955	06	Off-site disposal					
COD980716955	06	Institutional Controls					
COD980716955	07	Institutional Controls					
COD980716955	08	Off-site disposal					
COD980716955	08	Solidification					
COD980716955	08	Institutional Controls					
COD980716955	09	On-site disposal (excavation, capping, covering, reveg)					
COD980716955	09	Institutional Controls					
COD980716955	10	Off-site disposal					
COD980716955	11	Off-site disposal					
COD980716955	11	Institutional Controls					
COD081961518			$2,088,971	FIVE YEAR REMEDY ASSESSMENT	$35,000	RECORDS MANAGEMENT	$18,748
COD081961518	01	Water treatment-lime	$294,876	TECHNICAL ASSISTANCE	$20,000	NPL RP SEARCH	$7,278
COD081961518	01	Surface water diversion	$294,876	TECHNICAL ASSISTANCE	$20,000	NPL RP SEARCH	$7,278
COD081961518	01	On-site disposal (excavation, capping, covering, reveg)	$294,876	TECHNICAL ASSISTANCE	$20,000	NPL RP SEARCH	$7,278
COD081961518	01	Alternative drinking water	$294,876	TECHNICAL ASSISTANCE	$20,000	NPL RP SEARCH	$7,278
COD081961518	01	Institutional Controls	$294,876	TECHNICAL ASSISTANCE	$20,000	NPL RP SEARCH	$7,278
COD081961518	02	Institutional Controls	$111,119	TECHNICAL ASSISTANCE	$22,600	RECORDS MANAGEMENT	$18
COD081961518	03		$229,564	NEGOTIATION (GENERIC)	$4,888	RECORDS MANAGEMENT	$260
COD081961518	04						
MTD006230346			$3,382,420	MANAGEMENT ASSISTANCE	$37,805	HUMAN HEALTH RISK ASSESSMENT	$16,491
MTD006230346	01	Water treatment-other	$9,082	RECORDS MANAGEMENT	$444	RECORDS MANAGEMENT	$440
MTD006230346	01	Other – Treatment Technology	$9,082	RECORDS MANAGEMENT	$444	RECORDS MANAGEMENT	$440
MTD006230346	01	Other – Treatment Technology	$9,082	RECORDS MANAGEMENT	$444	RECORDS MANAGEMENT	$440

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
MTD006230346	02	Off-site disposal	$2,855,939	REMOVAL	$840,670	PRP RI/FS	$456,355
MTD006230346	02	Off-site disposal	$2,855,939	REMOVAL	$840,670	PRP RI/FS	$456,355
MTD006230346	02	Institutional Controls	$2,855,939	REMOVAL	$840,670	PRP RI/FS	$456,355
UT0002240158							
UT0002240158	00	On-site disposal (excavation, capping, covering, reveg)					
UT0002240158	00	Institutional Controls					
UT0002240158	01						
UT0002240158	02						
UT0002240158	03						
UT0002240158	04						
MT0012694970							
MT0012694970	01						
MT0012694970	02						
MT0012694970	03						
CO0001093392							
CO0001093392	00						
SDD987673985			$16,579,516	REMOVAL	$9,282,605	COMBINED RI/FS	$1,663,324
SDD987673985	01	On-site disposal (excavation, capping, covering, reveg)	$5,022,944	COMBINED RI/FS	$3,014,884	REMEDIAL DESIGN	$582,484
SDD987673985	01	Institutional Controls	$5,022,944	COMBINED RI/FS	$3,014,884	REMEDIAL DESIGN	$582,484
SDD987673985	01	Other – Engineering/Containment	$5,022,944	COMBINED RI/FS	$3,014,884	REMEDIAL DESIGN	$582,484
SDD987673985	01	Water treatment-lime	$5,022,944	COMBINED RI/FS	$3,014,884	REMEDIAL DESIGN	$582,484
SDD987673985	01	Monitoring (all media and as separate remedy)	$5,022,944	COMBINED RI/FS	$3,014,884	REMEDIAL DESIGN	$582,484
SDD987673985	02	Water treatment-lime	$23,240,625	REMEDIAL ACTION	$17,279,020	REMEDIAL ACTION	$2,499,650
SDD987673985	02	Impoundment	$23,240,625	REMEDIAL ACTION	$17,279,020	REMEDIAL ACTION	$2,499,650
UTD093120921							
UTD093120921	01	Institutional Controls					
UTD093120921	01	Monitoring (all media and as separate remedy)					
UT0002391472							
UT0002391472	01	Institutional Controls					
UT0002391472	01	Off-site disposal					
UT0002391472	02						
UT0002391472	03						
UT0002391472	04						
UT0002391472	05						
UTD070926811			$2,999,999	REMOVAL ASSESSMENT	$100,000	MANAGEMENT ASSISTANCE	$50,000
UTD070926811	01		$16	RECORDS MANAGEMENT	$16		
UTD070926811	02						
UTD070926811	03						
UTD070926811	04						
UTD070926811	05						
UTD070926811	06						
UTD070926811	07						

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
UTD070926811	08	On-site disposal (excavation, capping, covering, reveg)	$346,233	MANAGEMENT ASSISTANCE	$126,263	PRP REMOVAL	$82,905
UTD070926811	09	No action					
UTD070926811	10						
UTD070926811	11						
UTD070926811	12						
UTD070926811	13	On-site disposal (excavation, capping, covering, reveg)					
UTD070926811	13	Surface water diversion					
UTD070926811	13	Deconstruction/ decontamination of buildings					
UTD070926811	13	Off-site disposal					
UTD070926811	14	On-site disposal (excavation, capping, covering, reveg)					
UTD070926811	14	Deconstruction/ decontamination of buildings					
UTD070926811	15	On-site disposal (excavation, capping, covering, reveg)					
UTD070926811	16						
UTD070926811	17						
UTD070926811	18	On-site disposal (excavation, capping, covering, reveg)					
UTD070926811	19	On-site disposal (excavation, capping, covering, reveg)					
UTD070926811	19	Other – Engineering/Containment					
UTD070926811	20	On-site disposal (excavation, capping, covering, reveg)					
UTD070926811	21						
UTD070926811	22	On-site disposal (excavation, capping, covering, reveg)					
UTD070926811	22	Surface water diversion					
UTD070926811	23	Water treatment - Bioreactors (e.g., SRBs)					
UTD000826404			$1,659,441	MANAGEMENT ASSISTANCE	$101,089	FIVE YEAR REMEDY ASSESSMENT	$53,886
UTD000826404	01	On-site disposal (excavation, capping, covering, reveg)	$172,169	MANAGEMENT ASSISTANCE	$94,125	PRP LR	$28,710
UTD000826404	01	Institutional Controls	$172,169	MANAGEMENT ASSISTANCE	$94,125	PRP LR	$28,710
UTD000826404	02	Water treatment-lime	$318,897	MANAGEMENT ASSISTANCE	$106,632	MANAGEMENT ASSISTANCE	$103,072
UTD000826404	02	Water treatment-other	$318,897	MANAGEMENT ASSISTANCE	$106,632	MANAGEMENT ASSISTANCE	$103,072
UTD000826404	02	Monitored natural attenuation/recovery	$318,897	MANAGEMENT ASSISTANCE	$106,632	MANAGEMENT ASSISTANCE	$103,072
UTD000826404	02	Water treatment-other	$318,897	MANAGEMENT ASSISTANCE	$106,632	MANAGEMENT ASSISTANCE	$103,072
UTD000826404	02	Alternative drinking water	$318,897	MANAGEMENT ASSISTANCE	$106,632	MANAGEMENT ASSISTANCE	$103,072
UTD000826404	02	Institutional Controls	$318,897	MANAGEMENT ASSISTANCE	$106,632	MANAGEMENT ASSISTANCE	$103,072
UTD000826404	03	Institutional Controls	$49,062	MANAGEMENT ASSISTANCE	$30,998	FIVE YEAR REMEDY ASSESSMENT	$10,519
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	$49,062	MANAGEMENT ASSISTANCE	$30,998	FIVE YEAR REMEDY ASSESSMENT	$10,519
UTD000826404	03	On-site disposal (excavation, capping, covering, reveg)	$49,062	MANAGEMENT ASSISTANCE	$30,998	FIVE YEAR REMEDY ASSESSMENT	$10,519
UTD000826404	04	On-site disposal (excavation, capping, covering, reveg)					
UTD000826404	04	Other – Engineering/Containment					
UTD000826404	05	On-site disposal (excavation, capping, covering, reveg)	$351	RECORDS MANAGEMENT	$297	RECORDS MANAGEMENT	$54
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)					
UTD000826404	06	On-site disposal (excavation, capping, covering, reveg)					

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
UTD000826404	06	Surface water diversion					
UTD000826404	06	Water treatment - Created Wetlands					
UTD000826404	06	Soil Amendments					
UTD000826404	06	Sediment dredging/ disposal					
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	$182	RECORDS MANAGEMENT	$182		
UTD000826404	07	On-site disposal (excavation, capping, covering, reveg)	$182	RECORDS MANAGEMENT	$182		
UTD000826404	08						
UTD000826404	09						
UTD000826404	10	Institutional Controls					
UTD000826404	11	Institutional Controls					
UTD000826404	12						
UTD000826404	13						
UTD000826404	14						
UTD000826404	15						
UTD000826404	16						
UTD000826404	17	Institutional Controls					
UTD000826404	18						
UTD000826404	19						
UTD000826404	20						
UTD000826404	21						
UTD000826404	22						
UTD000826404	23						
UTD000826404	24						
UTD000826404	24	Deconstruction/ decontamination of buildings					
UTD000826404	24	On-site disposal (excavation, capping, covering, reveg)					
MT0009083840			$235,055,508	REMOVAL	$146,372,478	REMOVAL ASSESSMENT	$1,933,532
MT0009083840	01	On-site disposal (excavation, capping, covering, reveg)	$1,463,956	REMOVAL	$550,000	HUMAN HEALTH RISK ASSESSMENT	$419,500
MT0009083840	01	Off-site disposal	$1,463,956	REMOVAL	$550,000	HUMAN HEALTH RISK ASSESSMENT	$419,500
MT0009083840	01	Institutional Controls	$1,463,956	REMOVAL	$550,000	HUMAN HEALTH RISK ASSESSMENT	$419,500
MT0009083840	02	On-site disposal (excavation, capping, covering, reveg)	$33,209,427	REMOVAL	$22,136,737	REMOVAL	$4,750,000
MT0009083840	02	Off-site disposal	$33,209,427	REMOVAL	$22,136,737	REMOVAL	$4,750,000
MT0009083840	02	Institutional Controls	$33,209,427	REMOVAL	$22,136,737	REMOVAL	$4,750,000
MT0009083840	03		$1,620,229	HUMAN HEALTH RISK ASSESSMENT	$762,561	PRP RI/FS	$514,093
MT0009083840	04		$29,254,987	COMBINED RI/FS	$22,765,140	COMMUNITY INVOLVEMENT	$703,919
MT0009083840	05		$1,033,540	COMBINED RI/FS	$889,990	MANAGEMENT ASSISTANCE	$14,600
MT0009083840	06		$11,672	PRP REMOVAL	$5,312	MANAGEMENT ASSISTANCE	$345
MT0009083840	07		$5,761,269	COMBINED RI/FS	$5,720,205	RECORDS MANAGEMENT	$21,147
MT0009083840	08						

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
COD042167858							
COD042167858	01	Impoundment					
COD042167858	01	Permeable Reactive Barrier					
COD042167858	02	Monitoring (all media and as separate remedy)					
UTD081834277							
UTD081834277	01	On-site disposal (excavation, capping, covering, reveg)					
UTD081834277	01	Monitoring (all media and as separate remedy)					
UTD081834277	01	Institutional Controls					
UTD081834277	02	Off-site disposal					
UTD081834277	02	Other – Engineering/Containment					
UTD081834277	02	Institutional Controls					
UTD081834277	02	Other – Engineering/Containment					
UTD081834277	02	Monitoring (all media and as separate remedy)					
MTD980717565			$10,141,998	TECHNICAL ASSISTANCE GRANT	$639,875	MANAGEMENT ASSISTANCE	$310,000
MTD980717565	01	Alternative drinking water	$119,685				
MTD980717565	02	Sediment dredging/ disposal	$42,734,916	REMEDIAL ACTION	$26,211,687	REMEDIAL ACTION	$4,700,000
MTD980717565	02	On-site disposal (excavation, capping, covering, reveg)	$42,734,916	REMEDIAL ACTION	$26,211,687	REMEDIAL ACTION	$4,700,000
MTD980717565	03		$10,051,292	DESIGN ASSISTANCE	$3,151,653	TECHNICAL ASSISTANCE	$1,338,529
UT3890090035							
UT3890090035	01	On-site disposal (excavation, capping, covering, reveg)					
UT3890090035	02	On-site disposal (excavation, capping, covering, reveg)					
UT3890090035	02	Institutional Controls					
UT3890090035	03	Monitoring (all media and as separate remedy)					
UT3890090035	03	Permeable Reactive Barrier					
UT3890090035	03	Institutional Controls					
UTD980667208							
UTD980667208	01	Off-site disposal					
UTD980667208	01	On-site disposal (excavation, capping, covering, reveg)					
UTD980667208	01	Deconstruction/ decontamination of buildings					
UTD980667208	02						
UTD980667208	03	Monitored natural attenuation/recovery					
UTD980667208	03	Institutional Controls					
UTD980667208	03	Permeable Reactive Barrier					
UTD980667208	04						
UTD980667208	05						
UTD980667208	06						
UTD980667208	07						
UTD980667208	08						
MTD021997689							
MTD021997689	01	Monitored natural attenuation/recovery					
MTD021997689	01	Soil Amendments					

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
MTD021997689	01	Off-site disposal					
MTD021997689	01	Institutional Controls					
CON000802630			$548,995	GENERIC PA/SI	$88,273	NPL RP SEARCH	$80,522
CON000802630	01		$3,642,560	REMOVAL	$2,783,716	REMOVAL	$501,511
CON000802630	02		$80,717	COMBINED RI/FS	$68,385		
UTD980952840			539,188	PRP RI/FS	35,083	TECHNICAL ASSISTANCE	34,595
UTD980952840	01	Impoundment	425,831	TECHNICAL ASSISTANCE	99,988	MANAGEMENT ASSISTANCE	49,022
UTD980952840	01	Other – Engineering/Containment	425,831	TECHNICAL ASSISTANCE	99,988	MANAGEMENT ASSISTANCE	49,022
UTD980952840	01	Institutional Controls	425,831	TECHNICAL ASSISTANCE	99,988	MANAGEMENT ASSISTANCE	49,022
UTD980952840	02		546,430	TECHNICAL ASSISTANCE	496,900	NON-NPL PRP SEARCH	31,940
UTD980951388							
UTD980951388	01	On-site disposal (excavation, capping, covering, reveg)					
UTD980951388	01	Soil Amendments					
UTD980951388	01	Sediment dredging/ disposal					
UTD980951388	01	Institutional Controls					
UTD980951388	01	Monitoring (all media and as separate remedy)					
UTD980951388	02	On-site disposal (excavation, capping, covering, reveg)					
UTD980951388	02	Institutional Controls					
MTD980502777			$30,911,704	TECHNICAL ASSISTANCE GRANT	$514,399	REMOVAL ASSESSMENT	$175,337
MTD980502777	01	On-site disposal (excavation, capping, covering, reveg)	$2,762,801	REMEDIAL DESIGN	$1,006,755	REMEDIAL DESIGN	$819,000
MTD980502777	01	Soil Amendments	$2,762,801	REMEDIAL DESIGN	$1,006,755	REMEDIAL DESIGN	$819,000
MTD980502777	01	Sediment dredging/ disposal	$2,762,801	REMEDIAL DESIGN	$1,006,755	REMEDIAL DESIGN	$819,000
MTD980502777	01	Institutional Controls	$2,762,801	REMEDIAL DESIGN	$1,006,755	REMEDIAL DESIGN	$819,000
MTD980502777	02						
MTD980502777	03	Water treatment-lime	$4,080,387	TECHNICAL ASSISTANCE	$1,039,603	MANAGEMENT ASSISTANCE	$532,411
MTD980502777	03	Institutional Controls	$4,080,387	TECHNICAL ASSISTANCE	$1,039,603	MANAGEMENT ASSISTANCE	$532,411
MTD980502777	04	Water treatment-lime	$229,321	MANAGEMENT ASSISTANCE	$73,711	TECHNICAL ASSISTANCE	$17,640
MTD980502777	04	On-site disposal (excavation, capping, covering, reveg)	$229,321	MANAGEMENT ASSISTANCE	$73,711	TECHNICAL ASSISTANCE	$17,640
MTD980502777	04	Other – Engineering/Containment	$229,321	MANAGEMENT ASSISTANCE	$73,711	TECHNICAL ASSISTANCE	$17,640
MTD980502777	04	Surface water diversion	$229,321	MANAGEMENT ASSISTANCE	$73,711	TECHNICAL ASSISTANCE	$17,640
MTD980502777	04	Institutional Controls	$229,321	MANAGEMENT ASSISTANCE	$73,711	TECHNICAL ASSISTANCE	$17,640
MTD980502777	05						
MTD980502777	06		-$887				
MTD980502777	07	On-site disposal (excavation, capping, covering, reveg)	$984,220	PRP RA	$344,687	MANAGEMENT ASSISTANCE	$20,007
MTD980502777	07	Water treatment-other	$984,220	PRP RA	$344,687	MANAGEMENT ASSISTANCE	$20,007
MTD980502777	07	Solidification	$984,220	PRP RA	$344,687	MANAGEMENT ASSISTANCE	$20,007
MTD980502777	07	Off-site disposal	$984,220	PRP RA	$344,687	MANAGEMENT ASSISTANCE	$20,007
MTD980502777	07	Alternative drinking water	$984,220	PRP RA	$344,687	MANAGEMENT ASSISTANCE	$20,007
MTD980502777	07	Monitored natural attenuation/recovery	$984,220	PRP RA	$344,687	MANAGEMENT ASSISTANCE	$20,007
MTD980502777	07	Institutional Controls	$984,220	PRP RA	$344,687	MANAGEMENT ASSISTANCE	$20,007
MTD980502777	08		$7,716,840	PRP RI/FS	$2,465,721	RD/RA NEGOTIATIONS	$936,807

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
MTD980502777	09						
MTD980502777	10		$1,183,375	PRP REMOVAL	$404,700	PRP REMOVAL	$301,364
MTD980502777	11		$543,427	PRP REMOVAL	$236,271	PRP REMOVAL	$17,756
MTD980502777	12	On-site disposal (excavation, capping, covering, reveg)	$14,538				
MTD980502777	12	Surface water diversion	$14,538				
MTD980502777	12	Other – Engineering/Containment	$14,538				
MTD980502777	12	Water treatment-lime	$14,538				
MTD980502777	12	Impoundment	$14,538				
MTD980502777	12	Monitoring (all media and as separate remedy)	$14,538				
MTD980502777	12	Institutional Controls	$14,538				
MTD980502777	13		$6,527				
COD983769738			$2,292,248	MANAGEMENT ASSISTANCE	$61,091	GENERAL ENFORCEMENT	$47,415
COD983769738	01	On-site disposal (excavation, capping, covering, reveg)	$39,343	FIVE YEAR REMEDY ASSESSMENT	$6,067	REMOVAL ASSESSMENT	$2,047
COD983769738	01	Institutional Controls	$39,343	FIVE YEAR REMEDY ASSESSMENT	$6,067	REMOVAL ASSESSMENT	$2,047
COD983769738	01	Monitored natural attenuation/recovery	$39,343	FIVE YEAR REMEDY ASSESSMENT	$6,067	REMOVAL ASSESSMENT	$2,047
COD983769738	02	Institutional Controls	$65,618	FIVE YEAR REMEDY ASSESSMENT	$6,067	RECORDS MANAGEMENT	$1,412
COD983769738	02	Monitored natural attenuation/recovery	$65,618	FIVE YEAR REMEDY ASSESSMENT	$6,067	RECORDS MANAGEMENT	$1,412
COD983769738	02	Off-site disposal	$65,618	FIVE YEAR REMEDY ASSESSMENT	$6,067	RECORDS MANAGEMENT	$1,412
COD983769738	03	Alternative drinking water	$369,432	SECTION 107 LITIGATION	$198,599	LITIGATION (GENERIC)	$10,843
COD980806277							
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)					
COD980806277	01	On-site disposal (excavation, capping, covering, reveg)					
COD980806277	01	Monitoring (all media and as separate remedy)					
COD980806277	01	Alternative drinking water					
COD980806277	01	Institutional Controls					
COD980806277	02	Surface water diversion					
COD980806277	02	Other – Engineering/Containment					
CO0002378230							
CO0002378230	00						
COD983778432			$162,559,422	LONG TERM RESPONSE ACTION	$13,657,709	REMEDIAL ACTION	$7,211,091
COD983778432	00	Water treatment-other	$162,559,422	LONG TERM RESPONSE ACTION	$13,657,709	REMEDIAL ACTION	$7,211,091
COD983778432	00	Other – Engineering/Containment	$162,559,422	LONG TERM RESPONSE ACTION	$13,657,709	REMEDIAL ACTION	$7,211,091
COD983778432	01	Water treatment-other	$16,848,520	REMEDIAL ACTION	$3,697,737	REMEDIAL ACTION	$94,547
COD983778432	01	Other – Engineering/Containment	$16,848,520	REMEDIAL ACTION	$3,697,737	REMEDIAL ACTION	$94,547
COD983778432	01	Water treatment - Bioreactors (e.g., SRBs)	$16,848,520	REMEDIAL ACTION	$3,697,737	REMEDIAL ACTION	$94,547
COD983778432	01	Monitoring (all media and as separate remedy)	$16,848,520	REMEDIAL ACTION	$3,697,737	REMEDIAL ACTION	$94,547

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
COD983778432	02	On-site disposal (excavation, capping, covering, reveg)	$1,502,070	REMEDIAL ACTION	$1,495,083		
COD983778432	03		$6,513	RECORDS MANAGEMENT	$93		
COD983778432	04	Other – Engineering/Containment	$24,727,464	REMEDIAL ACTION	$20,050,000	REMEDIAL ACTION	$2,848,869
COD983778432	05	Impoundment	$5,264,917	REMEDIAL ACTION	$2,300,000	REMEDIAL DESIGN	$1,386,041
COD983778432	05	Monitoring (all media and as separate remedy)	$5,264,917	REMEDIAL ACTION	$2,300,000	REMEDIAL DESIGN	$1,386,041
COD983778432	05	On-site disposal (excavation, capping, covering, reveg)	$5,264,917	REMEDIAL ACTION	$2,300,000	REMEDIAL DESIGN	$1,386,041
COD983778432	05	Surface water diversion	$5,264,917	REMEDIAL ACTION	$2,300,000	REMEDIAL DESIGN	$1,386,041
COD983778432	05	Water treatment-lime	$5,264,917	REMEDIAL ACTION	$2,300,000	REMEDIAL DESIGN	$1,386,041
MTSFN7578012			$17,535,731	REMOVAL	$9,641,652	REMEDIAL DESIGN	$3,274,805
MTSFN7578012	01		$32,038	NON-NPL PRP SEARCH	$11,362	NPL RP SEARCH	$1,609
MTSFN7578012	02		$994,856	REMOVAL ASSESSMENT	$746,303	REMOVAL ASSESSMENT	$131,128
MTSFN7578012	03		$1,047,107	REMOVAL	$912,613	REMOVAL	$89,518
MTSFN7578012	04	On-site disposal (excavation, capping, covering, reveg)	$25,305,086	REMEDIAL ACTION	$10,081,046	REMEDIAL ACTION	$7,244,452
MTSFN7578012	04	Other – Engineering/Containment	$25,305,086	REMEDIAL ACTION	$10,081,046	REMEDIAL ACTION	$7,244,452
MTSFN7578012	04	Water treatment-other	$25,305,086	REMEDIAL ACTION	$10,081,046	REMEDIAL ACTION	$7,244,452
MTSFN7578012	04	Other – Engineering/Containment	$25,305,086	REMEDIAL ACTION	$10,081,046	REMEDIAL ACTION	$7,244,452
MTSFN7578012	04	Alternative drinking water	$25,305,086	REMEDIAL ACTION	$10,081,046	REMEDIAL ACTION	$7,244,452
MTSFN7578012	04	Institutional Controls	$25,305,086	REMEDIAL ACTION	$10,081,046	REMEDIAL ACTION	$7,244,452
MTSFN7578012	05		$2,690	REMOVAL	$10		
MTSFN7578012	06		$18,154				
MTSFN7578012	07		$20,826	REMOVAL	$12,479	REMOVAL	$8,347
MTSFN7578012	08		$8	NON-NPL PRP SEARCH	$8		
COD007063274			$219,087	FIVE YEAR REMEDY ASSESSMENT	$38,164	FIVE YEAR REMEDY ASSESSMENT	$15,524
COD007063274	01	On-site disposal (excavation, capping, covering, reveg)	$8,690	RECORDS MANAGEMENT	$163		
COD007063274	01	Impoundment	$8,690	RECORDS MANAGEMENT	$163		
UTN000802704			582,280	NON-NPL PRP SEARCH	186,018	HRS PACKAGE	49,889
UTN000802704	01		43,667	COMBINED RI/FS	43,667		
CO0002259588			$5,963,841	REMOVAL	$1,521,785	COMBINED RI/FS	$1,478,039
CO0002259588	01	Off-site disposal	$19,449,755	REMEDIAL ACTION	$13,610,708	REMOVAL	$3,795,553
CO0002259588	02		$338,207	PRP RI/FS	$89,304	HUMAN HEALTH RISK ASSESSMENT	$22,049
CO0002259588	03		$755,079	COMBINED RI/FS	$513,744	HUMAN HEALTH RISK ASSESSMENT	$30,843
SDD980717136							
SDD980717136	01	Institutional Controls					
SDD980717136	01	On-site disposal (excavation, capping, covering, reveg)					
AZD008397127							
AZD008397127	01						
CAD980496863							
CAD980496863	01	Other – Engineering/Containment					
CAD980496863	01	Surface water diversion					
CAD980496863	01	On-site disposal (excavation, capping, covering, reveg)					

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
CAD980496863	01	Institutional Controls					
CAD980496863	02	On-site disposal (excavation, capping, covering, reveg)					
NVD980813646							
NVD980813646	01	Off-site disposal					
NVD980813646	01	Institutional Controls					
NVD980813646	02						
CAD980638860							
CAD980638860	01	Off-site disposal					
CAD980638860	02	Off-site disposal					
CAD980817217							
CAD980817217	01	On-site disposal (excavation, capping, covering, reveg)					
CAD980817217	01	Surface water diversion					
CAD980817217	01	Other – Engineering/Containment					
CAD980817217	01	Institutional Controls					
CAD980817217	02	On-site disposal (excavation, capping, covering, reveg)					
AZ0000309013							
AZ0000309013	01						
CAD980498612							
CAD980498612	01	On-site disposal (excavation, capping, covering, reveg)					
CAD980498612	01	Surface water diversion					
CAD980498612	01	Other – Engineering/Containment					
CAD980498612	02	Water treatment-lime					
CAD980498612	02	Water treatment-lime					
CAD980498612	03	Water treatment-lime					
CAD980498612	03	Water treatment-lime					
CAD980498612	04	Other – Engineering/Containment					
CAD980498612	04	Water treatment-lime					
CAD980498612	05	On-site disposal (excavation, capping, covering, reveg)					
CAD980498612	06						
CA1141190578							
CA1141190578	01						
CA1141190578	02						
CA1141190578	03						
CAD983618893							
CAD983618893	01	Institutional Controls					
CAD983618893	01	Other – Engineering/Containment					
CAD983618893	01	Deconstruction/ decontamination of buildings					
CAD983618893	01	On-site disposal (excavation, capping, covering, reveg)					
CAD983618893	01	Water treatment-other					
CAD983618893	02	Alternative drinking water					
CAD983618893	02	Institutional Controls					
CAD983618893	03						

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
CAD983618893	04						
CAD980673685							
CAD980673685	01						
CAD980893275							
CAD980893275	01						
CAD980893275	02						
CAD980893275	03						
WAD009045279			19,422				
WAD009045279	01						
OR0000515759			$780,684	REMOVAL	$433,950	REMOVAL	$61,754
OR0000515759	01						
IDD980725832			$6,045,611	PRP RI/FS	$653,392	PRP REMOVAL	$337,681
IDD980725832	01	Water treatment-lime	$1,057,125	PRP RA	$778,850	PRP RD	$140,000
IDD980725832	01	On-site disposal (excavation, capping, covering, reveg)	$1,057,125	PRP RA	$778,850	PRP RD	$140,000
IDD980725832	01	Monitored natural attenuation/recovery	$1,057,125	PRP RA	$778,850	PRP RD	$140,000
IDD980725832	01	Institutional Controls	$1,057,125	PRP RA	$778,850	PRP RD	$140,000
IDD048340921			$175,196,355	REMEDIAL ACTION	$19,379,192	SECTION 106 107 LITIGATION	$9,689,540
IDD048340921	01	Off-site disposal	$10,687,573	REMEDIAL ACTION	$9,117,935	REMEDIAL ACTION	$1,000,000
IDD048340921	01	Institutional Controls	$10,687,573	REMEDIAL ACTION	$9,117,935	REMEDIAL ACTION	$1,000,000
IDD048340921	02	On-site disposal (excavation, capping, covering, reveg)	$101,938,173	REMEDIAL ACTION	$76,383,526	REMEDIAL DESIGN	$4,567,764
IDD048340921	02	Water treatment - Created Wetlands	$101,938,173	REMEDIAL ACTION	$76,383,526	REMEDIAL DESIGN	$4,567,764
IDD048340921	02	Surface water diversion	$101,938,173	REMEDIAL ACTION	$76,383,526	REMEDIAL DESIGN	$4,567,764
IDD048340921	02	Alternative drinking water	$101,938,173	REMEDIAL ACTION	$76,383,526	REMEDIAL DESIGN	$4,567,764
IDD048340921	02	Institutional Controls	$101,938,173	REMEDIAL ACTION	$76,383,526	REMEDIAL DESIGN	$4,567,764
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	$130,735,513	REMEDIAL ACTION	$82,547,381	REMOVAL	$10,894,907
IDD048340921	03	Alternative drinking water	$130,735,513	REMEDIAL ACTION	$82,547,381	REMOVAL	$10,894,907
IDD048340921	03	Institutional Controls	$130,735,513	REMEDIAL ACTION	$82,547,381	REMOVAL	$10,894,907
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	$130,735,513	REMEDIAL ACTION	$82,547,381	REMOVAL	$10,894,907
IDD048340921	03	On-site disposal (excavation, capping, covering, reveg)	$130,735,513	REMEDIAL ACTION	$82,547,381	REMOVAL	$10,894,907
WAD980726368			28,114,802	PRP RD	449,795	REMOVAL	400,780
WAD980726368	01	Air Stripping	325	MANAGEMENT ASSISTANCE	5,600	MANAGEMENT ASSISTANCE	69
WAD980726368	01	Off-site disposal	325	MANAGEMENT ASSISTANCE	5,600	MANAGEMENT ASSISTANCE	69
WAD980726368	01	Other – Treatment Technology	325	MANAGEMENT ASSISTANCE	5,600	MANAGEMENT ASSISTANCE	69
WAD980726368	01	Soil Vapor Extraction	325	MANAGEMENT ASSISTANCE	5,600	MANAGEMENT ASSISTANCE	69
WAD980726368	01	Thermal Treatment	325	MANAGEMENT ASSISTANCE	5,600	MANAGEMENT ASSISTANCE	69
WAD980726368	01	Water treatment - Bioreactors (e.g., SRBs)	325	MANAGEMENT ASSISTANCE	5,600	MANAGEMENT ASSISTANCE	69
WAD980726368	01	Institutional Controls	325	MANAGEMENT ASSISTANCE	5,600	MANAGEMENT ASSISTANCE	69
WAD980726368	01	Off-site disposal	325	MANAGEMENT ASSISTANCE	5,600	MANAGEMENT ASSISTANCE	69
WAD980726368	01	Sediment dredging/ disposal	325	MANAGEMENT ASSISTANCE	5,600	MANAGEMENT ASSISTANCE	69
WAD980726368	02						
WAD980726368	03						

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
WAD980726368	04		31,961	MANAGEMENT ASSISTANCE	31,961		
WAD980726368	05		37,478	MANAGEMENT ASSISTANCE	37,478		
WAD980726368	06		3,274	MANAGEMENT ASSISTANCE	3,274		
WAD980726368	07		113,969	MANAGEMENT ASSISTANCE	100,969	PRP RD	13,000
WAD980726368	08		34	MANAGEMENT ASSISTANCE	34		
WAD980726368	09		14,255	MANAGEMENT ASSISTANCE	14,255		
WAD980726368	10						
WAD980726368	11						
WAD980726368	12		1,968,700	PRP RA	1,220,437	PRP RI/FS	289,051
WAD980726368	13		724,556	PRP RD	299,759	PRP RA	133,082
WAD980726368	14		103,682	PRP RA	50,000	PRP RD	25,000
WAD980726368	16						
WAD980726368	17		158,131	PRP RD	65,294	PRP RA	26,195
WAD980726368	18		11,981	TECHNICAL ASSISTANCE	11,981		
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	58,105	REMEDIAL DESIGN	50,610	TECHNICAL ASSISTANCE GRANT	6,427
WAD980726368	19	Institutional Controls	58,105	REMEDIAL DESIGN	50,610	TECHNICAL ASSISTANCE GRANT	6,427
WAD980726368	19	On-site disposal (excavation, capping, covering, reveg)	58,105	REMEDIAL DESIGN	50,610	TECHNICAL ASSISTANCE GRANT	6,427
WAD980726368	19	Sediment dredging/ disposal	58,105	REMEDIAL DESIGN	50,610	TECHNICAL ASSISTANCE GRANT	6,427
WAD980726368	20	On-site disposal (excavation, capping, covering, reveg)	478,743	PRP RA	308,309	MANAGEMENT ASSISTANCE	72,110
WAD980726368	20	Off-site disposal	478,743	PRP RA	308,309	MANAGEMENT ASSISTANCE	72,110
WAD980726368	20	Institutional Controls	478,743	PRP RA	308,309	MANAGEMENT ASSISTANCE	72,110
WAD980726368	21	Deconstruction/ decontamination of buildings					
WAD980726368	21	On-site disposal (excavation, capping, covering, reveg)					
WAD980726368	21	Surface water diversion					
WAD980726368	22	Off-site disposal	117,345	PRP RA	92,274	MANAGEMENT ASSISTANCE	16,911
WAD980726368	22	Off-site disposal	117,345	PRP RA	92,274	MANAGEMENT ASSISTANCE	16,911
WAD980726368	23	On-site disposal (excavation, capping, covering, reveg)					
WAD980726368	23	Institutional Controls					
WAD980726368	24						
WAD980726368	25		214,389	PRP RA	167,304	PRP RA	17,167
WAD980726368	26		8,480	TECHNICAL ASSISTANCE GRANT	5,741	TECHNICAL ASSISTANCE GRANT	1,768
IDD984666610			$3,647,799	MANAGEMENT ASSISTANCE	$422,350	REMOVAL ASSESSMENT	$72,006
IDD984666610	01	Other – Engineering/Containment	$556,230	MANAGEMENT ASSISTANCE	$169,401	MANAGEMENT ASSISTANCE	$66,481
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	$556,230	MANAGEMENT ASSISTANCE	$169,401	MANAGEMENT ASSISTANCE	$66,481
IDD984666610	01	Institutional Controls	$556,230	MANAGEMENT ASSISTANCE	$169,401	MANAGEMENT ASSISTANCE	$66,481
IDD984666610	01	On-site disposal (excavation, capping, covering, reveg)	$556,230	MANAGEMENT ASSISTANCE	$169,401	MANAGEMENT ASSISTANCE	$66,481
IDD984666610	03		$184,302	PRP RD	$75,525	MANAGEMENT ASSISTANCE	$35,669
IDD984666610	04		$297,430	PRP RI/FS	$297,430		

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
ORN001002616			$698,653	REMOVAL ASSESSMENT	$119,769	REMOVAL ASSESSMENT	$74,136
ORN001002616	01		$508,333	COMBINED RI/FS	$449,937	TECHNICAL ASSISTANCE	$31,996
OR7122307658							
OR7122307658	01						
OR7122307658	02	On-site disposal (excavation, capping, covering, reveg)					
OR7122307658	02	Water treatment-lime					
OR7122307658	02	Institutional Controls					
WAD000065508							
WAD000065508	01	On-site disposal (excavation, capping, covering, reveg)					
WAD000065508	01	Water treatment-other					
WAD000065508	01	Institutional Controls					
ORD052221025			$355,387				
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)					
ORD052221025	01	On-site disposal (excavation, capping, covering, reveg)					
ORD052221025	01	Water treatment-other					
ORD052221025	01	Institutional Controls					
ORD052221025	02						
WAD980978753			11,478,893	COMBINED RI/FS	3,405,325	COMBINED RI/FS	2,127,003
WAD980978753	01	On-site disposal (excavation, capping, covering, reveg)	881,287	MANAGEMENT ASSISTANCE	390,922	COMBINED RI/FS	177,885
WAD980978753	01	Water treatment-other	881,287	MANAGEMENT ASSISTANCE	390,922	COMBINED RI/FS	177,885
WAD980978753	01	Off-site disposal	881,287	MANAGEMENT ASSISTANCE	390,922	COMBINED RI/FS	177,885
WAD980978753	01	Surface water diversion	881,287	MANAGEMENT ASSISTANCE	390,922	COMBINED RI/FS	177,885
WAD980978753	01	Institutional Controls	881,287	MANAGEMENT ASSISTANCE	390,922	COMBINED RI/FS	177,885
IDD081830994			$825,690	MANAGEMENT ASSISTANCE	$22,066	MANAGEMENT ASSISTANCE	$13,435
IDD081830994	01	Monitored natural attenuation/recovery	$114,267	FIVE YEAR REMEDY ASSESSMENT	$44,648	MANAGEMENT ASSISTANCE	$17,903
IDD081830994	01	Institutional Controls	$114,267	FIVE YEAR REMEDY ASSESSMENT	$44,648	MANAGEMENT ASSISTANCE	$17,903
IDD081830994	01	Institutional Controls	$114,267	FIVE YEAR REMEDY ASSESSMENT	$44,648	MANAGEMENT ASSISTANCE	$17,903
IDD081830994	01	On-site disposal (excavation, capping, covering, reveg)	$114,267	FIVE YEAR REMEDY ASSESSMENT	$44,648	MANAGEMENT ASSISTANCE	$17,903
ORD009412677			$741,181	PRP REMOVAL	$11,557	PRP REMOVAL	$10,671
ORD009412677	01	Off-site disposal	$397,819	PRP RA	$263,879	MANAGEMENT ASSISTANCE	$56,725
ORD009412677	01	Off-site disposal	$397,819	PRP RA	$263,879	MANAGEMENT ASSISTANCE	$56,725
ORD009412677	01	On-site disposal (excavation, capping, covering, reveg)	$397,819	PRP RA	$263,879	MANAGEMENT ASSISTANCE	$56,725
ORD009412677	01	Water treatment-other	$397,819	PRP RA	$263,879	MANAGEMENT ASSISTANCE	$56,725
ORD009412677	01	Institutional Controls	$397,819	PRP RA	$263,879	MANAGEMENT ASSISTANCE	$56,725
ORD009412677	02	Institutional Controls					
ORD009412677	02	Other – Engineering/Containment					
ORD009412677	02	On-site disposal (excavation, capping, covering, reveg)					
AK0001897602							
AK0001897602	01						

EPA ID	OU	Selected Remedy (Q7)	Total Cleanup Cost	Most Costly Action Type	Most Costly Action	Second Most Costly Action Type	Second Most Costly Action
WAD980722789			1,221,048	MANAGEMENT ASSISTANCE	2,113	LABORATORY SUPPORT	6
WAD980722789	01	On-site disposal (excavation, capping, covering, reveg)	1	MANAGEMENT ASSISTANCE	1		
WAD980722789	01	Institutional Controls	1	MANAGEMENT ASSISTANCE	1		
IDD980665459							
IDD980665459	01						
ORD050955848			$1,763,311	PRP RD	$30,064	PRP RD	$16,469
ORD050955848	01	Water treatment-other	$437,558	PRP LR	$284,961	MANAGEMENT ASSISTANCE	$104,626
ORD050955848	01	On-site disposal (excavation, capping, covering, reveg)	$437,558	PRP LR	$284,961	MANAGEMENT ASSISTANCE	$104,626
ORD050955848	01	Institutional Controls	$437,558	PRP LR	$284,961	MANAGEMENT ASSISTANCE	$104,626
ORD050955848	02	Off-site disposal					
ORD050955848	03	Off-site disposal					
ORD050955848	03	Institutional Controls					
ORD050955848	04						

Table C-11 – Completed RODs, ROD Amendments, and ESD's at the 126 Site Universe

Region	Site ID	EPA ID	Site Name	Action	Action ID	OU	OU Name	Action Date
01	0101028	MED980524128	CALLAHAN MINING CORP	RECORD OF DECISION	001	01	PCB/RESIDENTIAL	9/30/2009
01	0102071	VTD988366621	ELIZABETH MINE	Explanation Of Significant Differences	001	01	ENTIRE SITE	9/26/2008
01	0102071	VTD988366621	ELIZABETH MINE	RECORD OF DECISION	001	01	ENTIRE SITE	9/28/2006
01	0102065	VTD988366571	ELY COPPER MINE	RECORD OF DECISION	001	01	WASTE PILES	9/28/2011
02	0200996	NJD980785646	GLEN RIDGE RADIUM SITE	RECORD OF DECISION	001	01	MITIGATION SYSTEMS & HOMES	6/30/1989
02	0200996	NJD980785646	GLEN RIDGE RADIUM SITE	RECORD OF DECISION	002	02	GROUNDWATER	9/14/2005
02	0200996	NJD980785646	GLEN RIDGE RADIUM SITE	RECORD OF DECISION	003	03	HOME & STREET REMEDIATION	6/1/1990
02	0202972	NYD986882660	LI TUNGSTEN CORP.	RECORD OF DECISION	001	01	ENTIRE SITE	9/30/1999
02	0202972	NYD986882660	LI TUNGSTEN CORP.	Explanation Of Significant Differences	001	02	OU 2 - CAPTAIN'S COVE RAD	10/28/2002
02	0202972	NYD986882660	LI TUNGSTEN CORP.	Explanation Of Significant Differences	002	02	OU 2 - CAPTAIN'S COVE RAD	5/2/2005
02	0202972	NYD986882660	LI TUNGSTEN CORP.	RECORD OF DECISION	002	02	OU 2 - CAPTAIN'S COVE RAD	9/30/1999
02	0202972	NYD986882660	LI TUNGSTEN CORP.	RECORD OF DECISION	003	04	CREEK RADIATION	3/30/2005
02	0200665	NJD980529762	MAYWOOD CHEMICAL CO.	RECORD OF DECISION	002	02	DOE - MISS	9/22/2003
02	0200997	NJD980785653	MONTCLAIR/WEST ORANGE RADIUM SITE	RECORD OF DECISION	001	01	MITIGATION SYSTEM & HOMES	6/30/1989
02	0200997	NJD980785653	MONTCLAIR/WEST ORANGE RADIUM SITE	RECORD OF DECISION	002	02	GROUNDWATER	9/14/2005
02	0200997	NJD980785653	MONTCLAIR/WEST ORANGE RADIUM SITE	RECORD OF DECISION	003	03	HOME & STREET REMEDIATION	6/1/1990
02	0200203	NJD002365930	SHIELDALLOY CORP.	RECORD OF DECISION	001	01	GROUNDWATER	9/24/1996
02	0200772	NJD980654172	U.S. RADIUM CORP.	RECORD OF DECISION	001	01	SATELLITE AND VICINITY PROP.	9/21/1993
02	0200772	NJD980654172	U.S. RADIUM CORP.	RECORD OF DECISION	002	02	HIGH & ALDEN STS	8/29/1995
02	0200772	NJD980654172	U.S. RADIUM CORP.	RECORD OF DECISION	003	03	GROUND WATER	9/27/2006
02	0202931	NJ1891837980	W.R. GRACE & CO., INC./WAYNE INTERIM STORAGE SITE (USDOE)	Explanation Of Significant Differences	001	01		12/10/2003
02	0202931	NJ1891837980	W.R. GRACE & CO., INC./WAYNE INTERIM STORAGE SITE (USDOE)	RECORD OF DECISION	001	01		5/15/2000
03	0304433	PAD987341716	AUSTIN AVENUE RADIATION SITE	RECORD OF DECISION	001	01	HOMES	6/27/1994
03	0304433	PAD987341716	AUSTIN AVENUE RADIATION SITE	RECORD OF DECISION	002	02	GROUNDWATER	9/27/1996
03	0301103	PAD077087989	FOOTE MINERAL CO.	Explanation Of Significant Differences	001	01	SITEWIDE	4/7/2008
03	0301103	PAD077087989	FOOTE MINERAL CO.	RECORD OF DECISION	001	01	SITEWIDE	3/31/2006
03	0301569	PAD980829493	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	Explanation Of Significant Differences	001	01	SOIL	4/19/2001
03	0301569	PAD980829493	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	Explanation Of Significant Differences	002	01	SOIL	12/30/2004
03	0301569	PAD980829493	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	RECORD OF DECISION	001	01	SOIL	9/30/1997
03	0300624	PAD002395887	PALMERTON ZINC PILE	RECORD OF DECISION	001	01	BLUE MOUNTAIN	9/4/1987
03	0300624	PAD002395887	PALMERTON ZINC PILE	Explanation Of Significant Differences	001	02	CINDERBANK	8/27/2002
03	0300624	PAD002395887	PALMERTON ZINC PILE	RECORD OF DECISION	002	02	CINDERBANK	6/29/1988
03	0300624	PAD002395887	PALMERTON ZINC PILE	RECORD OF DECISION	003	03	COMMUNITY SOILS	10/9/2001

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03	0302737	VAD980705404	U.S. TITANIUM	Explanation Of Significant Differences	001	01		9/26/1990
03	0302737	VAD980705404	U.S. TITANIUM	Explanation Of Significant Differences	002	01		2/3/1995
03	0302737	VAD980705404	U.S. TITANIUM	Explanation Of Significant Differences	003	01		9/25/2002
03	0302737	VAD980705404	U.S. TITANIUM	RECORD OF DECISION	001	01		11/21/1989
04	0405550	SCD987577913	BREWER GOLD MINE	RECORD OF DECISION	001	01	OPERABLE UNIT 1	9/29/2005
04	0405468	TND987768546	CHEMET CO.	RECORD OF DECISION	001	01		5/15/1996
04	0406638	TN0001890839	COPPER BASIN MINING DISTRICT	RECORD OF DECISION	001	05	OCOEE RIVER	9/28/2011
04	0406784	SCD003360476	MACALLOY CORPORATION	RECORD OF DECISION	001	01	OPERABLE UNIT 1	8/21/2002
04	0401991	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	RECORD OF DECISION	002	00	SITEWIDE	7/6/2000
04	0401991	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	Explanation Of Significant Differences	001	01	OPERABLE UNIT 1	7/7/1994
04	0401991	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	RECORD OF DECISION	001	01	OPERABLE UNIT 1	2/19/1993
04	0400578	FLD010596013	STAUFFER CHEMICAL CO. (TARPON SPRINGS)	Explanation Of Significant Differences	001	01	OPERABLE UNIT 1	5/24/2007
04	0400578	FLD010596013	STAUFFER CHEMICAL CO. (TARPON SPRINGS)	RECORD OF DECISION	001	01	OPERABLE UNIT 1	7/2/1998
05	0500396	ILD062340641	DEPUE/NEW JERSEY ZINC/MOBIL CHEMICAL CORP.	RECORD OF DECISION	002	01	SOUTH DITCH	10/3/2003
05	0500648	ILD980606941	EAGLE ZINC CO DIV T L DIAMOND	Explanation Of Significant Differences	001	01	BUILDING DEMOLITITION	5/5/2011
05	0500648	ILD980606941	EAGLE ZINC CO DIV T L DIAMOND	RECORD OF DECISION	001	01	BUILDING DEMOLITITION	9/16/2009
05	0504223	OHD004379970	ORMET CORP.	Explanation Of Significant Differences	001	01	DESIGN	4/1/1997
05	0504223	OHD004379970	ORMET CORP.	RECORD OF DECISION	001	01	DESIGN	9/12/1994
05	0503034	MID980901946	TORCH LAKE	ROD Amendment	001	01	TAILING PILES - TORCH LAKE	7/31/2009
05	0503034	MID980901946	TORCH LAKE	RECORD OF DECISION	001	01	TAILING PILES - TORCH LAKE	9/30/1992
05	0503034	MID980901946	TORCH LAKE	RECORD OF DECISION	002	02	SURFACE WATER	3/31/1994
06	0600806	NMD002899094	CHEVRON QUESTA MINE	RECORD OF DECISION	001	00	SITEWIDE	12/20/2010
06	0600897	NMD980749378	CIMARRON MINING CORP.	RECORD OF DECISION	001	01		9/21/1990
06	0600897	NMD980749378	CIMARRON MINING CORP.	RECORD OF DECISION	002	02		9/6/1991
06	0600952	NMD981155930	CLEVELAND MILL	ROD Amendment	001	01		9/20/1999
06	0600952	NMD981155930	CLEVELAND MILL	RECORD OF DECISION	001	01		9/22/1993
06	0600816	NMD007860935	HOMESTAKE MINING CO.	RECORD OF DECISION	001	01	GROUNDWATER	9/27/1989
06	0601010	OKD000829440	NATIONAL ZINC CORP.	RECORD OF DECISION	001	01		12/13/1994
06	0601010	OKD000829440	NATIONAL ZINC CORP.	RECORD OF DECISION	002	02		10/2/1996
06	0601269	OKD980629844	TAR CREEK (OTTAWA COUNTY)	RECORD OF DECISION	001	01		6/6/1984
06	0601269	OKD980629844	TAR CREEK (OTTAWA COUNTY)	Explanation Of Significant Differences	001	02		8/30/2007
06	0601269	OKD980629844	TAR CREEK (OTTAWA COUNTY)	RECORD OF DECISION	002	02		8/27/1997
06	0601269	OKD980629844	TAR CREEK (OTTAWA COUNTY)	RECORD OF DECISION	003	04	MINING WASTES (NONRESIDENTIAL)	2/20/2008
06	0602105	TXD062113329	TEX-TIN CORP.	ROD Amendment	001	01	TEX TIN FACILITY	9/28/2000
06	0602105	TXD062113329	TEX-TIN CORP.	RECORD OF DECISION	001	01	TEX TIN FACILITY	5/17/1999
06	0602105	TXD062113329	TEX-TIN CORP.	RECORD OF DECISION	004	02	AMOCO PARCEL H	9/27/2001
06	0602105	TXD062113329	TEX-TIN CORP.	RECORD OF DECISION	003	03	OFF-SITE RESIDENTIAL AREA	9/29/2000
06	0602105	TXD062113329	TEX-TIN CORP.	RECORD OF DECISION	002	04	SWAN LAKE SALT MARSH	9/27/2001

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06	0604674	OKD987096195	TULSA FUEL AND MANUFACTURING	RECORD OF DECISION	001	01	SOURCE	11/24/2008
06	0600819	NMD030443303	UNITED NUCLEAR CORP.	RECORD OF DECISION	001	01	OVERALL SITE	9/30/1988
07	0702917	MO0000958611	ANNAPOLIS LEAD MINE	Explanation Of Significant Differences	001	01	MINING AREA	9/9/2008
07	0702917	MO0000958611	ANNAPOLIS LEAD MINE	RECORD OF DECISION	001	01	MINING AREA	9/29/2005
07	0702917	MO0000958611	ANNAPOLIS LEAD MINE	RECORD OF DECISION	002	02	BIG CREEK	6/28/2007
07	0702917	MO0000958611	ANNAPOLIS LEAD MINE	RECORD OF DECISION	003	03	TOWN OF ANNAPOLIS	6/29/2007
07	0701639	MOD981126899	BIG RIVER MINE TAILINGS/ST. JOE MINERALS CORP.	RECORD OF DECISION	001	01	RESIDENTIAL ACT/SOURCE CONTROL	9/30/2011
07	0700667	KSD980741862	CHEROKEE COUNTY	Explanation Of Significant Differences	001	01	GALENA ALTERNATE WATER SUPPLY	7/27/1989
07	0700667	KSD980741862	CHEROKEE COUNTY	RECORD OF DECISION	001	01	GALENA ALTERNATE WATER SUPPLY	12/21/1987
07	0700667	KSD980741862	CHEROKEE COUNTY	ROD Amendment	002	03	BAXTER SPRINGS SUBSITE	9/29/2006
07	0700667	KSD980741862	CHEROKEE COUNTY	RECORD OF DECISION	004	03	BAXTER SPRINGS SUBSITE	8/20/1997
07	0700667	KSD980741862	CHEROKEE COUNTY	ROD Amendment	001	04	TREECE SUBSITE	9/29/2006
07	0700667	KSD980741862	CHEROKEE COUNTY	RECORD OF DECISION	007	04	TREECE SUBSITE	8/20/1997
07	0700667	KSD980741862	CHEROKEE COUNTY	RECORD OF DECISION	002	05	GALENA GROUNDWATER/SURFACEWATR	9/18/1989
07	0700667	KSD980741862	CHEROKEE COUNTY	RECORD OF DECISION	006	06	BADGER, LAWTON, WACO	9/30/2004
07	0700667	KSD980741862	CHEROKEE COUNTY	RECORD OF DECISION	003	07	GALENA RESIDENTIAL SOILS	7/29/1996
07	0701102	MOD098633415	MADISON COUNTY MINES	RECORD OF DECISION	001	03	MADWIDE RESIDENTIAL	7/31/2008
07	0701102	MOD098633415	MADISON COUNTY MINES	RECORD OF DECISION	002	04	CONRAD	9/29/2011
07	0701651	MOD981507585	NEWTON COUNTY MINE TAILINGS	RECORD OF DECISION	003	01	DIAMOND/SPRING CITY/GRANBY	6/21/2010
07	0701651	MOD981507585	NEWTON COUNTY MINE TAILINGS	RECORD OF DECISION	001	02	REMAINDER OF NEWTON COUNTY	6/21/2010
07	0703481	NESFN0703481	OMAHA LEAD	RECORD OF DECISION	001	01	CONTAMINATED SOILS	12/15/2004
07	0703481	NESFN0703481	OMAHA LEAD	RECORD OF DECISION	002	02	FINAL REMEDIAL ACTION	5/13/2009
07	0701290	MOD980686281	ORONOGO-DUENWEG MINING BELT	RECORD OF DECISION	002	01	MINE AND MILL WASTE	9/30/2004
07	0701290	MOD980686281	ORONOGO-DUENWEG MINING BELT	RECORD OF DECISION	001	02	RESIDENTIAL YARDS	8/1/1996
07	0701290	MOD980686281	ORONOGO-DUENWEG MINING BELT	RECORD OF DECISION	003	04	GROUND WATER	7/29/1998
07	0705027	MON000705027	WASHINGTON COUNTY LEAD DISTRICT - OLD MINES	RECORD OF DECISION	001	01	RESIDENTIAL YARD REMOVAL	9/29/2011
07	0705023	MON000705023	WASHINGTON COUNTY LEAD DISTRICT - POTOSI	RECORD OF DECISION	001	01	RESIDENTIAL YARD REMOVAL	9/29/2011
07	0705032	MON000705032	WASHINGTON COUNTY LEAD DISTRICT - RICHWOODS	RECORD OF DECISION	001	01	RESIDENTIAL YARD REMOVAL	9/29/2011
08	0800403	MTD093291656	ANACONDA CO. SMELTER	ROD Amendment	003	04	WATER, WASTE AND SOILS	9/29/2011
08	0800403	MTD093291656	ANACONDA CO. SMELTER	RECORD OF DECISION	005	04	WATER, WASTE AND SOILS	9/29/1998
08	0800403	MTD093291656	ANACONDA CO. SMELTER	Explanation Of Significant Differences	001	07	OLD WORKS/EAST ANACONDA	11/6/1995
08	0800403	MTD093291656	ANACONDA CO. SMELTER	RECORD OF DECISION	003	07	OLD WORKS/EAST ANACONDA	3/8/1994
08	0800403	MTD093291656	ANACONDA CO. SMELTER	RECORD OF DECISION	002	11	FLUE DUST	9/23/1991
08	0800403	MTD093291656	ANACONDA CO. SMELTER	ROD Amendment	001	15	MILL CREEK	1/6/1988
08	0800403	MTD093291656	ANACONDA CO. SMELTER	RECORD OF DECISION	001	15	MILL CREEK	10/2/1987

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08	0800403	MTD093291656	ANACONDA CO. SMELTER	RECORD OF DECISION	004	16	COMMUNITY SOILS	9/30/1996
08	0800078	COD007063530	ASARCO, INC. (GLOBE PLANT)	RECORD OF DECISION	001	03	COMMUNITY SOILS	2/18/1993
08	0801057	MTD982572562	BASIN MINING AREA	RECORD OF DECISION	001	01	TOWN OF BASIN	3/30/2001
08	0801478	COD980717938	CALIFORNIA GULCH	Explanation Of Significant Differences	002	01	YAK TUNNEL	10/1/1991
08	0801478	COD980717938	CALIFORNIA GULCH	Explanation Of Significant Differences	001	01	YAK TUNNEL	4/1/1989
08	0801478	COD980717938	CALIFORNIA GULCH	ROD Amendment	001	01	YAK TUNNEL	3/23/1989
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	001	01	YAK TUNNEL	3/29/1988
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	014	02	HECLA TAILINGS	9/30/1999
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	005	03	D & RG SLAG PILES	5/6/1998
08	0801478	COD980717938	CALIFORNIA GULCH	Explanation Of Significant Differences	004	04	UPPER CAL GULCH	3/17/2004
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	008	04	UPPER CAL GULCH	3/31/1998
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	006	05	SMELTERS/MILL SITES	10/31/2000
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	016	05	SMELTERS/MILL SITES	9/29/2000
08	0801478	COD980717938	CALIFORNIA GULCH	ROD Amendment	002	06	HAMM'S TAILINGS/PENROSE DUMP	9/28/2010
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	011	06	HAMM'S TAILINGS/PENROSE DUMP	9/25/2003
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	007	07	APACHE TAILINGS	6/6/2000
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	004	08	LOWER CAL GULCH	9/29/2000
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	003	09	RESIDENTIAL SOIL	9/2/1999
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	002	10	OREGON GULCH	8/8/1997
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	017	11	ARKANSAS FLOOD PLAIN	9/28/2005
08	0801478	COD980717938	CALIFORNIA GULCH	RECORD OF DECISION	010	12	SITE-WIDE WATER QUALITY	9/22/2009
08	0800892	COD981551427	CAPTAIN JACK MILL	Explanation Of Significant Differences	001	01	TBD	10/6/2011
08	0800892	COD981551427	CAPTAIN JACK MILL	RECORD OF DECISION	001	01	TBD	9/29/2008
08	0801507	MT0001096353	CARPENTER SNOW CREEK MINING DISTRICT	RECORD OF DECISION	001	01	TOWN OF NEIHART	4/6/2009
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	RECORD OF DECISION	001	01	MINE DISCHARGE TREATMENT	9/30/1987
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	Explanation Of Significant Differences	001	02	TAILINGS/WASTEROCK/REMEDIATIO N	9/1/1999
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	RECORD OF DECISION	002	02	TAILINGS/WASTEROCK/REMEDIATIO N	3/31/1988
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	Explanation Of Significant Differences	003	03	DISCHARGE CONTROL/PHASE II	6/6/2005
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	ROD Amendment	001	03	DISCHARGE CONTROL/PHASE II	9/22/2003
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	RECORD OF DECISION	003	03	DISCHARGE CONTROL/PHASE II	9/30/1991
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	ROD Amendment	003	04	NORTH CLEAR CREEK	4/29/2010
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	ROD Amendment	002	04	NORTH CLEAR CREEK	9/25/2006
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	RECORD OF DECISION	004	04	NORTH CLEAR CREEK	9/29/2004
08	0801257	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	Explanation Of Significant Differences	001	01	RESIDENTIAL SOILS	11/15/2005
08	0801257	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	RECORD OF DECISION	001	01	RESIDENTIAL SOILS	9/30/2002
08	0801257	UTD988075719	DAVENPORT AND FLAGSTAFF SMELTERS	RECORD OF DECISION	002	02	NON-RES. LITTLE COTTON CREEK	9/16/2009
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	004	01	12TH & QUIVAS PROPERTIES	9/29/1987

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08	0800247	COD980716955	DENVER RADIUM SITE	Explanation Of Significant Differences	002	02	DUWALD STEEL	9/13/1993
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	005	02	DUWALD STEEL	9/29/1987
08	0800247	COD980716955	DENVER RADIUM SITE	Explanation Of Significant Differences	003	03	1000 WEST LOUISIANA	12/13/1993
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	006	03	1000 WEST LOUISIANA	9/29/1987
08	0800247	COD980716955	DENVER RADIUM SITE	Explanation Of Significant Differences	004	04	ROBCO	12/1/1994
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	002	04	ROBCO	9/30/1986
08	0800247	COD980716955	DENVER RADIUM SITE	Explanation Of Significant Differences	005	05	ROBCO	12/1/1994
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	003	05	ROBCO	6/30/1987
08	0800247	COD980716955	DENVER RADIUM SITE	Explanation Of Significant Differences	006	06	OPEN LANDS	1/17/1995
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	007	06	OPEN LANDS	9/29/1987
08	0800247	COD980716955	DENVER RADIUM SITE	Explanation Of Significant Differences	001	07	STREETS	9/15/1992
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	001	07	STREETS	3/24/1986
08	0800247	COD980716955	DENVER RADIUM SITE	Explanation Of Significant Differences	008	08	SHATTUCK	3/12/2007
08	0800247	COD980716955	DENVER RADIUM SITE	ROD Amendment	001	08	SHATTUCK	6/16/2000
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	009	08	SHATTUCK	1/28/1992
08	0800247	COD980716955	DENVER RADIUM SITE	Explanation Of Significant Differences	007	09	IHOP	1/17/1995
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	008	09	IHOP	12/23/1991
08	0800247	COD980716955	DENVER RADIUM SITE	RECORD OF DECISION	010	10	1314 W. EVANS/CARD MENTOR	6/30/1987
08	0800159	COD081961518	EAGLE MINE	ROD Amendment	001	01		3/29/1993
08	0800159	COD081961518	EAGLE MINE	RECORD OF DECISION	001	01		5/20/1988
08	0800159	COD081961518	EAGLE MINE	RECORD OF DECISION	003	02	SOILS	9/3/1998
08	0800377	MTD006230346	EAST HELENA SITE	Explanation Of Significant Differences	001	01	PROCESS PONDS	6/17/1993
08	0800377	MTD006230346	EAST HELENA SITE	RECORD OF DECISION	001	01	PROCESS PONDS	11/22/1989
08	0800377	MTD006230346	EAST HELENA SITE	RECORD OF DECISION	002	02	RESIDENTIAL/AGRICULTURAL LANDS	9/17/2009
08	0801644	UT0002240158	EUREKA MILLS	RECORD OF DECISION	001	00	SITEWIDE	9/30/2002
08	0801644	UT0002240158	EUREKA MILLS	RECORD OF DECISION	002	00	SITEWIDE	9/30/2002
08	0801644	UT0002240158	EUREKA MILLS	RECORD OF DECISION	003	04	GROUNDWATER/ECO RISK & OTHER	9/21/2011
08	0801668	SDD987673985	GILT EDGE MINE	RECORD OF DECISION	001	01	SITEWIDE	9/29/2008
08	0801668	SDD987673985	GILT EDGE MINE	RECORD OF DECISION	004	02	WATER TREATMENT	11/30/2001
08	0801668	SDD987673985	GILT EDGE MINE	RECORD OF DECISION	002	02	WATER TREATMENT	4/23/2001
08	0801668	SDD987673985	GILT EDGE MINE	RECORD OF DECISION	003	03	RUBY DUMP/CAP CLOSURE	8/30/2001
08	0800650	UTD093120921	INTERNATIONAL SMELTING AND REFINING	RECORD OF DECISION	001	01		9/27/2007
08	0801674	UT0002391472	JACOBS SMELTER	RECORD OF DECISION	001	01	RESIDENTIAL SOILS	7/29/1999
08	0800636	UTD070926811	KENNECOTT (NORTH ZONE)	RECORD OF DECISION	001	08	KENNECOTT (WWTP)	9/26/2002
08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	RECORD OF DECISION	002	01	BINGHAM CREEK	11/3/1998
08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	Explanation Of Significant Differences	002	02	SW JORDAN VALLEY GW PLUME	6/12/2007
08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	Explanation Of Significant Differences	001	02	SW JORDAN VALLEY GW PLUME	6/23/2003
08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	RECORD OF DECISION	001	02	SW JORDAN VALLEY GW PLUME	12/13/2000

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08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	RECORD OF DECISION	003	03	BUTTERFIELD CREEK	9/28/2001
08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	RECORD OF DECISION	004	06	LARK TAILINGS AND WASTE ROCK	9/28/2001
08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	RECORD OF DECISION	005	07	SOUTH JORDON EVAPORATION PONDS	9/28/2001
08	0801744	MT0009083840	LIBBY ASBESTOS SITE	RECORD OF DECISION	004	01	EXPORT PLANT	5/10/2010
08	0801744	MT0009083840	LIBBY ASBESTOS SITE	RECORD OF DECISION	005	02	SCREENING PLANT	5/10/2010
08	0800115	COD042167858	LINCOLN PARK	RECORD OF DECISION	002	02	LINCOLN PARK STUDY AREA	1/3/2002
08	0800641	UTD081834277	MIDVALE SLAG	Explanation Of Significant Differences	001	01	NORTHERN ZONE	2/10/2006
08	0800641	UTD081834277	MIDVALE SLAG	RECORD OF DECISION	001	01	NORTHERN ZONE	4/28/1995
08	0800641	UTD081834277	MIDVALE SLAG	RECORD OF DECISION	002	02	SOUTHERN ZONE	10/29/2002
08	0800445	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	ROD Amendment	001	01		8/7/1985
08	0800445	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	RECORD OF DECISION	001	01		4/14/1984
08	0800445	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	RECORD OF DECISION	003	02	RESERVOIR	12/15/2004
08	0800445	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	RECORD OF DECISION	004	03	MAINSTEM RIVER	4/29/2004
08	0800867	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	RECORD OF DECISION	001	01	MILLSITE	9/20/1990
08	0800867	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	RECORD OF DECISION	002	02	PERIPHERAL PROPERTIES	9/20/1990
08	0800867	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	Explanation Of Significant Differences	001	03	GROUNDWATER & SURFACE WATER	3/12/2009
08	0800867	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	RECORD OF DECISION	003	03	GROUNDWATER & SURFACE WATER	9/29/1998
08	0800867	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	RECORD OF DECISION	004	03	GROUNDWATER & SURFACE WATER	6/2/2004
08	0800679	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	RECORD OF DECISION	001	01	ORIGINAL PROPERTIES (OU A)	9/29/1989
08	0800705	UTD980952840	RICHARDSON FLAT TAILINGS	RECORD OF DECISION	001	01	RICHARDSON FLAT	7/6/2005
08	0800694	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	RECORD OF DECISION	002	01	MILL SITE AND GROUNDWATER	12/9/1993
08	0800694	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	Explanation Of Significant Differences	001	02	VICINITY PROPERTIES SOILS	6/23/1994
08	0800694	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	RECORD OF DECISION	001	02	VICINITY PROPERTIES SOILS	9/24/1990
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	Explanation Of Significant Differences	002	01	STREAMSIDE TLNGS (SBC)	8/31/1998
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	RECORD OF DECISION	004	01	STREAMSIDE TLNGS (SBC)	11/29/1995
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	RECORD OF DECISION	003	03	BERKELEY PT/MINE FLDNG (BUTTE)	9/29/1994
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	Explanation Of Significant Differences	001	04	WARM SPRINGS PONDS (SBC)	6/24/1991
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	RECORD OF DECISION	001	04	WARM SPRINGS PONDS (SBC)	9/28/1990
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	RECORD OF DECISION	005	07	ROCKER (SBC)	12/22/1995
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	Explanation Of Significant Differences	003	08	SOILS (BUTTE)	7/18/2011
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	RECORD OF DECISION	006	08	SOILS (BUTTE)	9/21/2006
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	RECORD OF DECISION	002	12	WSP/INACTIVE AREA	6/30/1992
08	0801085	COD983769738	SMELTERTOWN SITE	RECORD OF DECISION	001	02	WOOD TREATMENT	6/4/1998
08	0800261	COD980806277	SMUGGLER MOUNTAIN	Explanation Of Significant Differences	003	01	RESIDENTIAL AREA	5/16/1990
08	0800261	COD980806277	SMUGGLER MOUNTAIN	Explanation Of Significant Differences	005	01	RESIDENTIAL AREA	6/1/1993
08	0800261	COD980806277	SMUGGLER MOUNTAIN	Explanation Of Significant Differences	001	01	RESIDENTIAL AREA	3/1/1989
08	0800261	COD980806277	SMUGGLER MOUNTAIN	Explanation Of Significant Differences	004	01	RESIDENTIAL AREA	10/10/1991

Region	Site ID	EPA ID	Site Name	Action	Action ID	OU	OU Name	Action Date
08	0800261	COD980806277	SMUGGLER MOUNTAIN	Explanation Of Significant Differences	002	01	RESIDENTIAL AREA	3/1/1990
08	0800261	COD980806277	SMUGGLER MOUNTAIN	RECORD OF DECISION	001	01	RESIDENTIAL AREA	9/26/1986
08	0801669	CO0002378230	STANDARD MINE	RECORD OF DECISION	001	00	SITEWIDE	9/30/2011
08	0801194	COD983778432	SUMMITVILLE MINE	RECORD OF DECISION	001	01	HEAP LEACH PAD	12/15/1994
08	0801194	COD983778432	SUMMITVILLE MINE	RECORD OF DECISION	002	02	CROPSY BEAVER MUD DUMP - CLEAV	12/15/1994
08	0801194	COD983778432	SUMMITVILLE MINE	RECORD OF DECISION	003	04	MINESITE RECLAMATION/REVEGETAT	12/15/1994
08	0801194	COD983778432	SUMMITVILLE MINE	ROD Amendment	001	05	WATER TREATMENT/SITE WIDE	12/15/1994
08	0801194	COD983778432	SUMMITVILLE MINE	RECORD OF DECISION	006	05	WATER TREATMENT/SITE WIDE	9/28/2001
08	0801699	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	ROD Amendment	001	04	RIMINI/LANDMARK RES/LUTTRELL	9/29/2008
08	0801699	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	RECORD OF DECISION	001	04	RIMINI/LANDMARK RES/LUTTRELL	6/28/2002
08	0800076	COD007063274	URAVAN URANIUM PROJECT (UNION CARBIDE CORP.)	RECORD OF DECISION	001	01	SITEWIDE	10/31/1986
08	0801646	CO0002259588	VASQUEZ BOULEVARD AND I-70	RECORD OF DECISION	001	01	SOILS	9/25/2003
08	0800570	SDD980717136	WHITEWOOD CREEK	Explanation Of Significant Differences	001	01	SITEWIDE	6/1/1991
08	0800570	SDD980717136	WHITEWOOD CREEK	RECORD OF DECISION	001	01	SITEWIDE	3/30/1990
09	0901736	CAD980496863	ATLAS ASBESTOS MINE	Explanation Of Significant Differences	001	01	ATLAS MINE SITE	9/15/2010
09	0901736	CAD980496863	ATLAS ASBESTOS MINE	RECORD OF DECISION	002	01	ATLAS MINE SITE	2/14/1991
09	0901736	CAD980496863	ATLAS ASBESTOS MINE	RECORD OF DECISION	001	02	CITY OF COALINGA OUFS	7/19/1989
09	0903020	NVD980813646	CARSON RIVER MERCURY SITE	RECORD OF DECISION	001	01	OVERALL SITE	3/30/1995
09	0901938	CAD980638860	CELTOR CHEMICAL WORKS	RECORD OF DECISION	002	01	OVERALL SITE	9/30/1985
09	0901938	CAD980638860	CELTOR CHEMICAL WORKS	RECORD OF DECISION	001	02	POST, RA ACTIVITIES (O+M,..)	10/4/1983
09	0902075	CAD980817217	COALINGA ASBESTOS MINE	RECORD OF DECISION	002	01	COALINGA/OVERALL SOURCE REMEDY	9/21/1990
09	0902075	CAD980817217	COALINGA ASBESTOS MINE	RECORD OF DECISION	001	02	CITY OF COALINGA OUFS	7/19/1989
09	0901755	CAD980498612	IRON MOUNTAIN MINE	RECORD OF DECISION	001	01	WATER MANAGEMENT	10/3/1986
09	0901755	CAD980498612	IRON MOUNTAIN MINE	RECORD OF DECISION	002	02	SOURCE CONTROL	9/30/1992
09	0901755	CAD980498612	IRON MOUNTAIN MINE	RECORD OF DECISION	003	03	OLD/NO. 8 MINE SEEP	9/24/1993
09	0901755	CAD980498612	IRON MOUNTAIN MINE	RECORD OF DECISION	004	04	SLICKROCK CREEK AREA SOURCE	9/30/1997
09	0901755	CAD980498612	IRON MOUNTAIN MINE	RECORD OF DECISION	005	05	SEDIMENTS	9/30/2004
09	0904343	CAD983618893	LAVA CAP MINE	Explanation Of Significant Differences	001	01	TAILINGS SURFACE WTR MINE AREA	9/29/2006
09	0904343	CAD983618893	LAVA CAP MINE	RECORD OF DECISION	001	01	TAILINGS SURFACE WTR MINE AREA	9/28/2004
09	0904343	CAD983618893	LAVA CAP MINE	RECORD OF DECISION	002	02	GROUNDWATER	9/30/2008
10	1000597	WAD009045279	ALCOA (VANCOUVER SMELTER)	RECORD OF DECISION	001	01	REMEDIAL	2/7/1992
10	1000256	IDD980725832	BLACKBIRD MINE	Explanation Of Significant Differences	001	01	REMEDIAL	7/27/2007
10	1000256	IDD980725832	BLACKBIRD MINE	RECORD OF DECISION	001	01	REMEDIAL	3/3/2003
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	RECORD OF DECISION	001	01	POPULATED AREAS	8/30/1991
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	Explanation Of Significant Differences	003	02	NON-POPULATED AREAS	4/8/1998

Region	Site ID	EPA ID	Site Name	Action	Action ID	OU	OU Name	Action Date
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	Explanation Of Significant Differences	001	02	NON-POPULATED AREAS	1/18/1996
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	ROD Amendment	001	02	NON-POPULATED AREAS	9/9/1996
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	ROD Amendment	002	02	NON-POPULATED AREAS	12/10/2001
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	RECORD OF DECISION	002	02	NON-POPULATED AREAS	9/22/1992
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	RECORD OF DECISION	003	03	COEUR D'ALENE BASIN AREAWIDE	9/12/2002
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	006	01	NS/TF AREAWIDE	7/28/1997
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	009	01	NS/TF AREAWIDE	3/20/2003
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	008	01	NS/TF AREAWIDE	2/4/2002
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	002	01	NS/TF AREAWIDE	6/24/1993
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	007	01	NS/TF AREAWIDE	8/3/2000
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	010	01	NS/TF AREAWIDE	9/30/2004
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	RECORD OF DECISION	002	01	NS/TF AREAWIDE	9/30/1989
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	RECORD OF DECISION	003	05	HEAD OF HYLEBOS SOURCE CONTROL	9/30/1989
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	RECORD OF DECISION	007	19	ASARCO SEDIMENTS & GROUNDWATER	7/14/2000
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	005	20	ASARCO SOIL & GROUNDWATER	7/2/1996
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	RECORD OF DECISION	006	20	ASARCO SOIL & GROUNDWATER	3/24/1995
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	RECORD OF DECISION	004	21	ASARCO SMELTER DEMOLITION	12/31/1990
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	003	22	RUSTON/NORTH TACOMA	11/29/1993
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	RECORD OF DECISION	005	22	RUSTON/NORTH TACOMA	6/16/1993
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	004	23	TACOMA TAR PITS	5/9/1995
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	Explanation Of Significant Differences	001	23	TACOMA TAR PITS	11/1/1991
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	RECORD OF DECISION	001	23	TACOMA TAR PITS	12/30/1987
10	1001308	IDD984666610	EASTERN MICHAUD FLATS CONTAMINATION	ROD Amendment	003	01	FMC GW & LANDFILLS	1/20/2010
10	1001308	IDD984666610	EASTERN MICHAUD FLATS CONTAMINATION	RECORD OF DECISION	001	01	FMC GW & LANDFILLS	6/8/1998
10	1001508	OR7122307658	FREMONT NATIONAL FOREST/WHITE KING AND LUCKY LASS URANIUM MINES (USDA)	Explanation Of Significant Differences	001	02	WHITE KING	9/28/2006
10	1001508	OR7122307658	FREMONT NATIONAL FOREST/WHITE KING AND LUCKY LASS URANIUM MINES (USDA)	RECORD OF DECISION	001	02	WHITE KING	9/28/2001
10	1000551	WAD000065508	KAISER ALUMINUM (MEAD WORKS)	RECORD OF DECISION	001	01	REMEDIAL	5/1/2002
10	1000424	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	Explanation Of Significant Differences	001	01	SITE CONTROL	9/23/1994
10	1000424	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	RECORD OF DECISION	001	01	SITE CONTROL	9/29/1988
10	1001070	WAD980978753	MIDNITE MINE	RECORD OF DECISION	001	01	REMEDIAL	9/29/2006
10	1000213	IDD081830994	MONSANTO CHEMICAL CO. (SODA SPRINGS PLANT)	RECORD OF DECISION	001	01	REMEDIAL	4/30/1997
10	1000383	ORD009412677	REYNOLDS METALS COMPANY	RECORD OF DECISION	001	01	SOURCE AREAS	9/30/2002
10	1000383	ORD009412677	REYNOLDS METALS COMPANY	RECORD OF DECISION	002	02	FINAL GROUNDWATER	9/29/2006
10	1000948	WAD980722789	SILVER MOUNTAIN MINE	Explanation Of Significant Differences	001	01	REMEDIAL	10/12/1994

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10	1000948	WAD980722789	SILVER MOUNTAIN MINE	RECORD OF DECISION	001	01	REMEDIAL	3/27/1990
10	1000421	ORD050955848	TELEDYNE WAH CHANG	Explanation Of Significant Differences	004	01	GROUNDWATER & SEDIMENTS	6/19/2009
10	1000421	ORD050955848	TELEDYNE WAH CHANG	Explanation Of Significant Differences	001	01	GROUNDWATER & SEDIMENTS	10/8/1996
10	1000421	ORD050955848	TELEDYNE WAH CHANG	RECORD OF DECISION	002	01	GROUNDWATER & SEDIMENTS	6/10/1994
10	1000421	ORD050955848	TELEDYNE WAH CHANG	RECORD OF DECISION	001	02	SLUDGE	12/28/1989
10	1000421	ORD050955848	TELEDYNE WAH CHANG	Explanation Of Significant Differences	002	03	SOILS/RAD	9/28/2001
10	1000421	ORD050955848	TELEDYNE WAH CHANG	RECORD OF DECISION	003	03	SOILS/RAD	9/27/1995

Table C-12 – Completed FYRs at the 126 Site Universe

Reg	Site ID	EPA ID	Site Name	Action	Action Code	OU	OU Name	FYR Completion Date
02	0202972	NYD986882660	LI TUNGSTEN CORP.	FIVE-YEAR REVIEW	002	00	SITEWIDE	7/13/2010
02	0202972	NYD986882660	LI TUNGSTEN CORP.	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/2/2005
02	0200665	NJD980529762	MAYWOOD CHEMICAL CO.	FIVE-YEAR REVIEW	001	02	DOE - MISS	9/25/2009
02	0200772	NJD980654172	U.S. RADIUM CORP.	FIVE-YEAR REVIEW	001	00	SITEWIDE	7/13/2011
02	0202931	NJ1891837980	W.R. GRACE & CO., INC./WAYNE INTERIM STORAGE SITE (USDOE)	FF FIVE-YEAR REVIEW	001	01		9/30/2008
03	0304433	PAD987341716	AUSTIN AVENUE RADIATION SITE	FIVE-YEAR REVIEW	001	00	SITEWIDE	12/21/2000
03	0301569	PAD980829493	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	FIVE-YEAR REVIEW	002	01	SOIL	4/27/2011
03	0301569	PAD980829493	JACKS CREEK/SITKIN SMELTING & REFINING, INC.	FIVE-YEAR REVIEW	001	01	SOIL	4/28/2006
03	0300624	PAD002395887	PALMERTON ZINC PILE	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/28/2007
03	0300624	PAD002395887	PALMERTON ZINC PILE	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/26/1996
03	0300624	PAD002395887	PALMERTON ZINC PILE	FIVE-YEAR REVIEW	002	00	SITEWIDE	7/1/2002
03	0302737	VAD980705404	U.S. TITANIUM	FIVE-YEAR REVIEW	003	01		3/24/2010
03	0302737	VAD980705404	U.S. TITANIUM	FIVE-YEAR REVIEW	002	01		3/24/2005
03	0302737	VAD980705404	U.S. TITANIUM	FIVE-YEAR REVIEW	001	01		3/17/2000
04	0405550	SCD987577913	BREWER GOLD MINE	FIVE-YEAR REVIEW	001	01	OPERABLE UNIT 1	9/13/2011
04	0406784	SCD003360476	MACALLOY CORPORATION	FIVE-YEAR REVIEW	001	01	OPERABLE UNIT 1	9/1/2010
04	0401991	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/14/2006
04	0401991	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	FIVE-YEAR REVIEW	006	01	OPERABLE UNIT 1	9/1/2011
04	0401991	KYD049062375	NATIONAL SOUTHWIRE ALUMINUM CO.	FIVE-YEAR REVIEW	005	01	OPERABLE UNIT 1	8/2/2001
05	0500396	ILD062340641	DEPUE/NEW JERSEY ZINC/MOBIL CHEMICAL CORP.	FIVE-YEAR REVIEW	001	01	SOUTH DITCH	6/25/2010
05	0504223	OHD004379970	ORMET CORP.	FIVE-YEAR REVIEW	002	01	DESIGN	5/4/2007
05	0504223	OHD004379970	ORMET CORP.	FIVE-YEAR REVIEW	001	01	DESIGN	5/6/2002
05	0503034	MID980901946	TORCH LAKE	FIVE-YEAR REVIEW	002	00	SITEWIDE	3/27/2008
05	0503034	MID980901946	TORCH LAKE	FIVE-YEAR REVIEW	001	00	SITEWIDE	3/4/2003
06	0600897	NMD980749378	CIMARRON MINING CORP.	FIVE-YEAR REVIEW	002	00	SITEWIDE	7/7/2003
06	0600897	NMD980749378	CIMARRON MINING CORP.	FIVE-YEAR REVIEW	001	00	SITEWIDE	7/22/1998
06	0600897	NMD980749378	CIMARRON MINING CORP.	FIVE-YEAR REVIEW	003	01		7/31/2008
06	0600952	NMD981155930	CLEVELAND MILL	FIVE-YEAR REVIEW	002	01		8/20/2007
06	0600952	NMD981155930	CLEVELAND MILL	FIVE-YEAR REVIEW	001	01		8/20/2002
06	0600816	NMD007860935	HOMESTAKE MINING CO.	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/29/2011
06	0600816	NMD007860935	HOMESTAKE MINING CO.	FIVE-YEAR REVIEW	002	01	GROUNDWATER	9/26/2006
06	0600816	NMD007860935	HOMESTAKE MINING CO.	FIVE-YEAR REVIEW	001	01	GROUNDWATER	9/27/2001
06	0601010	OKD000829440	NATIONAL ZINC CORP.	FIVE-YEAR REVIEW	002	00	SITEWIDE	11/22/2006

Reg	Site ID	EPA ID	Site Name	Action	Action Code	OU	OU Name	FYR Completion Date
06	0601010	OKD000829440	NATIONAL ZINC CORP.	FIVE-YEAR REVIEW	001	00	SITEWIDE	10/25/2001
06	0601269	OKD980629844	TAR CREEK (OTTAWA COUNTY)	FIVE-YEAR REVIEW	004	00	SITEWIDE	9/29/2010
06	0601269	OKD980629844	TAR CREEK (OTTAWA COUNTY)	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/28/2005
06	0601269	OKD980629844	TAR CREEK (OTTAWA COUNTY)	FIVE-YEAR REVIEW	002	00	SITEWIDE	4/11/2000
06	0601269	OKD980629844	TAR CREEK (OTTAWA COUNTY)	FIVE-YEAR REVIEW	001	00	SITEWIDE	4/30/1994
06	0602105	TXD062113329	TEX-TIN CORP.	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/21/2010
06	0602105	TXD062113329	TEX-TIN CORP.	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/29/2005
06	0602105	TXD062113329	TEX-TIN CORP.	FIVE-YEAR REVIEW	002	02	AMOCO PARCEL H	9/30/2003
06	0600819	NMD030443303	UNITED NUCLEAR CORP.	FIVE-YEAR REVIEW	003	01	OVERALL SITE	9/17/2008
06	0600819	NMD030443303	UNITED NUCLEAR CORP.	FIVE-YEAR REVIEW	002	01	OVERALL SITE	9/18/2003
06	0600819	NMD030443303	UNITED NUCLEAR CORP.	FIVE-YEAR REVIEW	001	01	OVERALL SITE	9/24/1998
07	0700667	KSD980741862	CHEROKEE COUNTY	FIVE-YEAR REVIEW	004	00	SITE EVALUATION/DISPOSITION	9/30/2010
07	0700667	KSD980741862	CHEROKEE COUNTY	FIVE-YEAR REVIEW	003	00	SITE EVALUATION/DISPOSITION	9/30/2005
07	0700667	KSD980741862	CHEROKEE COUNTY	FIVE-YEAR REVIEW	001	00	SITE EVALUATION/DISPOSITION	9/28/1995
07	0700667	KSD980741862	CHEROKEE COUNTY	FIVE-YEAR REVIEW	002	00	SITE EVALUATION/DISPOSITION	9/28/2000
07	0701290	MOD980686281	ORONOGO-DUENWEG MINING BELT	FIVE-YEAR REVIEW	002	00	SITE EVALUATION/DISPOSITION	8/27/2007
07	0701290	MOD980686281	ORONOGO-DUENWEG MINING BELT	FIVE-YEAR REVIEW	001	00	SITE EVALUATION/DISPOSITION	9/27/2002
08	0800403	MTD093291656	ANACONDA CO. SMELTER	FIVE-YEAR REVIEW	005	00	SITEWIDE	9/30/2010
08	0800403	MTD093291656	ANACONDA CO. SMELTER	FIVE-YEAR REVIEW	004	00	SITEWIDE	9/29/2005
08	0800403	MTD093291656	ANACONDA CO. SMELTER	FIVE-YEAR REVIEW	003	00	SITEWIDE	12/30/1999
08	0800403	MTD093291656	ANACONDA CO. SMELTER	FIVE-YEAR REVIEW	002	00	SITEWIDE	11/23/1994
08	0800078	COD007063530	ASARCO, INC. (GLOBE PLANT)	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/23/2009
08	0800078	COD007063530	ASARCO, INC. (GLOBE PLANT)	FIVE-YEAR REVIEW	002	00	SITEWIDE	9/29/2004
08	0800078	COD007063530	ASARCO, INC. (GLOBE PLANT)	FIVE-YEAR REVIEW	001	01	FORMER NEUTRALIZATION POND	2/26/1999
08	0801057	MTD982572562	BASIN MINING AREA	FIVE-YEAR REVIEW	001	01	TOWN OF BASIN	5/28/2008
08	0801478	COD980717938	CALIFORNIA GULCH	FIVE-YEAR REVIEW	004	00	SITEWIDE	9/28/2007
08	0801478	COD980717938	CALIFORNIA GULCH	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/28/2001
08	0801478	COD980717938	CALIFORNIA GULCH	FIVE-YEAR REVIEW	001	00	SITEWIDE	2/2/1996
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	FIVE-YEAR REVIEW	004	00	SITEWIDE	9/29/2009
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/29/2004
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	FIVE-YEAR REVIEW	002	00	SITEWIDE	3/26/1999
08	0800257	COD980717557	CENTRAL CITY, CLEAR CREEK	FIVE-YEAR REVIEW	001	00	SITEWIDE	3/30/1994
08	0800247	COD980716955	DENVER RADIUM SITE	FIVE-YEAR REVIEW	008	00	SITEWIDE	9/30/2008
08	0800247	COD980716955	DENVER RADIUM SITE	FIVE-YEAR REVIEW	005	00	SITEWIDE	9/30/2003

Reg	Site ID	EPA ID	Site Name	Action	Action Code	OU	OU Name	FYR Completion Date
08	0800247	COD980716955	DENVER RADIUM SITE	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/12/1994
08	0800247	COD980716955	DENVER RADIUM SITE	FIVE-YEAR REVIEW	002	04	ROBCO	9/30/1993
08	0800247	COD980716955	DENVER RADIUM SITE	FIVE-YEAR REVIEW	003	05	ROBCO	9/30/1993
08	0800247	COD980716955	DENVER RADIUM SITE	FIVE-YEAR REVIEW	007	08	SHATTUCK	12/21/1999
08	0800159	COD081961518	EAGLE MINE	FIVE-YEAR REVIEW	004	00	SITEWIDE	9/30/2008
08	0800159	COD081961518	EAGLE MINE	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/27/2005
08	0800159	COD081961518	EAGLE MINE	FIVE-YEAR REVIEW	002	00	SITEWIDE	9/21/2000
08	0800377	MTD006230346	EAST HELENA SITE	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/27/2011
08	0800377	MTD006230346	EAST HELENA SITE	FIVE-YEAR REVIEW	002	01	PROCESS PONDS	3/31/2006
08	0800377	MTD006230346	EAST HELENA SITE	FIVE-YEAR REVIEW	001	01	PROCESS PONDS	9/27/1999
08	0801644	UT0002240158	EUREKA MILLS	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/26/2008
08	0801668	SDD987673985	GILT EDGE MINE	FIVE-YEAR REVIEW	001	00	SITEWIDE	4/10/2007
08	0801674	UT0002391472	JACOBS SMELTER	FIVE-YEAR REVIEW	002	00	SITEWIDE	9/22/2010
08	0801674	UT0002391472	JACOBS SMELTER	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/30/2005
08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	FIVE-YEAR REVIEW	002	00	SITEWIDE	9/30/2009
08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	FIVE-YEAR REVIEW	001	00	SITEWIDE	6/1/2004
08	0800601	UTD000826404	KENNECOTT (SOUTH ZONE)	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/29/2010
08	0800115	COD042167858	LINCOLN PARK	FIVE-YEAR REVIEW	001	02	LINCOLN PARK STUDY AREA	9/27/2007
08	0800641	UTD081834277	MIDVALE SLAG	FIVE-YEAR REVIEW	002	00	SITEWIDE	12/30/2008
08	0800641	UTD081834277	MIDVALE SLAG	FIVE-YEAR REVIEW	001	00	SITEWIDE	10/20/2003
08	0800445	MTD980717565	MILLTOWN RESERVOIR SEDIMENTS	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/23/2011
08	0800867	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	FF FIVE-YEAR REVIEW	003	00	SITEWIDE	6/11/2007
08	0800867	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	FF FIVE-YEAR REVIEW	002	00	SITEWIDE	9/10/2002
08	0800867	UT3890090035	MONTICELLO MILL TAILINGS (USDOE)	FF FIVE-YEAR REVIEW	001	00	SITEWIDE	2/13/1997
08	0800679	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	FIVE-YEAR REVIEW	001	00	SITEWIDE	2/13/1997
08	0800679	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	FIVE-YEAR REVIEW	003	00	SITEWIDE	6/11/2007
08	0800679	UTD980667208	MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES	FIVE-YEAR REVIEW	002	00	SITEWIDE	9/10/2002
08	0800384	MTD021997689	MOUAT INDUSTRIES	FIVE-YEAR REVIEW	001	01	LAGOONS/SOILS, GW, SW	3/18/2008
08	0800694	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/21/2009
08	0800694	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	FIVE-YEAR REVIEW	002	00	SITEWIDE	9/24/2004
08	0800694	UTD980951388	SHARON STEEL CORP. (MIDVALE TAILINGS)	FIVE-YEAR REVIEW	001	00	SITEWIDE	2/26/1999
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	FIVE-YEAR REVIEW	004	00	SITEWIDE	6/27/2011
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/30/2005
08	0800416	MTD980502777	SILVER BOW CREEK/BUTTE AREA	FIVE-YEAR REVIEW	002	00	SITEWIDE	3/23/2000
08	0801085	COD983769738	SMELTERTOWN SITE	FIVE-YEAR REVIEW	002	00	SITEWIDE	9/9/2010
08	0801085	COD983769738	SMELTERTOWN SITE	FIVE-YEAR REVIEW	001	02	WOOD TREATMENT	9/28/2005
08	0800261	COD980806277	SMUGGLER MOUNTAIN	FIVE-YEAR REVIEW	003	00	SITEWIDE	6/26/2007

Reg	Site ID	EPA ID	Site Name	Action	Action Code	OU	OU Name	FYR Completion Date
08	0800261	COD980806277	SMUGGLER MOUNTAIN	FIVE-YEAR REVIEW	002	01	RESIDENTIAL AREA	9/25/2002
08	0800261	COD980806277	SMUGGLER MOUNTAIN	FIVE-YEAR REVIEW	001	01	RESIDENTIAL AREA	11/7/1997
08	0801194	COD983778432	SUMMITVILLE MINE	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/30/2010
08	0801194	COD983778432	SUMMITVILLE MINE	FIVE-YEAR REVIEW	002	00	SITEWIDE	9/27/2005
08	0801194	COD983778432	SUMMITVILLE MINE	FIVE-YEAR REVIEW	001	00	SITEWIDE	8/3/2000
08	0801699	MTSFN7578012	UPPER TENMILE CREEK MINING AREA	FIVE-YEAR REVIEW	001	04	RIMINI/LANDMARK RES/LUTTRELL	7/30/2008
08	0800076	COD007063274	URAVAN URANIUM PROJECT (UNION CARBIDE CORP.)	FIVE-YEAR REVIEW	004	01	SITEWIDE	9/28/2010
08	0800076	COD007063274	URAVAN URANIUM PROJECT (UNION CARBIDE CORP.)	FIVE-YEAR REVIEW	003	01	SITEWIDE	9/28/2005
08	0800076	COD007063274	URAVAN URANIUM PROJECT (UNION CARBIDE CORP.)	FIVE-YEAR REVIEW	002	01	SITEWIDE	3/20/2000
08	0800076	COD007063274	URAVAN URANIUM PROJECT (UNION CARBIDE CORP.)	FIVE-YEAR REVIEW	001	01	SITEWIDE	9/4/1994
08	0801646	CO0002259588	VASQUEZ BOULEVARD AND I-70	FIVE-YEAR REVIEW	001	01	SOILS	9/30/2009
08	0800570	SDD980717136	WHITEWOOD CREEK	FIVE-YEAR REVIEW	002	01	SITEWIDE	9/27/2007
08	0800570	SDD980717136	WHITEWOOD CREEK	FIVE-YEAR REVIEW	001	01	SITEWIDE	7/17/2002
09	0901736	CAD980496863	ATLAS ASBESTOS MINE	FIVE-YEAR REVIEW	004	00	SITEWIDE	8/3/2011
09	0901736	CAD980496863	ATLAS ASBESTOS MINE	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/28/2006
09	0901736	CAD980496863	ATLAS ASBESTOS MINE	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/28/2001
09	0901736	CAD980496863	ATLAS ASBESTOS MINE	FIVE-YEAR REVIEW	002	00	SITEWIDE	5/15/1996
09	0903020	NVD980813646	CARSON RIVER MERCURY SITE	FIVE-YEAR REVIEW	001	01	OVERALL SITE	9/30/2003
09	0903020	NVD980813646	CARSON RIVER MERCURY SITE	FIVE-YEAR REVIEW	002	01	OVERALL SITE	9/30/2008
09	0901938	CAD980638860	CELTOR CHEMICAL WORKS	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/30/1993
09	0901938	CAD980638860	CELTOR CHEMICAL WORKS	FIVE-YEAR REVIEW	002	00	SITEWIDE	8/31/2001
09	0902075	CAD980817217	COALINGA ASBESTOS MINE	FIVE-YEAR REVIEW	004	00	SITEWIDE	8/3/2011
09	0902075	CAD980817217	COALINGA ASBESTOS MINE	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/28/2006
09	0902075	CAD980817217	COALINGA ASBESTOS MINE	FIVE-YEAR REVIEW	002	00	SITEWIDE	9/27/2001
09	0902075	CAD980817217	COALINGA ASBESTOS MINE	FIVE-YEAR REVIEW	001	00	SITEWIDE	5/15/1996
09	0901755	CAD980498612	IRON MOUNTAIN MINE	FIVE-YEAR REVIEW	004	00	SITEWIDE	7/14/2008
09	0901755	CAD980498612	IRON MOUNTAIN MINE	FIVE-YEAR REVIEW	003	00	SITEWIDE	9/30/2003
09	0901755	CAD980498612	IRON MOUNTAIN MINE	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/30/1993
09	0901755	CAD980498612	IRON MOUNTAIN MINE	FIVE-YEAR REVIEW	002	00	SITEWIDE	10/8/1998
09	0904343	CAD983618893	LAVA CAP MINE	FIVE-YEAR REVIEW	001	00	SITEWIDE	9/14/2011
10	1000256	IDD980725832	BLACKBIRD MINE	FIVE-YEAR REVIEW	001	01	REMEDIAL	8/25/2008
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	FIVE-YEAR REVIEW	004	00	SITEWIDE	11/18/2010
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	FIVE-YEAR REVIEW	003	00	SITEWIDE	10/24/2005
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	FIVE-YEAR REVIEW	001	01	POPULATED AREAS	9/27/2000
10	1000195	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX	FIVE-YEAR REVIEW	002	02	NON-POPULATED AREAS	9/28/2000
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	FIVE-YEAR REVIEW	006	00	SITEWIDE	12/23/2009
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	FIVE-YEAR REVIEW	005	00	SITEWIDE	12/29/2004

Reg	Site ID	EPA ID	Site Name	Action	Action Code	OU	OU Name	FYR Completion Date
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	FIVE-YEAR REVIEW	002	10	ST. PAUL SEDIMENTS (DELETED)	12/29/1999
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	FIVE-YEAR REVIEW	003	22	RUSTON/NORTH TACOMA	3/31/2000
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	FIVE-YEAR REVIEW	004	23	TACOMA TAR PITS	9/25/2003
10	1000981	WAD980726368	COMMENCEMENT BAY, NEAR SHORE/TIDE FLATS	FIVE-YEAR REVIEW	001	23	TACOMA TAR PITS	9/29/1998
10	1001508	OR7122307658	FREMONT NATIONAL FOREST/WHITE KING AND LUCKY LASS URANIUM MINES (USDA)	FF FIVE-YEAR REVIEW	002	00	SITEWIDE	5/18/2010
10	1000424	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	FIVE-YEAR REVIEW	003	01	SITE CONTROL	6/30/2005
10	1000424	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	FIVE-YEAR REVIEW	001	01	SITE CONTROL	12/28/1994
10	1000424	ORD052221025	MARTIN-MARIETTA ALUMINUM CO.	FIVE-YEAR REVIEW	002	01	SITE CONTROL	12/29/1999
10	1000213	IDD081830994	MONSANTO CHEMICAL CO. (SODA SPRINGS PLANT)	FIVE-YEAR REVIEW	002	01	REMEDIAL	9/18/2008
10	1000213	IDD081830994	MONSANTO CHEMICAL CO. (SODA SPRINGS PLANT)	FIVE-YEAR REVIEW	001	01	REMEDIAL	9/30/2003
10	1000383	ORD009412677	REYNOLDS METALS COMPANY	FIVE-YEAR REVIEW	001	00	SITEWIDE	7/21/2008
10	1000948	WAD980722789	SILVER MOUNTAIN MINE	FIVE-YEAR REVIEW	003	01	REMEDIAL	9/21/2007
10	1000948	WAD980722789	SILVER MOUNTAIN MINE	FIVE-YEAR REVIEW	001	01	REMEDIAL	7/16/1997
10	1000948	WAD980722789	SILVER MOUNTAIN MINE	FIVE-YEAR REVIEW	002	01	REMEDIAL	9/23/2002
10	1000421	ORD050955848	TELEDYNE WAH CHANG	FIVE-YEAR REVIEW	003	00	SITEWIDE	1/8/2008
10	1000421	ORD050955848	TELEDYNE WAH CHANG	FIVE-YEAR REVIEW	002	00	SITEWIDE	1/7/2003
10	1000421	ORD050955848	TELEDYNE WAH CHANG	FIVE-YEAR REVIEW	001	00	SITEWIDE	12/29/1997

Attachment C.1:
Data Collection Instructions

DATA COLLECTION INSTRUCTIONS
NPL AND SUPERFUND-EQUIVALENT DATA COLLECTION AND ANALYSIS

The following tables describe questions, provide some basic guidance on the intent of the questions, and identify possible information sources. In general, wherever possible, use the ROD as the primary source for information. Some questions directly ask about other documents or sources (e.g., risk assessments). Other information sources are provided, below, and ordered in terms of most easy to access or the most directly useful.

1. Get Organized

The following questions are intended to help SRA understand the documentation available for the sites and operable units that are the subject of this research. These answers will help us understand what documentation has been developed, how it relates to the entire site and individual OUs, and whether we had on-line access to the documents for this research.

Question	Column	Guidance	Data Entry Choices	Information Sources
R1. How many operable units have been defined for the site?	OU_ID; OU NAME	• Pre-populated In general, the 00 OU is the sitewide OU. For any information that covers an entire site, use this OU. Sometimes, Regions will also include an OU1 as a sitewide OU.	N/A	• CERCLIS
R2. Has a baseline human health risk assessment (HHRA) that covers this OU been completed?		• Spreadsheet indicates sites/OUs where a HHRA has been identified, along with date and link; verify that the HHRA covers the OU • A sitewide HHRA is an HHRA that covers all OUs • *Note: No additional assumptions were built into this analysis and the analysis only focused on HHRA's that were available online.*	N/A	• Risk Assessment Documents linked • Regional Website • ROD
R3. If yes to R2, what is the date of the HHRA?	Human Risk Assessment Date	• Verify date in HHRA Data column	• Date	• Risk Assessment Documents linked • Regional Website • ROD
R4. Does the HHRA apply to the entire site, just this OU, or a combination of this OU and other OUs (but not the entire site)?	TBD (new column)	Specify if the HHRA applies to the entire site, the specific OU for which you are addressing this question, or a combination (covering multiple OUs); when answering this for a sitewide OU, enter "entire site" if the HHRA covers the entire site.	• Entire site • This OU only • This OU and others *(enter OU numbers covered in applicable OU rows)*	• Risk Assessment Documents linked • Regional Website • ROD

Question	Column	Guidance	Data Entry Choices	Information Sources
R5. Is the HHRA for this site or OU on-line?	HH Risk Assessmen t Online? (Y/N)	• Prepopulated with data/link; verify accuracy Note: Information on risk assessments that were found online is pre-populated including the web link.	N/A	As noted in spreadsheet
R6. Has a baseline ecological risk assessment (ERA) that covers this OU been completed?		• Spreadsheet indicates sites/OUs where a ERA has been identified, along with date and link; verify that the ERA covers the OU • A sitewide ERA is an ERA that covers all OUs *Note: for final analysis, a CERCLIS pull on ROD actions and risk assessment Actions will help identify those sites with risk assessments that don't have documents online.*	N/A	• Risk Assessment Documents linked • Regional Website • ROD
R7. If yes to R6, what is the date of the ERA?	Eco Risk Assessmen t Date	• Enter date or "NA" if you answered "N" to question R6	• Date • "Not applicable"	• Risk Assessment Documents linked • Regional Website • ROD
R8. Does the ERA apply to the entire site, just this OU, or a combination of this OU and other OUs (but not the entire site)?	TBD (new column)	Specify if the ERA applies to the entire site, the specific OU for which you are addressing this question, or a combination (covering multiple OUs); when answering this for a sitewide OU, enter "entire site" if the ERA covers the entire site.	• Entire site • This OU only • This OU and others *(enter OU numbers covered in applicable OU rows).*	• Risk Assessment Documents linked • Regional Website • ROD
R9. Is the ERA for this site or OU on-line?	Eco Risk Assessmen t Online? (Y/N)	• Prepopulated with data/link; verify accuracy Note: Information on risk assessments that were found online is pre-populated including the web link.	N/A	As noted in spreadsheet
R10. Was a separate ROD developed for this OU?	TBD (now W-Y)	Prepopulated with data/link; verify accuracy *Note: for final analysis, a CERCLIS pull on ROD actions will help identify those sites with RODs that don't have documents online.*	N/A	• Regional Website • ROD for at least one OU
R11. Has the ROD covering this OU been	TBD (now AC-AH)	Prepopulated with data/link; verify accuracy	N/A	• Regional Website • OU-specific ROD,

Question	Column	Guidance	Data Entry Choices	Information Sources
amended with a ROD amendment or updated with an ESD?				ROD Amendment, or ESD

2. Summarize Operational History, Status, and Processes

The following questions ask about the operational history of the site, specifically as it relates to mining and mineral processing activities, the operational status of the site (is it still being used for mining or mineral processing), and how previous or existing operations relate to site contamination. Generally, these questions will apply to the entire site.

Question	Column	Guidance	Data Entry Choices	Information Sources
R12. What minerals were (or are) mined and/or processed at the site?	Survey (combine with R13)	List common minerals mined or processed	• Copper • Gold • Zinc • Mercury • Cadmium • Silver • Uranium • Lead • Magnesium • Tungsten • Lithium • Iron • Phosphate • Chromium • Molybdenum • Radium • Other (list)	• ROD • ATSDR documents previously identified • Regional Website (site description)
R13. Was the site a mine, a mineral processor, or both?	Survey (combine with R12)	"Mining-only" sites are sites that were just mines/have only excavation processes. "Mineral processing/beneficiation only" are sites that conducted some processing or beneficiation of minerals (e.g., smelting, radium processing, leaching, refining). "Both" indicates sites that had excavation/mining on site and some form of processing of minerals on site. Differentiate between those that had activities onsite vs. offsite. Offsite includes those that had no actual activities on the actual site but	• Onsite: Mining/excavation only • Onsite: Mineral processing/ beneficiation only • Onsite: Both • Offsite: Mining/excavation only • Offsite: Mineral processing/ beneficiation only • Offsite: Both	• ROD • ATSDR documents previously identified • Regional Website (site description)

		contamination has come to be located at the site (including by natural migration, disposal, or other movement). Only include those activities that are primary processes. Do not include secondary processes such as recycling of scrap metal or secondary smelting.		
R14. Did at least some of the contamination at the site come from a smelter?	Survey	If there was a smelter at the site that resulted in contamination OR if smelting activities from off-site caused the site contamination, enter Y.	Y/N	• ROD • ATSDR documents previously identified Regional Website (site description)
R15. If Y to R14, identify minerals smelted.	Survey	If Y for smelting activities, provide minerals smelted.	• Copper • Lead • Zinc • Iron • Gold • Silver • Other (describe)	• ROD • ATSDR documents previously identified • Regional Website (site description)
R15A. What was the source of information for R12-R15?	Survey	Record the documentation source for the information provided. The best source for this information is the ROD. If a ROD is not available, check in other EPA and government documents.	Free text	NA
R16. When did mining operations start?	TBD (new column)	Approximate start date (year/decade) Verify pre-populated data provided in "Years of Operation" column and enter start date	• Year	• Regional Website (site description) • ROD • RI Report
R17. Are mining operations still occurring at the site?	TBD	Verify pre-populated data provided in "Years of Operation" column and enter "Y" if activities are still occurring.	• Y/N	
R18. When did mining operations end, or are the operations still occurring?	TBD (new column)	Approximate end date (year/decade) Verify pre-populated data provided in "Years of Operation" column and enter end date	• Year • "Not applicable" (ongoing)	
R19. Were other activities, besides HRM conducted on/at the site?	survey	Enter Y/N if activities other than mining and mineral processing that are identified in site documents as having potentially contributed to the contamination. This could include activities such as illegal dumping of other wastes; scrap metal recycling; battery recycling;	• Y/N	• Regional Website (site description) • ROD • RI Report

		secondary processing of metals. OU names can give an indication of other activities (e.g, "Wood treating.")		
R20. If Y to R19, provide a brief description of other activities.	survey	Describe other activities. This could include activities such as illegal dumping of other wastes; scrap metal recycling; battery recycling; wood treating; secondary processing of metals.	• Open text	• Regional Website (site description) • ROD • RI Report
R21. What NAICS code or codes best captures or capture the operations of the facility (at the time of the release of hazardous substances).	TBD (New columns) NAICS Codes (up to 5)	If available, enter NAICS code identified in site documents at a site-wide basis. Based on the operations in place during the release of the contamination. If site documents do not list NAICS code: • Refer to "List of NAICS Codes" in data entry column as a starting point. • Refer to definitions in NAICS handbook. • If it is not immediately obvious how to classify the HRM activities, enter "unknown." More than one code may apply per site. If the code or codes are provided in the site documents, use this information, and do not attempt to define additional codes based on the List of NAICS Codes.	**Mining/Extraction** 212210: Iron Ore Mining 212211: Gold Ore Mining 212212: Silver Ore Mining 212231: Lead Ore and Zinc Ore Mining 212234: Copper and Nickel Ore Mining 212291: Uranium-Radium-Vanadium Ore Mining 212299: All Other Metal Ore Mining 212392: Phosphate Rock Mining **Mineral Processing** 331311: Alumina Refining 331312: Primary Processing of Aluminum 331411: Primary Smelting and Refining of Copper 331419: Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum) Unknown	• ROD • Other site documents
R22. What was the basis for your answer to R21?	Spreadsheet	Indicate whether your answer to R22 is based on information extracted from site documents or based on your judgment by comparing the description of site activities to the list of NAICS codes.	• Documentation • Best judgment	• ROD "Site History" or "Background section" • Other site documents
R23. Was the site a	Spreadsheet	Partially pre-populated; add data for	• Y/N	• Regional

mixed ownership site (e.g., BLM, USFS)		appropriate sites Mixed-ownership sites refer to those owned at least in part by another federal partner (e.g., BLM, USFS, DoD, DOE) with portions of the site private/state/other owners		Website (site description) • ROD
R24. If Y to R23, identify the federal partner that partially owned the site.	Spreadsheet		• BLM • USFS • DOD • DOE	• Regional Website (site description) • ROD

3. Identify Hazardous Substances

These following questions ask about the hazardous substances identified as the basis for listing the site on the NPL (or proposing the site for the NPL) and identified as requiring action based on site-specific risk assessment and/or other requirements. Following sections will ask specific questions about each of these hazardous substances.

Question	Column	Guidance	Data Entry Choices	Information Sources
R25. Which hazardous substances were identified in the Hazard Ranking System package?	TBD	Identify the hazardous substances that were listed in the toxicity table in all Waste Characteristics sections of the HRS documentation record used to list the site. There may be several toxicity tables if there are different pathways. For example in sections: 3.2.1; 4.1.2.2.1; 5.1.2.1. Answer this for sitewide only (not each OU).	See List of Hazardous Substances at end of document	• HRS Documentation Record
R26. Which hazardous substances were identified as chemicals of concern (COCs) based on the HHRA?	HS Survey	Answer for sitewide OU only (not each specific OU) if HHRA covered entire site. ROD may identify COCs based on site-specific human health risk assessment, site-specific ecological risk assessment, or comparison to chemical-specific ARARs. For this question, identify only those associated with the site-specific HHRA.	See List of Hazardous Substances at end of document	• ROD • Human health risk assessment
R27. Which hazardous substances were identified as COCs based on the ERA?	HS Survey	Answer for sitewide OU only (not each specific OU) if ERA covered entire site. ROD may identify COCs based on site-specific human health risk assessment, site-specific ecological risk assessment, or comparison to chemical-specific ARARs. For this question, identify only those associated with the site-specific	See List of Hazardous Substances at end of document	• ROD • Ecological risk assessment

		ERA.		
R28. Which hazardous substances were identified as COCs based on chemical-specific ARARs, rather than site-specific risk assessment?	HS Survey	Answer for sitewide OU only (not each specific OU) if ARAR applies to entire site rather than specific OU.	See List of Hazardous Substances at end of document	• ROD

4. Describe Sources and Extent of Contamination

Question	Column	Guidance	Data Entry Choices	Information Sources
R29. What is the primary source of the hazardous substance contamination (i.e., waste type)?	survey	Enter the primary source(s) of the mining contamination for each hazardous substance. If possible, trace back to original source. For example, if the ROD sites "household dust" only enter the initial source of the duet [e.g., smelter emissions (airborne); tailings (in piles or otherwise distributed in solid form)] If contamination was discovered in drums/tanks please select "Other" and enter container type and material in field. Use "other" if source type is not included in the list. Please include a brief description of the waste type.	• Tailings (in piles or otherwise distributed in solid form) • Tailings ponds • Leachate • Sludge (from water treatment plants, smelting processes, or other sources) • Potliners • Waste rock or overburden • Slag (from smelter processes) • Chat (only use if the specific word "chat" is in the ROD) • Red/Brown mud (from alumina processing) • Smelter emissions (airborne) • Leach pad • Leachate • Pit lake • Underground mine workings • Flue dust • Demolition debris • Other (describe)	• ROD
R29A. For each hazardous substance identified previously, identify the media where contamination is being (or will	survey	For each hazardous substance identified as COCs, please identify which media is being treated by the remedy. This question requires some research and tracking data in the ROD. This question focuses on only those chemicals which are driving the cleanup. The concentrations	Surface soil Subsurface soil Surface water Ground water Sediment	ROD

Question	Column	Guidance	Data Entry Choices	Information Sources
be) addressed?		of these chemicals must be above an established cleanup level or ARAR and are the reason a certain remedy is being undertaken. For example: a site had emissions emitted via smokestacks that settled in residential soils in a town. Surface soil levels were found to contain lead in concentrations above state cleanup standards (e.g., 400 ppm) and slightly elevated levels of arsenic (not above benchmarks). The remedy for this OU includes replacing soil. For such a site, you would enter "surface soil" for lead.		
R29B. Is there acid mine drainage (AMD), acid rock drainage (ARD) at the OU?	spreadsheet	If acid mine drainage or acid rock drainage occurs anywhere at the site, enter Y.	Y/N	
R30. What is the estimated areal extent of land contamination?	Spreadsheet	Site-wide pre-populated from CERCLIS in three columns: SITE_ACRE (site acres); RAU_ACRES (ready for reuse acres); SITE_BNRDY_ACRES (site boundary acres)	N/A	• CERCLIS
	TBD (new column) Site Area from Other Source	If there is not information in the SITE_ACRE; RAU_ACRES; SITE_BNRDY_ACRES column, search other sources for site (not OU) area values. To convert square feet to acres, multiply by 2.3×10^{-5} There may be several contradicting acre values for the site area. If there is a value in the ROD, use that one. Otherwise, default to Site Profiles link to Regional content, followed by other EPA sources.	Area in **acres only**	• ROD • Regional Website (site description)
	TBD (Site Area Source)	Enter website address for source document		N/A
R31. For the hazardous substances identified in R26 through R28, was a particular process/waste exclusively responsible for the contamination (i.e., waste rock	•	• Options: o Identify specific processes from list: ▪ Refer to R6 for site-specific list? o Multiple activities	•	

Question	Column	Guidance	Data Entry Choices	Information Sources
pile, tailings ponds), or were those hazardous substances present as a result of multiple activities at the site?				
R33. For smelting facilities, was the contamination that is attributed to activities identified in R31 from a particular waste management method, operating unit or process?	Spreadsheet	Indicate what specific smelting activity caused contamination. If only smelting activities in general are mentioned for the OU, please enter "Smelting-but activity not specified)	o Smelting-but activity not specified o Reverberatory furnace o Blast furnace o Coke oven o Rolling mill o Stamp mill o Plating o Electric Arc Furnace o Other	ROD
R34. For the hazardous substances identified in R26 through R28, are there concentration levels of the contamination in each environmental media (i.e., ground water, surface water, air, soil)?	•	• Specific media categories • Format for data (i.e., range, max, median, etc.)		

5. Describe Human Health and Ecological Risks Evaluated

Question	Column	Guidance	Data Entry Choices	Information Sources
R35. For the hazardous substances	Survey	• Refer to list of receptors, pathways, and routes.	• As defined in survey	• ROD • Human health risk assessment

identified in R26 through R28, what were the exposure pathways and exposure routes considered in the human health risk assessment?				
R36. For the hazardous substances identified in R26 through R28, what were the exposure pathways and exposure routes considered in the ecological risk assessment?	•	• Refer to list of assessment endpoints, pathways, and routes.	• As defined in survey	• ROD • Ecological Risk Assessment

6. Describe the Remedy

Question	Column	Guidance	Data Entry Choices	Information Sources
R37. For the hazardous substances identified in R26 through R28, which ones were addressed by the selected remedy(ies) documented in the decision document?	Reference: Cleanup Technology	By contaminant previously identified, please indicate the remedy chosen in the ROD for this COC. Always start by reviewing the most recent ROD, ESD, or ROD amendment to be sure the most current information is entered. Remedies often change overtime; only input the most current remedy selected and/or constructed. Data is provided from a previous study in columns "Cleanup Technology" and "Cleanup Technology Description" Please review the data in these columns and use only as reference for this analysis. You do not need to edit the data in the Cleanup Technology column; this will be eventually overridden by you input in the survey. Please DO edit the text in the	• On-site disposal (movement of waste or soil to onsite disposal units; excavation; includes cap/cover on disposal units; underground injection/disposal) • On-site in-place stabilization (focusing on keeping waste or soils in place and stabilizing with cap/covers; includes cementification) • Off-site disposal (movement of waste or soil to offsite disposal units) • Sediment dredging and disposal • Deconstruction/decontamination of buildings • Water treatment-chemical (including passive lime treatment but NOT including GW pump and treat systems) • Surface water diversion • Sulfate Reducing Bioreactor • Created wetlands (only those wetlands that are part of the treatment; do not include wetlands restored during	• ROD • ESD • ROD Amendment

DATA COLLECTION INSTRUCTIONS
NPL AND SUPERFUND-EQUIVALENT DATA COLLECTION AND ANALYSIS

Question	Column	Guidance	Data Entry Choices	Information Sources
		Cleanup Technology Description column. This is free form text.	cleanup actions but not intended as integral part of remedy) • Institutional controls • Water treatment-other (Please include max. treatment system flow rate) • Providing alternate drinking water source • Resident relocation • Impoundment • GW pump and treat • Monitored Natural Attention (MNA) • Viitrification • Soil Vapor Extraction • Ground water monitoring • Other (describe)	
R38. What was the cleanup level for the site by media? (This will hopefully answer the question of what we are requiring the FR to cover)	Survey	For each media, indicate the cleanup levels by contaminant.	•	ROD
39A. What quantities of soil, were required to be excavated/treated/disposed according to the selected remedy(ies) documented in the Record(s) of Decision?	New column: Amount Soil Excavated/ Treated/Dis posed	Previous analysis results included in "Amount of Waste Disposed" and "Waste Acreage" columns. This should be used as reference only. Enter amount of soil excavated and treated/disposed in cubic yards.	Enter amount	ROD
39B. What quantities of soil were required to be capped (only) according to the selected remedy(ies) documented in the Record(s) of Decision?	New column: Amount Soil Capped	Previous analysis results included in "Amount of Waste Disposed" and "Waste Acreage" columns. This should be used as reference only. This total should NOT overlap with that entered in 39A. Enter amount of soil capped in place—with no treatment-- in acres.	Enter amount	ROD
39C. What Amount of Groundwater has been Treated?	New column: Amount	Enter groundwater treated by remedy (gallons per minute)	Enter amount	ROD

Question	Column	Guidance	Data Entry Choices	Information Sources
	Groundwater Treated	CONVERT if needed.		
39D. What Amount of Surface Water has been Treated?	New column: Amount Surface Water Treated	Enter surface water treated by remedy (gallons per minute) CONVERT if needed.	Enter amount	ROD
39E. What Amount of Sediment has been Excavated?	New column: Amount Sediment Excavated	Enter sediment excavated and treated/disposed by remedy (cubic yards total) Previous analysis results included in "Amount of Waste Disposed" column. This should be used as reference only. CONVERT if needed.	Enter amount	ROD
39F1. What Amount of Sediment has been Capped?	New column: Amount Sediment Capped	Enter sediment capped by remedy. This should not overlap with data entered in column 39E. Enter unit of measurement in next column	Enter amount	ROD
39F2 What units were used to count the amount of sediment capped?	New column: Sediment cap unit	Enter unit of measurement for sediment capped (e.g., stream miles, acres, other)	Enter Unit of Measure	ROD
R40. For each of the media-specific remedial actions described in R39, over what timeframes did the remedies take place or are the remedies projected to take place?	Spreadsheet	• Answer in years (not dates) • Indicate in spreadsheet whether timeframe is actual or projected	Enter timeframe	ROD
R41. Who funded the remediation?	Spreadsheet	Based on CERCLIS action leads and standard algorithm. Analyze for each OU.	• EPA • PRP • Mixed • FF • State	CERCLIS
R42A. For sites, what were the projected ROD cost estimates?	New column: ROD Cost Estimate Value	Review ROD cost estimate section for **selected remedy**. Enter total value of entire remedy for the OU.	• Enter dollar amount • Not Available (Use for remedial actions without cost estimates)	ROD/ESD/AMD

Question	Column	Guidance	Data Entry Choices	Information Sources
		For data gathering, please gather this information for ALL sites in the universe; not just PRP-lead sites. Final analysis will pull out PRP lead vs. non-PRP lead sites.		
	New column: ROD Cost Estimate (Unit)	For values entered in 42A, enter unit/specifics on the cost estimate unit (e.g., 30-year net present value in dollars)	Free text, such as: 30-year net present dollars	ROD/ESD/AMD
R43. What was the most costly action (present worth cost) for the site (e.g., heap leach detoxification and cover, grading and revegetation, long-term water treatment)?	New column: Spreadsheet	Review ROD cost estimate section. Enter the **individual action** that is estimated to cost the most. Often times, several actions are included in each alternate. Review all costs proposed for the separate actions for the remedy. To the extent possible, determine which selected action contributes most to the overall remedy cost. Start with most recent ROD/ESD/AMD to ensure most current information is included.	Free text	ROD/ESD/AMD (Cost section)
R44. What phase of completion is the site (for remediation)?	New column: Spreadsheet	Input completion status as indicated by CERCLIS site profiles home page. Data are found in "Major Site Cleanup Milestones" subsection under "Cleanup Progress"	• 1st Cleanup Action Initiated • Proposed to the NPL • Listed as Final on NPL • Final Remedy Selected • Construction Complete • Deleted from NPL	Site Profiles Page Found via: http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm
R45. Which hazardous substances were identified in the Remedial Investigation (RI)	New Column; spreadsheet	Answer for sitewide OU only (not each specific OU) if RI applies to entire site rather than specific OU. Use the Conclusions Section within the RI to identify the identified contaminants of concern	• See List of Hazardous Substances at end of document	RI
R46. ASARCO Settlement	New	This only pertains to the 26 EPA-	• Identify the Settlement amount	http://www.epa.

Appendix D:
Supplemental Activity Data from Removal Sites

The CERCLA sites presented in **Section 2.2.1** and **Appendix C** were NPL or SA approach sites. Since many of these sites began as removal actions, these sites are likely to capture the same types of response activities that would be representative of removal-only sites. In order to verify that the response activities in the Remedy Study Universe cover the same categories of actions as removal-only sites, EPA conducted a supplemental data collection of response activities at sites which were not yet listed on the NPL at the time the data in **Appendix C** was collected.

Unlike NPL sites, removal-only sites do not have Records of Determination (RODs). Rather, these sites typically have action memorandums and pollution reports that document the activities taking place at a given site. The EPA On-Scene Coordinator (OSC) Website (or EPAOSC)[1] is intended to be a resource for EPA OSCs to access, track, and share information with OSCs throughout the country. Documentation on removal sites has become much more consistently placed on EPAOSC over the past decade. However, older sites with no recent activity either do not appear on EPAOSC or have very minimal documentation. As a result, EPA used the following hierarchy for collecting data on removal-only sites:

(1) Documentation on the EPAOSC website, including:

   a. Action memoranda – an action memorandum provides a concise written record of the selection and approval of a removal action;[2]

   b. Pollution reports – a pollution report provides documentation of activities for removal actions under CERCLA;[3] and

   c. Other documentation available on EPAOSC;

(2) Documentation on another EPA website; or

(3) Any other publicly available documentation.

Table D.1 below presents the facilities and data sources examined pursuant to the hierarchy above and **Table D.2** presents the response action where 1 indicates the presence of the given category of response action. Data collection followed the instructions from **Attachment C.1**.

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[1] Available online at www.epaosc.org.

[2] U.S. EPA (Environmental Protection Agency). 2009. *Superfund Removal Guidance for Preparing Action Memoranda*. OSWER. Washington, DC 20460. September. Available online at: https://www.epa.gov/sites/production/files/2014-02/documents/superfund_removal_guide_for_preparing_action_memo.pdf

[3] U.S. EPA (Environmental Protection Agency). 1994. *Superfund Removal Procedures. Removal Response Reporting: POLREPs and OSC Reports*. OSWER. Washington, DC 20460. EPA-540/R-94/023. June.

Question	Column	Guidance	Data Entry Choices	Information Sources
Amounts	Column: Spreadsheet	Funded ASARCO sites.	and in parentheses identify the settlement amount with interest	gov/compliance/resources/cases/cleanup/cercla/asarco/community.html

Glossary of Acronyms:

ARAR – Applicable or Relevant and Appropriate Requirement
OU – Operable Unit
ROD – Record of Decision
ESD – Explanation of Significant Differences
HHRA – Human Health Risk Assessment
ERA – Ecological Risk Assessment
COC – Chemical of Concern
COPC – Chemical of Potential Concern
RI – Remedial Investigation

List of Hazardous Substances Commonly Found at HRM Sites

Arsenic
Asbestos
Cadmium
Chromium
Cobalt
Copper
Cyanide
Fluoride
Gold
Lead
Lithium
PCBs
Phosphate
Magnesium
Manganese
Mercury
Molybdenum
Nickel
Radium
Selenium
Silver
Thallium
Tungsten
Uranium
Vanadium
Zinc

Table D.1 – Removal Site Data Sources

Region	State	Facility Name	EPA ID	Source (s)
1	MA	Zonolite/W.R. Grace	MASFN0103055	https://www.epaosc.org
1	VT	Vermont Asbestos Group Mine	VTN000105222	https://www.epaosc.org
2	NJ	WR Grace Hamilton TWP	NJD067387472	https://www.epaosc.org
2	NY	Reynolds Metals Aluminum Reduction Site	NYD002245967	No Data Available
2	NY	Aluminum Company of America	NYD980506232	www3.epa.gov/region02/superfund/npl/aluminumcompany/pdf/0201690c.pdf
2	NY	Jewett White Lead Co. Site	NYD980531545	https://www.epaosc.org
3	MD	Powhatan Mining Company	MDN000306665	https://www.epaosc.org
3	PA	Vermiculite WRG4	PAN000305592	https://www.epaosc.org
3	VA	Allied-Pulaski	VAD980551915	No Data Available
3	WV	Spelter Zinc Plant	WV0000634584	No Data Available
3	WV	Sloan Glass Site	WV0004294104	No Data Available
3	WV	Fourco Glass	WVD988768693	https://www.epaosc.org
3	WV	Beaumont Glass Company Site	WVD988788345	https://www.epa.gov/sites/production/files/2014-07/documents/2007_report_on_the_land_use_of_all_emergency_response_and_removal_sites_completed_between_2001_and_2006_in_region_3.pdf
3	WV	8th and Plutus Streets' Pottery Site	WVN000305784	No Data Available
3	WV	Carr China	WVN000306608	No Data Available
3	WV	Yankee Street Arsenic Site	WVN000306627	No Data Available
3	WV	Dalzell Viking Glass Company	WVSFN0305531	No Data Available
4	AL	Gulf States Steel/Black Creek	ALD004014973	https://www.epaosc.org
4	FL	Coronet Industries	FLD001704741	No Data Available
4	GA	VCC Albany	GAD981237043	https://www.epaosc.org
4	GA	VCC Augusta	GAN000407494	No Data Available
4	GA	VCC Social Circle	GAN000407760	https://www.epaosc.org
4	GA	VCC Columbus	GAN000409850	https://www.epaosc.org
4	GA	Zonolite Road GAO 144	GAN000410399	https://www.epaosc.org
4	GA	VCC Rome	GAN000410416	https://www.epaosc.org

4	KY	W.R. Grace - Wilder, KY	KYN000407413	https://www.epaosc.org
4	NC	Estech General Chemical	NCD051827905	https://www.epaosc.org
4	NC	Holtra Chem	NCD991278631	https://www.epaosc.org
4	NC	Loflin Gold Mine	NCN000407301	https://www.epaosc.org
4	NC	Caraleigh Phosphate and Fertilizer Works	NCN000407686	https://www.epaosc.org
4	NC	VCC Winston Salem	NCN000410344	https://www.epaosc.org
4	NC	Northeast Chemical	NCSFN0406973	No Data Available
4	SC	Columbia Nitrogen	SC0001040393	https://www.epaosc.org
4	SC	Ashepoo Phosphate/Fertilizer Works	SC0001645373	No Data Available
4	SC	Stono Phosphate Works	SC0002316404	https://www.epaosc.org
4	SC	Atlantic Phosphate Works	SC0002332815	https://www.epaosc.org
4	SC	Vermiculite EXFO W R Grace GAO150	SCD003344108	https://www.epaosc.org
4	SC	International Minerals and Chemicals (IMC)	SCD003350493	No Data Available
4	SC	Swift Agri-Chem	SCD058181991	No Data Available
4	SC	Starmet CMI	SCD987570405	https://www.epaosc.org
4	SC	Henry's Knob	SCN000407376	No Data Available
4	SC	Virginia Carolina Chemical (VCC) Port of Baldwin Mines	SCN000407725	https://www.epaosc.org
4	SC	VCC Greenville	SCN000407814	https://www.epaosc.org
4	SC	Virginia Carolina Chemical (VCC) Wando	SCN000410243	https://www.epaosc.org
4	SC	Virginia Carolina Chemical (VCC) Columbia	SCN000410253	https://www.epaosc.org
4	SC	VCC Pon Pon	SCS123457002	https://www.epaosc.org
4	TN	Copper Basin Mining District	TN0001890839	No Data Available
5	IL	Old American Zinc Plant	IL0000034355	https://www.epaosc.org
5	IL	Ottawa Township Flat Glass Site	ILD005468616	https://www.epaosc.org
5	IL	Vulcan-Louisville/Fansteel	ILD097271563	https://www.epaosc.org
5	IL	St Louis Smelting & Refining Co	ILD980607006	https://www.epaosc.org
5	IL	Abingdon Pottery	ILN000510219	https://www.epaosc.org
5	IL	ALCOA Properties	ILSFN0508010	https://www.epaosc.org
5	IN	Mine Site 2028	INN000510234	No Data Available
5	MI	National Plate Glass	MIN000508745	No Data Available
5	MN	Western Mineral Products	MNN000508056	https://www3.epa.gov/region5/cleanup/westernmineral/index.htm

5	OH	SCIO Pottery Site	OHD004465084	https://www3.epa.gov/region5/waste/permits/tr-ohd004465084-scio-sob.pdf
5	OH	Midwest Portland Cement	OHD075020842	No Data Available
5	OH	Mosaic Tile Dump	OHN000508430	No Data Available
6	NM	Stephenson – Bennett Mine	NMD986684231	http://www.atsdr.cdc.gov/hac/pha/pha.asp?docid=1208&pg=0
6	NM	Jackpile-Paguate Uranium Mine	NMN000607033	https://babel.hathitrust.org/cgi/pt?id=mdp.39015025203061;view=1up;seq=4
6	NM	Northeast Churchrock Mine Site	NNN000906132	https://www.epaosc.org
6	NM	Ne Churchrock Quivira Mines	NNSFN0905492	https://www.epaosc.org
6	OK	Quinton Smelter	OKD987088366	https://www.epaosc.org
7	KS	National Zinc Co.	KSD980406698	No Data Available
7	KS	Prime Western Smelter	KSD980685366	No Data Available
7	KS	Caney Smelter	KSD984971986	https://www.epaosc.org
7	KS	Pittsburg Zinc	KSD985015338	https://www.epaosc.org
7	KS	Former United Zinc Smelter	KSN000705026	https://www.epaosc.org
7	MO	Lawrence County Mining Area Sites	MON000703982	https://www.epaosc.org
7	MO	Franklin County Lead	MON000705442	https://www.epaosc.org
7	MO	Central Mining District Lead – Cole Co.	MON000705444	https://www.epaosc.org
7	MO	Central Mining District Lead – Miller Co.	MON000705678	https://www.epaosc.org
7	MO	Central Mining District Lead – Camden Co.	MON000705679	https://www.epaosc.org
7	MO	Central Mining District Lead – Morgan Co.	MON000705680	https://www.epaosc.org
7	MO	Central Mining District Lead – Moniteau Co.	MON000705681	https://www.epaosc.org
7	MO	Washington County Lead District - Pea Ridge	MON000706017	https://www.epaosc.org
8	CO	Golden Age Mine	CO0000023077	No Data Available
8	CO	Industrial Minerals	CO0001407543	No Data Available
8	CO	Iron Springs Mining District	CO0001916360	https://www.epaosc.org
8	CO	Western Minerals Denver Plant	CO0010165136	https://www.epaosc.org
8	CO	Hendricks Mining & Milling	COD078348737	No Data Available
8	CO	Ilse Mine AKA Terrible Mine	COD980957674	https://www.epaosc.org
8	CO	Gem Park Complex	CON000801985	https://www.epaosc.org
8	CO	Bueno Mill & Mine SIte	CON000802129	https://www.epaosc.org
8	CO	Belden Cribbings	CON000802450	https://www.epaosc.org

8	CO	Claim Jumper/Shock Hill	CON000802644	https://www.epaosc.org
8	CO	American Lead and Zinc Mill	CON000802649	https://www.epaosc.org
8	MT	Rumsey Tailings	MT0001992585	https://www.epaosc.org
8	MT	McLaren Mill Tailings	MTD981550841	https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0800025
8	MT	Georgetown Railroad	MTD986068930	https://www.epaosc.org
8	MT	King Creek	MTD986069920	No Data Available
8	MT	Great Republic Smelter	MTN000802591	https://www.epaosc.org
8	ND	Robinson Insulation	ND0010165116	http://www.atsdr.cdc.gov/asbestos/sites/health_consultations/pdf/hcfinalminot.pdf
8	UT	Leeds 5 Stamp Mill	UT0000934653	No Data Available
8	UT	Empire Canyon	UT0002005981	https://www.epaosc.org
8	UT	Intermountain Insulation SLC Plant	UT0010165126	No Data Available
8	UT	Ophir Mills and Smelter	UT0010221516	https://www.epaosc.org
8	UT	Leeds Silver Reclamation Site	UTD981550619	No Data Available
8	UT	American Fork Canyon/UINTA National	UTD988074951	https://www.epaosc.org
8	UT	Sandy Smelter Site	UTD988078044	https://www.epaosc.org
8	UT	Vermiculite Intermountain Site	UTN000802119	https://www.epaosc.org
9	AZ	McCleur Tailings	AZ0000309096	https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0905054
9	AZ	ASARCO Hayden Plant	AZD008397127	https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/AZD008397126
9	AZ	Cyprus Tohono Mine	AZD094524097	https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dec8ba3252368428825742600743733/b3a939aef4ee637788257acb006a16ec!OpenDocument
9	CA	Central Eureka Mine	CA0000726539	http://www.ehib.org/ehib/www.ehib.org/projects/MesaDeOro1996.pdf

9	CA	Gambonini Mercury Mine	CA0002322469	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwintIrRko_OAhWECD4KHbYXDnMQFggkMAE&url=http%3A%2F%2Fwww.waterboards.ca.gov%2Fsanfranciscobay%2Fboard_info%2Fagendas%2F2002%2Foctober%2F10-16-02-5hssr.doc&usg=AFQjCNFYNqBYRFCWjHBrdUg3YjICNFr_LA&sig2=BfBJlHxcdROmQQYNKIN99Q&bvm=bv.127984354,d.cWw
9	CA	Riconada Mine	CA0141190579	https://yosemite.epa.gov/opa/admpress.nsf/6427a6b7538955c585257359003f0230/e1c447cfbaf6dbdd852570d8005e15c2!OpenDocument&Start=3.6&Count=5&Expand=3.6
9	CA	Grey Eagle Mine	CAD000629923	https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dec8ba3252368428825742600743733/fba904b893e36ea188257007005e9456!opendocument
9	CA	Marsh Creek Rd Abandoned Dump SIte	CAD980736060	http://www.eastbaytimes.com/ci_11298535?nclick_check=0
9	CA	Zeibright Mine	CAN000905925	https://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/3344375263b631ad8525719d006ff404!OpenDocument&Highlight=2,risk
9	CA	MTA Vermiculite Rail Spur	CAN000905933	No Data Available
9	CA	Pioneer Pit and Gardner's Point Placer Mines	CAN000905978	https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/14044e94b4976c9d882570070060858c!OpenDocument
9	CA	Shaharald Mine	CAN000908300	https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/f8728d1c79f1b30f882574260072d053/4fcad6cbc014decb882574010080c1f1!OpenDocument
9	CA	Abbot/Turkey Run Mine	CAN000908401	http://www.lakeconews.com/index2.php?option=com_content&id=1715From
9	CA	Altoona Mine	CAN000908402	https://cumulis.epa.gov/supercpad/cursites/ccontinfo.cfm?id=0908402, http://www.mtshastanews.com/article/20080924/NEWS/309249963
9	CA	Bodie State Historical Park	CAN000908532	No Data Available

9	CA	Goldome Mine	CAN000908600	No Data Available
9	CA	Polar Star Mine	CASFN0905494	No Data Available
9	AZ	Abandoned Uranium Mines on the Navajo Nation	NNN000906087	No Data Available
9	NV	Eagle 1 Mill Site	NV0001995604	No Data Available
9	NV	Veta Grande Mining Co	NVD038275020	No Data Available
9	NV	Anaconda Copper Company	NVD083917252	No Data Available
10	ID	USDA FS Boise NF: Monarch Mine Stamp Mill USDA	ID0001413723	https://www.epaosc.org
10	ID	Cinnabar Mine	IDD980665160	https://www.epaosc.org
10	ID	Southeast Idaho Selenium Project	IDN001002245	No Data Available
10	ID	Salmon River Uranium Development	IDN001002662	https://www.epaosc.org
10	ID	Harmony Mine & Mill Site	IDSFN1002104	https://www.epaosc.org
10	ID	Grouse Creek Mine	IDSFN1002152	https://cumulis.epa.gov/supercpad/cursites/ccontinfo.cfm?id=1002151
10	WA	Holden Mine	WA9122307672	http://www.holdenminecleanup.com/about-the-project
10	WA	Alder Mill	WAD980722847	https://www.epaosc.org
10	WA	Vermiculite Northwest	WAN001002259	https://yosemite.epa.gov/r10/cleanup.nsf/32e58b284950a4fc882578480000fdcc/717834e601dce8cd8825762d0072baad!OpenDocument
10	WA	Silverton Mercury (Hg) Concentrators	WAN001002702	https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=1002701
10	WA	Grandview Mine	WASFN1002165	https://cumulis.epa.gov/supercpad/cursites/ccontinfo.cfm?id=1002164

Table D.2 – Removal Site Response Actions

EPA ID	Response Action													
	On-site disposal (excavation, capping, covering, Reveg)	Off-site disposal	Engineering/ Containment (other)	Surface water diversion	Water treatment - lime	Water treatment (other)	No action	Alternative drinking water	Sediment dredging/ disposal	Monitoring (all media as separate remedy)	Monitored natural attenuation/recovery	Deconstruction of buildings	Other	Notes
MASFN0103055		1.00										1.00		
VTN000105222		1.00										1.00		
NJD067387472														
NYD002245967														
NYD980506232		1.00				1.00			1.00					
NYD980531545	1.00	1.00												
MDN000306665	1.00	1.00	1.00	1.00					1.00			1.00		
PAN000305592	1.00	1.00	1.00											
VAD980551915														
WV0000634584														
WV0004294104														
WVD988768693	1.00		1.00											
WVD988788345														
WVN000305784														
WVN000306608														
WVN000306627														
WVSFN0305531														
ALD004014973	1.00	1.00	1.00			1.00			1.00			1.00		
FLD001704741														
GAD981237043		1.00												
GAN000407494														
GAN000407760		1.00												

Table D.2 – Removal Site Response Actions

EPA ID	Response Action													
	On-site disposal (excavation, capping, covering, Reveg)	Off-site disposal	Engineering/ Containment (other)	Surface water diversion	Water treatment - lime	Water treatment (other)	No action	Alternative drinking water	Sediment dredging/ disposal	Monitoring (all media as separate remedy)	Monitored natural attenuation/recovery	Deconstruction of buildings	Other	Notes
GAN000409850		1.00												
GAN000410399		1.00												
GAN000410416		1.00												
KYN000407413		1.00										1.00		
NCD051827905		1.00				1.00			1.00		1.00			
NCD991278631	1.00	1.00										1.00		
NCN000407301	1.00													
NCN000407686		1.00												
NCN000410344		1.00												
NCSFN0406973														
SC0001040393	1.00	1.00				1.00								
SC0001645373														
SC0002316404		1.00				1.00								
SC0002332815		1.00				1.00				1.00				
SCD003344108														
SCD003350493														
SCD058181991														
SCD987570405	1.00	1.00				1.00								
SCN000407376														
SCN000407725		1.00					1.00							
SCN000407814	1.00	1.00												
SCN000410243		1.00												

Table D.2 – Removal Site Response Actions

EPA ID	Response Action													
	On-site disposal (excavation, capping, covering, Reveg)	Off-site disposal	Engineering/ Containment (other)	Surface water diversion	Water treatment - lime	Water treatment (other)	No action	Alternative drinking water	Sediment dredging/ disposal	Monitoring (all media as separate remedy)	Monitored natural attenuation/recovery	Deconstruction of buildings	Other	Notes
SCN000410253		1.00												
SCS123457002		1.00				1.00								
TN0001890839														
IL0000034355	1.00													
ILD005468616		1.00												
ILD097271563		1.00	1.00						1.00					
ILD980607006		1.00												
ILN000510219	1.00	1.00												
ILSFN0508010	1.00													
INN000510234														
MIN000508745														
MNN000508056		1.00												
OHD004465084	1.00													
OHD075020842														
OHN000508430														
NMD986684231	1.00													
NMN000607033														
NNN000906132	1.00													
NNSFN0905492	1.00		1.00											
OKD987088366	1.00		1.00									1.00		
KSD980406698														
KSD980685366														

Table D.2 – Removal Site Response Actions

EPA ID	Response Action													
	On-site disposal (excavation, capping, covering, Reveg)	Off-site disposal	Engineering/ Containment (other)	Surface water diversion	Water treatment - lime	Water treatment (other)	No action	Alternative drinking water	Sediment dredging/ disposal	Monitoring (all media as separate remedy)	Monitored natural attenuation/recovery	Deconstruction of buildings	Other	Notes
KSD984971986	1.00	1.00	1.00											
KSD985015338														
KSN000705026	1.00	1.00												
MON000703982	1.00							1.00		1.00				
MON000705442								1.00		1.00				
MON000705444		1.00						1.00	1.00	1.00				
MON000705678		1.00						1.00	1.00	1.00				
MON000705679		1.00						1.00	1.00	1.00				
MON000705680		1.00						1.00	1.00	1.00				
MON000705681		1.00						1.00	1.00	1.00				
MON000706017	1.00	1.00						1.00						
CO0000023077														
CO0001407543														
CO0001916360	1.00													
CO0010165136		1.00												
COD078348737														
COD980957674	1.00													
CON000801985	1.00													
CON000802129	1.00		1.00											
CON000802450			1.00											
CON000802644		1.00												
CON000802649	1.00													

Table D.2 – Removal Site Response Actions

EPA ID	Response Action														
	On-site disposal (excavation, capping, covering, Reveg)	Off-site disposal	Engineering/ Containment (other)	Surface water diversion	Water treatment - lime	Water treatment (other)	No action	Alternative drinking water	Sediment dredging/ disposal	Monitoring (all media as separate remedy)	Monitored natural attenuation/recovery	Deconstruction of buildings	Other	Notes
MT0001992585	1.00													
MTD981550841	1.00	1.00												
MTD986068930	1.00													
MTD986069920														
MTN000802591		1.00		1.00										
ND0010165116														
UT0000934653														
UT0002005981														
UT0010165126														
UT0010221516	1.00													
UTD981550619														
UTD988074951		1.00												
UTD988078044		1.00												
UTN000802119		1.00												
AZ0000309096														
AZD008397127		1.00								1.00				
AZD094524097	1.00		1.00			1.00		1.00						
CA0000726539	1.00	1.00	1.00											
CA0002322469	1.00		1.00						1.00					
CA0141190579													1.00	Built fences
CAD000629923	1.00		1.00											
CAD980736060			1.00	1.00									1.00	Dam reconstruction

Table D.2 – Removal Site Response Actions

EPA ID	Response Action													
	On-site disposal (excavation, capping, covering, Reveg)	Off-site disposal	Engineering/ Containment (other)	Surface water diversion	Water treatment - lime	Water treatment (other)	No action	Alternative drinking water	Sediment dredging/ disposal	Monitoring (all media as separate remedy)	Monitored natural attenuation/recovery	Deconstruction of buildings	Other	Notes
CAN000905925		1.00												
CAN000905933														
CAN000905978														
CAN000908300														
CAN000908401	1.00	1.00	1.00									1.00		
CAN000908402	1.00													
CAN000908532														
CAN000908600														
CASFN0905494														
NNN000906087														
NV0001995604														
NVD038275020														
NVD083917252														
ID0001413723	1.00	1.00	1.00						1.00					
IDD980665160	1.00						1.00							
IDN001002245														
IDN001002662		1.00										1.00		
IDSFN1002104		1.00	1.00											
IDSFN1002152														
WA9122307672														
WAD980722847	1.00		1.00	1.00					1.00					
WAN001002259		1.00												

Table D.2 – Removal Site Response Actions

EPA ID	Response Action													
	On-site disposal (excavation, capping, covering, Reveg)	Off-site disposal	Engineering/ Containment (other)	Surface water diversion	Water treatment - lime	Water treatment (other)	No action	Alternative drinking water	Sediment dredging/ disposal	Monitoring (all media as separate remedy)	Monitored natural attenuation/recovery	Deconstruction of buildings	Other	Notes
WAN001002702														
WASFN1002165														

Appendix E: Hardrock Mining Facilities Potentially Subject to the Proposed 108(b) Rule

As part of its rulemaking development efforts, EPA sought to identify the full universe of hardrock mining and mineral processing sites applicable to 108b, or the "Maximum Extent Universe." A combination of data provided by MSHA and USGS were used to generate a "potential" universe of all currently operating facilities, which EPA further populated with processes and commodities from site-specific information, when possible, and professional judgment, when not. From the potential universe, EPA then removed placer and small mines through the use of MSHA operating status and state classification information, supplemented by professional judgment. The resulting list comprised 354 currently operating mining and processing facilities potentially subject to 108b, listed below.

EPA consulted with the summary data from the 354 facilities to ensure that the sample of 63 facilities it selected for the regression analyses described in **Section 3** of this technical support document were representative of the hardrock mining industry in terms of mining methods and processes practiced, commodities extracted or processed, and geography.

#	Assigned Facility Name	ST	MSHA ID	FRS ID	Type of Facility	Commodity	Commodity Group	Operating Status
1	Agrium/NuWest Rasmussen Ridge	ID	1002177	110000468351	Surface Mine	Phosphate Rock	Phosphates	Active
2	Airport Equipment Fish Creek	AK	5001556		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
3	AK Steel Ashland	KY			Primary Smelter	Iron Ore	Ferrous Metals	Active
4	AK Steel Middletown	OH			Primary Smelter	Iron Ore	Ferrous Metals	Active
5	Alaska Gold Nanuuq	AK	5001850	110024260440	Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
6	Alcoa Intalco	WA		110040947820	Primary Smelter	Aluminum	Aluminum	Active
7	Alcoa Massena West	NY		110000582735	Primary Smelter	Aluminum	Aluminum	Active
8	Alcoa Point Comfort	TX	4100320	110000606997	Processor/Refiner	Alumina	Aluminum	Active
9	Alcoa Warrick	IN		110000602045	Primary Smelter	Aluminum	Aluminum	Active
10	Alcoa Wenatchee	WA		110000491156	Primary Smelter	Aluminum	Aluminum	Active
11	Almatis Premium Alumina	LA		110013406732	Processor/Refiner	Alumina	Aluminum	Active
12	Ancient Alien Mining DeFord1	OR	3503792		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
13	Anderson & Sons Mining	AK	5001759		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
14	Anglogold Cresson	CO	0503695	110022508534	Surface Mine	Gold	Non-Ferrous Metals	Active
15	Anvil Creek	AK	5001974		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
16	Apache Mining Old Wasp Mine	AZ	0203246		Surface Mine	Gold	Non-Ferrous Metals	Active
17	ArcelorMittal Burns Harbor	IN			Primary Smelter	Iron Ore	Ferrous Metals	Active
18	ArcelorMittal Cleveland	OH			Primary Smelter	Iron Ore	Ferrous Metals	Active
19	ArcelorMittal Indiana Harbor	IN			Primary Smelter	Iron Ore	Ferrous Metals	Active
20	ArcelorMittal Minorca	MN	2102449	110008799390	Surface Mine	Iron Ore	Ferrous Metals	Active
21	ArcelorMittal Riverdale	IL			Primary Smelter	Iron Ore	Ferrous Metals	Active
22	Asarco Amarillo	TX			Processor/Refiner	Copper	Non-Ferrous Metals	Active
23	Asarco Mission	AZ	0200135	110011660023	Surface Mine	Copper	Non-Ferrous Metals	Active
24	Asarco Ray	AZ	0200150	110013883805	Surface Mine	Copper	Non-Ferrous Metals	Active
25	Asarco Ray Hayden	AZ		110000471338	Primary Smelter	Copper	Non-Ferrous Metals	Active
26	Asarco Silver Bell	AZ	0200134	110010063563	Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
27	Ashdown	NV	2600578	110020577632	Underground Mine	Molybdenum	Non-Ferrous Metals	Active

#	Assigned Facility Name	ST	MSHA ID	FRS ID	Type of Facility	Commodity	Commodity Group	Operating Status
28	ATI Wah Chang	OR		110000488035	Processor/Refiner	Zirconium and hafnium	Rare Earth Minerals	Active
29	Atna Resources Pinson Mine	NV	2601597		Underground Mine	Gold	Non-Ferrous Metals	Active
30	AU Mines Manhattan Gulch	NV	2602658		Surface Mine	Gold	Non-Ferrous Metals	Active
31	Bailey Mining	AK	5001389		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
32	Baker Hughes Argenta	NV	2601152		Surface Mine	Barite Barium Ore	Industrial Rock	Active
33	Baker Hughes Slaven	NV	2602730		Surface Mine	Barite Barium Ore	Industrial Rock	Active
34	Barrick Bald Mountain	NV	2601842	110000608441	Surface Mine	Gold	Non-Ferrous Metals	Active
35	Barrick Cortez	NV	2600827; 2602573	110041618666	Surface-Underground Mine	Gold	Non-Ferrous Metals	Active
36	Barrick Golden Sunlight Mine	MT	2401417	110000428564	Surface Mine	Gold	Non-Ferrous Metals	Active
37	Barrick Goldstrike Mine/Mill/Roaster	NV	2601089; 2602674; 2602673	110043802178	Surface Mine/Processing	Gold	Non-Ferrous Metals	Active
38	Barrick Meikle	NV	2602246		Underground Mine	Gold	Non-Ferrous Metals	Active
39	Barrick Storm Exploration	NV	2602300	110027839828	Underground Mine	Gold	Non-Ferrous Metals	Active
40	Barrick Turquois Ridge	NV	2602286	110002048025	Underground Mine	Gold	Non-Ferrous Metals	Active
41	Bear Creek Placer	MT	2402573		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
42	Bessemer Peterson	MI	2003372		Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
43	BHP Copper Cities	AZ		110015967621	Surface Mine	Copper	Non-Ferrous Metals	Active
44	Black Butte	MT	2402423	110001473815	Surface Mine	Iron Ore	Ferrous Metals	Temporarily idled
45	Blue Ribbon Gold Cahoon#1	AK	5002004		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
46	Borealis Mine	NV	2601655		Surface Mine	Gold	Non-Ferrous Metals	Active
47	Bromide Mining Project	UT	4202579		Underground Mine	Copper	Non-Ferrous Metals	Active

#	Assigned Facility Name	ST	MSHA ID	FRS ID	Type of Facility	Commodity	Commodity Group	Operating Status
48	Buckeye Olive Creek	AK	5000304		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
49	Cal Sierra Dredge 17	CA	0402386	110014377021	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
50	CalPortland Baxter Mine	CA	0403569		Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
51	Cameco Crow Butte	NE		110002358788	In-situ Leaching	Uranium	Radioactive Metals	Active
52	Canon Resources Gold King Creek	AK	5001921		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
53	Capstone Pinto Valley	AZ	0201049	110038167710	Surface Mine	Copper	Non-Ferrous Metals	Active
54	Carlota Copper	AZ	0202653	110039495588	Surface Mine	Copper	Non-Ferrous Metals	Active
55	CCR Mine	AK	5001983		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
56	Century	UT	4202596		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
57	Century Hawesville	KY		110000380917	Primary Smelter	Aluminum	Aluminum	Active
58	Century Mount Holly	SC		110002329454	Primary Smelter	Aluminum	Aluminum	Active
59	Century Seebree	KY		110038162118	Primary Smelter	Aluminum	Aluminum	Active
60	CFI Pit	SD	3900925	110004948647	Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
61	Childs and Nicholls CN Portable1	MT	2402666		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
62	Cliffs Natural Resources-Empire	MI	2001012	110038173437	Surface Mine	Iron Ore	Ferrous Metals	Active
63	Cliffs Natural Resources-Tilden	MI	2000422	110041006416	Surface Mine	Iron Ore	Ferrous Metals	Active
64	CML Iron Mountain	UT	4201927; 4202624	110043433111	Surface Mine	Iron Ore	Ferrous Metals	Active
65	Coeur Kensington	AK	5001544	110041400427	Underground Mine	Gold	Non-Ferrous Metals	Active
66	Coeur Rochester	NV	2601941	110000472890	Surface Mine	Silver Ore	Non-Ferrous Metals	Active
67	Columbus Project	NV	2601674	110027832638	Surface Mine	Rare Earths	Rare Earth Minerals	Active
68	Comstock Mining	NV	2601871		Surface Mine	Gold	Non-Ferrous Metals	Active
69	Contact Concentrator	MT	2401648		Processor/Refiner	Gold	Non-Ferrous Metals	Intermittent operation
70	Coyote Blossom Mine	NV	2602745		Underground Mine	Gold	Non-Ferrous Metals	Active
71	CR Briggs	CA	0405276	110000602232	Surface Mine	Gold	Non-Ferrous Metals	Active

#	Assigned Facility Name	ST	MSHA ID	FRS ID	Type of Facility	Commodity	Commodity Group	Operating Status
72	CS Mining OK and Hidden Treasure	UT	4202431	110043669544	Surface Mine	Copper	Non-Ferrous Metals	Active
73	Curtis Tungsten	CA	0405092		Surface Mine	Tungsten	Non-Ferrous Metals	Intermittent operation
74	Cyprus Tohono	AZ	0202579	110008254584	Surface Mine	Copper	Non-Ferrous Metals	Active
75	D&S Mining Ohio Mine	MT	2401779		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
76	Daniel Even	AK	5002001		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
77	Davis Creek	AK	5001956		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
78	DDCMine	AK	5002015		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
79	Degerstrom Rossi	NV	2602735		Surface Mine	Barite Barium Ore	Industrial Rock	Active
80	Degerstrom Screen Plant	NV	2602739		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
81	Degerstrom Slaven	NV	2602749	110041418427	Surface Mine	Barite Barium Ore	Industrial Rock	Active
82	Denton-Rawhide Mine	NV	2601030	110000600993	Surface Mine	Gold	Non-Ferrous Metals	Active
83	Desrt Hawk Kiewit Mine	UT	4202560		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
84	Dig M Storey Claim	NV	2602601		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
85	Dobson Wild Goose	AK	5001957		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
86	Doe Run Brushy Creek	MO	2300499	110018008920	Underground Mine	Lead-Zinc Ore	Non-Ferrous Metals	Active
87	Doe Run Buick	MO	2300457	110044834061	Underground Mine	Lead-Zinc Ore	Non-Ferrous Metals	Active
88	Doe Run Fletcher	MO	2300409	110000596016	Underground Mine	Lead-Zinc Ore	Non-Ferrous Metals	Active
89	Doe Run Sweetwater	MO	2300458	110042676299	Underground Mine	Lead-Zinc Ore	Non-Ferrous Metals	Active
90	Doe Run Viburnum	MO	2300495	110041118493	Underground Mine	Lead-Zinc Ore	Non-Ferrous Metals	Active
91	Doe Run Viburnum Casteel	MO	2301800	110007374527	Underground Mine	Lead-Zinc Ore	Non-Ferrous Metals	Active

#	Assigned Facility Name	ST	MSHA ID	FRS ID	Type of Facility	Commodity	Commodity Group	Operating Status
92	Drake	AZ	0203299		Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
93	Dun Glen Placer Mine	NV	2602750		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
94	DuPont Florida	FL	0800225	110007242947	Surface Mine	Titanium	Non-Ferrous Metals	Active
95	Eagle Humboldt	MI	2000420	110040612717	Surface Mine	Iron Ore	Ferrous Metals	Active
96	Earth Movers Cleary Creek	AK	5001650		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
97	Ellet Channel Quest	AK	5001875	110037094738	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
98	Emmetts Mockingbird Mine	CA	0405781		Underground Mine	Gold	Non-Ferrous Metals	Active
99	Energy Fuels Canyon Mine	AZ	0203305		Underground Mine	Uranium	Radioactive Metals	Temporarily idled
100	Energy Fuels Pinenut Mine	AZ	0202286	110015941294	Underground Mine	Uranium	Radioactive Metals	Active
101	Energy Fuels White Mesa Mill	UT	4201429	110000879425	Processor/Refiner	Uranium	Radioactive Metals	Active
102	Essar Steel	MN	2103751		Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
103	Eureka Moly Mount Hope	NV	2602729		Surface Mine	Molybdenum	Non-Ferrous Metals	Active
104	Fairbanks Creek Mine	AK	5001562		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
105	First Liberty Fencemaker	NV	2601650	110043236744	Underground Mine	Antimony	Non-Ferrous Metals	Active
106	First Liberty Lovelock	NV			Processor/Refiner	Antimony	Non-Ferrous Metals	Active
107	Florida Canyon Mine	NV	2601947	110007978581	Surface Mine	Gold	Non-Ferrous Metals	Active
108	FMC Bessemer Lithium	NC		110002444249	Processor/Refiner	Lithium	Non-Ferrous Metals	Active
109	Fox Iron Creek Placer	SD	3901592		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
110	Freeport McMoRan Bagdad	AZ	0200137	110010378661	Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
111	Freeport McMoRan Chino	NM	2900708		Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
112	Freeport McMoRan Climax	CO	0502256	110022511174	Underground Mine/Processing	Molybdenum	Non-Ferrous Metals	Active
113	Freeport McMoRan Cobre Continental	NM	2900725; 2900731	110001549922	Surface Mine/Processing	Copper	Non-Ferrous Metals	Active

#	Assigned Facility Name	ST	MSHA ID	FRS ID	Type of Facility	Commodity	Commodity Group	Operating Status
114	Freeport McMoRan Henderson	CO	0500790	110005997591; 110000600190	Underground Mine/Processing	Molybdenum	Non-Ferrous Metals	Active
115	Freeport McMoRan Miami	AZ	0200112	110008254423	Surface Mine/Processing/ Primary Smelter	Copper	Non-Ferrous Metals	Active
116	Freeport McMoRan Morenci	AZ	0200024	110000600724	Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
117	Freeport McMoRan Safford	AZ	0203131	110037149519	Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
118	Freeport McMoRan Sierrita	AZ	0200144	110000471837	Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
119	Freeport McMoRan Tyrone	NM	2900159	110042056333	Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
120	French Gulch Washington Mine	CA	0403425		Underground Mine	Gold	Non-Ferrous Metals	Active
121	Geo Nevada Spring Valley	NV	2602470	110027825030	Surface Mine	Gold	Non-Ferrous Metals	Active
122	Glacier Mining	AK	5001386		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
123	Glitter Enterprises Gold Bug	SD	3901595		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
124	Gold Acquisition Relief Canyon	NV	2602657		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
125	Gold Rule Placer Mine	MT	2402582		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
126	Gold Run Creek	AK	5001440		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
127	Golden Bear	OR	3503780		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
128	Golden Queen Soledad Mountain	CA	0405319		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
129	Goldrich GNP	AK	5001402		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
130	GoldWedge	NV	2602542		Underground Mine	Gold	Non-Ferrous Metals	Active
131	Great Salt Lake Minerals Ogden	UT		110000469920	Brine Extraction/Proces sing	Potash	Industrial Rock	Active
132	Greyhound Golden Eagle	ID	1002155	110046356144	Underground Mine	Gold	Non-Ferrous Metals	Active

#	Assigned Facility Name	ST	MSHA ID	FRS ID	Type of Facility	Commodity	Commodity Group	Operating Status
133	Gunsinger Golden Jubilee Mine	MT	2402187		Underground Mine	Gold	Non-Ferrous Metals	Active
134	Hahm Intenational Silverlake	CA	0405281		Surface Mine	Iron Ore	Ferrous Metals	Active
135	Haile Gold Mine	SC	3800600		Surface Mine	Gold	Non-Ferrous Metals	Active
136	Halliburton Rossi	NV	2602239	110040938821	Surface Mine	Barite Barium Ore	Industrial Rock	Active
137	Hareventure Golddust	AK	5001969		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
138	Hastie Mining Klondike II	KY	1519209		Surface Mine	Fluorspar	Industrial Rock	Active
139	Hecla Greens Creek	AK	5001267	110032882735	Underground Mine	Silver Ore	Non-Ferrous Metals	Active
140	Hecla Lucky Friday	ID	1000088	110041927378	Underground Mine	Silver Ore	Non-Ferrous Metals	Active
141	Hector Placer Mine	CO	0504989		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
142	Hibbing Taconite	MN	2101600	110008799185	Surface Mine	Iron Ore	Ferrous Metals	Active
143	Hoffman Middle Fork	AK	5001549		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
144	Homestake Ruby Hill	NV	2602307	110015844176	Surface Mine	Gold	Non-Ferrous Metals	Active
145	Hurt MK Falls	AK	5002005		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
146	Hycroft Resources	NV	2601962	110007980453	Surface Mine	Gold	Non-Ferrous Metals	Active
147	Idaho State Gold Hill	ID	1002209		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
148	Iluka Resources Brink-Concord-Stony Creek	VA	4407250; 4407222; 4407221	110041948015; 110029527493; 110001908534	Surface Mine/Processing	Titanium	Non-Ferrous Metals	Active
149	Indium Germanium	NY		110009488125	Processor/Refiner	Germanium	Non-Ferrous Metals	Active
150	Indium New York	NY		110004393754	Processor/Refiner	Indium	Non-Ferrous Metals	Active
151	Industrial Minerals Plant 2	SC	3800388		Processor/Refiner	Boron	Industrial Rock	Active
152	Intrepid Moab	UT		110020098758	Brine Extraction/Processing	Potash	Industrial Rock	Active
153	Intrepid PotashEast/West	NM	2900170	110022747553	Underground Mine	Potash	Industrial Rock	Active

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154	Intrepid PotashNorth	NM	2902028	110007975076	Processor/Refiner	Potash	Industrial Rock	Active
155	Intrepid Wendover	UT		110055002848	Brine Extraction/Processing	Potash	Industrial Rock	Active
156	Jones Mining	AK	5001952		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
157	Jubilee Mine	AK	5001961		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
158	Jubilee Venture Eagle Mine Project	CO	0504985		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
159	Kenwin #7 Below Discovery	AK	5001677		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
160	Kinross Crown Resources Buckhorn Mine	WA	4503615		Underground Mine/Processing	Gold	Non-Ferrous Metals	Active
161	Kinross Fairbanks Gold Fort Knox	AK	5001616	110007347120	Surface Mine	Gold	Non-Ferrous Metals	Active
162	Kinross Kettle River Mill	WA	4503283		Processor/Refiner	Gold	Non-Ferrous Metals	Active
163	Kirtley Creek Mine	ID	1001895		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
164	Klondex Gold Fire Creek	NV	2602691		Underground Mine	Gold	Non-Ferrous Metals	Active
165	Klondex Midas	NV	2602314		Underground Mine	Gold	Non-Ferrous Metals	Active
166	KMI Zeolite Shenandoah	NV	2602408		Processor/Refiner	Brucite	Non-Ferrous Metals	Active
167	Landview Mastadon Creek	AK	5001976		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
168	Last Chance Ranch	OR	3503819		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
169	Liberty	CO	0504893		Underground Mine	Gold	Non-Ferrous Metals	Temporarily idled
170	Lindberg SP13	MI	2003314	110021101350	Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
171	Lindberg SP14	MI	2003336		Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
172	Lindberg SP16	MI	2003408	110021101350	Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
173	Lisbon Valley	UT	4202406	110025331843	Surface Mine	Copper	Non-Ferrous Metals	Active
174	LNT Goldndreams	AK	5001970		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation

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175	Lost Channel Mine	AK	5001973		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
176	Lost Creek	WY			In-situ Leaching	Uranium	Radioactive Metals	Active
177	LuDan Sulivan Pit	OR	3503673		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
178	Lundin Eagle Mine-Humboldt Mill	MI	2003454	110040612717	Underground Mine/Processing	Nickel	Non-Ferrous Metals	Active
179	M&W Prospect Mine	MT	2401991	110017852536	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
180	Maccor Last Mine	AK	5001763	110013347903	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
181	Magnetation Mesabi Chief	MN	2103655		Processor/Refiner	Iron Ore	Ferrous Metals	Active
182	Magnetation Plant 1	MN			Processor/Refiner	Iron Ore	Ferrous Metals	Temporarily idled
183	Magnetation Plant 2	MN			Processor/Refiner	Iron Ore	Ferrous Metals	Active
184	Manko 5	FL	0800222		Surface Mine	Phosphate Rock	Phosphates	Active
185	Marigold Mine	NV	2602081	110016767122	Surface Mine	Gold	Non-Ferrous Metals	Active
186	Martinique Crescent Creek	UT	4202188		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
187	Marvel Creek	AK	5000298		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
188	Materion Delta	UT		110008175232	Processor/Refiner	Beryllium	Rare Earth Minerals	Active
189	Materion Elmore	OH		110000383184	Processor/Refiner	Beryllium	Rare Earth Minerals	Active
190	Materion Natural Resources Utah	UT	4200706	110041366009	Surface Mine	Beryllium	Rare Earth Minerals	Active
191	McDonald Mammoth Mine	MT	2401524		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
192	Mesabi Nugget	MN	2103689	110037418979	Processor/Refiner	Iron Ore	Ferrous Metals	Active
193	Mestena Alta Mesa	TX			In-situ Leaching	Uranium	Radioactive Metals	Active
194	M-I Greystone	NV	2600411	110027807489	Surface Mine	Barite Barium Ore	Industrial Rock	Active
195	MicroLite	KS	1400868	110011223540	Surface Mine	Potash	Industrial Rock	Active
196	Midway Gold Pan	NV	2602755		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
197	Miller Ketchem Creek	AK	5001592	110037263181	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
198	Miller Sandborn Gravel Pit	CO	0504998		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation

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199	Mineral Park	AZ	0200843	110000600804	Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
200	Mineral Ridge Gold	NV	2602302		Surface Mine	Gold	Non-Ferrous Metals	Active
201	Minerals Development MDG Portable 1	MT	2402674		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
202	Mining Resources LLC	MN			Processor/Refiner	Iron Ore	Ferrous Metals	Active
203	Minntac Screening	MN	2103770		Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
204	Mississippi Phosphates	MS		110000546053	Processor/Refiner	Phosphate Rock	Phosphates	Active
205	Mojave Gold Road Mine	AZ	0202620		Underground Mine	Gold	Non-Ferrous Metals	Active
206	Molycorp Mountain Pass	CA	0402542		Surface Mine/Processing	Rare Earths	Rare Earth Minerals	Active
207	Monsanto/P4 South Rasmussen-Blackfoot Bridge	ID	1001854	110000743982	Surface Mine/Processing	Phosphate Rock	Phosphates	Active
208	Montana Resources Continental	MT	2400338	110000428555	Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
209	Mosaic Four Corners	FL	0801117	110027948292	Surface Mine	Phosphate Rock	Phosphates	Active
210	Mosaic PotashCarlsbad	NM	2900802	110022763393	Underground Mine	Potash	Industrial Rock	Active
211	Mosaic South Fort Meade	FL	0801183	110041971925	Surface Mine	Phosphate Rock	Phosphates	Active
212	Mosaic South Pasture Hardee	FL	0800903	110005990963	Surface Mine	Phosphate Rock	Phosphates	Active
213	Mosaic Uncle Sam	LA		110006020215	Processor/Refiner	Phosphate Rock	Phosphates	Active
214	Mosaic Wingate	FL	0800981	110040491973	Surface Mine	Phosphate Rock	Phosphates	Active
215	Nevada Barth	NV	2600078	110041292357	Surface Mine	Iron Ore	Ferrous Metals	Active
216	Nevada Copper Pumpkin Hollow	NV	2602711		Underground Mine	Copper	Non-Ferrous Metals	Active
217	Nevada Rae Black Rock Canyon	NV	2602572		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
218	New Jersey Mill	ID	1001913		Processor/Refiner	Gold	Non-Ferrous Metals	Intermittent operation
219	New Riverside Ochre	GA	0900245	110001328019	Surface Mine	Barite Barium Ore	Industrial Rock	Active
220	Newmont Chukar	NV	2602481		Underground Mine	Gold	Non-Ferrous Metals	Active
221	Newmont Emigrant/Mill 6	NV	2602697; 2602678		Surface Mine/Processing	Gold	Non-Ferrous Metals	Active
222	Newmont Exodus	NV	2602661		Underground Mine	Gold	Non-Ferrous Metals	Active

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223	Newmont Genesis	NV	2600062	110027793617	Surface Mine	Gold	Non-Ferrous Metals	Active
224	Newmont Leeville	NV	2602512		Underground Mine	Gold	Non-Ferrous Metals	Active
225	Newmont Lone Tree	NV	2602159	110007980435	Surface Mine	Gold	Non-Ferrous Metals	Active
226	Newmont Pete Bajo	NV	2602689	110000608334	Underground Mine	Gold	Non-Ferrous Metals	Active
227	Newmont Phoenix	NV			Surface Mine	Gold	Non-Ferrous Metals	Active
228	Newmont Phoenix	NV			Surface Mine/Processing	Copper	Non-Ferrous Metals	Active
229	Newmont South Area	NV	2600500		Surface Mine	Gold	Non-Ferrous Metals	Active
230	Newmont Twin Creeks	NV	2601942	110000601028	Surface Mine	Gold	Non-Ferrous Metals	Active
231	NH Gold Dewey Mine	MT	2402668		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
232	NM Operations Mammoth Valley	AK	5002020		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
233	Nome Gold Maine Monroeville	AK	5001031		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
234	Noranda Gramercy	LA	1600352	110041016646	Processor/Refiner	Alumina	Aluminum	Active
235	Noranda New Madrid	MO		110017980639	Primary Smelter	Aluminum	Aluminum	Active
236	Nord Johnson Camp	AZ	0202824	110000917483	Surface Mine	Copper	Non-Ferrous Metals	Active
237	Northshore Mining Babbitt-Silver Bay	MN	2100209; 2100831	110008800048; 110000910453	Surface Mine/Processing	Iron Ore	Ferrous Metals	Active
238	Northwest Gold Cripple Creek	AK	5001452		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
239	NOV Big Ledge-Dry Creek Mill	NV	2602603	110027820776	Surface Mine/Processing	Barite Barium Ore	Industrial Rock	Intermittent operation
240	Nutritional Additives Sexton	NV	2600734	110021331432	Surface Mine	Barite Barium Ore	Industrial Rock	Active
241	NYAC Mining	AK	5001035	110009037425	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
242	Nyrstar Clarksville	TN		110024424078	Primary Smelter	Zinc	Non-Ferrous Metals	Active
243	Nyrstar East Tennessee Complex-Coy	TN	4000166	110027729484	Underground Mine	Zinc	Non-Ferrous Metals	Active

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244	Nyrstar East Tennessee Complex- Immel	TN	4000168		Underground Mine	Zinc	Non-Ferrous Metals	Active
245	Nyrstar East Tennessee Complex- Young	TN	4000170	110027672953	Underground Mine	Zinc	Non-Ferrous Metals	Active
246	Nyrstar Middle Tennessee Complex- Cumberland	TN	4002213	110000375415	Underground Mine	Zinc	Non-Ferrous Metals	Active
247	Nyrstar Middle Tennessee Complex- Elmwood/Gordonsville	TN	4000864	110000375415	Underground Mine	Zinc	Non-Ferrous Metals	Active
248	Nyrstar Middle Tennessee Complex- Gordonsville	TN			Underground Mine	Zinc	Non-Ferrous Metals	Active
249	Old Camp Mine	AK	5001903		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
250	Olsen	ID	1002236		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
251	Oregon Belle Mine	OR	3503513		Underground Mine	Gold	Non-Ferrous Metals	Temporarily idled
252	Paradise Valley Triple Creek	AK	5001953		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
253	PCS Lee Creek Aurora	NC	3100212	110000586376	Surface Mine/Processing	Phosphate Rock	Phosphates	Active
254	PCS Swift Creek/WhiteSprings	FL	0800798	110028016368	Surface Mine	Phosphate Rock	Phosphates	Active
255	Pea Ridge	MO	2302356	110042518068	Surface Mine	Iron Ore	Ferrous Metals	Active
256	Penn Mag Plant1	PA	3607767	110001085851	Surface Mine/Processing	Iron Ore	Ferrous Metals	Active
257	PennMag Plant2	PA	3607535	110001085851	Surface Mine	Chromite Chromium Ore	Non-Ferrous Metals	Active
258	Pickett Mining Group	NC	3102224		Processor/Refiner	Gold	Non-Ferrous Metals	Intermittent operation
259	Plumbago Mine	CA	0403065		Underground Mine	Gold	Non-Ferrous Metals	Active
260	Polar Mining Fox Mine	AK	5001557	110008998371	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
261	PolyMet Hoyt Lakes	MN	2103658	110008800262	Surface Mine	Copper	Non-Ferrous Metals	Active
262	Premier Chemicals Gabbs	NV			Surface Mine	Brucite	Industrial Rock	Active
263	Quality Magnetite	IN	1202459		Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
264	Queen Resources Malheur Queen	OR	3503799		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
265	R&B Gravel	AK	5001854		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation

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266	Reiss Viking	WV	4608672	110009117641	Surface Mine	Iron Ore	Ferrous Metals	Active
267	Resco Hillsborough	NC	3100233	110018633816	Surface Mine	Bauxite	Aluminum	Active
268	Resolution Copper	AZ	0200152	110013282401	Underground Mine	Copper	Non-Ferrous Metals	Active
269	Rio Tinto Borax	CA	0400743	110017972826	Surface Mine	Boron	Industrial Rock	Active
270	Rio Tinto Kennecott Bingham Canyon-Copperton-Magna	UT	4200149; 4201996	110042022085; 110002380405; 110009506347	Surface Mine/Processing/ Primary Smelter	Copper	Non-Ferrous Metals	Active
271	RM Ester Sand & Gravel	AK	5001670	110037094578	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
272	Robert Cook	AK	5001550		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
273	Robinson Nevada	NV	2601916	110042080832	Surface Mine	Copper	Non-Ferrous Metals	Active
274	Rockwood Lithium	NV			Brine Extraction/Processing	Lithium	Non-Ferrous Metals	Active
275	Rosemont Copper	AZ	0203256	110039337376	Surface Mine	Copper	Non-Ferrous Metals	Active
276	Round Mountain Smoky Valley	NV	2600594	110041296772	Surface Mine	Gold	Non-Ferrous Metals	Active
277	RTD Mining Magnet & Gold Creek	AK	5001754	110008998335	Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
278	Ruby Mining Nome Anvil Creek Mine	AK	5001846	110037228069	Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
279	Rye Creek	MT	2402602		Processor/Refiner	Rare Earths	Rare Earth Minerals	Intermittent operation
280	Saint Gobain Bauxite Mine/Calciner	AR	0300261	110001710890	Surface Mine/Processing	Bauxite	Aluminum	Active
281	Saint Lawrence Balmat	NY	3001185	110001175139	Underground Mine	Lead-Zinc Ore	Non-Ferrous Metals	Active
282	Scabtron	AK	5001614		Underground Mine	Gold	Non-Ferrous Metals	Active
283	Searles Valley Minerals Trona	CA			Brine Extraction/Processing	Boron	Industrial Rock	Active
284	Searles Valley Minerals Westend	CA			Processor/Refiner	Boron	Industrial Rock	Active
285	SEMCOA Section 27 Mine	AR	0301979		Surface Mine	Bauxite	Aluminum	Intermittent operation
286	Severstal Dearborn	MI			Primary Smelter	Iron Ore	Ferrous Metals	Active

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287	Sherlund Ketchum Creek	AK	5001865	110022285007	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
288	Sherwin Alumina	TX	4100906	110014436707	Processor/Refiner	Alumina	Aluminum	Active
289	Silver Falcon Diamond Creek	ID	1002202		Surface Mine	Silver Ore	Non-Ferrous Metals	Intermittent operation
290	Simplot Smoky Canyon/Don	ID	1001590	110005783731; 110000600421	Surface Mine/Processing	Phosphate Rock	Phosphates	Active
291	Simplot Vernal/Rock Springs	UT/ WY	4200998	110000912335; 110000600369	Surface Mine/Processing	Phosphate Rock	Phosphates	Active
292	Sixteen To One Mine	CA	0401299	110010058427	Underground Mine	Gold	Non-Ferrous Metals	Active
293	Skidmore Vault Mine	AK	5001679		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
294	Slisco Nolan Valley	AK	5001959		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
295	Small Mine Development Lee Smith	NV	2602397		Underground Mine	Gold	Non-Ferrous Metals	Active
296	Small Mine Development SSX	NV	2602299		Underground Mine	Gold	Non-Ferrous Metals	Active
297	Small Mine Development Starvation Canyon	NV	2602634		Underground Mine	Gold	Non-Ferrous Metals	Active
298	Smith Ranch Highland	WY		110043529580	In-situ Leaching	Uranium	Radioactive Metals	Active
299	Solauro Tonopah	NV	2602718		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
300	South Texas Mining Hobson	TX			In-situ Leaching	Uranium	Radioactive Metals	Active
301	South Texas Mining LaPalangana	TX			In-situ Leaching	Uranium	Radioactive Metals	Active
302	Southern Ionics Mission North Mine	GA	0901230		Surface Mine	Zirconium and hafnium	Rare Earth Minerals	Active
303	Southern Ionics Mission South Mine	GA			Surface Mine	Zirconium and hafnium	Rare Earth Minerals	Active
304	Specialty Vermiculite	SC	3800085		Surface Mine	Vermiculite	Industrial Rock	Active
305	Star Minerals Bear Creek	MT	2402676		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
306	Sterling Mine	NV	2601503	110007981130	Underground Mine	Gold	Non-Ferrous Metals	Temporarily idled
307	Stillwater East Boulder	MT	2401879	110007110474	Underground Mine	Platinum Group Ore	Non-Ferrous Metals	Active
308	Stillwater Stillwater/Columbus	MT	2401490	#N/A	Underground Mine/Processing	Platinum Group Ore	Non-Ferrous Metals	Active

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309	Stocks Trucking Amy Mine	NV	2602666		Underground Mine	Gold	Non-Ferrous Metals	Active
310	Sumitomo Pogo	AK	5001642	110009058802	Underground Mine	Gold	Non-Ferrous Metals	Active
311	Sunrise	WY	4801764		Surface Mine	Iron Ore	Ferrous Metals	Intermittent operation
312	Sunrise Minerals Gold Placer Mine	NV	2602635	110041524801	Surface Mine	Gold	Non-Ferrous Metals	Active
313	Sunshine Mine	ID	1000089	110017860117	Underground Mine	Silver Ore	Non-Ferrous Metals	Active
314	Sutter Gold Lincoln Mine	CA	0405038		Underground Mine	Gold	Non-Ferrous Metals	Active
315	Sylarus Germanium	UT			Processor/Refiner	Germanium	Non-Ferrous Metals	Active
316	Taiga Mining Hog River	AK	5001603	110008998497	Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
317	Tara Minerals Ponderosa	ID	1002237		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
318	Teck Alaska Red Dog	AK	5001545	110000601705	Surface Mine/Processing	Lead-Zinc Ore	Non-Ferrous Metals	Active
319	Teck Washington Pend Oreille	WA	4500366	110042071441	Underground Mine	Zinc	Non-Ferrous Metals	Active
320	Terra	AK	5001991		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
321	Thomas SK Sweepstakes	AK	5001981		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
322	Thompson Creek	ID	1000531	110000600430	Surface Mine	Molybdenum	Non-Ferrous Metals	Active
323	TNT Ventures Big Canyon Mine	NV	2602672		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
324	Tracy Brant	AK	5002002		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
325	Tweet Kougarok Dredge Pit	AK	5000482		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
326	Umicore Germanium	OK		110015742801	Processor/Refiner	Germanium	Non-Ferrous Metals	Active
327	UmicoreRhode Island	RI		110000313018	Processor/Refiner	Indium	Non-Ferrous Metals	Active
328	United Taconite Thunderbird Mine	MN	2103403; 2103404	110007372093	Surface Mine/Processing	Iron Ore	Ferrous Metals	Active

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329	Upstream Big Nugget Mine	AK	5000931		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
330	Uranerz Energy Nichols Ranch	WY			In-situ Leaching	Uranium	Radioactive Metals	Active
331	Uranium One Willow Creek	WY		110009758459; 110009753695	In-situ Leaching	Uranium	Radioactive Metals	Active
332	US AntimonyMontana	MT		110000497472	Primary Smelter	Antimony	Non-Ferrous Metals	Active
333	US Magnesium	UT		110045587352	Brine Extraction/Processing	Magnesium	Non-Ferrous Metals	Active
334	US Silver Galena	ID	1000082	110000600537	Underground Mine	Silver Ore	Non-Ferrous Metals	Active
335	US Steel Fairfield	AL			Primary Smelter	Iron Ore	Ferrous Metals	Active
336	US Steel Gary	IN			Primary Smelter	Iron Ore	Ferrous Metals	Active
337	US Steel Granite City	IL			Primary Smelter	Iron Ore	Ferrous Metals	Active
338	US Steel Great Lakes Ecorse	MI			Primary Smelter	Iron Ore	Ferrous Metals	Active
339	US Steel Mon Valley Edgar Thompson	PA			Primary Smelter	Iron Ore	Ferrous Metals	Active
340	USSteel Keetac	MN	2103352	110008797864	Surface Mine/Processing	Iron Ore	Ferrous Metals	Active
341	USSteel Minntac	MN	2100282; 2100820	110008476988; 110038160076	Surface Mine/Processing	Iron Ore	Ferrous Metals	Active
342	Valdez White Creek Mine	AK	5001994		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
343	Valley Excavating Nick Mine	NV	2602687		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
344	Veris Gold Saval 4- Jerritt Canyon	NV	2602742; 2601621	110043970398	Underground Mine/Processing	Gold	Non-Ferrous Metals	Active
345	Virginia Vermiculite	VA	4405101		Surface Mine	Vermiculite	Industrial Rock	Active
346	Voytilla Ester	AK	5001524		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
347	Waterton Global Hollister Mine	NV	2602535	110039495622	Underground Mine	Gold	Non-Ferrous Metals	Active
348	Western Mesquite	CA	0404614		Surface Mine	Gold	Non-Ferrous Metals	Active
349	Western Mine Dev Buckland Mine	OR	3503663		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
350	Western Zirconium	UT		110000758378	Processor/Refiner	Zirconium and hafnium	Rare Earth Minerals	Active

#	Assigned Facility Name	ST	MSHA ID	FRS ID	Type of Facility	Commodity	Commodity Group	Operating Status
351	Wharf Mine	SD	3901282	110000594973	Surface Mine	Gold	Non-Ferrous Metals	Active
352	White Water Mining Portable Wash	AZ	0203330		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled
353	Willow Creek Mine	CO	0504855		Surface Mine	Gold	Non-Ferrous Metals	Intermittent operation
354	Winston Realty	MT	2402651		Surface Mine	Gold	Non-Ferrous Metals	Temporarily idled

Attachment H.1: Websites Visited to Verify Currently Operating Facilities

- http://active-mines.findthedata.org/d/c/Phosphate
- http://biz.yahoo.com/p/_basicm-gldslv.html
- http://capstonemining.com/operations/pinto-valley/operations/default.aspx
- http://dec.alaska.gov/spar/csp/db_search.htm
- http://digicoll.library.wisc.edu/cgi-bin/EcoNatRes/EcoNatRes-idx?type=turn&entity=EcoNatRes.MinYB1985v1.p0755&id=EcoNatRes.MinYB1985v1&isize=M
- http://eaglemine.com/about-us/history/
- http://eaglemine.com/operations/humboldt-mill/humboldt-mill-process/
- http://en.wikipedia.org/wiki/Iron_ore
- http://en.wikipedia.org/wiki/List_of_alumina_refineries
- http://en.wikipedia.org/wiki/Uranium_mining
- http://energyfuels.com/_resources/2012_AIF.pdf
- http://globenewswire.com/news-release/2013/11/20/591288/10058797/en/First-Liberty-Power-Announces-Fencemaker-Mine-and-Milling-Advances.html
- http://gogeometry.com/mining/miami_copper_mine_gila_county_az_map_news.html
- http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110008254423
- http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110007513360
- http://im-mining.com/2011/02/01/newmonts-nevada/
- http://investing.businessweek.com/research/stocks/private/snapshot.asp?privcapId=49922011
- http://investor.norandaaluminum.com/phoenix.zhtml?c=220051&p=irol-IRHome
- http://investor.norandaaluminum.com/phoenix.zhtml?c=220051&p=irol-sec&secCat01Enhanced.1_rs=21&secCat01Enhanced.1_rc=10
- http://mineral-resources.findthedata.org/d/d/United-States/Florida
- http://mineralsmakelife.org/assets/images/content/resources/NMA_Report_-_Web_version_FINAL1.pdf
- http://northern.org/programs/clean-water-mines/hardrock-mines-in-interior-and-arctic-alaska/fort-knox-true-north-mine-1
- http://nrd.kbic-nsn.gov/mining-project-Rio-Tinto.html
- http://repository.azgs.az.gov/uri_gin/azgs/dlio/1588
- http://toxics.usgs.gov/regional/mining/index.html
- http://uraniuminvestingnews.com/13296/energy-fuels-uranium-mining.html
- http://usa.arcelormittal.com/Our-operations/Flat/Weirton/
- http://water.epa.gov/scitech/wastetech/guide/ironsteel/index.cfm
- http://www.aluminum.org/industries/production/primary-production
- http://www.asarco.com/about-us/our-locations/
- http://www.atsdr.cdc.gov/sites/HWAZ/overview.html
- http://www.bhpbilliton.com/home/investors/reports/Documents/2013/BHPBillitonAnnualReport2013.pdf
- http://www.blm.gov/id/st/en/prog/energy___minerals/minerals/phosphate/Phosphate.html
- http://www.blm.gov/nv/st/en/info/newsroom/2012/may/battle_mountain_feis.html
- http://www.cameco.com/mining/highland_smith/
- http://www.cfindustries.com/plants_central-florida.html
- http://www.cfindustries.com/plants_central-florida-process.html

- http://www.climaxmolybdenum.com/
- http://www.copperarea.com/pages/asarco-plans-100-million-upgrade-of-hayden-smelter-to-meet-new-epa-sulfur-dioxide-emission-limits-project-not-expected-to-disrupt-operation-of-plant-or-employees-hours/
- http://www.dep.state.fl.us/water/mines/manpho.htm
- http://www.dep.state.fl.us/water/mines/tech.htm
- http://www.deseretnews.com/article/865604208/Rio-Tinto-to-remove-arsenic-contaminated-soil-near-West-Jordan-subdivision.html?pg=all
- http://www.earthworksaction.org/issues/detail/in_situ_leach_uranium_mining#.U7Y3dKginBM
- http://www.earthworksaction.org/issues/detail/mining
- http://www.eia.gov/nuclear/data.cfm#biomass
- http://www.eia.gov/uranium/production/annual/
- http://www.emgold.com/s/Buckskin.asp
- http://www.energyfuels.com/investors/press_releases/index.php?content_id=298
- http://www.epa.gov/aml/amlsite/nonnpl.htm
- http://www.epa.gov/ghgreporting/ghgdata/reportingdatasets.html
- http://www.epa.gov/osw/nonhaz/industrial/special/mining/
- http://www.epa.gov/ttn/gei/uscdta30.html
- http://www.epa.gov/waste/nonhaz/industrial/special/mining/minedock/id/index.htm
- http://www.ewg.org/mining/mines/index.php?fips=00000
- http://www.fcx.com/operations/northamerica-metals.htm
- http://www.fcx.com/operations/USA_Miami.htm
- http://www.fcx.com/operations/USA_NewMexico_Chino.htm
- http://www.fcx.com/operations/USA_NewMexico_Chino_Cobre.htm
- http://www.fundinguniverse.com/company-histories/magma-copper-company-history/
- http://www.getfilings.com/sec-filings/150302/CENTURY-ALUMINUM-CO_10-K/#s8175EF8EF74E23FFE2BC9B4A2D6876E9
- http://www.grace.com/About/LocationResult.aspx?CountriesFromMap=UNITED STATES
- http://www.hailegoldmine.com/
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- http://www.hailegoldmineeis.com/pdf/FINAL_ROD_10_27_14.pdf
- http://www.infomine.com/companies-properties/
- http://www.infomine.com/companies-properties/reports/propertyreport.aspx?pid=21302&part=11&part=2&part=1&Submit=View+Report
- http://www.infomine.com/minesite/minesite.asp?site=bingham#
- http://www.kinross.com/operations/operation-fort-knox-alaska-usa.aspx
- http://www.kinross.com/operations/operation-kettle-river-buckhorn-usa.aspx
- http://www.law.miami.edu/library/everglades/news/save/1997/030097_epa_Damage_cases_and_enviro_ct.pdf
- http://www.magnetation.com/iron-ore-concentrate/
- http://www.magnetation.com/magnetation-llc/
- http://www.magnetation.com/videos/
- http://www.montanaresources.com/index.php
- http://www.mosaicco.com/Who_We_Are/locations_directory_locations_by_facility_type.htm

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- http://www.nbmg.unr.edu/dox/dox.htm
- http://www.nbmg.unr.edu/dox/dox.htmhttp://www.nbmg.unr.edu/dox/dox.htm
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- http://www.riotinto.com/copper/kennecott-utah-copper-86.aspx
- http://www.saint-gobain-northamerica.com/contact/LocationsDetail.asp?Location=AR&Country=US
- http://www.savethesantacruzaquifer.info/cerclis.htm
- http://www.simplot.com/about/us_operations
- http://www.southernionics.com/mining/
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- http://www.steel.org/~/media/Files/AISI/Making%20Steel/Article%20Files/ironore.PDF
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- http://www.uranium1.com/index.php/en/mining-operations/united-states
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- http://www1.fipr.state.fl.us/FIPR/phosphateprimer.nsf/0/01e19457a7ce3fe385256f800074411e/Body/0.6528!OpenElement&FieldElemFormat=jpghttp://www1.fipr.state.fl.us/FIPR/phosphateprimer.nsf/0/01e19457a7ce3fe385256f800074411e/Body/0.6528!OpenElement&FieldElemFormat=jpg
- http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/AZ0000309013
- http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/AZD008397127
- https://sites.google.com/site/magnetation/home
- https://www.alcoa.com/global/en/about_alcoa/map/globalmap.asp?lc=16&country=United_States
- https://www.alcoa.com/massena_operations/en/info_page/facts.asp
- https://www.deq.idaho.gov/regional-offices-issues/pocatello/southeast-idaho-phosphate-mining.aspx
- https://www.intrepidpotash.com/AboutUs/LocationsOperations.aspx
- https://www.lightmetalage.com/producers_primary.php?L=U

Appendix F:
Hardrock Mining Facilities in Data Collection Sample

This appendix presents information related to the 63 currently operating and 3 CERCLA hardrock mining facilities in the engineering cost estimate dataset. **Section 3** of this technical support document discusses why these sites were selected for the data collection sample, and describes how these sites compare to the included universe of potentially regulated facilities.

#	Mine Name	MSHA ID	State	Commodities	Operating Status[1]
1	Fort Knox	5001616	Alaska	Gold	Active
2	Greens Creek	5001267	Alaska	Silver, Gold, Lead, Zinc	Active
3	Kensington	5001544	Alaska	Gold	Active
4	Niblack		Alaska	Silver, Gold, Lead, Zinc	Active
5	Nixon Fork		Alaska	Copper	Proposed
6	Pogo	5001642	Alaska	Gold	Active
7	Red Dog	5001545	Alaska	Lead, Zinc	Active
8	Rock Creek	5001850	Alaska	Gold	Closed
9	True North		Alaska	Gold	Closed
10	Arizona 1		Arizona	Uranium	Active
11	Bagdad	200137	Arizona	Copper	Active
12	Johnson Camp	202824	Arizona	Copper	Active
13	Mission	200135	Arizona	Copper	Active
14	Pinto Valley	201049	Arizona	Copper	Active
15	Rosemont	203256	Arizona	Copper	Active
16	Safford	203131	Arizona	Copper	Active
17	Ray	200150	Arizona	Copper	Active
18	Silver Bell	200134	Arizona	Copper	Active
19	Briggs	405276	California	Gold	Active
20	Mesquite	404614	California	Gold	Active
21	Mountain Pass	402542	California	Rare Earth	Active
22	Climax	502256	Colorado	Molybdenum	Active
23	Cresson	503695	Colorado	Gold	Active
24	Revenue		Colorado	Silver, Gold	Active
25	Blackfoot Bridge	1001854	Idaho	Phosphorus	Active
26	Idaho Cobalt		Idaho	Cobalt	Proposed
27	Smoky Canyon	1001590	Idaho	Phosphorus	Active
28	Thompson Creek	1000531	Idaho	Molybdenum	Active
29	Essar	2103751	Minnesota	Iron	Active
30	Hibbing Taconite	2101600	Minnesota	Iron	Active
31	Minntac	2103770	Minnesota	Iron	Active
32	Northshore	2100209; 2100831	Minnesota	Iron	Active
33	SCRAM		Minnesota	Iron	Active
34	Continental	2400338	Montana	Copper	Active
35	East Boulder	2401879	Montana	Platinum Group Metals	Active
36	Golden Sunlight	2401417	Montana	Silver, Gold	Active
37	Bald Mountain	North	Nevada	Silver, Gold	Active
38	Emigrant	2602697;	Nevada	Gold	Active

[1] Operating statuses are current as of MSHA data for 2014 and supporting sources.

#	Mine Name	MSHA ID	State	Commodities	Operating Status[1]
		2602678			
39	Goldstrike	2601089; 2602674; 2602673	Nevada	Gold	Active
40	Hollister	2602535	Nevada	Gold	Active
41	Hycroft	2601962	Nevada	Gold	Active
42	Jerritt Canyon	2602742; 2601621	Nevada	Gold	Active
43	Lone Tree	2602159	Nevada	Gold	Active
44	Marigold	2602081	Nevada	Gold	Active
45	Phoenix Historic		Nevada	Silver, Gold	Active
46	Phoenix Copper		Nevada	Copper	Active
47	Robinson	2601916	Nevada	Copper	Active
48	Rochester	2601941	Nevada	Silver	Active
49	Round Mountain	2600594	Nevada	Gold	Active
50	Ruby Hill	2602307	Nevada	Gold	Active
51	SOAP	2600500	Nevada	Gold	Active
52	Standard		Nevada	Gold	Active
53	Trenton Canyon	2602159	Nevada	Gold	Active
54	Chino	2900708	New Mexico	Copper	Active
55	Mt Taylor		New Mexico	Uranium	Active
56	St Anthony		New Mexico	Uranium	Active
57	Tyrone	2900159	New Mexico	Copper	Active
58	Haile	3800600	South Carolina	Gold	Proposed
59	Lisbon Valley	4202406	Utah	Copper	Active
60	Crow Butte		Nebraska	Uranium (In Situ Leach)	Active
61	Nichols Ranch		Wyoming	Uranium (In Situ Leach)	Active
62	Smith/Reynolds Ranch		Wyoming	Uranium (In Situ Leach)	Active
63	Highland		Wyoming	Uranium (In Situ Leach)	Active
64	Clear Creek		Colorado	Gold, Silver	CERCLA
65	Summitville		Colorado	Gold, Silver	CERCLA
66	Zortman Landusky	240150	Montana	Gold, Silver	CERCLA

Appendix G:
Reclamation and Closure Plan Cost Estimate Data

This appendix lists the engineering cost estimates for the 63 currently operating and three CERCLA hardrock mining facilities. A separate table is provided for each site feature and site-wide cost category. Facilities are only listed in a table if a cost estimate was identified for the relevant site feature or site-wide cost category. The methodology used to collect the data in this appendix is described in detail in **Section 3** of this technical support document.

Table G.1 – Open Pit Data

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate: Earthwork and Revegetation	Source Document Cost Estimate: Source Controls	Source Document Cost Estimate: Total	Source: Document	Source: Year
1	Alaska	Fort Knox	Au	660	$106,035	$0	$106,035	Fort Knox Mine Reclamation and Closure Plan	2013
7	Alaska	Red Dog	Zn-Pb	307	$894,226	$0	$894,226	Red Dog Mine Closure and Reclamation Plan, Final	2009
12	Arizona	Johnson Camp	Cu	145	$29,882	$0	$29,882	Aquifer Protection Permit No. P-100514, Johnson Camp Mine Closure Cost Estimate Comparison	2007
16	Arizona	Rosemont	Cu	402	$2,235,771	$0	$2,235,771	Rosemont Reclamation and Closure Plan	2007
17	Arizona	Safford	Cu	105	$174,422	$0	$174,422	Safford Mine Reclamation Plan	2005
21	California	Mesquite	Au	1,290	$749,165	$0	$749,165	Mesquite Mine Reclamation Cost Estimate	2013
22	California	Mountain Pass	Rare Earth	69	$259,045	$0	$259,045	Financial Assurance Cost Estimate Molycorp Minerals, LLC, Mountain Pass Mine	2013
23	Colorado	Climax	Mo	100	$0	$723,854	$723,854	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
24	Colorado	Cresson	Au	899	$8,936,048	$0	$8,936,048	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
26	Idaho	Blackfoot Bridge	P	426	$2,121,268	$28,780,488	$30,901,756	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
28	Idaho	Smoky Canyon	P	197	$3,523,362	$0	$3,523,362	Simplot Smoky Canyon Mine Panel F 1st Year Reclamation Bond - BLM Calculation	2008
29	Idaho	Thompson Creek	Mo	443	$20,820	$0	$20,820	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
30	Minnesota	Essar	Fe	26	$63,138	$0	$63,138	Essar Reclamation Cost Estimate	2014
31	Minnesota	Hibbing Taconite	Fe	126	$1,238,162	$0	$1,238,162	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
32	Minnesota	Minntac	Fe	628	$370,339	$0	$370,339	U.S. Steel Minntac Mine Extension Financial Assurance	2014
35	Montana	Continental	Cu	648	$4,291,579	$0	$4,291,579	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate			Source	
					Earthwork and Revegetation	Source Controls	Total	Document	Year
37	Montana	Golden Sunlight	Au, Ag	218	$1,440,874	$7,475,686	$8,916,560	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
38	Nevada	Bald Mountain (North)	Au, Ag	268	$146,669	$0	$146,669	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	33	$18,436	$0	$18,436	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	112	$82,392	$0	$82,392	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	4	$1,559	$0	$1,559	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	1,282	$77,703	$0	$77,703	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	896	$161,810	$0	$161,810	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	58	$35,938	$3,413,333	$3,449,271	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	239	$77,647	$0	$77,647	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	1,455	$222,825,296	$0	$222,825,296	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
48	Nevada	Robinson	Cu	199	$263,856	$1,365,701	$1,629,557	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	46	$35,717	$0	$35,717	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	119	$122,063	$0	$122,063	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	36	$60,124	$0	$60,124	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	87	$60,709	$0	$60,709	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	38	$27,185	$0	$27,185	Standard Mine SRCE Bond Calculation	2008

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate: Earthwork and Revegetation	Source Document Cost Estimate: Source Controls	Source Document Cost Estimate: Total	Source: Document	Source: Year
54	Nevada	Trenton Canyon	Au	109	$68,120	$0	$68,120	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
55	New Mexico	Chino	Cu	1,500	$2,637,564	$0	$2,637,564	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
58	New Mexico	Tyrone	Cu	1,600	$1,247,337	$0	$1,247,337	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
59	South Carolina	Haile	Au	182	$818,474	$4,381,963	$5,200,437	Haile Gold Mine Reclamation Plan	2013
60	Utah	Lisbon Valley	Cu	100	$156,664	$0	$156,664	Lisbon Valley Mining Co Bond Worksheet	2014
Minimum				4	$0	$723,854	$1,559		
Maximum				1,600	$222,825,296	$28,780,488	$222,825,296		
Median				197	$156,664	$3,897,648	$174,422		
Mean				407	$6,902,146	$7,690,171	$8,149,201		

Table G.2 – Waste Rock Data

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate: Earthwork and Revegetation	Source Controls	Total	Source: Document	Year
1	Alaska	Fort Knox	Au	865	$5,632,648	$0	$5,632,648	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	70	$36,077	$0	$36,077	SCRE for Greens Creek Reclamation Plan Update	2014
4	Alaska	Niblack	Cu-Au-Ag-Zn	3	$187,506	$0	$187,506	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
5	Alaska	Nixon Fork	Cu	8	$100,009	$0	$100,009	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
7	Alaska	Red Dog	Zn-Pb	190	$1,538,453	$0	$1,538,453	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	256	$1,434,708	$0	$1,434,708	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
9	Alaska	True North	Au	106	$999,144	$0	$999,144	True North Gold Mine Reclamation and Closure Plan	2012
12	Arizona	Johnson Camp	Cu	168	$339,078	$0	$339,078	Aquifer Protection Permit No. P-100514, Johnson Camp Mine Closure Cost Estimate Comparison	2007
14	Arizona	Pinto Valley	Cu	367	$12,488,675	$0	$12,488,675	Pinto Valley Operations Closure and Post-Closure Strategy	2013
16	Arizona	Rosemont	Cu	1,600	$7,095,712	$0	$7,095,712	Rosemont Reclamation and Closure Plan	2007
17	Arizona	Safford	Cu	660	$3,056,013	$0	$3,056,013	Safford Mine Reclamation Plan	2005
20	California	Briggs	Au	129	$449,436	$0	$449,436	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
21	California	Mesquite	Au	1,204	$1,100,663	$0	$1,100,663	Mesquite Mine Reclamation Cost Estimate	2013
22	California	Mountain Pass	Rare Earth	168	$726,935	$0	$726,935	Financial Assurance Cost Estimate Molycorp Minerals, LLC, Mountain Pass Mine	2013
23	Colorado	Climax	Mo	852	$5,290,517	$0	$5,290,517	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
24	Colorado	Cresson	Au	740	$8,140,572	$0	$8,140,572	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate			Source	
					Earthwork and Revegetation	Source Controls	Total	Document	Year
26	Idaho	Blackfoot Bridge	P	206	$3,277,301	$8,010,076	$11,287,377	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
29	Idaho	Thompson Creek	Mo	850	$2,753,110	$13,681,900	$16,435,010	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
30	Minnesota	Essar	Fe	157	$309,024	$0	$309,024	Essar Reclamation Cost Estimate	2014
31	Minnesota	Hibbing Taconite	Fe	1,147	$4,631,025	$0	$4,631,025	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
32	Minnesota	Minntac	Fe	483	$2,673,750	$0	$2,673,750	U.S. Steel Minntac Mine Extension Financial Assurance	2014
33	Minnesota	Northshore	Fe	42	$263,202	$5,345,656	$5,608,858	Financial Assurance Cost Estimate, Cliffs Natural Resources	2014
35	Montana	Continental	Cu	475	$9,647,031	$0	$9,647,031	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008
37	Montana	Golden Sunlight	Au, Ag	480	$10,030,748	$0	$10,030,748	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
38	Nevada	Bald Mountain (North)	Au, Ag	3,968	$19,023,086	$0	$19,023,086	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	106	$1,035,286	$7,181,975	$8,217,261	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	3,749	$21,518,808	$0	$21,518,808	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	8	$198,892	$0	$198,892	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	1,757	$3,567,476	$0	$3,567,476	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	1,095	$1,415,154	$0	$1,415,154	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	1,220	$834,919	$0	$834,919	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	1,011	$3,420,030	$0	$3,420,030	Marigold Mining Company Reclamation Bonding Annual Update	2008

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate: Earthwork and Revegetation	Source Document Cost Estimate: Source Controls	Source Document Cost Estimate: Total	Source: Document	Source: Year
46	Nevada	Phoenix Historic	Au, Ag	2,221	$19,557,966	$70,352,810	$89,910,776	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
48	Nevada	Robinson	Cu	2,904	$11,106,364	$7,547,014	$18,653,378	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	402	$11,557,220	$0	$11,557,220	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	2,024	$6,674,560	$0	$6,674,560	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	691	$3,587,350	$0	$3,587,350	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	2,764	$5,633,809	$0	$5,633,809	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	156	$523,993	$0	$523,993	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	657	$8,212,932	$0	$8,212,932	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
55	New Mexico	Chino	Cu	2,438	$110,335,032	$0	$110,335,032	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
56	New Mexico	Mt Taylor	U	22	$533,577	$0	$533,577	Mt Taylor Mine Plan for Mine Closeout/DP-61 Closure	2012
57	New Mexico	St Anthony	U	320	$19,737,582	$0	$19,737,582	St Anthony Closeout Plan - 2010-07-30 Concept Level R1	2010
58	New Mexico	Tyrone	Cu	2,426	$107,564,120	$0	$107,564,120	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
59	South Carolina	Haile	Au	683	$5,529,889	$5,214,727	$10,744,616	Haile Gold Mine Reclamation Plan	2013
60	Utah	Lisbon Valley	Cu	419	$1,128,643	$0	$1,128,643	Lisbon Valley Mining Co Bond Worksheet	2014
Minimum				3	$36,077	$5,214,727	$36,077		
Maximum				3,968	$110,335,032	$70,352,810	$110,335,032		
Median				570	$3,348,666	$7,547,014	$4,960,771		
Mean				919	$9,671,696	$16,762,023	$12,222,439		

Table G.3 – Heap/Dump Leach Data

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate			Source	
					Earthwork and Revegetation	Source Controls	Total	Document	Year
1	Alaska	Fort Knox	Au	556	$2,165,462	$0	$2,165,462	Fort Knox Mine Reclamation and Closure Plan	2013
11	Arizona	Bagdad	Cu	631	$3,561,004	$0	$3,561,004	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
12	Arizona	Johnson Camp	Cu	356	$811,719	$0	$811,719	Aquifer Protection Permit No. P-100514, Johnson Camp Mine Closure Cost Estimate Comparison	2007
14	Arizona	Pinto Valley	Cu	762	$47,404,804	$0	$47,404,804	Pinto Valley Operations Closure and Post-Closure Strategy	2013
17	Arizona	Safford	Cu	739	$6,613,064	$0	$6,613,064	Safford Mine Reclamation Plan	2005
19	Arizona	Silver Bell	Cu	1,214	$1,176,337	$0	$1,176,337	Financial Assurance for permits P-100510 and P-103190 - REVISED	2008
20	California	Briggs	Au	150	$500,195	$0	$500,195	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
21	California	Mesquite	Au	783	$375,553	$0	$375,553	Mesquite Mine Reclamation Cost Estimate	2013
24	Colorado	Cresson	Au	936	$85,971,992	$0	$85,971,992	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
35	Montana	Continental	Cu	398	$2,631,871	$0	$2,631,871	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008
38	Nevada	Bald Mountain (North)	Au, Ag	1,093	$7,160,238	$0	$7,160,238	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	130	$778,703	$0	$778,703	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	161	$142,365	$0	$142,365	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
42	Nevada	Hycroft	Au	1,321	$4,127,824	$0	$4,127,824	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	23	$40,164	$0	$40,164	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate: Earthwork and Revegetation	Source Document Cost Estimate: Source Controls	Source Document Cost Estimate: Total	Source: Document	Source: Year
44	Nevada	Lone Tree	Au	308	$4,272,324	$0	$4,272,324	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	802	$15,228,641	$0	$15,228,641	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	472	$3,354,234	$0	$3,354,234	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	322	$8,985,207	$69,851,713	$78,836,920	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	163	$1,369,037	$0	$1,369,037	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	129	$2,375,758	$0	$2,375,758	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	995	$5,675,593	$0	$5,675,593	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	130	$2,568,491	$0	$2,568,491	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	1,289	$20,585,404	$0	$20,585,404	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	127	$2,829,273	$0	$2,829,273	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	101	$8,614,734	$0	$8,614,734	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
58	New Mexico	Tyrone	Cu	273	$7,221,045	$0	$7,221,045	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
60	Utah	Lisbon Valley	Cu	185	$325,173	$799,900	$1,125,073	Lisbon Valley Mining Co Bond Worksheet	2014
Minimum				23	$40,164	$799,900	$40,164		
Maximum				1,321	$85,971,992	$69,851,713	$85,971,992		
Median				377	$3,091,754	$35,325,807	$3,091,754		
Mean				520	$8,816,650	$35,325,807	$11,339,922		

Table G.4 – Tailings Facility Data

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate			Source	
					Earthwork and Revegetation	Source Controls	Total	Document	Year
1	Alaska	Fort Knox	Au	1,069	$7,123,606	$0	$7,123,606	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	349	$933,255	$9,103,805	$10,037,060	SCRE for Greens Creek Reclamation Plan Update	2014
3	Alaska	Kensington	Au	86	$2,170,768	$0	$2,170,768	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
5	Alaska	Nixon Fork	Cu	10	$96,884	$323,442	$420,326	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	149	$3,482,540	$0	$3,482,540	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	77	$4,817,280	$0	$4,817,280	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	135	$1,001,687	$0	$1,001,687	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
11	Arizona	Bagdad	Cu	465	$6,076,296	$0	$6,076,296	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
13	Arizona	Mission	Cu	2,106	$7,855,664	$0	$7,855,664	ASARCO Mission Mine Complex-Closure and Post-closure Costs APP No. P-100508	2007
14	Arizona	Pinto Valley	Cu	1,586	$74,854,056	$0	$74,854,056	Pinto Valley Operations Closure and Post-Closure Strategy	2013
16	Arizona	Rosemont	Cu	4,140	$3,568,821	$0	$3,568,821	Rosemont Reclamation and Closure Plan	2007
18	Arizona	Ray	Cu	1,970	$3,090,774	$0	$3,090,774	Aquifer Protection Permit Application, ASARCO, LLC - Ripsey Wash TSF	2014
22	California	Mountain Pass	Rare Earth	119	$446,759	$0	$446,759	Financial Assurance Cost Estimate Molycorp Minerals, LLC, Mountain Pass Mine	2013
23	Colorado	Climax	Mo	698	$7,948,702	$0	$7,948,702	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
27	Idaho	Idaho Cobalt	Co	36	$708,151	$4,769,876	$5,478,027	Idaho Cobalt Reclamation Cost Estimate Summary	2006
29	Idaho	Thompson Creek	Mo	609	$12,888,041	$0	$12,888,041	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
30	Minnesota	Essar	Fe	137	$417,391	$0	$417,391	Essar Reclamation Cost Estimate	2014

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate			Source	
					Earthwork and Revegetation	Source Controls	Total	Document	Year
31	Minnesota	Hibbing Taconite	Fe	6,200	$6,974,110	$0	$6,974,110	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
32	Minnesota	Minntac	Fe	200	$196,429	$0	$196,429	U.S. Steel Minntac Mine Extension Financial Assurance	2014
34	Minnesota	SCRAM	Fe	600	$336,110	$0	$336,110	Permit to Mine, Minor Amendment Application, SCRAM Mineral Recovery Plant 2	2013
35	Montana	Continental	Cu	355	$8,661,687	$0	$8,661,687	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008
36	Montana	East Boulder	PGM	103	$2,706,954	$0	$2,706,954	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
37	Montana	Golden Sunlight	Au, Ag	286	$4,253,790	$0	$4,253,790	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
40	Nevada	Goldstrike	Au	2,114	$55,779,592	$0	$55,779,592	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
43	Nevada	Jerritt Canyon	Au	361	$3,486,473	$0	$3,486,473	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	320	$1,905,615	$0	$1,905,615	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	184	$446,277	$0	$446,277	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	1,396	$14,698,852	$0	$14,698,852	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
48	Nevada	Robinson	Cu	1,639	$4,774,754	$0	$4,774,754	Reclamation Plan Revision for Disturbance up to December 2015	2014
50	Nevada	Round Mountain	Au	1,051	$4,942,493	$0	$4,942,493	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
52	Nevada	SOAP	Au	2,316	$23,498,816	$0	$23,498,816	Reclamation and Operating Plan SOAP Mine	2012
55	New Mexico	Chino	Cu	4,229	$38,189,128	$9,984,804	$48,173,932	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate			Source	
					Earthwork and Revegetation	Source Controls	Total	Document	Year
59	South Carolina	Haile	Au	396	$5,344,084	$11,200,862	$16,544,946	Haile Gold Mine Reclamation Plan	2013
Minimum				10	$96,884	$323,442	$196,429		
Maximum				6,200	$74,854,056	$11,200,862	$74,854,056		
Median				396	$4,253,790	$9,103,805	$4,817,280		
Mean				1,075	$9,505,328	$7,076,558	$10,577,534		

Table G.5 – Process Pond and Reservoir Data

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate	Source Document	Source Year
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	14	$337,649	SCRE for Greens Creek Reclamation Plan Update	2014
4	Alaska	Niblack	Cu-Au-Ag-Zn	1	$17,755	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
11	Arizona	Bagdad	Cu	4	$170,289	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
12	Arizona	Johnson Camp	Cu	20	$36,234	Aquifer Protection Permit No. P- 100514, Johnson Camp Mine Closure Cost Estimate Comparison	2007
14	Arizona	Pinto Valley	Cu	100	$4,611,845	Pinto Valley Operations Closure and Post-Closure Strategy	2013
16	Arizona	Rosemont	Cu	20	$668,064	Rosemont Reclamation and Closure Plan	2007
18	Arizona	Ray	Cu	11	$482,267	Aquifer Protection Permit Application, ASARCO, LLC - Ripsey Wash TSF	2014
21	California	Mesquite	Au	31	$197,437	Mesquite Mine Reclamation Cost Estimate	2013
26	Idaho	Blackfoot Bridge	P	9	$352,657	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
27	Idaho	Idaho Cobalt	Co	7	$235,753	Idaho Cobalt Reclamation Cost Estimate Summary	2006
38	Nevada	Bald Mountain (North)	Au, Ag	34	$5,240,036	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
40	Nevada	Goldstrike	Au	216	$1,854,431	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	1	$5,817	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	51	$1,075,726	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
44	Nevada	Lone Tree	Au	43	$379,868	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	28	$569,764	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	27	$356,849	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	1	$19,956	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	6	$63,691	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	38	$5,901,456	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	141	$2,762,163	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	19	$114,487	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	28	$485,486	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	5	$227,800	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	3	$65,081	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
56	New Mexico	Mt Taylor	U	44	$328,522	Mt Taylor Mine Plan for Mine Closeout/DP-61 Closure	2012
58	New Mexico	Tyrone	Cu	21	$368,405	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
60	Utah	Lisbon Valley	Cu	15	$158,436	Lisbon Valley Mining Co Bond Worksheet	2014

Site ID	State	Mine Name	Commodity	Disturbed Acres	Source Document Cost Estimate	Source Document	Year
61	Nebraska	Crow Butte	U (ISL)	30	$1,238,602	Crow Butte Uranium Mine 2015 Surety Estimate	2015
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	3	$106,967	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	38	$5,711,398	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
Minimum				1	$5,817		
Maximum				216	$5,901,456		
Median				20	$352,657		
Mean				31	$1,101,448		

Table G.6 – Underground Mine Data

Site ID	State	Mine Name	Commodity	Source Document Cost Estimate	Source Document	Year
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$570,021	SCRE for Greens Creek Reclamation Plan Update	2014
4	Alaska	Niblack	Cu-Au-Ag-Zn	$143,269	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
5	Alaska	Nixon Fork	Cu	$55,661	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	$4,408,801	Appendix B Updated Reclamation Cost Estimate	2012
10	Arizona	Arizona 1	U	$110,991	Cost Estimate for Update to Arizona I Bond - APP Permit Number P-102008	2008
12	Arizona	Johnson Camp	Cu	$29,619	Aquifer Protection Permit No. P- 100514, Johnson Camp Mine Closure Cost Estimate Comparison	2007
23	Colorado	Climax	Mo	$932,412	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
25	Colorado	Revenue	Au, Ag	$13,048	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
27	Idaho	Idaho Cobalt	Co	$108,037	Idaho Cobalt Reclamation Cost Estimate Summary	2006
36	Montana	East Boulder	PGM	$535,035	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
38	Nevada	Bald Mountain (North)	Au, Ag	$12,806	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
40	Nevada	Goldstrike	Au	$10,517	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$24,649	Hollister Mine Project Update to the Plan of Operations	2013
43	Nevada	Jerritt Canyon	Au	$535,742	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
56	New Mexico	Mt Taylor	U	$479,931	Mt Taylor Mine Plan for Mine Closeout/DP-61 Closure	2012
Minimum				$10,517		
Maximum				$4,408,801		
Median				$110,991		
Mean				$531,369		

Table G.7 – Drainage Data

Site ID	State	Mine Name	Commodity	Source Document Cost Estimate	Source Document	Year
1	Alaska	Fort Knox	Au	$771,065	Fort Knox Mine Reclamation and Closure Plan	2013
4	Alaska	Niblack	Cu-Au-Ag-Zn	$5,435	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
7	Alaska	Red Dog	Zn-Pb	$1,711,528	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	$72,869	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
9	Alaska	True North	Au	$2,955	True North Gold Mine Reclamation and Closure Plan	2012
13	Arizona	Mission	Cu	$74,551	ASARCO Mission Mine Complex-Closure and Post-closure Costs APP No. P-100508	2007
23	Colorado	Climax	Mo	$13,744,801	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
28	Idaho	Smoky Canyon	P	$4,685	Simplot Smoky Canyon Mine Panel F 1st Year Reclamation Bond - BLM Calculation	2008
35	Montana	Continental	Cu	$279,098	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008
36	Montana	East Boulder	PGM	$92,784	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
38	Nevada	Bald Mountain (North)	Au, Ag	$14,632	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$8,020	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$14,276,403	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$171,392	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$330,812	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
44	Nevada	Lone Tree	Au	$7,771	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	$9,093,827	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	$239,694	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
48	Nevada	Robinson	Cu	$41,853	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$4,149,671	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$141,324	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$5,365	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$126,035	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$3,066	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	$334,810	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
59	South Carolina	Haile	Au	$1,266,144	Haile Gold Mine Reclamation Plan	2013
60	Utah	Lisbon Valley	Cu	$21,496	Lisbon Valley Mining Co Bond Worksheet	2014
Minimum				$2,955		
Maximum				$14,276,403		
Median				$126,035		
Mean				$1,740,448		

Table G.8a – Solid and Hazardous Waste Disposal Data (Total: All Sub-Categories)

Site ID	State	Mine Name	Commodity	Source Document Cost Estimate	Source Document	Year
3	Alaska	Kensington	Au	$198,587	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
7	Alaska	Red Dog	Zn-Pb	$1,548,068	Red Dog Mine Closure and Reclamation Plan, Final	2009
14	Arizona	Pinto Valley	Cu	$3,219,767	Pinto Valley Operations Closure and Post-Closure Strategy	2013
20	California	Briggs	Au	$7,993	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
23	Colorado	Climax	Mo	$200,535	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
25	Colorado	Revenue	Au, Ag	$11,599	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
27	Idaho	Idaho Cobalt	Co	$641,272	Idaho Cobalt Reclamation Cost Estimate Summary	2006
31	Minnesota	Hibbing Taconite	Fe	$1,842,740	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
36	Montana	East Boulder	PGM	$9,689	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
38	Nevada	Bald Mountain (North)	Au, Ag	$268,898	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
40	Nevada	Goldstrike	Au	$557,693	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$138,622	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$115,430	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
44	Nevada	Lone Tree	Au	$37,351	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
47	Nevada	Phoenix Copper	Cu	$1,251,562	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$395,930	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$148,803	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$68,115	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$31,791	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$22,637	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$4,491	Standard Mine SRCE Bond Calculation	2008
61	Nebraska	Crow Butte	U (ISL)	$693,260	Crow Butte Uranium Mine 2015 Surety Estimate	2015
62	Wyoming	Nichols Ranch	U (ISL)	$821,772	Nichols Ranch Project Surety Estimate Adjustment Summary 2013-2014	2014
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	$2,920,848	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	$3,608,464	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
Minimum				$4,491		
Maximum				$3,608,464		
Median				$200,535		
Mean				$750,637		

Table G.8b – Solid and Hazardous Waste Disposal Data (Solid Waste)

Site ID	State	Mine Name	Commodity	Source Document Cost Estimate	Source Document	Year
3	Alaska	Kensington	Au	No Data Available	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
7	Alaska	Red Dog	Zn-Pb	No Data Available	Red Dog Mine Closure and Reclamation Plan, Final	2009
14	Arizona	Pinto Valley	Cu	No Data Available	Pinto Valley Operations Closure and Post-Closure Strategy	2013
20	California	Briggs	Au	No Data Available	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
23	Colorado	Climax	Mo	No Data Available	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
25	Colorado	Revenue	Au, Ag	No Data Available	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
27	Idaho	Idaho Cobalt	Co	No Data Available	Idaho Cobalt Reclamation Cost Estimate Summary	2006
31	Minnesota	Hibbing Taconite	Fe	$1,170,030	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
36	Montana	East Boulder	PGM	No Data Available	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
38	Nevada	Bald Mountain (North)	Au, Ag	$13,544	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
40	Nevada	Goldstrike	Au	$14,280	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$31,736	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$38,200	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
44	Nevada	Lone Tree	Au	$6,053	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
47	Nevada	Phoenix Copper	Cu	$6,478	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$13,040	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$72,039	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$60,577	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$923	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	No Data Available	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$5,238	Standard Mine SRCE Bond Calculation	2008
61	Nebraska	Crow Butte	U (ISL)	No Data Available	Crow Butte Uranium Mine 2015 Surety Estimate	2015
62	Wyoming	Nichols Ranch	U (ISL)	No Data Available	Nichols Ranch Project Surety Estimate Adjustment Summary 2013-2014	2014
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	No Data Available	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	No Data Available	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
Minimum				$923		
Maximum				$1,170,030		
Median				$13,912		
Mean				$119,345		

Table G.8c – Solid and Hazardous Waste Disposal Data (Hazardous Materials)

Site ID	State	Mine Name	Commodity	Source Document Cost Estimate	Source Document	Year
3	Alaska	Kensington	Au	No Data Available	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
7	Alaska	Red Dog	Zn-Pb	No Data Available	Red Dog Mine Closure and Reclamation Plan, Final	2009
14	Arizona	Pinto Valley	Cu	No Data Available	Pinto Valley Operations Closure and Post-Closure Strategy	2013
20	California	Briggs	Au	$10,941	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
23	Colorado	Climax	Mo	$189,689	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
25	Colorado	Revenue	Au, Ag	$10,913	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
27	Idaho	Idaho Cobalt	Co	$29,535	Idaho Cobalt Reclamation Cost Estimate Summary	2006
31	Minnesota	Hibbing Taconite	Fe	$643,260	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
36	Montana	East Boulder	PGM	$9,116	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
38	Nevada	Bald Mountain (North)	Au, Ag	$213,236	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
40	Nevada	Goldstrike	Au	$629,624	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$7,920	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$62,935	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
44	Nevada	Lone Tree	Au	$19,328	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
47	Nevada	Phoenix Copper	Cu	$182,828	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$29,434	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$73,812	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	No Data Available	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$30,541	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$22,743	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	No Data Available	Standard Mine SRCE Bond Calculation	2008
61	Nebraska	Crow Butte	U (ISL)	$325,548	Crow Butte Uranium Mine 2015 Surety Estimate	2015
62	Wyoming	Nichols Ranch	U (ISL)	$184,224	Nichols Ranch Project Surety Estimate Adjustment Summary 2013-2014	2014
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	$71,130	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	$41,549	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
Minimum				$7,920		
Maximum				$643,260		
Median				$52,242		
Mean				$139,415		

Table G.8d – Solid and Hazardous Waste Disposal Data (Contaminated Soils)

Site ID	State	Mine Name	Commodity	Source Document Cost Estimate	Source Document	Year
3	Alaska	Kensington	Au	$282,005	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
7	Alaska	Red Dog	Zn-Pb	$2,203,285	Red Dog Mine Closure and Reclamation Plan, Final	2009
14	Arizona	Pinto Valley	Cu	No Data Available	Pinto Valley Operations Closure and Post-Closure Strategy	2013
20	California	Briggs	Au	No Data Available	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
23	Colorado	Climax	Mo	No Data Available	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
25	Colorado	Revenue	Au, Ag	No Data Available	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
27	Idaho	Idaho Cobalt	Co	No Data Available	Idaho Cobalt Reclamation Cost Estimate Summary	2006
31	Minnesota	Hibbing Taconite	Fe	$351,669	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
36	Montana	East Boulder	PGM	No Data Available	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
38	Nevada	Bald Mountain (North)	Au, Ag	$86,862	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
40	Nevada	Goldstrike	Au	$10,601	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$122,484	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$34,333	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
44	Nevada	Lone Tree	Au	$18,541	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
47	Nevada	Phoenix Copper	Cu	No Data Available	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$420,630	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$28,637	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$19,296	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$5,805	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$3,824	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	No Data Available	Standard Mine SRCE Bond Calculation	2008
61	Nebraska	Crow Butte	U (ISL)	No Data Available	Crow Butte Uranium Mine 2015 Surety Estimate	2015
62	Wyoming	Nichols Ranch	U (ISL)	No Data Available	Nichols Ranch Project Surety Estimate Adjustment Summary 2013-2014	2014
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	No Data Available	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	No Data Available	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
Minimum				$3,824		
Maximum				$2,203,285		
Median				$34,333		
Mean				$275,998		

Table G.8e – Solid and Hazardous Waste Disposal Data (Organic Solution Removal)

Site ID	State	Mine Name	Commodity	Source Document Cost Estimate	Source Document	Year
3	Alaska	Kensington	Au	No Data Available	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
7	Alaska	Red Dog	Zn-Pb	No Data Available	Red Dog Mine Closure and Reclamation Plan, Final	2009
14	Arizona	Pinto Valley	Cu	No Data Available	Pinto Valley Operations Closure and Post-Closure Strategy	2013
20	California	Briggs	Au	No Data Available	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
23	Colorado	Climax	Mo	No Data Available	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
25	Colorado	Revenue	Au, Ag	No Data Available	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
27	Idaho	Idaho Cobalt	Co	No Data Available	Idaho Cobalt Reclamation Cost Estimate Summary	2006
31	Minnesota	Hibbing Taconite	Fe	No Data Available	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
36	Montana	East Boulder	PGM	No Data Available	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
38	Nevada	Bald Mountain (North)	Au, Ag	No Data Available	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
40	Nevada	Goldstrike	Au	No Data Available	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	No Data Available	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	No Data Available	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
44	Nevada	Lone Tree	Au	No Data Available	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
47	Nevada	Phoenix Copper	Cu	$282,033	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	No Data Available	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	No Data Available	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	No Data Available	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	No Data Available	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	No Data Available	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	No Data Available	Standard Mine SRCE Bond Calculation	2008
61	Nebraska	Crow Butte	U (ISL)	No Data Available	Crow Butte Uranium Mine 2015 Surety Estimate	2015
62	Wyoming	Nichols Ranch	U (ISL)	No Data Available	Nichols Ranch Project Surety Estimate Adjustment Summary 2013-2014	2014
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	No Data Available	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	No Data Available	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
Minimum				$282,033		
Maximum				$282,033		
Median				$282,033		
Mean				$282,033		

Table G.8f – Solid and Hazardous Waste Disposal Data (Building Decontamination)

Site ID	State	Mine Name	Commodity	Source Document Cost Estimate	Source Document	Year
3	Alaska	Kensington	Au	No Data Available	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
7	Alaska	Red Dog	Zn-Pb	No Data Available	Red Dog Mine Closure and Reclamation Plan, Final	2009
14	Arizona	Pinto Valley	Cu	$1,831,680	Pinto Valley Operations Closure and Post-Closure Strategy	2013
20	California	Briggs	Au	No Data Available	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
23	Colorado	Climax	Mo	No Data Available	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
25	Colorado	Revenue	Au, Ag	No Data Available	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
27	Idaho	Idaho Cobalt	Co	No Data Available	Idaho Cobalt Reclamation Cost Estimate Summary	2006
31	Minnesota	Hibbing Taconite	Fe	No Data Available	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
36	Montana	East Boulder	PGM	No Data Available	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
38	Nevada	Bald Mountain (North)	Au, Ag	No Data Available	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
40	Nevada	Goldstrike	Au	No Data Available	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	No Data Available	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	No Data Available	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
44	Nevada	Lone Tree	Au	No Data Available	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
47	Nevada	Phoenix Copper	Cu	$997,486	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	No Data Available	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	No Data Available	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	No Data Available	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	No Data Available	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	No Data Available	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	No Data Available	Standard Mine SRCE Bond Calculation	2008
61	Nebraska	Crow Butte	U (ISL)	$232,921	Crow Butte Uranium Mine 2015 Surety Estimate	2015
62	Wyoming	Nichols Ranch	U (ISL)	No Data Available	Nichols Ranch Project Surety Estimate Adjustment Summary 2013-2014	2014
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	$108,205	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	$158,168	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
Minimum				$108,205		
Maximum				$1,831,680		
Median				$232,921		
Mean				$665,692		

Table G.8g – Solid and Hazardous Waste Disposal Data (Haulage and Disposal)

Site ID	State	Mine Name	Commodity	Source Document Cost Estimate	Source Document	Year
3	Alaska	Kensington	Au	No Data Available	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
7	Alaska	Red Dog	Zn-Pb	No Data Available	Red Dog Mine Closure and Reclamation Plan, Final	2009
14	Arizona	Pinto Valley	Cu	$1,153,958	Pinto Valley Operations Closure and Post-Closure Strategy	2013
20	California	Briggs	Au	No Data Available	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
23	Colorado	Climax	Mo	No Data Available	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
25	Colorado	Revenue	Au, Ag	No Data Available	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
27	Idaho	Idaho Cobalt	Co	$576,162	Idaho Cobalt Reclamation Cost Estimate Summary	2006
31	Minnesota	Hibbing Taconite	Fe	$146,528	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
36	Montana	East Boulder	PGM	No Data Available	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
38	Nevada	Bald Mountain (North)	Au, Ag	No Data Available	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
40	Nevada	Goldstrike	Au	No Data Available	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	No Data Available	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	No Data Available	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
44	Nevada	Lone Tree	Au	No Data Available	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
47	Nevada	Phoenix Copper	Cu	No Data Available	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	No Data Available	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	No Data Available	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	No Data Available	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	No Data Available	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	No Data Available	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	No Data Available	Standard Mine SRCE Bond Calculation	2008
61	Nebraska	Crow Butte	U (ISL)	$93,819	Crow Butte Uranium Mine 2015 Surety Estimate	2015
62	Wyoming	Nichols Ranch	U (ISL)	$511,324	Nichols Ranch Project Surety Estimate Adjustment Summary 2013-2014	2014
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	$2,299,782	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	$2,863,024	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
Minimum				$93,819		
Maximum				$2,863,024		
Median				$576,162		
Mean				$1,092,085		

Table G.9 – Short-Term O&M and Monitoring Data

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source: Document	Source: Year
1	Alaska	Fort Knox	Au	$561,359	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$194,623	SCRE for Greens Creek Reclamation Plan Update	2014
3	Alaska	Kensington	Au	$48,817	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
4	Alaska	Niblack	Cu-Au-Ag-Zn	$5,785	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
5	Alaska	Nixon Fork	Cu	$7,344	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	$16,336	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$224,358	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	$39,797	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
9	Alaska	True North	Au	$59,984	True North Gold Mine Reclamation and Closure Plan	2012
10	Arizona	Arizona 1	U	$8,239	Cost Estimate for Update to Arizona I Bond - APP Permit Number P-102008	2008
13	Arizona	Mission	Cu	$28,299	ASARCO Mission Mine Complex- Closure and Post-closure Costs APP No. P-100508	2007
14	Arizona	Pinto Valley	Cu	$82,342	Pinto Valley Operations Closure and Post-Closure Strategy	2013
18	Arizona	Ray	Cu	$19,050	Aquifer Protection Permit Application, ASARCO, LLC - Ripsey Wash TSF	2014
19	Arizona	Silver Bell	Cu	$131,524	Financial Assurance for permits P-100510 and P-103190 - REVISED	2008
20	California	Briggs	Au	$9,795	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
21	California	Mesquite	Au	$18,788	Mesquite Mine Reclamation Cost Estimate	2013
22	California	Mountain Pass	Rare Earth	$106,017	Financial Assurance Cost Estimate Molycorp Minerals, LLC, Mountain Pass Mine	2013
23	Colorado	Climax	Mo	$258,156	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
24	Colorado	Cresson	Au	$239,946	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
26	Idaho	Blackfoot Bridge	P	$233,805	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
27	Idaho	Idaho Cobalt	Co	$315,623	Idaho Cobalt Reclamation Cost Estimate Summary	2006
28	Idaho	Smoky Canyon	P	$54,940	Simplot Smoky Canyon Mine Panel F 1st Year Reclamation Bond - BLM Calculation	2008
29	Idaho	Thompson Creek	Mo	$232,640	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
30	Minnesota	Essar	Fe	$27,026	Essar Reclamation Cost Estimate	2014
31	Minnesota	Hibbing Taconite	Fe	$563,454	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
32	Minnesota	Minntac	Fe	$4,464	U.S. Steel Minntac Mine Extension Financial Assurance	2014
33	Minnesota	Northshore	Fe	$80,550	Financial Assurance Cost Estimate, Cliffs Natural Resources	2014
35	Montana	Continental	Cu	$18,978	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008
36	Montana	East Boulder	PGM	$144,323	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
37	Montana	Golden Sunlight	Au, Ag	$1,346,763	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Year
38	Nevada	Bald Mountain (North)	Au, Ag	$696,003	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$296,980	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$1,509,168	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$122,646	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$274,286	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	$87,353	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	$535,555	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	$202,898	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	$390,539	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	$61,943	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$672,788	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$379,317	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$627,134	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$227,634	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$651,695	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$83,059	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	$359,336	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
55	New Mexico	Chino	Cu	$133,802	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
56	New Mexico	Mt Taylor	U	$102,474	Mt Taylor Mine Plan for Mine Closeout/DP-61 Closure	2012
57	New Mexico	St Anthony	U	$773,862	St Anthony Closeout Plan - 2010-07-30 Concept Level R1	2010
59	South Carolina	Haile	Au	$105,756	Haile Gold Mine Reclamation Plan	2013
60	Utah	Lisbon Valley	Cu	$86,116	Lisbon Valley Mining Co Bond Worksheet	2014
Minimum				$4,464		
Maximum				$1,509,168		
Median				$132,663		
Mean				$258,913		

Table G.10 – Long-Term O&M and Monitoring Data

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source	
					Document	Year
1	Alaska	Fort Knox	Au	$127,715	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$37,255	SCRE for Greens Creek Reclamation Plan Update	2014
6	Alaska	Pogo	Au	$61,686	Appendix B Updated Reclamation Cost Estimate	2012
8	Alaska	Rock Creek	Au	$7,654	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
11	Arizona	Bagdad	Cu	$58,024	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
13	Arizona	Mission	Cu	$136,775	ASARCO Mission Mine Complex- Closure and Post-closure Costs APP No. P-100508	2007
14	Arizona	Pinto Valley	Cu	$1,131,853	Pinto Valley Operations Closure and Post-Closure Strategy	2013
26	Idaho	Blackfoot Bridge	P	$16,768	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
37	Montana	Golden Sunlight	Au, Ag	$73,539	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
39	Nevada	Emigrant	Au	$47,513	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
47	Nevada	Phoenix Copper	Cu	$88,867	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$42,850	Reclamation Plan Revision for Disturbance up to December 2015	2014
55	New Mexico	Chino	Cu	$244,033	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
58	New Mexico	Tyrone	Cu	$380,866	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
Minimum				$7,654		
Maximum				$1,131,853		
Median				$67,613		
Mean				$175,386		

Table G.11 – Interim O&M Data

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source: Document	Source: Year
1	Alaska	Fort Knox	Au	$9,637,277	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$664,381	SCRE for Greens Creek Reclamation Plan Update	2014
3	Alaska	Kensington	Au	$4,668,097	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
5	Alaska	Nixon Fork	Cu	$500,942	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	$1,430,970	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$11,526,565	Red Dog Mine Closure and Reclamation Plan, Final	2009
18	Arizona	Ray	Cu	$202,995	Aquifer Protection Permit Application, ASARCO, LLC - Ripsey Wash TSF	2014
19	Arizona	Silver Bell	Cu	$743,661	Financial Assurance for permits P-100510 and P-103190 - REVISED	2008
20	California	Briggs	Au	$84,649	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
21	California	Mesquite	Au	$8,806,525	Mesquite Mine Reclamation Cost Estimate	2013
23	Colorado	Climax	Mo	$2,883,282	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
24	Colorado	Cresson	Au	$10,656,450	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
27	Idaho	Idaho Cobalt	Co	$2,690,425	Idaho Cobalt Reclamation Cost Estimate Summary	2006
29	Idaho	Thompson Creek	Mo	$1,223,823	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
36	Montana	East Boulder	PGM	$1,170,704	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
37	Montana	Golden Sunlight	Au, Ag	$1,218,890	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
38	Nevada	Bald Mountain (North)	Au, Ag	$12,664,438	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$2,873,186	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$2,249,634	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
42	Nevada	Hycroft	Au	$11,001,223	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	$4,578,162	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	$6,611,617	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	$3,393,056	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	$9,161,727	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	$7,617,892	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$6,617,485	Reclamation Plan Revision for Disturbance up to December 2015	2014
50	Nevada	Round Mountain	Au	$17,237,910	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$1,548,904	Ruby Hill Mine Reclamation Bond Estimate	2009

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Source Year
53	Nevada	Standard	Au	$1,909,430	Standard Mine SRCE Bond Calculation	2008
55	New Mexico	Chino	Cu	$1,816,685	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
58	New Mexico	Tyrone	Cu	$2,212,979	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
60	Utah	Lisbon Valley	Cu	$529,687	Lisbon Valley Mining Co Bond Worksheet	2014
Minimum				$84,649		
Maximum				$17,237,910		
Median				$2,781,806		
Mean				$4,691,677		

Table G.12 – Water Treatment Data

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Source Year
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$523,211	SCRE for Greens Creek Reclamation Plan Update	2014
6	Alaska	Pogo	Au	$107,600	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$11,931,035	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	$1,644,482	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
11	Arizona	Bagdad	Cu	$111,373	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
27	Idaho	Idaho Cobalt	Co	$16,616	Idaho Cobalt Reclamation Cost Estimate Summary	2006
36	Montana	East Boulder	PGM	$886,034	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
37	Montana	Golden Sunlight	Au, Ag	$2,446,000	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
47	Nevada	Phoenix Copper	Cu	$74,052	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
55	New Mexico	Chino	Cu	$4,705,625	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
58	New Mexico	Tyrone	Cu	$3,589,902	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
59	South Carolina	Haile	Au	$25,201	Haile Gold Mine Reclamation Plan	2013
62	Wyoming	Nichols Ranch	U (ISL)	$423,392	Nichols Ranch Project Surety Estimate Adjustment Summary 2013-2014	2014
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	$5,014,305	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	$3,617,464	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
65	Colorado	Clear Creek	Au, Ag	$1,641,198	Clear Creek Cost Info	2011
66	Colorado	Summitville	Au, Ag	$6,581,158	Summitville Mine Wastewater Treatment Plant Construction Cost Estimate Summary	2009
67	Montana	Zortman and Landusky	Au, Ag	$1,956,382	Engineering Evaluation/Cost Analysis (EE/CA) For Water Management at the Zortman and Landusky Mines Phillips County, Montana	2006
Minimum				$16,616		
Maximum				$11,931,035		
Median				$1,642,840		
Mean				$2,516,391		

Table G.13a – Overhead and Oversight Costs (Mobilization/Demobilization)

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Source Year
1	Alaska	Fort Knox	Au	$301,977	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$560,025	SCRE for Greens Creek Reclamation Plan Update	2014
4	Alaska	Niblack	Cu-Au-Ag-Zn	$70,824	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
6	Alaska	Pogo	Au	$1,086,596	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$5,817,273	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	$442,594	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
9	Alaska	True North	Au	$68,047	True North Gold Mine Reclamation and Closure Plan	2012
10	Arizona	Arizona 1	U	$12,292	Cost Estimate for Update to Arizona I Bond - APP Permit Number P-102008	2008
11	Arizona	Bagdad	Cu	$294,183	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
12	Arizona	Johnson Camp	Cu	$16,412	Aquifer Protection Permit No. P- 100514, Johnson Camp Mine Closure Cost Estimate Comparison	2007
17	Arizona	Safford	Cu	$333,576	Safford Mine Reclamation Plan	2005
20	California	Briggs	Au	$66,452	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
21	California	Mesquite	Au	$29,455	Mesquite Mine Reclamation Cost Estimate	2013
22	California	Mountain Pass	Rare Earth	$28,300	Financial Assurance Cost Estimate Molycorp Minerals, LLC, Mountain Pass Mine	2013
23	Colorado	Climax	Mo	$430,277	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
24	Colorado	Cresson	Au	$2,335,041	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
25	Colorado	Revenue	Au, Ag	$4,928	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
26	Idaho	Blackfoot Bridge	P	$1,299,133	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
27	Idaho	Idaho Cobalt	Co	$271,430	Idaho Cobalt Reclamation Cost Estimate Summary	2006
28	Idaho	Smoky Canyon	P	$875,286	Simplot Smoky Canyon Mine Panel F 1st Year Reclamation Bond - BLM Calculation	2008
29	Idaho	Thompson Creek	Mo	$1,076,281	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
33	Minnesota	Northshore	Fe	$871,225	Financial Assurance Cost Estimate, Cliffs Natural Resources	2014
34	Minnesota	SCRAM	Fe		Permit to Mine, Minor Amendment Application, SCRAM Mineral Recovery Plant 2	2013
35	Montana	Continental	Cu	$1,165,035	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008
36	Montana	East Boulder	PGM	$544,304	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
37	Montana	Golden Sunlight	Au, Ag	$815,504	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
38	Nevada	Bald Mountain (North)	Au, Ag	$497,412	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$219,441	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$724,175	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$125,975	Hollister Mine Project Update to the Plan of Operations	2013

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Source Year
42	Nevada	Hycroft	Au	$387,571	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	$696,154	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	$292,524	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
46	Nevada	Phoenix Historic	Au, Ag	$2,643,838	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	$66,241	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$330,671	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$128,523	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$1,398,818	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$168,665	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$122,159	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$203,126	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	$187,990	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
55	New Mexico	Chino	Cu	$1,866,110	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
56	New Mexico	Mt Taylor	U	$71,767	Mt Taylor Mine Plan for Mine Closeout/DP-61 Closure	2012
57	New Mexico	St Anthony	U	$1,439,544	St Anthony Closeout Plan - 2010-07-30 Concept Level R1	2010
58	New Mexico	Tyrone	Cu	$1,182,269	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
60	Utah	Lisbon Valley	Cu	$37,842	Lisbon Valley Mining Co Bond Worksheet	2014
Minimum				$4,928		
Maximum				$5,817,273		
Median				$332,124		
Mean				$687,114		

Table G.13b – Overhead and Oversight Costs (Engineering Design and Redesign)

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Source Year
1	Alaska	Fort Knox	Au	$2,366,958	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$1,581,394	SCRE for Greens Creek Reclamation Plan Update	2014
3	Alaska	Kensington	Au	$690,572	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
4	Alaska	Niblack	Cu-Au-Ag-Zn	$32,387	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
5	Alaska	Nixon Fork	Cu	$218,046	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	$828,062	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$1,307,685	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	$90,399	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
9	Alaska	True North	Au	$67,719	True North Gold Mine Reclamation and Closure Plan	2012
10	Arizona	Arizona 1	U	$29,476	Cost Estimate for Update to Arizona I Bond - APP Permit Number P-102008	2008
11	Arizona	Bagdad	Cu	$1,039,562	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
18	Arizona	Ray	Cu	$267,686	Aquifer Protection Permit Application, ASARCO, LLC - Ripsey Wash TSF	2014
20	California	Briggs	Au	$88,603	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
21	California	Mesquite	Au	$121,589	Mesquite Mine Reclamation Cost Estimate	2013
22	California	Mountain Pass	Rare Earth	$161,345	Financial Assurance Cost Estimate Molycorp Minerals, LLC, Mountain Pass Mine	2013
23	Colorado	Climax	Mo	$4,084,849	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
25	Colorado	Revenue	Au, Ag	$9,738	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
26	Idaho	Blackfoot Bridge	P	$1,730,359	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
27	Idaho	Idaho Cobalt	Co	$398,653	Idaho Cobalt Reclamation Cost Estimate Summary	2006
31	Minnesota	Hibbing Taconite	Fe	$385,486	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
33	Minnesota	Northshore	Fe	$210,011	Financial Assurance Cost Estimate, Cliffs Natural Resources	2014
35	Montana	Continental	Cu	$1,941,725	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008
36	Montana	East Boulder	PGM	$544,304	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
37	Montana	Golden Sunlight	Au, Ag	$1,359,172	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
38	Nevada	Bald Mountain (North)	Au, Ag	$3,355,837	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$2,407,561	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$7,136,270	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$486,648	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$1,259,001	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	$527,162	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Year
44	Nevada	Lone Tree	Au	$1,976,830	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	$1,729,770	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	$15,410,532	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	$4,848,400	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$3,057,287	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$1,943,790	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$4,458,664	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$1,004,705	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$3,955,340	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$613,123	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	$1,534,340	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
55	New Mexico	Chino	Cu	$7,637,254	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
56	New Mexico	Mt Taylor	U	$215,301	Mt Taylor Mine Plan for Mine Closeout/DP-61 Closure	2012
58	New Mexico	Tyrone	Cu	$2,955,672	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
60	Utah	Lisbon Valley	Cu	$207,651	Lisbon Valley Mining Co Bond Worksheet	2014
Minimum				$9,738		
Maximum				$15,410,532		
Median				$1,039,562		
Mean				$1,917,265		

Table G.13c – Overhead and Oversight Costs (Contingency)

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Source Year
1	Alaska	Fort Knox	Au	$5,917,394	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$7,475,682	SCRE for Greens Creek Reclamation Plan Update	2014
3	Alaska	Kensington	Au	$2,209,828	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
4	Alaska	Niblack	Cu-Au-Ag-Zn	$36,584	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
5	Alaska	Nixon Fork	Cu	$436,093	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	$5,979,460	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$4,278,821	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	$301,332	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
9	Alaska	True North	Au	$169,298	True North Gold Mine Reclamation and Closure Plan	2012
10	Arizona	Arizona 1	U	$49,126	Cost Estimate for Update to Arizona I Bond - APP Permit Number P-102008	2008
11	Arizona	Bagdad	Cu	$980,725	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
12	Arizona	Johnson Camp	Cu	$163,715	Aquifer Protection Permit No. P- 100514, Johnson Camp Mine Closure Cost Estimate Comparison	2007
13	Arizona	Mission	Cu	$2,549,725	ASARCO Mission Mine Complex- Closure and Post-closure Costs APP No. P-100508	2007
14	Arizona	Pinto Valley	Cu	$317,772	Pinto Valley Operations Closure and Post-Closure Strategy	2013
17	Arizona	Safford	Cu	$1,111,920	Safford Mine Reclamation Plan	2005
18	Arizona	Ray	Cu	$356,916	Aquifer Protection Permit Application, ASARCO, LLC - Ripsey Wash TSF	2014
19	Arizona	Silver Bell	Cu	$1,106,027	Financial Assurance for permits P-100510 and P-103190 - REVISED	2008
20	California	Briggs	Au	$155,055	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
21	California	Mesquite	Au	$486,356	Mesquite Mine Reclamation Cost Estimate	2013
22	California	Mountain Pass	Rare Earth	$198,111	Financial Assurance Cost Estimate Molycorp Minerals, LLC, Mountain Pass Mine	2013
24	Colorado	Cresson	Au	$11,675,207	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
26	Idaho	Blackfoot Bridge	P	$4,707,006	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
27	Idaho	Idaho Cobalt	Co	$3,161,845	Idaho Cobalt Reclamation Cost Estimate Summary	2006
28	Idaho	Smoky Canyon	P	$149,952	Simplot Smoky Canyon Mine Panel F 1st Year Reclamation Bond - BLM Calculation	2008
29	Idaho	Thompson Creek	Mo	$1,424,328	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
30	Minnesota	Essar	Fe	$297,134	Essar Reclamation Cost Estimate	2014
31	Minnesota	Hibbing Taconite	Fe	$3,319,603	Hibbing Taconite Company Task Detail Report FASB 143 Estimate	2008
32	Minnesota	Minntac	Fe	$422,266	U.S. Steel Minntac Mine Extension Financial Assurance	2014
33	Minnesota	Northshore	Fe	$2,331,216	Financial Assurance Cost Estimate, Cliffs Natural Resources	2014
34	Minnesota	SCRAM	Fe	$45,854	Permit to Mine, Minor Amendment Application, SCRAM Mineral Recovery Plant 2	2013
35	Montana	Continental	Cu	$3,883,449	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Year
36	Montana	East Boulder	PGM	$2,721,518	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014
37	Montana	Golden Sunlight	Au, Ag	$1,359,172	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
38	Nevada	Bald Mountain (North)	Au, Ag	$2,416,371	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$3,004,097	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$5,410,840	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$369,970	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$1,888,501	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	$594,464	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	$2,336,567	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	$2,460,836	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	$15,410,532	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	$3,909,525	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$2,291,696	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$2,234,005	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$3,634,436	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$758,152	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$3,538,110	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$407,194	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	$1,694,264	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
55	New Mexico	Chino	Cu	$3,393,146	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
56	New Mexico	Mt Taylor	U	$358,835	Mt Taylor Mine Plan for Mine Closeout/DP-61 Closure	2012
57	New Mexico	St Anthony	U	$1,470,086	St Anthony Closeout Plan - 2010-07-30 Concept Level R1	2010
58	New Mexico	Tyrone	Cu	$2,364,537	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
60	Utah	Lisbon Valley	Cu	$415,301	Lisbon Valley Mining Co Bond Worksheet	2014
61	Nebraska	Crow Butte	U (ISL)	$5,618,987	Crow Butte Uranium Mine 2015 Surety Estimate	2015
62	Wyoming	Nichols Ranch	U (ISL)	$1,460,551	Nichols Ranch Project Surety Estimate Adjustment Summary 2013-2014	2014
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	$17,805,859	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013
64	Wyoming	Highland	U (ISL)	$13,103,085	Smith Ranch/Reynolds Ranch and Highland Combined Operations, 2014-2015 Surety Estimate	2013

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source	
					Document	Year
Minimum				$36,584		
Maximum				$17,805,859		
Median				$1,888,501		
Mean				$2,849,634		

Table G.13d – Overhead and Oversight Costs (Contractor Profit and Overhead)

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source	
					Document	Year
1	Alaska	Fort Knox	Au	$8,876,092	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$8,913,313	SCRE for Greens Creek Reclamation Plan Update	2014
3	Alaska	Kensington	Au	$2,071,714	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
4	Alaska	Niblack	Cu-Au-Ag-Zn	$161,934	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
5	Alaska	Nixon Fork	Cu	$508,775	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	$5,120,586	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$4,269,206	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	$301,332	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
9	Alaska	True North	Au	$592,541	True North Gold Mine Reclamation and Closure Plan	2012
10	Arizona	Arizona 1	U	$19,651	Cost Estimate for Update to Arizona I Bond - APP Permit Number P-102008	2008
11	Arizona	Bagdad	Cu	$1,118,011	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
12	Arizona	Johnson Camp	Cu	$164,120	Aquifer Protection Permit No. P- 100514, Johnson Camp Mine Closure Cost Estimate Comparison	2007
16	Arizona	Rosemont	Cu	$2,558,293	Rosemont Reclamation and Closure Plan	2007
17	Arizona	Safford	Cu	$2,562,976	Safford Mine Reclamation Plan	2005
20	California	Briggs	Au	$429,003	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
21	California	Mesquite	Au	$705,216	Mesquite Mine Reclamation Cost Estimate	2013
22	California	Mountain Pass	Rare Earth	$382,073	Financial Assurance Cost Estimate Molycorp Minerals, LLC, Mountain Pass Mine	2013
23	Colorado	Climax	Mo	$7,919,056	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
24	Colorado	Cresson	Au	$5,837,604	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
25	Colorado	Revenue	Au, Ag	$37,185	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
26	Idaho	Blackfoot Bridge	P	$4,707,006	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
27	Idaho	Idaho Cobalt	Co	$1,580,922	Idaho Cobalt Reclamation Cost Estimate Summary	2006
28	Idaho	Smoky Canyon	P	$799,742	Simplot Smoky Canyon Mine Panel F 1st Year Reclamation Bond - BLM Calculation	2008
29	Idaho	Thompson Creek	Mo	$3,092,777	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
32	Minnesota	Minntac	Fe	$580,357	U.S. Steel Minntac Mine Extension Financial Assurance	2014
33	Minnesota	Northshore	Fe	$2,399,997	Financial Assurance Cost Estimate, Cliffs Natural Resources	2014
38	Nevada	Bald Mountain (North)	Au, Ag	$6,040,928	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$5,006,828	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$13,527,100	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$616,617	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$3,147,500	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Source Year
43	Nevada	Jerritt Canyon	Au	$1,757,987	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	$3,894,278	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	$4,101,393	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	$38,526,330	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	$9,773,812	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$5,729,239	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$3,723,341	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$9,086,089	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$1,263,587	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$8,845,275	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$678,655	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	$2,823,772	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
55	New Mexico	Chino	Cu	$42,414,319	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
56	New Mexico	Mt Taylor	U	$358,835	Mt Taylor Mine Plan for Mine Closeout/DP-61 Closure	2012
57	New Mexico	St Anthony	U	$4,095,445	St Anthony Closeout Plan - 2010-07-30 Concept Level R1	2010
58	New Mexico	Tyrone	Cu	$17,734,029	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
60	Utah	Lisbon Valley	Cu	$194,829	Lisbon Valley Mining Co Bond Worksheet	2014
Minimum				$19,651		
Maximum				$42,414,319		
Median				$2,693,374		
Mean				$5,188,535		

Table G.13e – Overhead and Oversight Costs (Contractor Liability Insurance)

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Source Year
1	Alaska	Fort Knox	Au	$159,601	Fort Knox Mine Reclamation and Closure Plan	2013
3	Alaska	Kensington	Au	$207,171	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
5	Alaska	Nixon Fork	Cu	$19,079	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	$588,867	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$115,384	Red Dog Mine Closure and Reclamation Plan, Final	2009
9	Alaska	True North	Au	$6,024	True North Gold Mine Reclamation and Closure Plan	2012
16	Arizona	Rosemont	Cu	$240,502	Rosemont Reclamation and Closure Plan	2007
23	Colorado	Climax	Mo	$1,445,924	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
24	Colorado	Cresson	Au	$1,809,657	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
25	Colorado	Revenue	Au, Ag	$5,633	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
26	Idaho	Blackfoot Bridge	P	$706,052	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
27	Idaho	Idaho Cobalt	Co	$59,285	Idaho Cobalt Reclamation Cost Estimate Summary	2006
28	Idaho	Smoky Canyon	P	$18,065	Simplot Smoky Canyon Mine Panel F 1st Year Reclamation Bond - BLM Calculation	2008
29	Idaho	Thompson Creek	Mo	$59,711	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
38	Nevada	Bald Mountain (North)	Au, Ag	$228,617	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$216,483	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$805,452	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$18,388	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$145,984	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	$150,661	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	$246,474	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	$226,625	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	$1,237,002	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	$122,282	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$298,568	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$193,258	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$560,269	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$68,552	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$451,913	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$34,349	Standard Mine SRCE Bond Calculation	2008

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Year
54	Nevada	Trenton Canyon	Au	$165,163	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
57	New Mexico	St Anthony	U	$451,005	St Anthony Closeout Plan - 2010-07-30 Concept Level R1	2010
Minimum				$5,633		
Maximum				$1,809,657		
Median				$200,215		
Mean				$345,688		

Table G.13f – Overhead and Oversight Costs (Payment and Performance Bonds)

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source: Document	Source: Year
1	Alaska	Fort Knox	Au	$1,775,218	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$1,725,157	SCRE for Greens Creek Reclamation Plan Update	2014
3	Alaska	Kensington	Au	$414,342	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
4	Alaska	Niblack	Cu-Au-Ag-Zn	$9,716	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
5	Alaska	Nixon Fork	Cu	$124,468	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	$1,177,735	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$1,048,071	Red Dog Mine Closure and Reclamation Plan, Final	2009
9	Alaska	True North	Au	$50,709	True North Gold Mine Reclamation and Closure Plan	2012
16	Arizona	Rosemont	Cu	$240,502	Rosemont Reclamation and Closure Plan	2007
20	California	Briggs	Au	$9,244	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
23	Colorado	Climax	Mo	$751,594	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
24	Colorado	Cresson	Au	$1,167,521	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
25	Colorado	Revenue	Au, Ag	$2,928	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
26	Idaho	Blackfoot Bridge	P	$1,412,104	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
27	Idaho	Idaho Cobalt	Co	$143,002	Idaho Cobalt Reclamation Cost Estimate Summary	2006
28	Idaho	Smoky Canyon	P	$149,952	Simplot Smoky Canyon Mine Panel F 1st Year Reclamation Bond - BLM Calculation	2008
38	Nevada	Bald Mountain (North)	Au, Ag	$1,812,279	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$1,502,048	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$4,058,130	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$184,985	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$944,250	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	$903,968	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	$1,168,283	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	$1,230,418	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	$11,557,899	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	$2,932,143	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$1,718,772	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$1,117,003	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$2,725,827	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$379,076	Ruby Hill Mine Reclamation Bond Estimate	2009

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Source Year
52	Nevada	SOAP	Au	$2,653,582	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$203,597	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	$847,132	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
57	New Mexico	St Anthony	U	$192,428	St Anthony Closeout Plan - 2010-07-30 Concept Level R1	2010
Minimum				$2,928		
Maximum				$11,557,899		
Median				$996,161		
Mean				$1,362,767		

Table G.13g – Overhead and Oversight Costs (Agency Direct Costs)

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source: Document	Source: Year
1	Alaska	Fort Knox	Au	$4,733,916	Fort Knox Mine Reclamation and Closure Plan	2013
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	$4,025,367	SCRE for Greens Creek Reclamation Plan Update	2014
3	Alaska	Kensington	Au	$966,799	Reclamation and Closure Plan Update for the Kensington Gold Project, Borough of Juneau, Alaska	2013
4	Alaska	Niblack	Cu-Au-Ag-Zn	$7,658	Niblack Reclamation and Closure Plan, 2012 Post-Construction Update	2012
5	Alaska	Nixon Fork	Cu	$396,118	Nixon Fork Mine Plan of Operations & Reclamation, Plan Version 2, Volume II of II	2011
6	Alaska	Pogo	Au	$1,640,977	Appendix B Updated Reclamation Cost Estimate	2012
7	Alaska	Red Dog	Zn-Pb	$1,846,143	Red Dog Mine Closure and Reclamation Plan, Final	2009
8	Alaska	Rock Creek	Au	$90,399	Rock Creek Mine Plan of Operations Volume 4, Reclamation Plan	2006
9	Alaska	True North	Au	$135,438	True North Gold Mine Reclamation and Closure Plan	2012
10	Arizona	Arizona 1	U	$9,825	Cost Estimate for Update to Arizona I Bond - APP Permit Number P-102008	2008
11	Arizona	Bagdad	Cu	$196,122	Closure Strategy and Cost Estimate Update - APP No. P-105258	2010
12	Arizona	Johnson Camp	Cu	$65,648	Aquifer Protection Permit No. P- 100514, Johnson Camp Mine Closure Cost Estimate Comparison	2007
14	Arizona	Pinto Valley	Cu	$534,963	Pinto Valley Operations Closure and Post-Closure Strategy	2013
16	Arizona	Rosemont	Cu	$3,607,526	Rosemont Reclamation and Closure Plan	2007
17	Arizona	Safford	Cu	$1,667,880	Safford Mine Reclamation Plan	2005
20	California	Briggs	Au	$134,011	Financial Assurance Cost Estimate for CR Briggs Corporation, Briggs Mine including Gold Tooth South Project	2014
21	California	Mesquite	Au	$364,768	Mesquite Mine Reclamation Cost Estimate	2013
22	California	Mountain Pass	Rare Earth	$343,865	Financial Assurance Cost Estimate Molycorp Minerals, LLC, Mountain Pass Mine	2013
23	Colorado	Climax	Mo	$4,084,849	Climax Molybdenum Company Permit M-1977-493 Exhibit L - Reclamation Costs	2010
24	Colorado	Cresson	Au	$5,837,604	Cripple Creek & Victor Gold Mining Company Reclamation Cost Model to Support Mine Life Extension Project 2 (MLE2) DRMS Warranty Version	2014
25	Colorado	Revenue	Au, Ag	$16,231	Revenue Mine Cost Summary, CIRCES Cost Estimating Software	2014
26	Idaho	Blackfoot Bridge	P	$1,911,420	P4 Production, LLC, Blackfoot Bridge Project Financial Assurance Cost Estimates	2010
27	Idaho	Idaho Cobalt	Co	$711,415	Idaho Cobalt Reclamation Cost Estimate Summary	2006
28	Idaho	Smoky Canyon	P	$349,887	Simplot Smoky Canyon Mine Panel F 1st Year Reclamation Bond - BLM Calculation	2008
29	Idaho	Thompson Creek	Mo	$2,871,210	EPA CERCLA 108b Financial Assurance Cost Estimation Summary Spreadsheet, Thompson Creek Mine	2011
30	Minnesota	Essar	Fe	$80,357	Essar Reclamation Cost Estimate	2014
32	Minnesota	Minntac	Fe	$348,214	U.S. Steel Minntac Mine Extension Financial Assurance	2014
33	Minnesota	Northshore	Fe	$2,331,216	Financial Assurance Cost Estimate, Cliffs Natural Resources	2014
34	Minnesota	SCRAM	Fe	$30,264	Permit to Mine, Minor Amendment Application, SCRAM Mineral Recovery Plant 2	2013
35	Montana	Continental	Cu	$3,883,449	Montana Resources, Operating Permit # 00030, 00030A, 00041, 00108, 5 - Year Bond Review	2008
36	Montana	East Boulder	PGM	$1,331,920	Stillwater Mining Company, East Boulder Project, Calculation of Reclamation Liability	2014

Site ID	State	Mine Name	Commodity	Source Document Total Cost Estimate	Source Document	Year
37	Montana	Golden Sunlight	Au, Ag	$2,718,344	Golden Sunlight Mine, Operating Permit #00065, 5-Year Bond Review, Partial Bond Release, & Amendment 11 Calculation	2008
38	Nevada	Bald Mountain (North)	Au, Ag	$3,624,556	Bald Mountain Mine North Area Operations Reclamation Bond Cost Estimate - 3 Year Update	2014
39	Nevada	Emigrant	Au	$3,004,097	Nevada Standardized Reclamation Bond Calculation, Emigrant Mine	2011
40	Nevada	Goldstrike	Au	$8,116,260	Barrick Goldstrike Mines Inc. Reclamation Plan and 2012 Three-Year Update for the Goldstrike Mine Project	2012
41	Nevada	Hollister	Au	$493,293	Hollister Mine Project Update to the Plan of Operations	2013
42	Nevada	Hycroft	Au	$1,888,501	Hycroft Mine (NVN-064641; 0134) Amendment to Reclamation Plan Hycroft Mine Expansion Project	2012
43	Nevada	Jerritt Canyon	Au	$6,596,869	2009 Annual Work Plan, Queenstake Resources USA, Inc. Jerrit Canyon Mine	2009
44	Nevada	Lone Tree	Au	$2,336,567	Newmont Mining Corporation, Lone Tree Mine Reclamation Plan	2011
45	Nevada	Marigold	Au	$2,460,836	Marigold Mining Company Reclamation Bonding Annual Update	2008
46	Nevada	Phoenix Historic	Au, Ag	$23,115,798	Phoenix Mine Reclamation Permit 0223, Cumulative Reclamation Cost Estimate	2011
47	Nevada	Phoenix Copper	Cu	$5,864,287	Newmont Mining Corporation - Phoenix Copper Leach Project, SRCE	2012
48	Nevada	Robinson	Cu	$3,437,544	Reclamation Plan Revision for Disturbance up to December 2015	2014
49	Nevada	Rochester	Ag	$2,234,005	Amendment #8 to the Plan of Operations/Reclamation Permit	2010
50	Nevada	Round Mountain	Au	$5,451,653	Round Mountain Gold Corporation 2011 Revised Comprehensive Reclamation Plan and Bond Cost Estimate	2011
51	Nevada	Ruby Hill	Au	$1,010,869	Ruby Hill Mine Reclamation Bond Estimate	2009
52	Nevada	SOAP	Au	$5,307,164	Reclamation and Operating Plan SOAP Mine	2012
53	Nevada	Standard	Au	$542,925	Standard Mine SRCE Bond Calculation	2008
54	Nevada	Trenton Canyon	Au	$1,694,264	Trenton Canyon Mine Reclamation Cost Estimate Update	2011
55	New Mexico	Chino	Cu	$8,482,863	Chino Closure/Closeout Plan Update, Chino Mines Company, Hurley, New Mexico	2007
56	New Mexico	Mt Taylor	U	$251,185	Mt Taylor Mine Plan for Mine Closeout/DP-61 Closure	2012
58	New Mexico	Tyrone	Cu	$2,364,537	Tyrone Closure/Closeout Plan Earthwork Cost Estimate Summary Report	2013
59	South Carolina	Haile	Au	$2,323,437	Haile Gold Mine Reclamation Plan	2013
61	Nebraska	Crow Butte	U (ISL)	$3,745,991	Crow Butte Uranium Mine 2015 Surety Estimate	2015
Minimum				$7,658		
Maximum				$23,115,798		
Median				$1,867,322		
Mean				$2,622,617		

Appendix H:
Water Balance and Chemical Process Data

This appendix provides the data and sources for all the water balance and leaching potential variables used in the response cost regression analysis described in **Section 4** of this document. This appendix includes five tables:

- **Table H.1 –** Distance to Surface Water Data,
- **Table H.2** – Depth to Groundwater Data,
- **Table H.3 –** Precipitation and Evaporation Data,
- **Table H.4 –** Chemical Process Data, and
- **Table H.5 –** Water Treatment Data.

The methodology used to collect the data in each of these tables is described in greater detail in **Section 3** in the main body of this document.

Table H.1 Distance to Surface Water Data

SITE ID	STATE	MINE NAME	COMMODITY	LONGITUDE	LATITUDE	COORDINATE DATA SOURCE	DISTANCE TO SURFACE WATER (METERS)	SOURCE*
1	Alaska	Fort Knox	Au	-147.3605	65.0008	MSHA/Google Earth	0	2001 RCP 15
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	-134.7458	58.1175	MSHA	0	2013 FEIS 1-1 and map on 1-4
3	Alaska	Kensington	Au	-135.0497	58.8449	MSHA/Google Earth	0	2004 FSEIS 2-8-10
4	Alaska	Niblack	Cu-Au-Ag-Zn	-132.1472	55.0664	MSHA	0	2007 POO Fig. 4
5	Alaska	Nixon Fork	Cu	-154.7653	63.2375	MSHA	0	2005 RCP and POO v. 15
6	Alaska	Pogo	Au	-146.1111	64.2597	MSHA	0	2003 FEIS 3-7
7	Alaska	Red Dog	Zn-Pb	-162.8520	68.0721	MSHA/Google Earth	0	2009 FSEIS 3-47
8	Alaska	Rock Creek	Au	-165.4550	64.6160	MSHA/Google Earth	0	2015 RCP 8
9	Alaska	True North	Au	-147.5589	65.0447	Envirofacts (FRS)	0	2012 RCP
10	Arizona	Arizona 1	U	-112.7322	36.5032	MSHA/Google Earth	19,312	1988 EA 3
11	Arizona	Bagdad	Cu	-113.1686	34.5947	MSHA	0	2003 Boulder Creek Watershed Inventory & Characterization 6
12	Arizona	Johnson Camp	Cu	-110.0661	32.1029	MSHA/Google Earth	4,590	USGS
13	Arizona	Mission	Cu	-111.0525	31.9983	MSHA	7,400	USGS
14	Arizona	Pinto Valley	Cu	-110.9400	33.3714	MSHA	0	2014 APP 9
15	Arizona	Rosemont	Cu	-110.7620	31.8613	MSHA/Google Earth	17,703	2013 FEIS 410
16	Arizona	Safford	Cu	-109.6804	32.9518	MSHA/Google Earth	4,828	2003 FEIS Fig. 1-2
17	Arizona	Ray	Cu	-110.9780	33.1560	MSHA/Google Earth	805	2016 DEIS 3-61
18	Arizona	Silver Bell	Cu	-111.4539	32.3736	MSHA	15,931	USGS
19	California	Briggs	Au	-117.3717	35.7628	MSHA	2,963	USGS
20	California	Mesquite	Au	-114.9803	33.0522	MSHA/Google Earth	24,140	2000 DEIR/EIS 3.2-2
21	California	Mountain Pass	Rare Earth	-115.5744	35.4719	MSHA	13,179	USGS
22	Colorado	Climax	Mo	-106.3161	39.3389	MSHA	0	2011 RCE 2 and 6
23	Colorado	Cresson	Au	-105.1250	38.7392	MSHA	1,609	2012 MLE2 4-1
24	Colorado	Revenue	Au, Ag	-107.7503	37.9739	MSHA	0	2012 PA G-1
25	Idaho	Blackfoot Bridge	P	-111.5056	42.8267	MSHA	0	2011 FEIS 3-53
26	Idaho	Idaho Cobalt	Co	-114.3520	45.1392	MSHA/Google Earth	0	2008 FEIS 3-6 and map on 3-9
27	Idaho	Smoky Canyon	P	-111.5114	42.7383	MSHA	0	2015 FEIS 1-4
28	Idaho	Thompson Creek	Mo	-114.5353	44.3145	MSHA/Google Earth	0	2015 FEIS 3-51
29	Minnesota	Essar	Fe	-93.2194	47.3833	MSHA/Google Earth	0	2011 DEIS 4.1-33
30	Minnesota	Hibbing Taconite	Fe	-92.9673	47.4768	MSHA/Google Earth	989	USGS
31	Minnesota	Minntac	Fe	-92.6236	47.5325	MSHA	0	2004 DEIS 2-13
32	Minnesota	Northshore	Fe	-91.2574	47.2944	MSHA	0	2014 EAW 18
33	Minnesota	SCRAM	Fe	-93.3885	47.2790	Company Website/Google Earth	0	2011 APM 8
34	Montana	Continental	Cu	-112.5226	46.0131	MSHA	0	2011 FYRR 3-1
35	Montana	East Boulder	PGM	-110.0858	45.5036	MSHA	0	2012 FEIS 218
36	Montana	Golden Sunlight	Au, Ag	-112.0110	45.9025	MSHA/Google Earth	0	2013 FEIS 3-27
37	Nevada	Bald Mountain (North)	Au, Ag	-115.6147	39.9422	MSHA	6,437	2015 DEIS 3.3-3
38	Nevada	Emigrant	Au	-115.9687	40.6029	MSHA/Google Earth	6,437	2010 FEIS 3-36 and CEDB
39	Nevada	Goldstrike	Au	-116.3600	40.9590	MSHA/Google Earth	1,609	2000 DSEIS 3-23

SITE ID	STATE	MINE NAME	COMMODITY	LONGITUDE	LATITUDE	COORDINATE DATA SOURCE	DISTANCE TO SURFACE WATER (METERS)	SOURCE*
40	Nevada	Hollister	Au	-116.5631	41.1078	MSHA/Google Earth	0	2012 DEIS 3-23
41	Nevada	Hycroft	Au	-118.6829	40.8721	MSHA/Google Earth	0	2012 FEIS Table 3.6-3
42	Nevada	Jerritt Canyon	Au	-115.9043	41.4089	MSHA/Google Earth	0	2015 FEIS 53
43	Nevada	Lone Tree	Au	-117.2372	40.8218	MSHA/Google Earth	0	1996 FEIS 3-24 and 3-26
44	Nevada	Marigold	Au	-117.1567	40.7394	MSHA/Google Earth	0	2003 FSEIS 3-29
45	Nevada	Phoenix Historic	Au, Ag	-117.1354	40.5206	MSHA/Google Earth	0	2002 FEIS 3.2-3
46	Nevada	Phoenix Copper	Cu	-117.1354	40.5206	MSHA/Google Earth	0	2011 DEIS 3.2-2
47	Nevada	Robinson	Cu	-114.9872	39.2664	MSHA	0	1994 FEIS 3-16
48	Nevada	Rochester	Ag	-118.1412	40.2883	MSHA/Google Earth	15,289	2015 FEIS 3-34
49	Nevada	Round Mountain	Au	-117.0937	38.6989	MSHA/Google Earth	0	2010 FEIS 3.3-17
50	Nevada	Ruby Hill	Au	-115.9905	39.5309	MSHA/Google Earth	32,187	2005 FSEIS 3.4-2
51	Nevada	SOAP	Au	-116.1973	40.7712	MSHA/Google Earth	0	1993 DEIS 3-19
52	Nevada	Standard	Au	-118.2447	40.5839	Envirofacts (FRS)	0	2009 EA 3-7
53	Nevada	Trenton Canyon	Au	-117.2236	40.6533	MSHA	0	1998 FEIS Figure 3-2B, Figure 3-15A
54	New Mexico	Chino	Cu	-108.1008	32.7964	MSHA	0	2007 CCP 31
55	New Mexico	Mt Taylor	U	-107.6318	35.3379	Envirofacts (FRS)/Google Earth	805	2013 CCP 6-7
56	New Mexico	St Anthony	U	-107.3009	35.1637	Google Earth	17,703	2006 CCP 2
57	New Mexico	Tyrone	Cu	-108.3675	32.6508	MSHA/Google Earth	1,816	USGS
58	South Carolina	Haile	Au	-80.5360	34.5760	MSHA/Google Earth	0	2014 FEIS, Figure 3.3-2
59	Utah	Lisbon Valley	Cu	-109.2902	38.2657	MSHA/Google Earth	19,312	1996 DEIS 3-14 and 3-16
60	Nebraska	Crow Butte	U (ISL)	-103.3535	42.6458	Envirofacts (FRS)/Google Earth	0	1998 EA 10
61	Wyoming	Nichols Ranch	U (ISL)	-106.0215	43.6778	Company Website/Google Earth	1,252	USGS
62	Wyoming	Smith/Reynolds Ranch	U (ISL)	-105.6482	43.1453	Google Earth	66	USGS
63	Wyoming	Highland	U (ISL)	-105.6850	43.0507	Google Earth	2,653	USGS
64	Colorado	Clear Creek	Au, Ag	-105.5190	39.7711	State Website/Google Earth	3,121	USGS
65	Colorado	Summitville	Au, Ag	-106.5850	37.4300	Envirofacts (FRS)	0	2001 ROD p.14
66	Montana	Zortman and Landusky	Au, Ag	-108.6108	47.9206	Envirofacts (FRS)	0	2006 EECA 2-1 and 2-3

*Where source is listed as USGS, EPA used GIS coordinates of the facility to measure distances as discussed in **Section 4.4.2**.

Table H.2 – Depth to Groundwater Data

SITE ID	STATE	MINE NAME	COMMODITY	SOURCE DATA: DEPTH TO GW (MIN)	DATA VALUE: DEPTH TO GW (MIN)	SOURCE DATA: DEPTH TO GW (MAX)	DATA VALUE: DEPTH TO GW (MAX)	SOURCE
1	Alaska	Fort Knox	Au	0	0	No information		2001 RCP 15
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	0	0	No information		2013 FEIS 3-70
3	Alaska	Kensington	Au	0	0	54	54	2004 FSEIS G-3
4	Alaska	Niblack	Cu-Au-Ag-Zn	0	0	50	50	2007 POO 23
5	Alaska	Nixon Fork	Cu	500	500	770	770	2005 RCP and POO vol. 1 15 and 23
6	Alaska	Pogo	Au	0	0	300	300	2003 FEIS 3-20
7	Alaska	Red Dog	Zn-Pb	0	0	No information		2009 FSEIS 3-73-77
8	Alaska	Rock Creek	Au	0	0	No information		2015 RCP 10-11
9	Alaska	True North	Au	0	0	No information		2012 RCP 9
10	Arizona	Arizona 1	U	1400	1400	No information		1988 EA 23
11	Arizona	Bagdad	Cu	10	10	300	300	1997 RCP 5
12	Arizona	Johnson Camp	Cu	50	50	600	600	2010 APP 36
13	Arizona	Mission	Cu	20	20	400	400	San Xavier Ground Water Recharge 2009 FEA 18-19
14	Arizona	Pinto Valley	Cu	3.25	3.25	410.7	410.7	2014 APP 21
15	Arizona	Rosemont	Cu	0	0	400	400	2013 FEIS 327
16	Arizona	Safford	Cu	0	0	750	750	2003 FEIS 3-23
17	Arizona	Ray	Cu	32	32	154	154	2016 DEIS 3-61
18	Arizona	Silver Bell	Cu	No information		No information		
19	California	Briggs	Au	70	70	296	296	2012 EA 31
20	California	Mesquite	Au	140	140	140	140	2000 DEIR/EIS 3.1-27
21	California	Mountain Pass	Rare Earth	0	0	208.05	208.05	1996 EIR 3-52 and 3-53
22	Colorado	Climax	Mo	0	0	No information		2011 RCE 11
23	Colorado	Cresson	Au	4	4	750	750	2012 MLE2 4-15-17
24	Colorado	Revenue	Au, Ag	0	0	No information		2012 PA G-3-4
25	Idaho	Blackfoot Bridge	P	0	0	100	100	2011 FEIS 3-74
26	Idaho	Idaho Cobalt	Co	10	10	400	400	2008 FEIS 3-11
27	Idaho	Smoky Canyon	P	100	100	800	800	2015 FEIS 3-21
28	Idaho	Thompson Creek	Mo	0	0	No information		2015 FEIS 3-101
29	Minnesota	Essar	Fe	5	5	500	500	2010 FEIS 6-24
30	Minnesota	Hibbing Taconite	Fe					
31	Minnesota	Minntac	Fe	0	0	0		2004 DEIS 2-13
32	Minnesota	Northshore	Fe	0	0	No information		2014 EAW 15
33	Minnesota	SCRAM	Fe	No information		No information		
34	Montana	Continental	Cu	0	0	No information		2011 FYRR 3-1
35	Montana	East Boulder	PGM	25	25	200	200	2012 FEIS 211
36	Montana	Golden Sunlight	Au, Ag	0	0	1100	1100	2013 FEIS 2-24 and 3-29
37	Nevada	Bald Mountain (North)	Au, Ag	9	9	257	257	2015 DEIS 3.3-41
38	Nevada	Emigrant	Au	120	120	650	650	2010 FEIS 3-8
39	Nevada	Goldstrike	Au	0	0	No information		2012 RCP 6
40	Nevada	Hollister	Au	22.98	22.98	243.52	243.52	2012 DEIS 3.5-9
41	Nevada	Hycroft	Au	10.6	10.6	772.4	772.4	2012 FEIS Table 3.7 -3
42	Nevada	Jerritt Canyon	Au	30	30	1200	1200	2015 FS 55
43	Nevada	Lone Tree	Au	0	0	40	40	1996 FEIS 3-22
44	Nevada	Marigold	Au	0	0	970	970	2013 EA 10 and 56-57

SITE ID	STATE	MINE NAME	COMMODITY	SOURCE DATA: DEPTH TO GW (MIN)	DATA VALUE: DEPTH TO GW (MIN)	SOURCE DATA: DEPTH TO GW (MAX)	DATA VALUE: DEPTH TO GW (MAX)	SOURCE
45	Nevada	Phoenix Historic	Au, Ag	0	0	No information		2002 FEIS 2-23
46	Nevada	Phoenix Copper	Cu	100	100	No information		2012 FEIS ES-3
47	Nevada	Robinson	Cu	0	0	1200	1200	1994 FEIS 3-25 and 3-26
48	Nevada	Rochester	Ag	0	0	No information		2015 FEIS 3-40
49	Nevada	Round Mountain	Au	0	0	100	100	2010 FEIS 3.3-17
50	Nevada	Ruby Hill	Au	14	14	379	379	2005 FSEIS 3.4-17
51	Nevada	SOAP	Au	0	0	500	500	1993 DEIS 3-40 to 3-45
52	Nevada	Standard	Au	No information		No information		2009 EA 2-7
53	Nevada	Trenton Canyon	Au	No information		No information		2011 Rec. Cost Est. p. 9
54	New Mexico	Chino	Cu	110	110	380	380	2007 CCP 50
55	New Mexico	Mt Taylor	U	30	30	600	600	2013 CCP 8
56	New Mexico	St Anthony	U	0	0	578	578	2006 CCP 3 and 28
57	New Mexico	Tyrone	Cu	30	30	90	90	2013 CCP 21
58	South Carolina	Haile	Au	30	30	No information		2014 FEIS 3.3-3
59	Utah	Lisbon Valley	Cu	400	400	No information		1996 DEIS 3-20
60	Nebraska	Crow Butte	U (ISL)	0	0	No information		1998 EA 10
61	Wyoming	Nichols Ranch	U (ISL)	50	50	200	200	2013 EA 3-56
62	Wyoming	Smith/Reynolds Ranch	U (ISL)	100	100	No information		2009 EA 55
63	Wyoming	Highland	U (ISL)	100	100	No information		2009 EA 55
64	Colorado	Clear Creek	Au, Ag					
65	Colorado	Summitville	Au, Ag	0	0	No information		2001 ROD p.14
66	Montana	Zortman and Landusky	Au, Ag	0	0	No information		2006 EECA 3-11

Table H.3 – Precipitation and Evaporation Data

SITE ID	STATE	MINE NAME	COMMODITY	SITE-SPECIFIC PAN EVAPORATION (IN)	SITE-SPECIFIC LAKE EVAPORATION (IN)	SITE-SPECIFIC EVAPORATION (UNSPECIFIED TYPE) (IN)	SITE-SPECIFIC EVAPORATION SOURCE	REGIONAL EVAPORATION (IN)	REGIONAL EVAPORATION SOURCE
1	Alaska	Fort Knox	Au	No Information	No Information	No Information		18	Western Regional Climate Center (College Univ Exp Stn)
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	No Information	No Information	No Information		15	Western Regional Climate Center (Juneau AP)
3	Alaska	Kensington	Au	No Information	No Information	17.1	2004 FSEIS A-19		
4	Alaska	Niblack	Cu-Au-Ag-Zn	No Information	No Information	No Information		15	Western Regional Climate Center (Juneau AP)
5	Alaska	Nixon Fork	Cu	No Information	No Information	13	2005 EA 50		
6	Alaska	Pogo	Au	No Information	No Information	No Information		18	Western Regional Climate Center (College Univ Exp Stn)
7	Alaska	Red Dog	Zn-Pb	No Information	No Information	9	2009 FSEIS 3-53		
8	Alaska	Rock Creek	Au	No Information	No Information	No Information		16	Western Regional Climate Center (McGrath WB Airport)
9	Alaska	True North	Au	No Information	No Information	No Information		18	Western Regional Climate Center (College Univ Exp Stn)
10	Arizona	Arizona 1	U	No Information	No Information	No Information		44	Western Regional Climate Center (Grand Canyon NP 2)
11	Arizona	Bagdad	Cu	No Information	No Information	73	1997 RCP 4		
12	Arizona	Johnson Camp	Cu	No Information	No Information	No Information		98	Western Regional Climate Center (Safford Agricultrl Ctr)
13	Arizona	Mission	Cu	No Information	No Information	No Information		111	Western Regional Climate Center (Tuscon U of Ariz #1)
14	Arizona	Pinto Valley	Cu	No Information	No Information	No Information		97	Western Regional Climate Center (Roosevelt 1 WNW)
15	Arizona	Rosemont	Cu	No Information	71.52	No Information	2013 FEIS 238		
16	Arizona	Safford	Cu	No Information	No Information	No Information		98	Western Regional Climate Center (Safford Agricultrl Ctr)
17	Arizona	Ray	Cu	95.78	No Information	No Information	2016 DEIS 3-3		
18	Arizona	Silver Bell	Cu	No Information	No Information	No Information		111	Western Regional Climate Center (Tuscon U of Ariz #1)
19	California	Briggs	Au	No Information	No Information	149	2012 EA pdf page 233		
20	California	Mesquite	Au	No Information	80	No Information	2000 DEIR/EIS 3.2-9		

SITE ID	STATE	MINE NAME	COMMODITY	SITE-SPECIFIC PAN EVAPORATION (IN)	SITE-SPECIFIC LAKE EVAPORATION (IN)	SITE-SPECIFIC EVAPORATION (UNSPECIFIED TYPE) (IN)	SITE-SPECIFIC EVAPORATION SOURCE	REGIONAL EVAPORATION (IN)	REGIONAL EVAPORATION SOURCE
21	California	Mountain Pass	Rare Earth	No Information	No Information	No Information		116	Western Regional Climate Center (Boulder City)
22	Colorado	Climax	Mo	No Information	No Information	No Information		19	Western Regional Climate Center (Climax)
23	Colorado	Cresson	Au	No Information	44.3	No Information	2012 MLE2 4-25		
24	Colorado	Revenue	Au, Ag	35	No Information	No Information	2012 PA K-1		
25	Idaho	Blackfoot Bridge	P	No Information	No Information	51.6	2011 FEIS 2-26-27		
26	Idaho	Idaho Cobalt	Co	27.5	No Information	No Information	2008 FEIS 3-37		
27	Idaho	Smoky Canyon	P	No Information	No Information	No Information		28	Western Regional Climate Center (Blackfoot Dam)
28	Idaho	Thompson Creek	Mo	No Information	No Information	No Information		41	Western Regional Climate Center (Mackay 4 NW)
29	Minnesota	Essar	Fe	No Information	No Information	No Information		36	MN DNR (University of Minnesota St. Paul Campus)
30	Minnesota	Hibbing Taconite	Fe	No Information	No Information	No Information		36	MN DNR (University of Minnesota St. Paul Campus)
31	Minnesota	Minntac	Fe	No Information	No Information	No Information		36	MN DNR (University of Minnesota St. Paul Campus)
32	Minnesota	Northshore	Fe	No Information	26.7	No Information	Long-Range Hydrology Study - Northshore Mining Company - November 2008, p. 7		
33	Minnesota	SCRAM	Fe	No Information	20	No Information	2012 MPCA 10-11		
34	Montana	Continental	Cu	No Information	No Information	30	2006 ROD 1-4		
35	Montana	East Boulder	PGM	No Information	No Information	40	1992 FEIS 4-11		
36	Montana	Golden Sunlight	Au, Ag	No Information	No Information	30	2013 FEIS 3-31		
37	Nevada	Bald Mountain (North)	Au, Ag	No Information	No Information	35	2015 DEIS 3.3-3		
38	Nevada	Emigrant	Au	No Information	46	No Information	2010 FEIS 3-25		
39	Nevada	Goldstrike	Au	No Information	No Information	No Information		51	Western Regional Climate Center (Beowawe U of N Ranch)
40	Nevada	Hollister	Au	No Information	No Information	No Information		51	Western Regional Climate Center (Beowawe U of N Ranch)

SITE ID	STATE	MINE NAME	COMMODITY	SITE-SPECIFIC PAN EVAPORATION (IN)	SITE-SPECIFIC LAKE EVAPORATION (IN)	SITE-SPECIFIC EVAPORATION (UNSPECIFIED TYPE) (IN)	SITE-SPECIFIC EVAPORATION SOURCE	REGIONAL EVAPORATION (IN)	REGIONAL EVAPORATION SOURCE
41	Nevada	Hycroft	Au	59.38	No Information	No Information	2012 FEIS 3-61		
42	Nevada	Jerritt Canyon	Au	No Information	No Information	No Information		51	Western Regional Climate Center (Ruby Lake)
43	Nevada	Lone Tree	Au	55	No Information	No Information	1996 FEIS App. 254		
44	Nevada	Marigold	Au	No Information	No Information	No Information		51	
45	Nevada	Phoenix Historic	Au, Ag	No Information	43	No Information	2002 FEIS 3.2-1		Western Regional Climate Center (Beowawe U of N Ranch)
46	Nevada	Phoenix Copper	Cu	62.5	No Information	No Information	2011 DEIS 3.2-1		
47	Nevada	Robinson	Cu	No Information	No Information	No Information		51	Western Regional Climate Center (Ruby Lake)
48	Nevada	Rochester	Ag	No Information	No Information	37.5	2015 FEIS, 3-40		
49	Nevada	Round Mountain	Au	66.4	No Information	No Information	2010 FEIS 3.7-7		
50	Nevada	Ruby Hill	Au	No Information	45	No Information	2005 FSEIS 3.4-35		
51	Nevada	SOAP	Au	No Information	No Information	40	1993 DEIS 3-19		
52	Nevada	Standard	Au	No Information	No Information	50 to 60	2009 EA 3-7		
53	Nevada	Trenton Canyon	Au	No Information	No Information	No Information		51	Western Regional Climate Center (Beowawe U of N Ranch)
54	New Mexico	Chino	Cu	No Information	No Information	No Information		100	Western Regional Climate Center (Florida)
55	New Mexico	Mt Taylor	U	No Information	No Information	No Information		63	Western Regional Climate Center (Laguna)
56	New Mexico	St Anthony	U	No Information	No Information	No Information		63	Western Regional Climate Center (Laguna)
57	New Mexico	Tyrone	Cu	No Information	No Information	No Information		101	Western Regional Climate Center (Animas)
58	South Carolina	Haile	Au	No Information	No Information	No Information		64	SC State Climatology Office (Sandhill Research Station - Elgin)
59	Utah	Lisbon Valley	Cu	50	No Information	No Information	1996 DEIS 3-81		
60	Nebraska	Crow Butte	U (ISL)	No Information	No Information	No Information		17	Nebraska Water Center (Dawes County Estimate)

SITE ID	STATE	MINE NAME	COMMODITY	SITE-SPECIFIC PAN EVAPORATION (IN)	SITE-SPECIFIC LAKE EVAPORATION (IN)	SITE-SPECIFIC EVAPORATION (UNSPECIFIED TYPE) (IN)	SITE-SPECIFIC EVAPORATION SOURCE	REGIONAL EVAPORATION (IN)	REGIONAL EVAPORATION SOURCE
61	Wyoming	Nichols Ranch	U (ISL)	No Information	No Information	No Information		51	Western Regional Climate Center (Gillette 9 ESE)
62	Wyoming	Smith/Reynolds Ranch	U (ISL)	No Information	No Information	No Information		74	Western Regional Climate Center (Douglas)
63	Wyoming	Highland	U (ISL)	No Information	No Information	No Information		74	Western Regional Climate Center (Douglas)
64	Colorado	Clear Creek	Au, Ag	No Information	No Information	No Information		36	Western Regional Climate Center (Grand Lake 6 SSW)
65	Colorado	Summitville	Au, Ag	No Information	No Information	No Information		35	Western Regional Climate Center (Platoro)
66	Montana	Zortman and Landusky	Au, Ag	No Information	No Information	No Information		38	Western Regional Climate Center (Malta 7 E)

SITE ID	STATE	MINE NAME	COMMODITY	TOTAL PRECIPITATION (MIN) (IN)	TOTAL PRECIPITATIO N (MAX) (IN)	TOTAL PRECIPITATION (AVERAGE) (IN)	PRECIPITATION SOURCE	NET PRECIPITATION (CALCULATED)
1	Alaska	Fort Knox	Au	No Information	No Information	12	2001 RCP 5	-6.0
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	No Information	No Information	60.4	2013 FEIS 3-39	45.4
3	Alaska	Kensington	Au	No Information	No Information	58.3	2004 FSEIS A-17	41.2
4	Alaska	Niblack	Cu-Au-Ag-Zn	No Information	No Information	174	2007 POO 23	159.0
5	Alaska	Nixon Fork	Cu	No Information	No Information	20	2005 EA 50	7.0
6	Alaska	Pogo	Au	No Information	No Information	19	2003 FEIS 3-12	1.0
7	Alaska	Red Dog	Zn-Pb	No Information	No Information	18.5	2009 FSEIS 3-3	9.5
8	Alaska	Rock Creek	Au	No Information	No Information	19	2015 RCP 9	3.0
9	Alaska	True North	Au	13	22	18	2012 RCP 7	0.0
10	Arizona	Arizona 1	U	No Information	No Information	10.1	1988 EA 15	-33.9
11	Arizona	Bagdad	Cu	No Information	No Information	13.7	1997 RCP 4	-59.3
12	Arizona	Johnson Camp	Cu	10	25	15	2011 RCP 3	-83.0
13	Arizona	Mission	Cu	No Information	No Information	13.30708661	Waste Rock Borrow Characterization 2011 Tailings and Mine Waste, 2	-97.7
14	Arizona	Pinto Valley	Cu	10.2	41.2	23.8	Pinto Creek 2007 WQS for Dissolved Copper, 17	-72.2
15	Arizona	Rosemont	Cu	12.61	22.97	17.79	2013 FEIS 236	-77.6
16	Arizona	Safford	Cu	12	15	13.5	2003 FEIS 3-23	-84.5
17	Arizona	Ray	Cu	13	14	13.5	2016 DEIS 3-3	-82.3
18	Arizona	Silver Bell	Cu	No Information	No Information	12.51968504	Arizona Game and Fish Department - Habitat Use and Movements of Desert Bighorn Sheep Near Silver Bell Mine 1996 p. 4	-98.5
19	California	Briggs	Au	No Information	No Information	3.8	2012 EA E-3	-145.2
20	California	Mesquite	Au	No Information	No Information	3	2000 DEIR/EIS 3.2-9	-103.7
21	California	Mountain Pass	Rare Earth	3	18	6.9	1996 EIR 3-37 and 3-51	-109.1
22	Colorado	Climax	Mo	No Information	No Information	24.71	Western Regional Climate Center Monthly Climate Summary	5.7
23	Colorado	Cresson	Au	No Information	No Information	18.9	2012 MLE2 4-25	-40.2
24	Colorado	Revenue	Au, Ag	No Information	No Information	40	2012 PA K-1	5.0
25	Idaho	Blackfoot Bridge	P	No Information	No Information	17.2	2011 FEIS 2-20	-34.4
26	Idaho	Idaho Cobalt	Co	No Information	No Information	15.82	2008 FEIS 3-36	-11.7
27	Idaho	Smoky Canyon	P	30	35	32.5	2015 FEIS 3-2	4.5
28	Idaho	Thompson Creek	Mo	15.5	26	20.7	2015 FEIS 3-175	-20.3
29	Minnesota	Essar	Fe	No Information	No Information	28	2010 FEIS 5-32	-8.0
30	Minnesota	Hibbing Taconite	Fe	No Information	No Information	30	2011 USGS Average Annual Precipitation (Regional)	-6.0
31	Minnesota	Minntac	Fe	No Information	No Information	26	2004 DEIS 2-36	-10.0
32	Minnesota	Northshore	Fe	No Information	No Information	28.4	Long-Range Hydrology Study - Northshore Mining Company - November 2008, p. 7	-7.2
33	Minnesota	SCRAM	Fe	No Information	No Information	27.4	2012 MPCA 10-11	0.7
34	Montana	Continental	Cu	6	20	13	2006 ROD 1-4	-17.0
35	Montana	East Boulder	PGM	20	23	21.5	1992 FEIS 3-63	-18.5
36	Montana	Golden Sunlight	Au, Ag	12	14	13	2013 FEIS, 3-31	-17.0
37	Nevada	Bald Mountain (North)	Au, Ag	11.5	20.5	16	2015 DEIS, 3.3.1	-19.0

SITE ID	STATE	MINE NAME	COMMODITY	TOTAL PRECIPITATION (MIN) (IN)	TOTAL PRECIPITATIO N (MAX) (IN)	TOTAL PRECIPITATION (AVERAGE) (IN)	PRECIPITATION SOURCE	NET PRECIPITATION (CALCULATED)
38	Nevada	Emigrant	Au	No Information	No Information	9.7	2010 FEIS 3-25	-51.6
39	Nevada	Goldstrike	Au	No Information	No Information	15	2011 USGS Average Annual Precipitation (Regional)	-36.0
40	Nevada	Hollister	Au	12.09	12.43	No Information	2012 DEIS 3.6-1	-38.7
41	Nevada	Hycroft	Au	No Information	No Information	10.5	2012 FEIS 3-60	-48.9
42	Nevada	Jerritt Canyon	Au	24	48	24	2015 FS 9	-27.0
43	Nevada	Lone Tree	Au	No Information	No Information	8.85	2015 EA 46	-46.2
44	Nevada	Marigold	Au	5.16	7.96	6.49	2013 EA 53	-44.5
45	Nevada	Phoenix Historic	Au, Ag	7.46	9.53	No Information	2002 FEIS 3.2-4	-48.8
46	Nevada	Phoenix Copper	Cu	No Information	No Information	8	2011 DEIS 3.2-1	-54.5
47	Nevada	Robinson	Cu	6	20	13	1994 FEIS 3-12	-38.0
48	Nevada	Rochester	Ag	No Information	No Information	8.61	2015 FEIS 3-2	-28.9
49	Nevada	Round Mountain	Au	5	7	6	2010 FEIS 2-46	-60.4
50	Nevada	Ruby Hill	Au	No Information	No Information	11.7	2005 FSEIS 3.4-35	-48.3
51	Nevada	SOAP	Au	No Information	No Information	9.73	1993 DEIS 3-14	-30.3
52	Nevada	Standard	Au	No Information	No Information	14	2009 EA 3-2	-41.0
53	Nevada	Trenton Canyon	Au	9.45	9.62	9.535	1998 FEIS 3-34	-41.5
54	New Mexico	Chino	Cu	No Information	No Information	16	2007 CCP 31	-84.0
55	New Mexico	Mt Taylor	U	No Information	No Information	15	2011 USGS Average Annual Precipitation (Regional)	-48.0
56	New Mexico	St Anthony	U	No Information	No Information	10	2011 USGS Average Annual Precipitation (Regional)	-53.0
57	New Mexico	Tyrone	Cu	No Information	No Information	16	2013 CCP 18	-85.0
58	South Carolina	Haile	Au	No Information	No Information	46	2014 FEIS 3.1-3	-18.0
59	Utah	Lisbon Valley	Cu	No Information	No Information	14.41	1996 DEIS 3-81	-35.6
60	Nebraska	Crow Butte	U (ISL)	No Information	No Information	15.6	1998 EA 8	-1.4
61	Wyoming	Nichols Ranch	U (ISL)	No Information	No Information	14	2013 EA 3-3	-37.0
62	Wyoming	Smith/Reynolds Ranch	U (ISL)	No Information	No Information	12	2009 EA 34	-62.0
63	Wyoming	Highland	U (ISL)	No Information	No Information	12	2009 EA 34	-62.0
64	Colorado	Clear Creek	Au, Ag	No Information	No Information	20	2011 USGS Average Annual Precipitation (Regional)	-16.0
65	Colorado	Summitville	Au, Ag	No Information	No Information	41	2001 ROD 12	6.0
66	Montana	Zortman and Landusky	Au, Ag	No Information	No Information	18	2006 EECA 2-1	-20.0

Table H.4 – Chemical Process Data

SITE ID	STATE	MINE NAME	COMMODITY	FLOTATION CHEMICALS	CYANIDE LEACHING	ACID LEACHING	ALKALINE LEACHING	SOURCE*
1	Alaska	Fort Knox	Au	0	1	0	0	2001 RCP 9
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	1	0	0	0	2013 FEIS 1-1
3	Alaska	Kensington	Au	1	0	0	0	2004 FSEIS 2-21-22
4	Alaska	Niblack	Cu-Au-Ag-Zn	0	0	0	0	2007 RCP 1-2
5	Alaska	Nixon Fork	Cu	1	1	0	0	2005 RCP and POO v. 1 10-11
6	Alaska	Pogo	Au	1	1	0	0	2003 FEIS 1-1
7	Alaska	Red Dog	Zn-Pb	1	0	0	0	2009 FSEIS 2-18-21
8	Alaska	Rock Creek	Au	1	1	0	0	2015 RCP 16
9	Alaska	True North	Au	0	0	0	0	N/A
10	Arizona	Arizona 1	U	0	0	0	0	N/A
11	Arizona	Bagdad	Cu	1	0	1	0	1997 RCP 3 and Figure 2-3
12	Arizona	Johnson Camp	Cu	0	0	1	0	2011 RCP 5
13	Arizona	Mission	Cu	1	0	0	0	2015 NPDES Fact Sheet 3
14	Arizona	Pinto Valley	Cu	1	0	1	0	2012 RCP 1 and 10 and 2014 APP, 6
16	Arizona	Rosemont	Cu	1	0	1	0	2013 FEIS 33 and 35
17	Arizona	Safford	Cu	0	0	1	0	2003 FEIS 2-10
18	Arizona	Ray	Cu	1	0	1	0	2016 DEIS 1-2
19	Arizona	Silver Bell	Cu	1	0	1	0	1997 RCP 3-5 and Figure 2-3
20	California	Briggs	Au	0	1	0	0	2012 EA 20
21	California	Mesquite	Au	0	1	0	0	2000 DEIR/EIS 1-1
22	California	Mountain Pass	Rare Earth	1	0	1	0	1996 EIR 2-9
23	Colorado	Climax	Mo	1	0	0	0	2011 RCE 59 and 61
24	Colorado	Cresson	Au	1	1	0	0	2012 MLE2 1-1-5
25	Colorado	Revenue	Au, Ag	1	0	0	0	2012 PA D-5
26	Idaho	Blackfoot Bridge	P	0	0	0	0	2011 FEIS 2-3
27	Idaho	Idaho Cobalt	Co	1	0	0	0	2008 FEIS 2-2
28	Idaho	Smoky Canyon	P	1	0	0	0	2015 FEIS 2-1
29	Idaho	Thompson Creek	Mo	1	0	0	0	2015 FEIS 2-13
30	Minnesota	Essar	Fe	0	0	0	0	2011 DEIS 3.0-9-11
31	Minnesota	Hibbing Taconite	Fe	0	0	0	0	N/A
32	Minnesota	Minntac	Fe	1	0	0	0	2004 DEIS 2-5
33	Minnesota	Northshore	Fe	0	0	0	0	2014 EAW 3
34	Minnesota	SCRAM	Fe	0	0	0	0	2011 APM 1
35	Montana	Continental	Cu	1	0	1	0	2011 FYRR 3-1 to 3-3
36	Montana	East Boulder	PGM	1	0	0	0	2012 FEIS 1
37	Montana	Golden Sunlight	Au, Ag	0	1	0	0	2013 FEIS 2-4
38	Nevada	Bald Mountain (North)	Au, Ag	0	1	0	0	2015 DEIS 2-86 and 2-93
39	Nevada	Emigrant	Au	1	1	0	0	2010 FEIS 2-26
40	Nevada	Goldstrike	Au	0	1	0	0	1991 FEIS 2-1
41	Nevada	Hollister	Au	0	0	0	0	2012 POO 13
42	Nevada	Hycroft	Au	0	1	0	0	2012 FEIS 2-10
43	Nevada	Jerritt Canyon	Au	0	1	0	0	2015 FS 3
44	Nevada	Lone Tree	Au	0	1	0	0	1996 FEIS 3-34 and 2015 EA 8
45	Nevada	Marigold	Au	0	1	0	0	2003 FSEIS 2-26
46	Nevada	Phoenix Historic	Au, Ag	1	1	0	0	2002 FEIS 2-26-31
47	Nevada	Phoenix Copper	Cu	0	1	1	0	2012 FEIS ES-8, 2011 DEIS 2-11
48	Nevada	Robinson	Cu	1	1	1	0	1994 FEIS 2-12 and 2-18

SITE ID	STATE	MINE NAME	COMMODITY	FLOTATION CHEMICALS	CYANIDE LEACHING	ACID LEACHING	ALKALINE LEACHING	SOURCE*
49	Nevada	Rochester	Ag	0	1	0	0	2015 FEIS 1-7-8
50	Nevada	Round Mountain	Au	1	1	0	0	2010 FEIS 2-16-17
51	Nevada	Ruby Hill	Au	0	1	0	0	2005 FSEIS 2-21
52	Nevada	SOAP	Au	0	1	0	0	1993 DEIS 2-22
53	Nevada	Standard	Au	0	1	0	0	2009 EA 1-6 and 2-1
54	Nevada	Trenton Canyon	Au	0	1	0	0	1998 FEIS S-11
55	New Mexico	Chino	Cu	1	0	1	0	2007 CCP 8-9
56	New Mexico	Mt Taylor	U	0	0	0	0	N/A
57	New Mexico	St Anthony	U	0	0	0	0	N/A
58	New Mexico	Tyrone	Cu	1	0	1	0	2013 CCP 9
59	South Carolina	Haile	Au	1	1	0	0	2014 FEIS 1-18
60	Utah	Lisbon Valley	Cu	0	0	1	0	1996 DEIS 2-22
61	Nebraska	Crow Butte	U (ISL)	0	0	0	1	1998 EA 17
62	Wyoming	Nichols Ranch	U (ISL)	0	0	0	1	2013 EA, 2-10
63	Wyoming	Smith/Reynolds Ranch	U (ISL)	0	0	0	1	2009 EA, 17
64	Wyoming	Highland	U (ISL)	0	0	0	1	2009 EA, 17
65	Colorado	Clear Creek	Au, Ag	0	0	0	0	N/A
66	Colorado	Summitville	Au, Ag	1	1	0	0	2001 ROD pp. 1-3
67	Montana	Zortman and Landusky	Au, Ag	0	1	0	0	2006 EECA 2-3

*N/A in the source column represents sites where no documented chemical processes were found.

Table H.5 – Water Treatment Data

SITE ID	STATE	MINE NAME	COMMODITY	TREATMENT TYPE	ESTIMATED FLOW RATE (GPM)	SOURCE
2	Alaska	Greens Creek	Pb, Zn, Ag, Au	Lime Neutralization and FeCl	234	2014 Cost Estimate - Solution Management
6	Alaska	Pogo	Au	Lime Neutralization	180	2012 Appendix B Cost Estimate p.54/145
7	Alaska	Red Dog	Zn-Pb	Lime Neutralization	1,585	2009 Post Closure Cost Estimate p.5
8	Alaska	Rock Creek	Au	Chemical Precipitation and Microfiltration	600	2006 RCP p. 197
11	Arizona	Bagdad	Cu	Pumpback	350	2013 APP p.5
26	Idaho	Idaho Cobalt	Co	Groundwater Pumpback	89	2008 FEIS 2-35
35	Montana	East Boulder	PGM	Biological Treatment	500	2015 Bond Calc - Water Treatment
36	Montana	Golden Sunlight	Au, Ag	Lime Precipitation	392	1997 DEIS p.272
46	Nevada	Phoenix Copper	Cu	E-ponds	11.4	2012 FEIS p. 2-7
54	New Mexico	Chino	Cu	Lime Neutralization	1,300	2008 CCP Appendix D p.3,10
57	New Mexico	Tyrone	Cu	Lime Neutralization	1,146	2013 CCP Appendix D p.43,61
58	South Carolina	Haile	Au	Passive Treatment	15	2013 RCP p.51
61	Wyoming	Nichols Ranch	U (ISL)	Reverse Osmosis	50	2014 Cost Estimate p. 11
62	Wyoming	Smith/Reynolds Ranch	U (ISL)	Reverse Osmosis	250	2013 Cost Estimate, p.18,20
63	Wyoming	Highland	U (ISL)	Reverse Osmosis	250	2014 Cost Estimate p.45, 47
64	Colorado	Clear Creek	Au, Ag	Lime Neutralization	700	Argo Tunnel Remedial Action Summary p.9
65	Colorado	Summitville	Au, Ag	Lime Neutralization	1,600	2009 Budget Summary
66	Montana	Zortman and Landusky	Au, Ag	Lime Neutralization	502	2006 EECA p.1-2, 1-3

Appendix I:
Normality Test Results

This appendix presents the Anderson-Darling test results discussed in **Section 4** of this document. The Anderson-Darling test was used to determine whether the regression data follow a normal or lognormal distribution. Additionally, this appendix presents linear and lognormal frequency plots for each independent and dependent variable.

I.1 Anderson-Darling Test

The hypotheses used in the Anderson-Darling test for a normal distribution are as follows:

- H_0: Data are sampled from a population that is normally distributed.
- H_A: Data are sampled from a population that is not normally distributed.

Similarly, the test hypotheses for lognormal distribution:

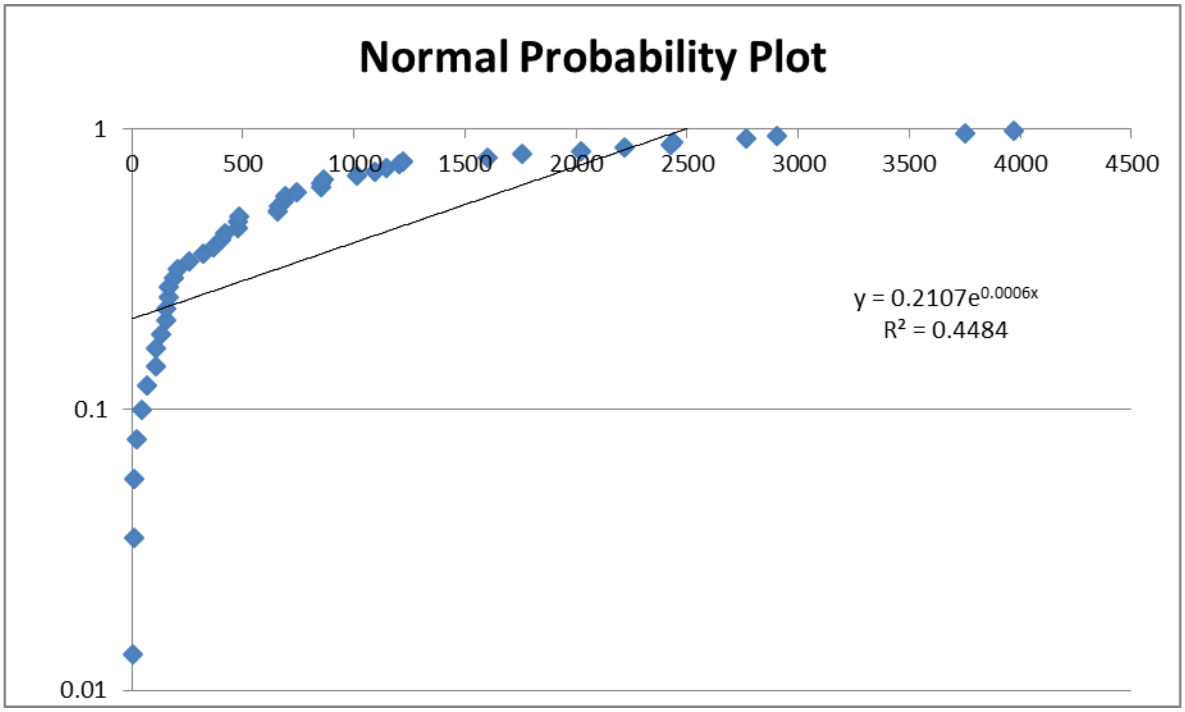
- H_0: Data are sampled from a population that is lognormally distributed.
- H_A: Data are sampled from a population that is not lognormally normally distributed.

EPA presents the p-values and conclusions of the Anderson-Darling tests for each independent and dependent variable in **Table I.1**. Furthermore, EPA presents the results graphically in **Figures I.1** through **I.21**. For distance to surface water and depth to groundwater, lognormal plots and result incorporate a linear transformation of +1 in order to be represented graphically as discussed in **Section 4.1**. Note that no result or corresponding figure is presented for the lognormal distribution for net precipitation due to the fact that EPA found that net precipitation was normally distributed. Thus, no testing of log-normality was necessary.

Table I.1 – Anderson-Darling Test Results

Variable	H_0: Normal Distribution	H_0: Lognormal Distribution	Normality Determination
DEPENDENT VARIABLES			
Solid/Hazardous Waste Disposal Capital Costs	$p < 0.000$, reject null	$p = 0.504$, fail to reject null	lognormal
Open Pit Capital Costs	$p < 0.000$, reject null	$p = 0.208$, fail to reject null	lognormal
Underground Mine Capital Costs	$p < 0.000$, reject null	$p = 0.338$, fail to reject null	lognormal
Waste Rock Capital Costs	$p < 0.000$, reject null	$p = 0.243$, fail to reject null	lognormal
Heap/Dump Leach Capital Costs	$p < 0.000$, reject null	$p = 0.585$, fail to reject null	lognormal
Tailings Facility Capital Costs	$p < 0.000$, reject null	$p = 0.088$, fail to reject null	lognormal
Process Pond/Reservoir Capital Costs	$p < 0.000$, reject null	$p = 0.812$, fail to reject null	lognormal
Drainage Capital Costs	$p < 0.000$, reject null	$p = 0.388$, fail to reject null	lognormal
Interim O&M Costs	$p < 0.000$, reject null	$p = 0.306$, fail to reject null	lognormal
Water Treatment Costs	$p = 0.003$, reject null	$p = 0.102$, fail to reject null	lognormal
Short-Term O&M/Monitoring Costs	$p < 0.000$, reject null	$p = 0.135$, fail to reject null	lognormal
Long-Term O&M/Monitoring Costs	$p < 0.000$, reject null	$p = 0.774$, fail to reject null	lognormal
INDEPENDENT VARIABLES			
Open Pit Acreage	$p < 0.000$, reject null	$p = 0.581$, fail to reject null	lognormal
Waste Rock Acreage	$p < 0.000$, reject null	$p = 0.017$, fail to reject null	lognormal
Heap/Dump Leach Acreage	$p < 0.000$, reject null	$p = 0.103$, fail to reject null	lognormal
Tailings Facility Acreage	$p < 0.000$, reject null	$p = 0.790$, fail to reject null	lognormal
Process Pond/Reservoir Acreage	$p < 0.000$, reject null	$p = 0.131$, fail to reject null	lognormal
On-site Water Flows	$p = 0.008$, reject null	$p = 0.209$, fail to reject null	lognormal
Distance to Surface Water	$p < 0.000$, reject null	$p < 0.000$, reject null	neither
Depth to Groundwater	$p < 0.000$, reject null	$p < 0.000$, reject null	neither
Net Precipitation	$p = 0.216$, fail to reject null	N/A	normal

Figure I.1 – Normality Probability Plots for Solid/Hazardous Waste Disposal Capital Costs



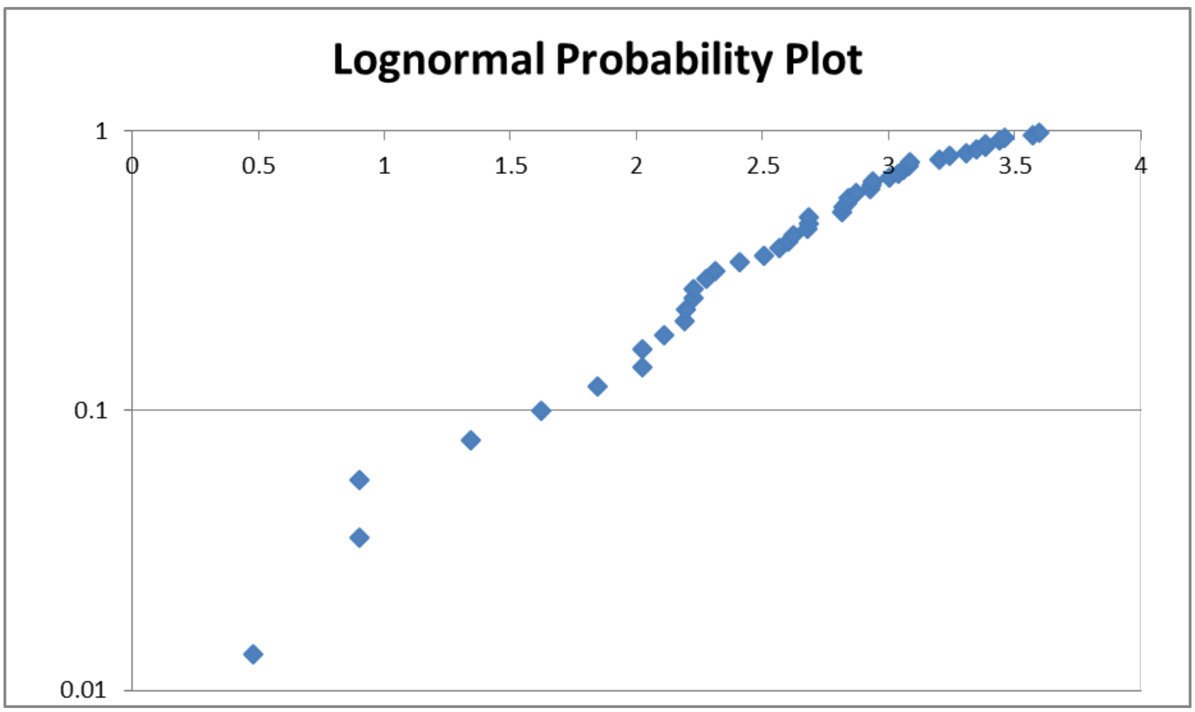
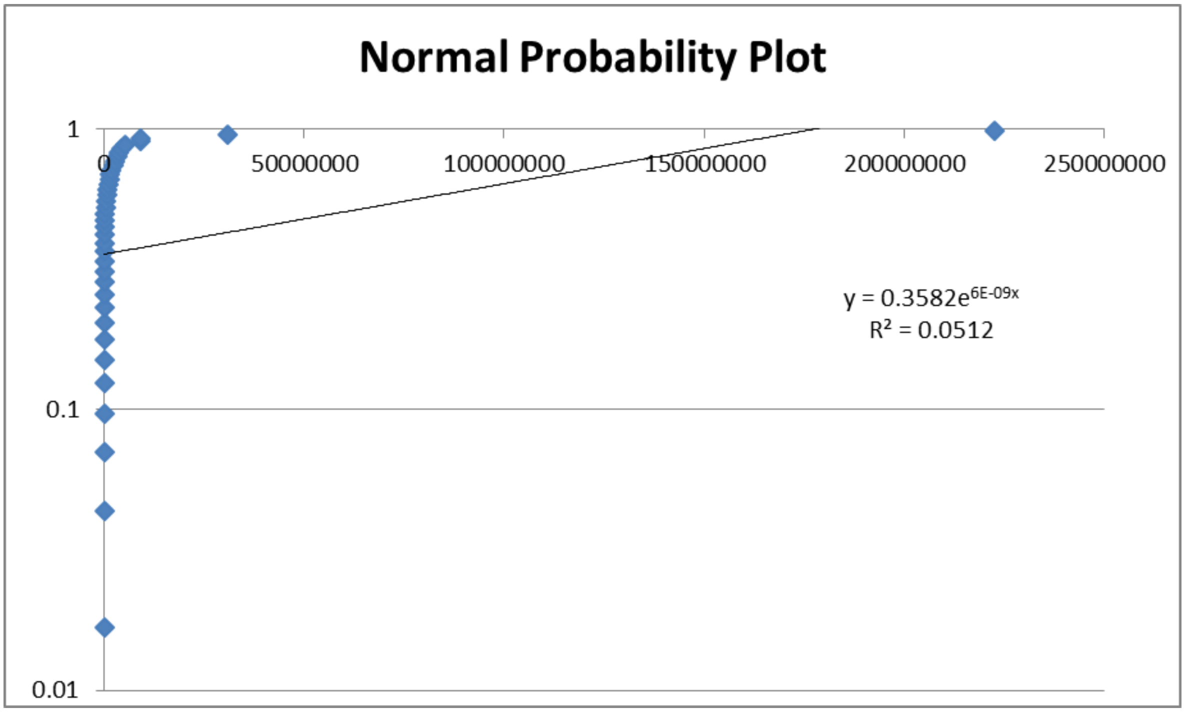


Figure I.2 – Normality Probability Plots for Open Pit Capital Costs



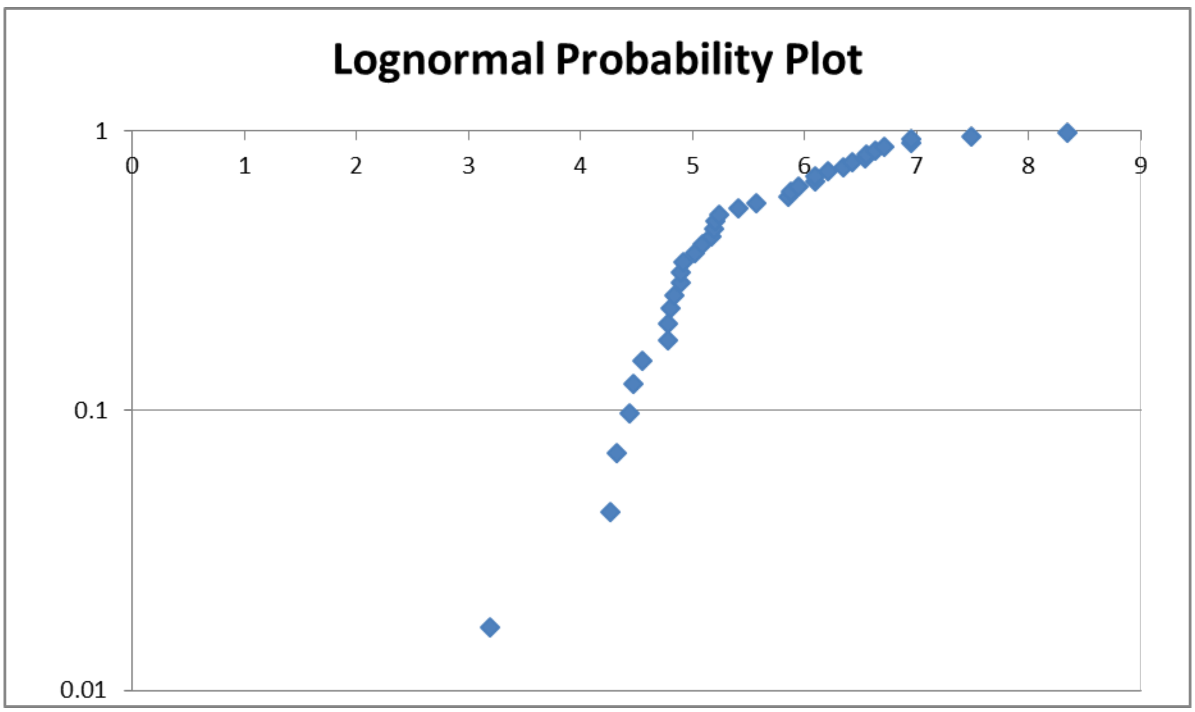
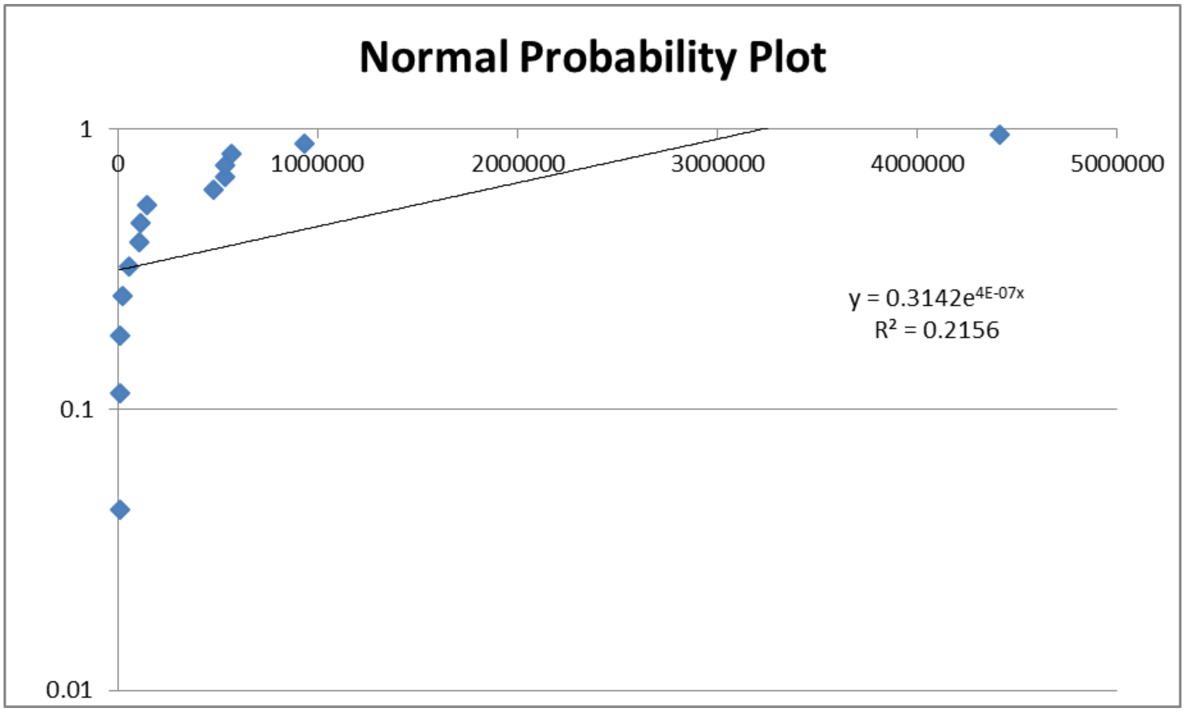


Figure I.3 – Normality Probability Plots for Underground Mine Capital Costs



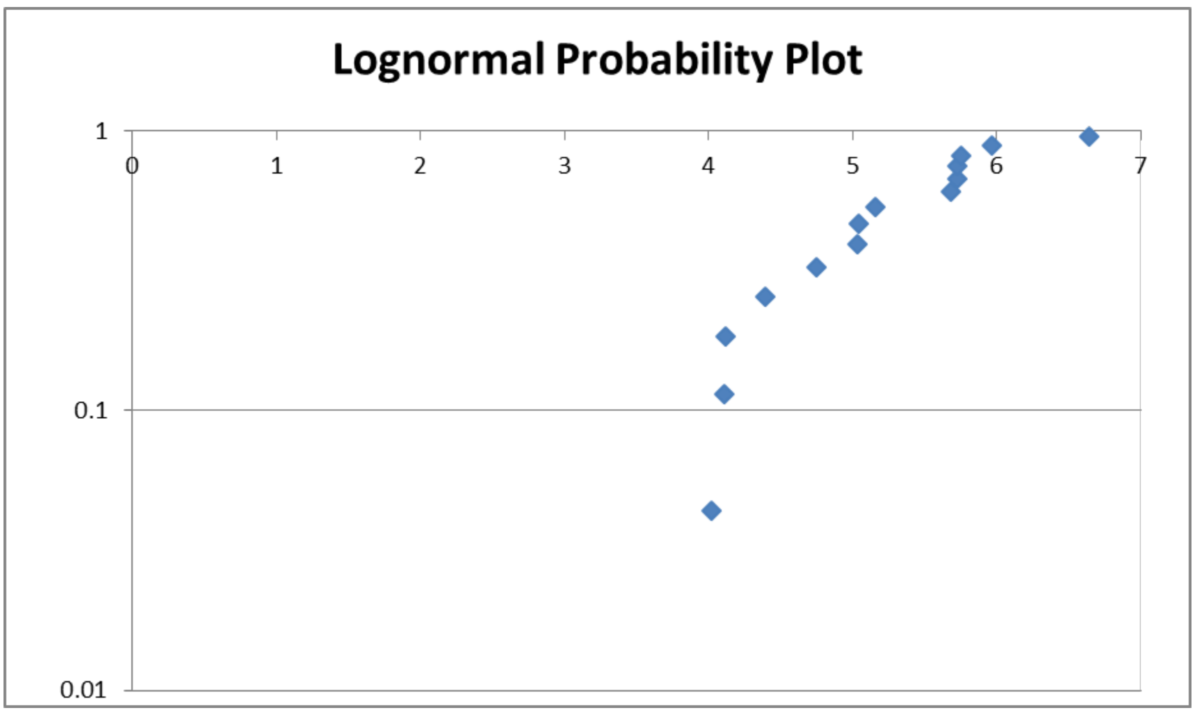
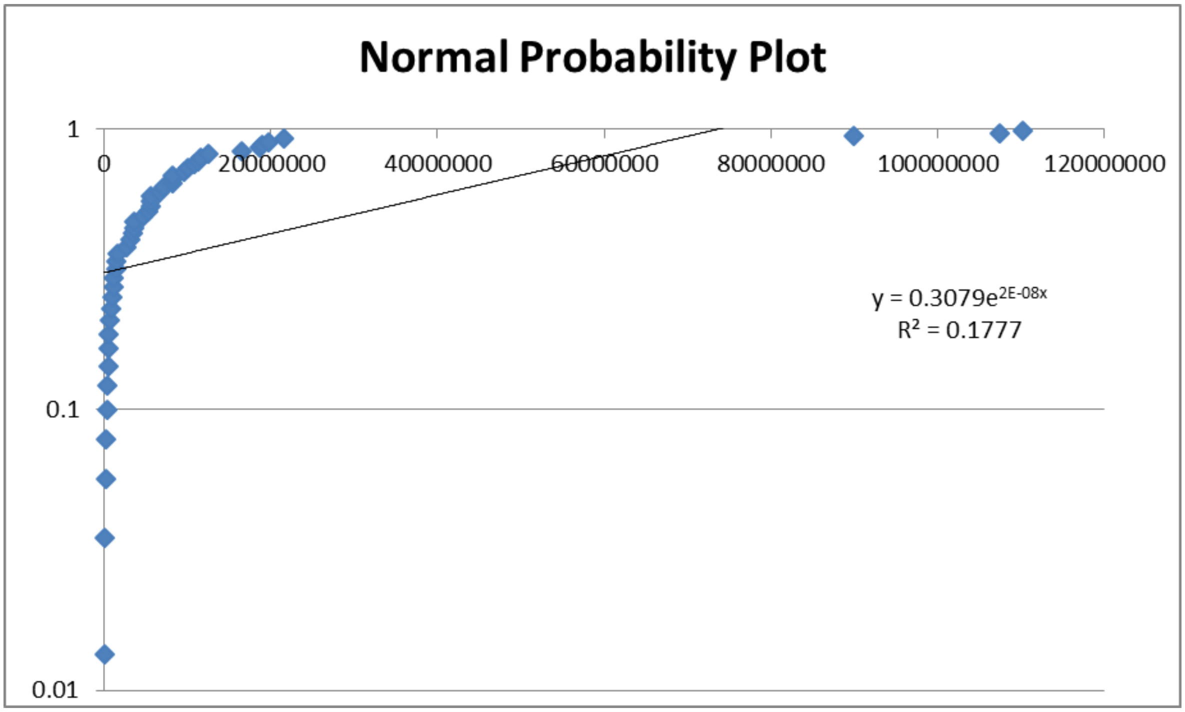


Figure I.4 – Normality Probability Plots for Waste Rock Capital Costs



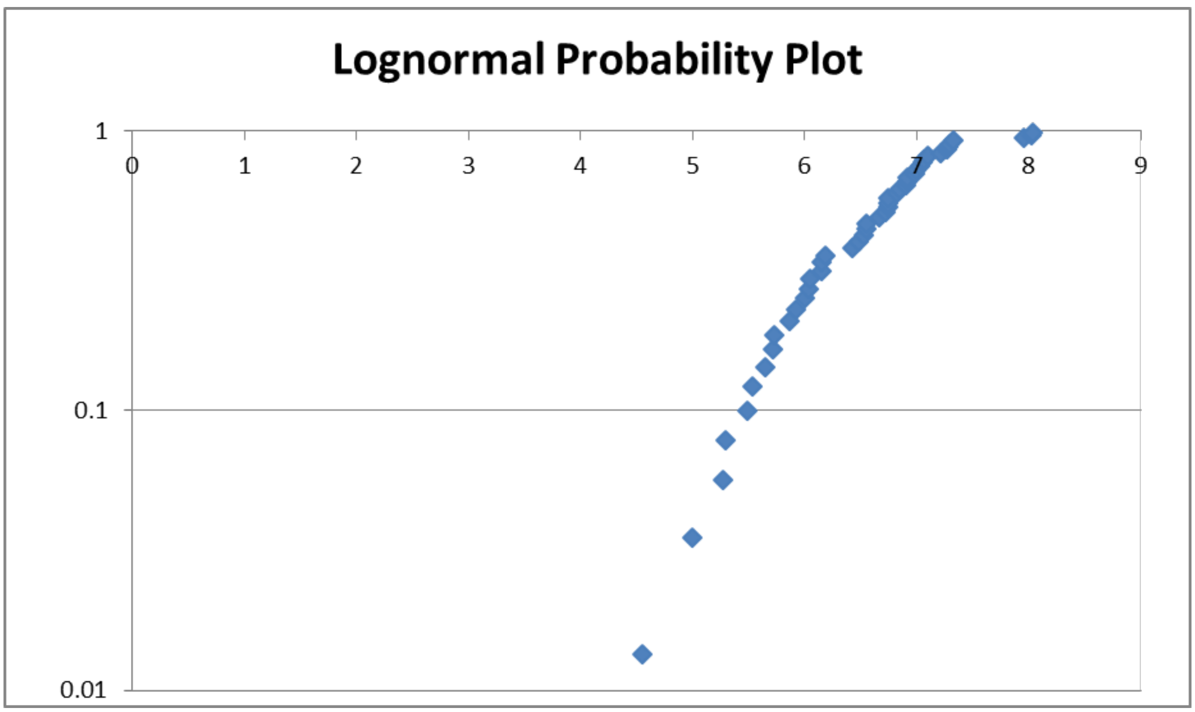
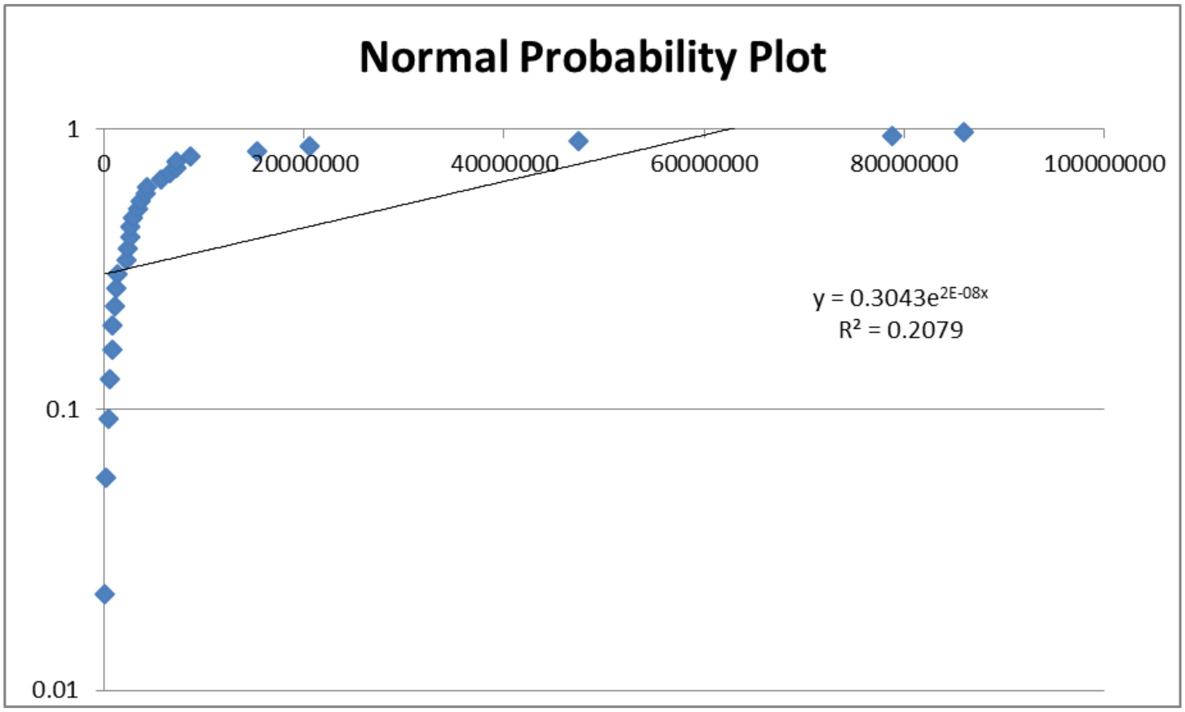


Figure I.5 – Normality Probability Plots For Heap/Dump Leach Capital Costs



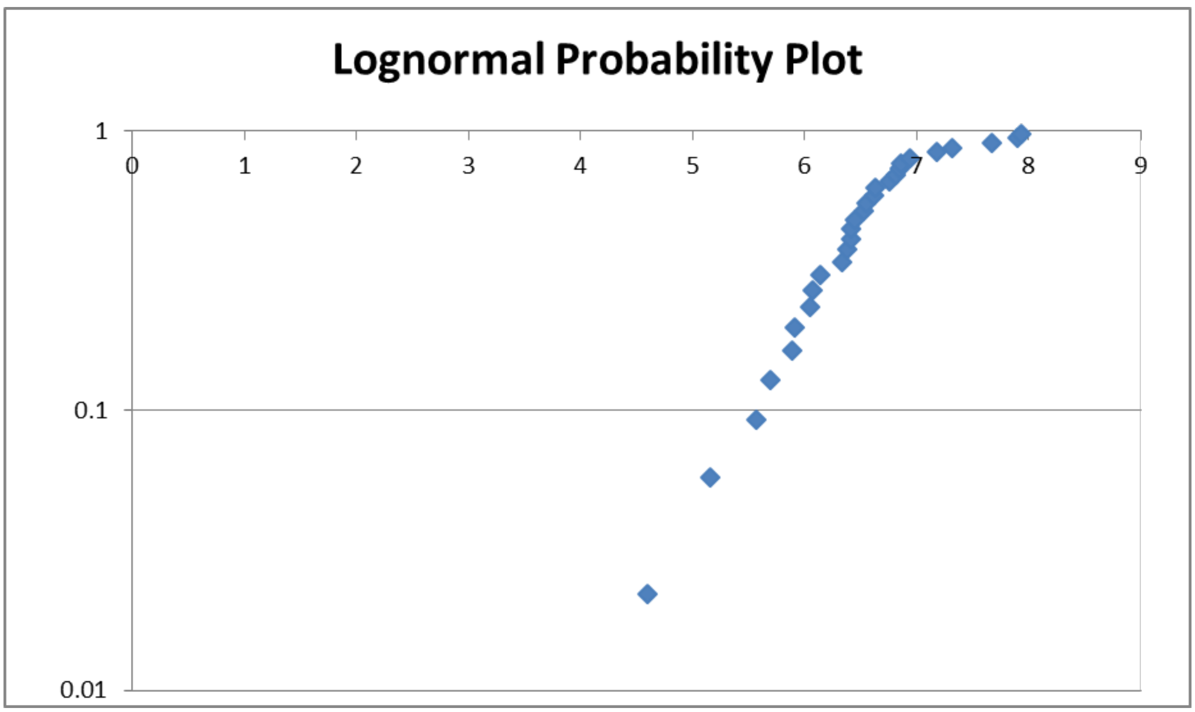
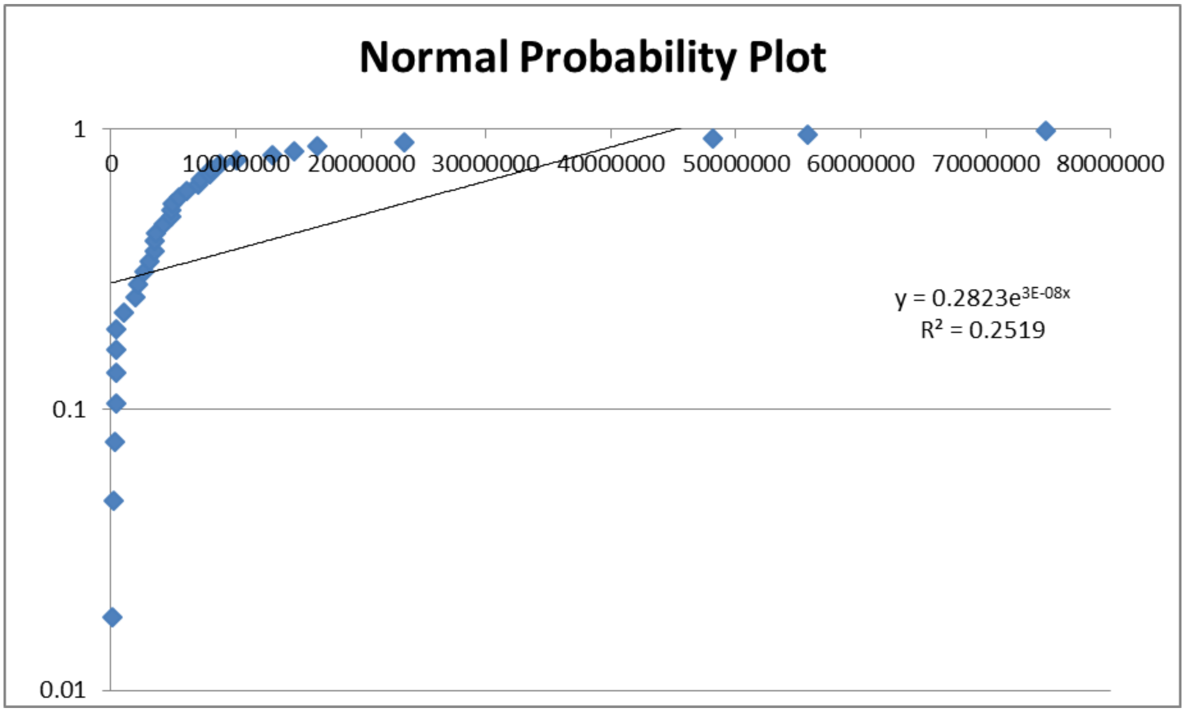


Figure I.6 – Normality Probability Plots for Tailings Facility Capital Costs



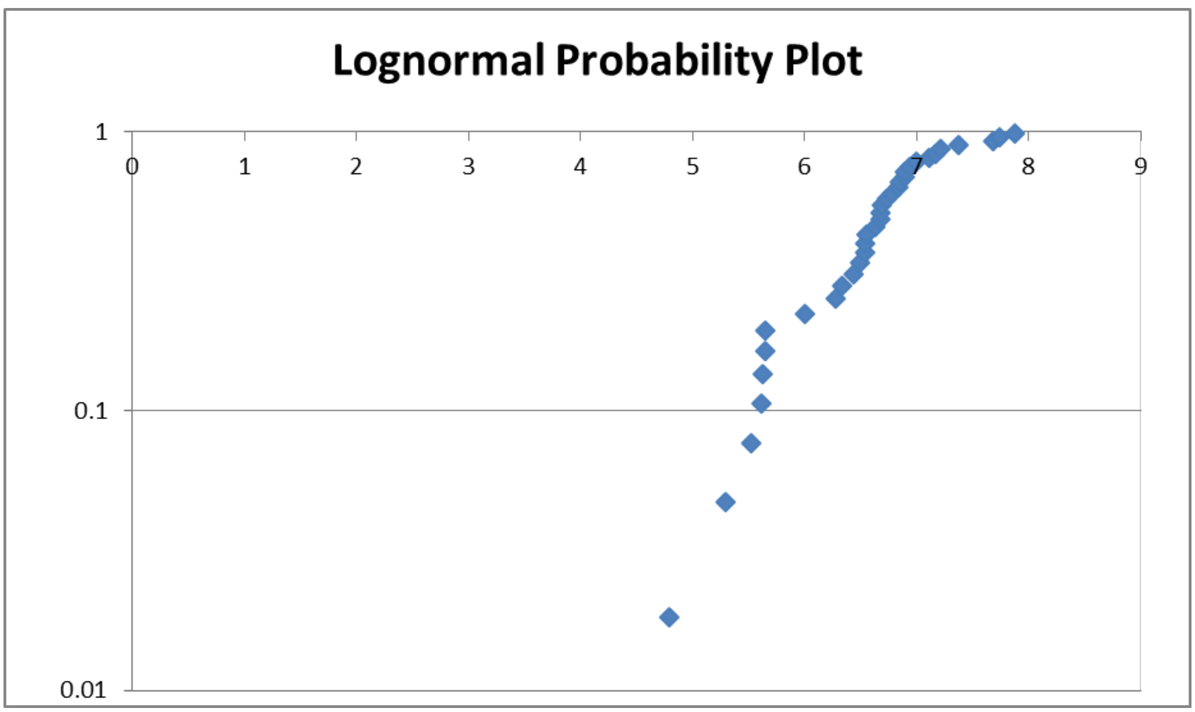
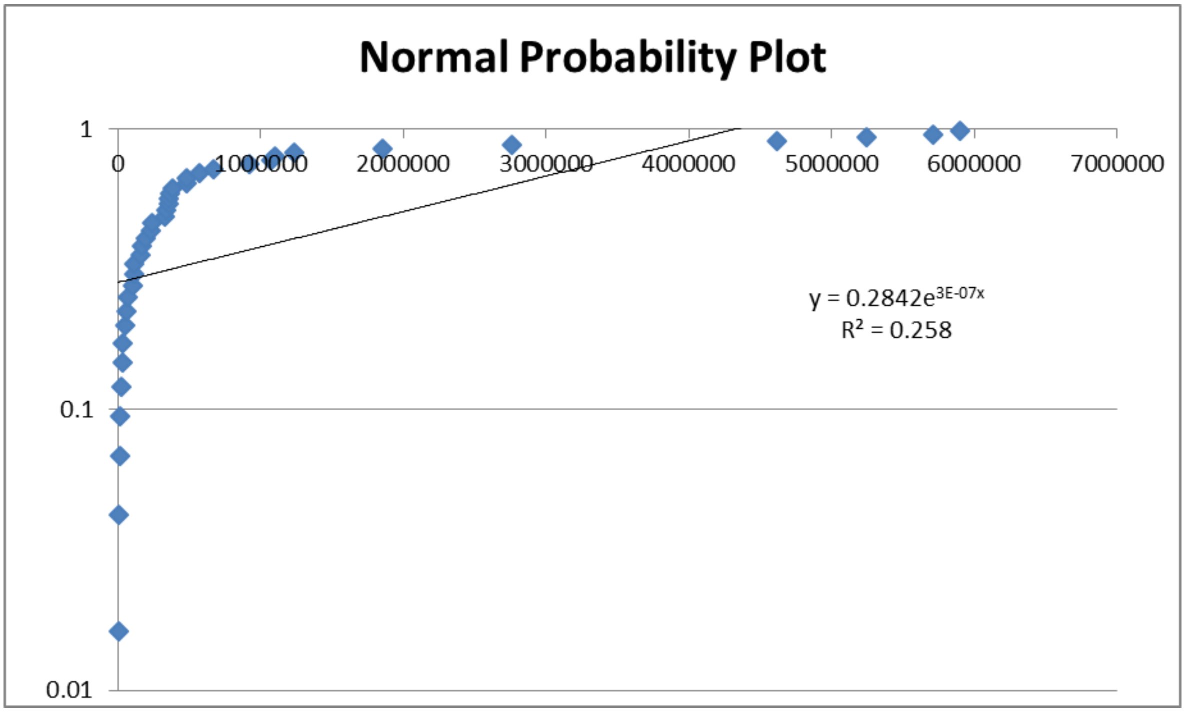


Figure I.7 – Normality Probability Plots for Process Pond/Reservoir Capital Costs



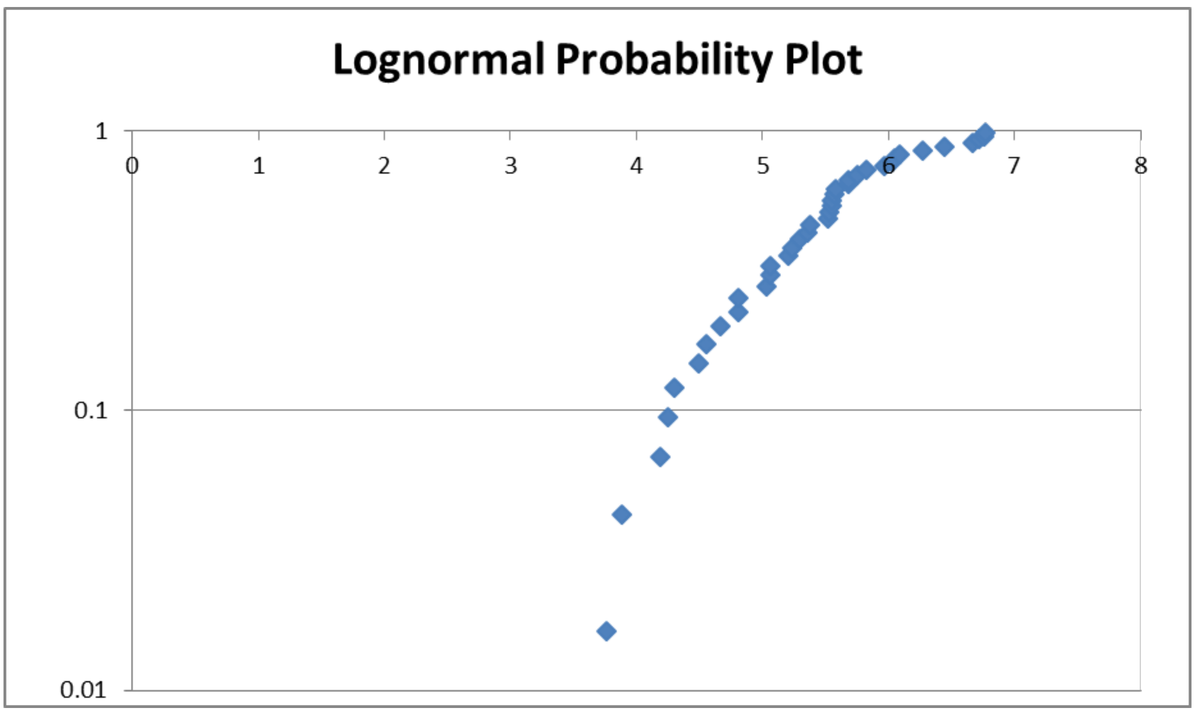
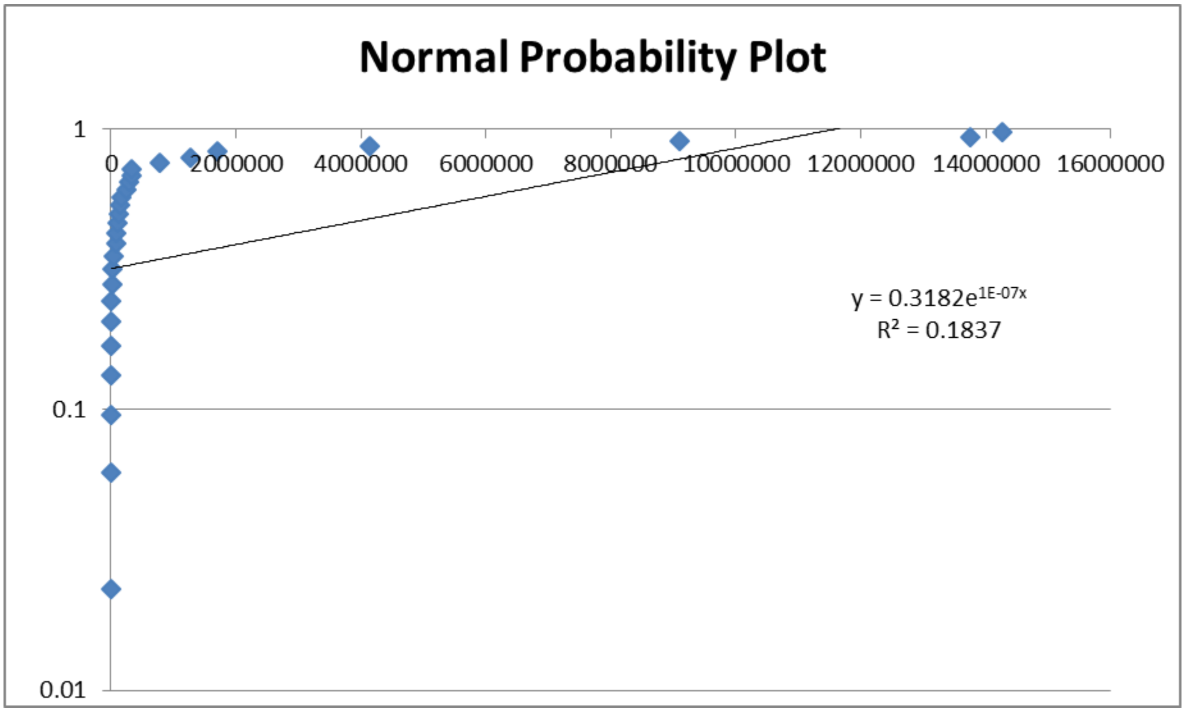


Figure I.8 – Normality Probability Plots for Drainage Capital Costs



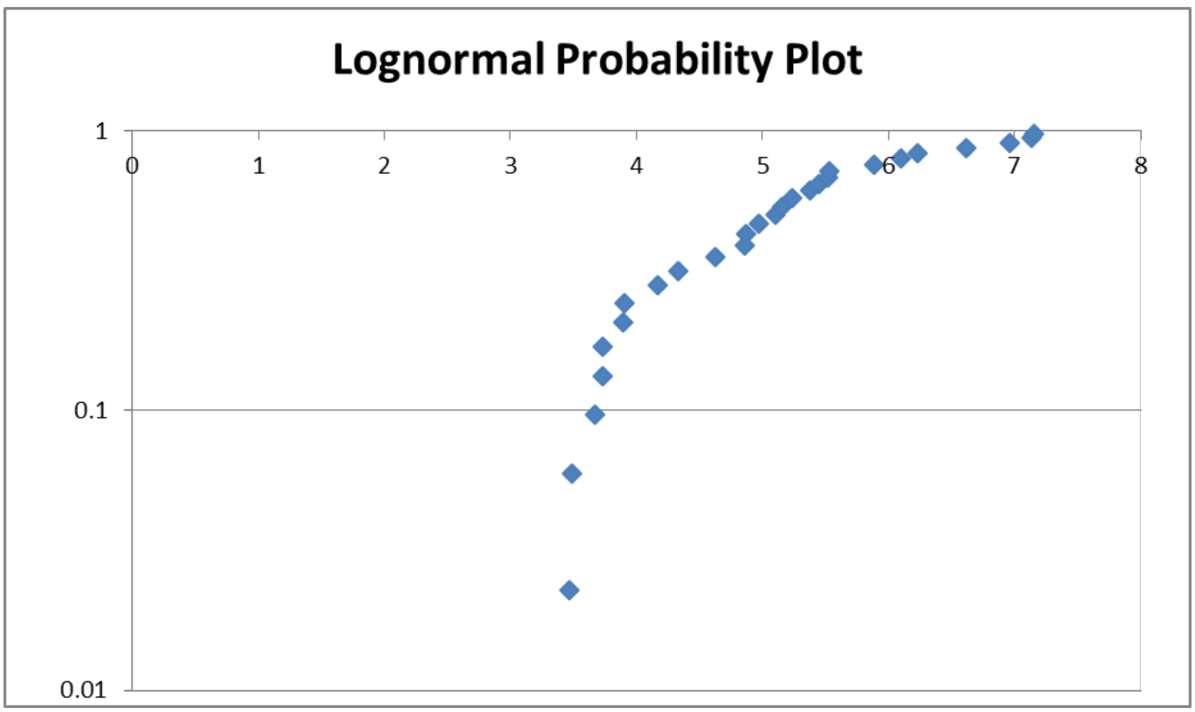
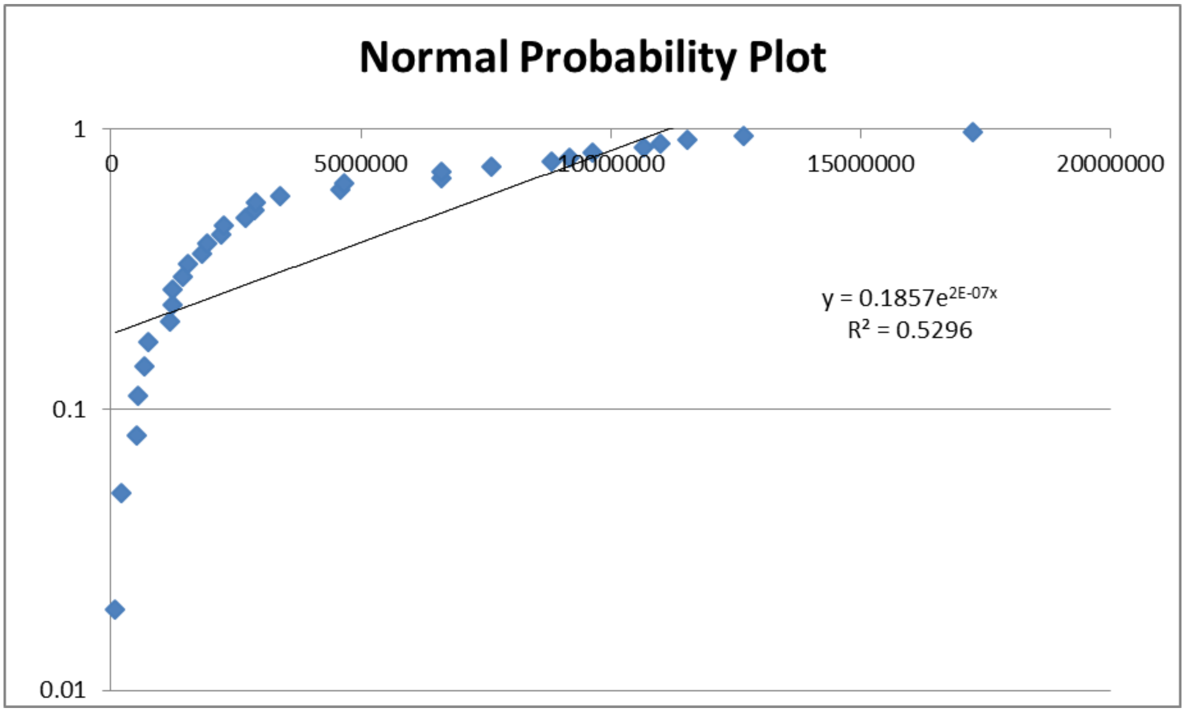


Figure I.9 – Normality Probability Plots for Interim O&M Costs



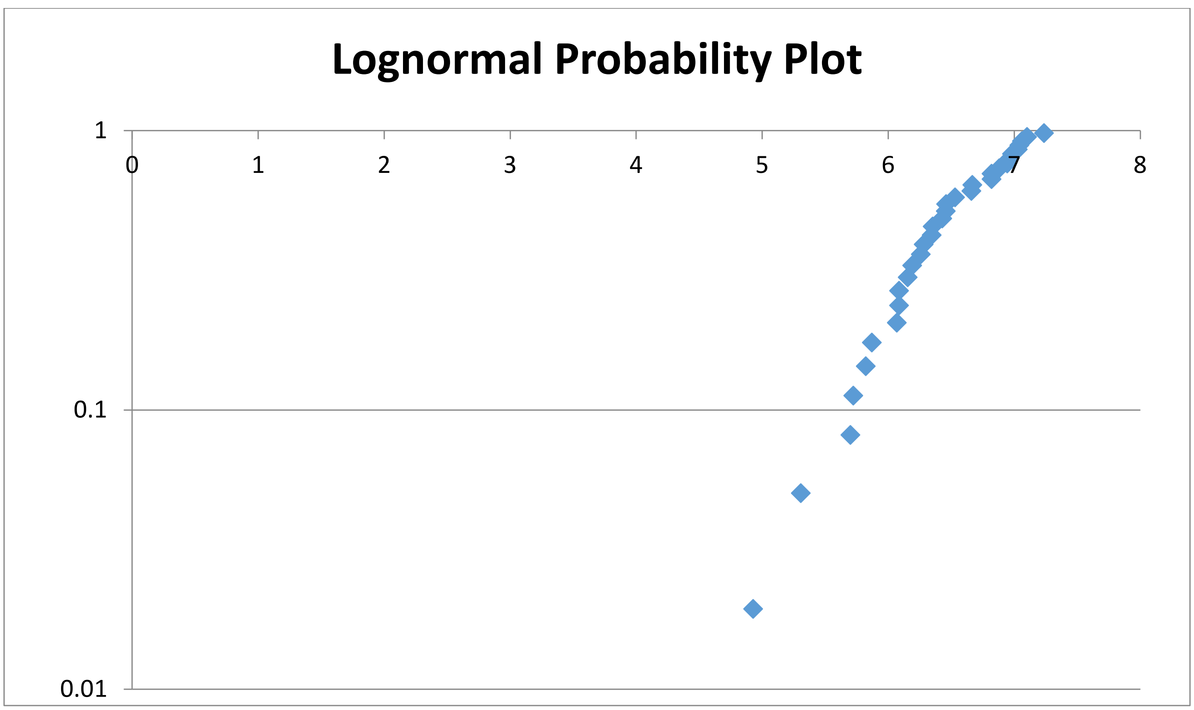
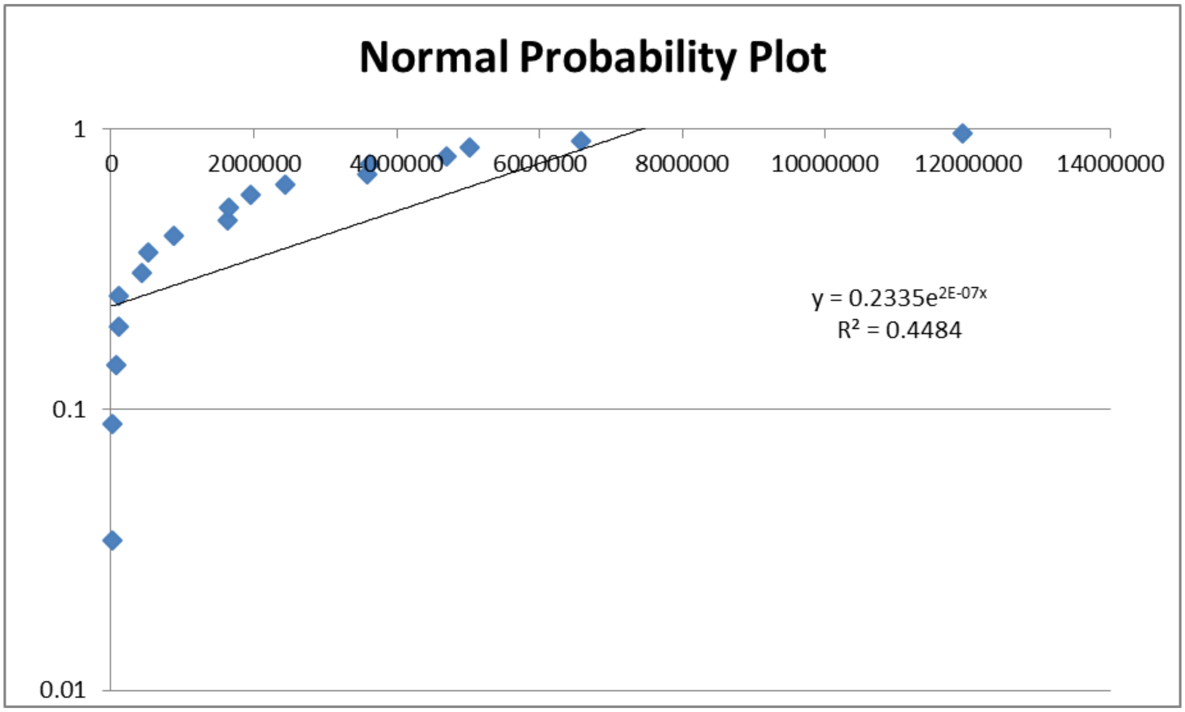


Figure I.10 – Normality Probability Plots for Water Treatment Costs



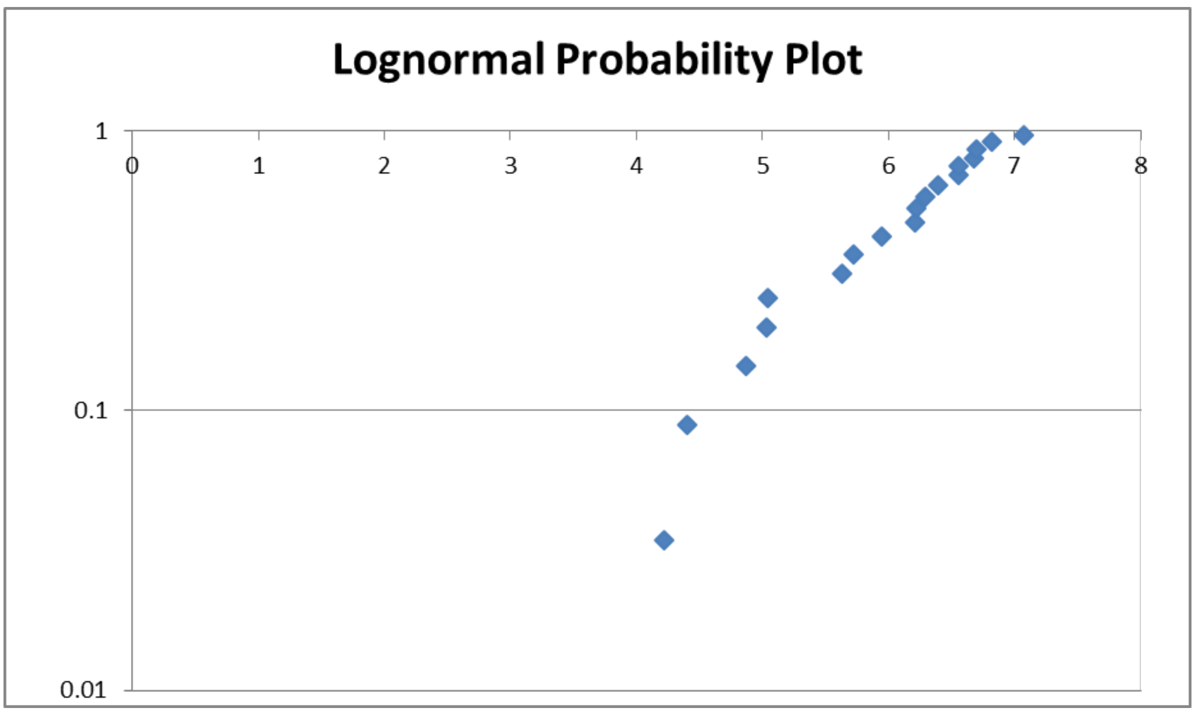
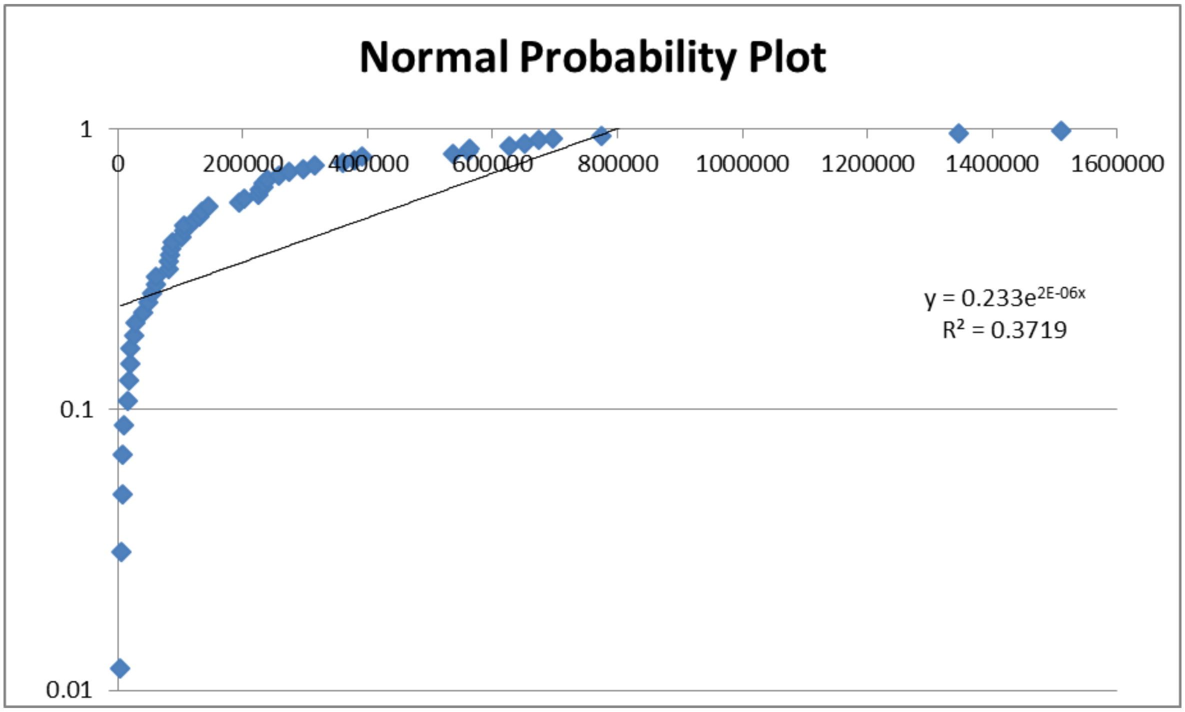


Figure I.11 – Normality Probability Plots for Short-Term O&M/Monitoring Costs



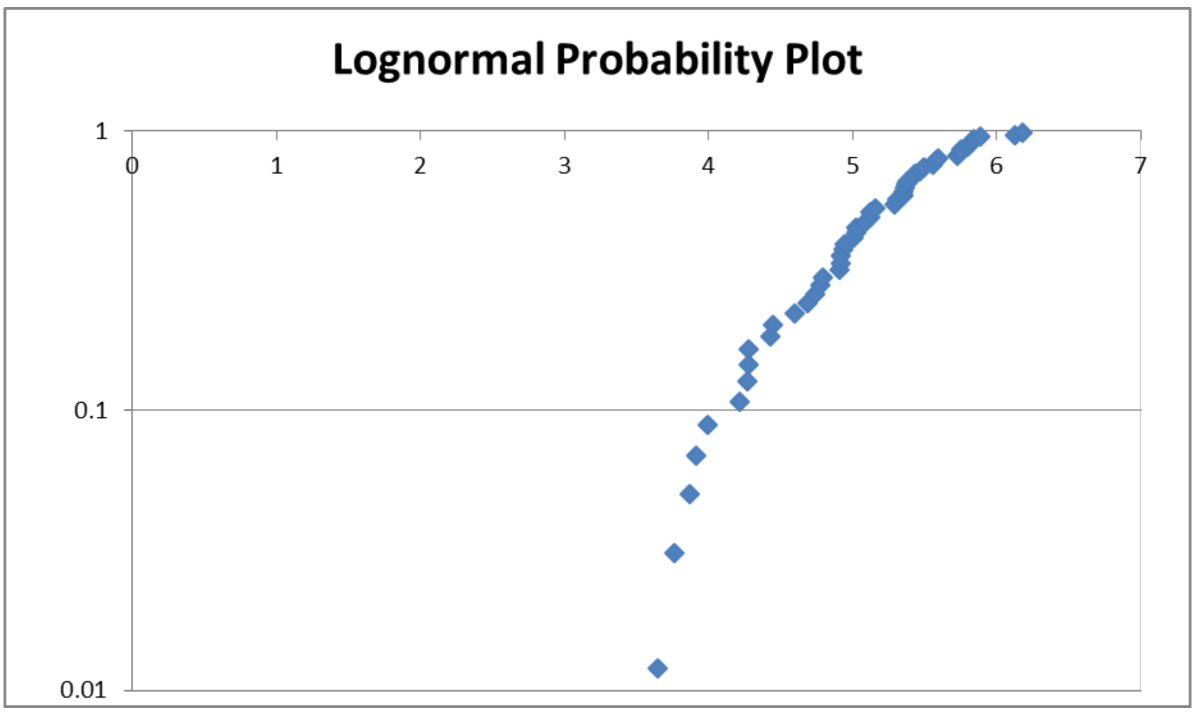
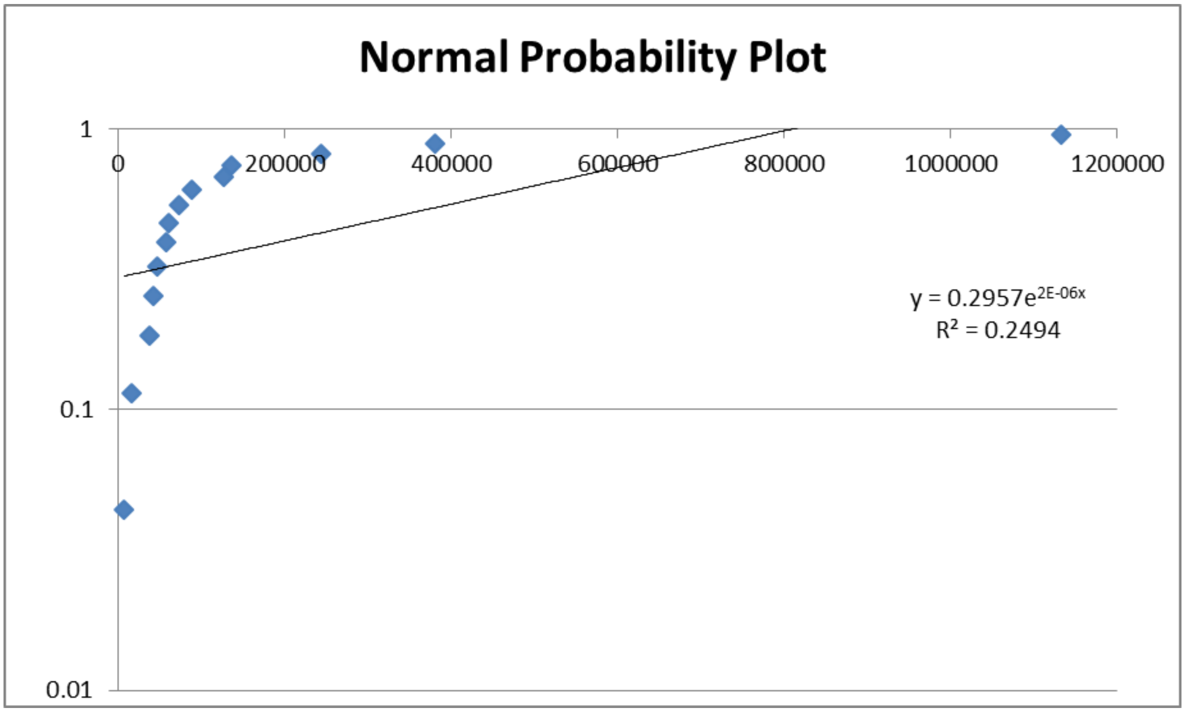


Figure I.12 – Normality Probability Plots for Long-Term O&M/Monitoring Costs



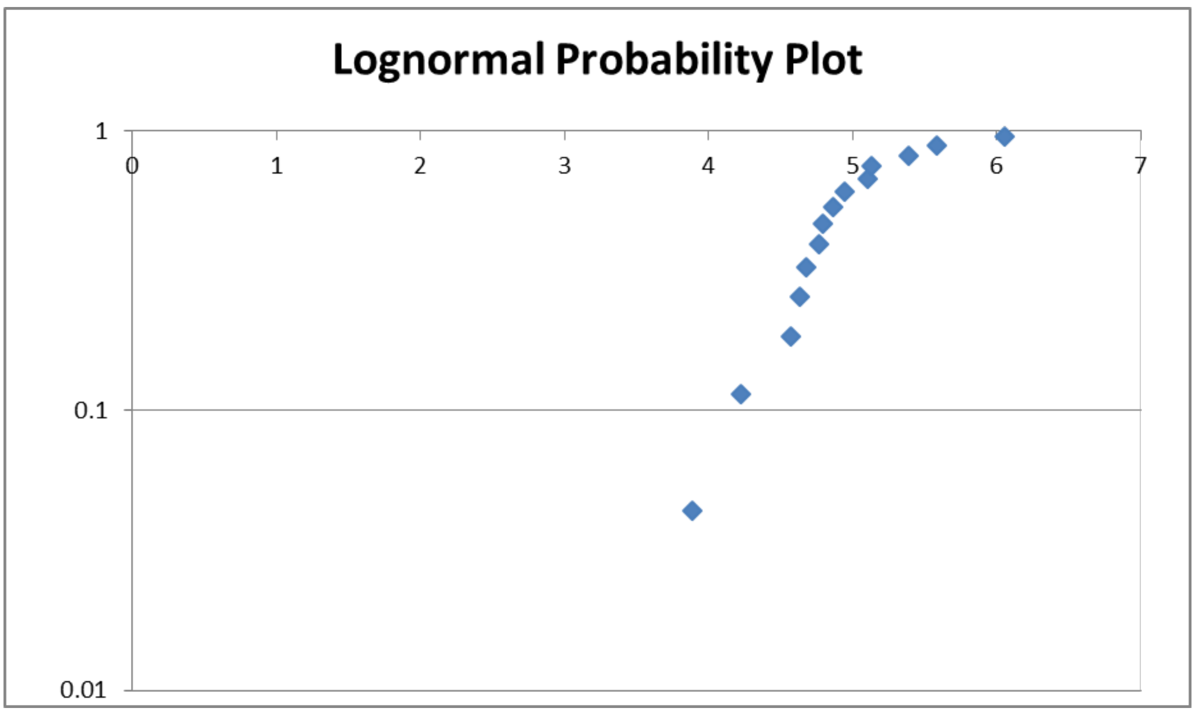
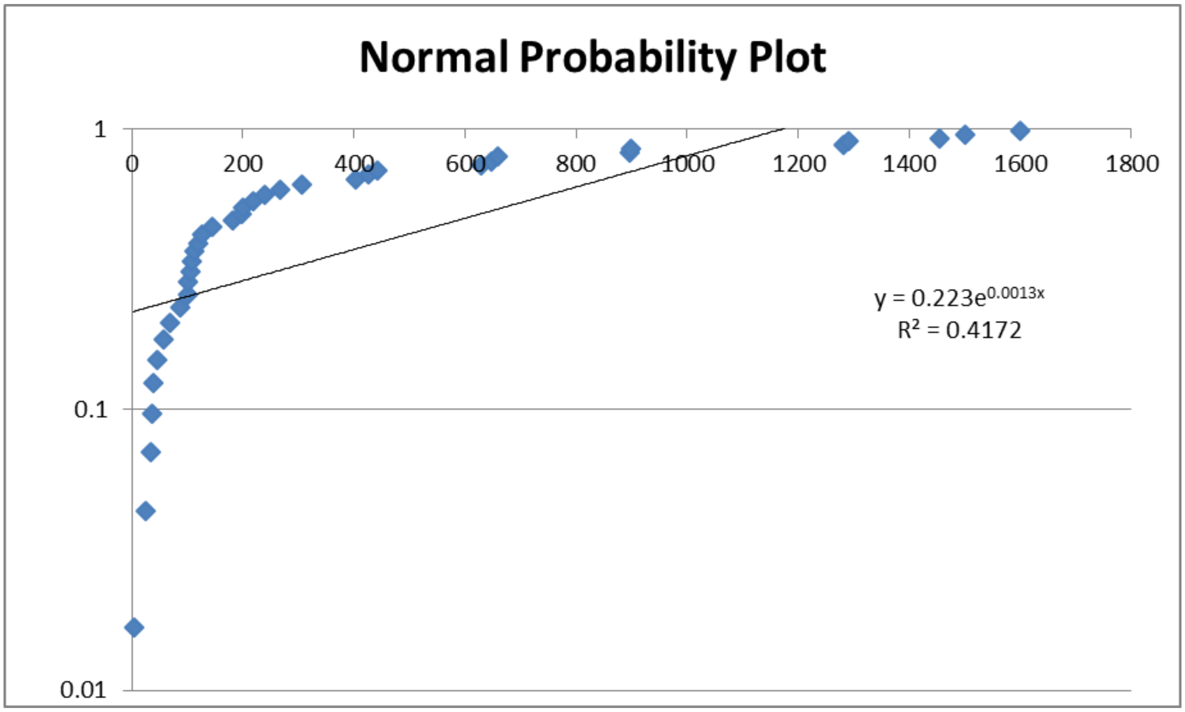


Figure I.13 – Normality Probability Plots for Open Pit Acreage



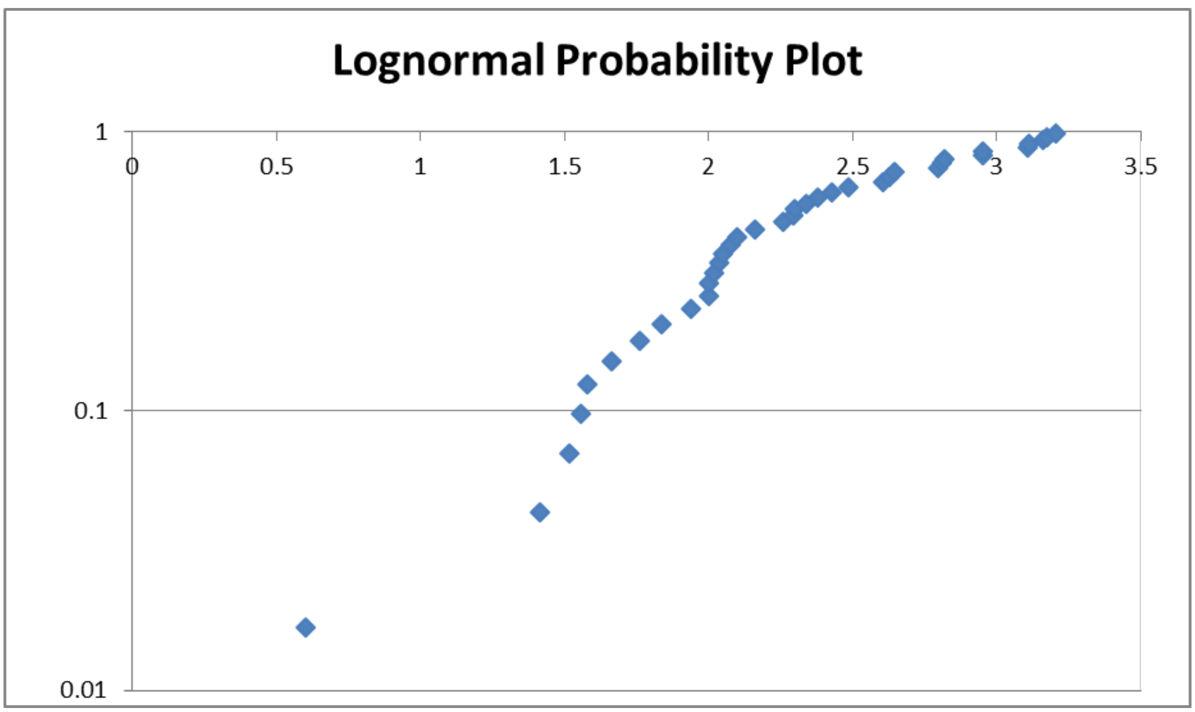
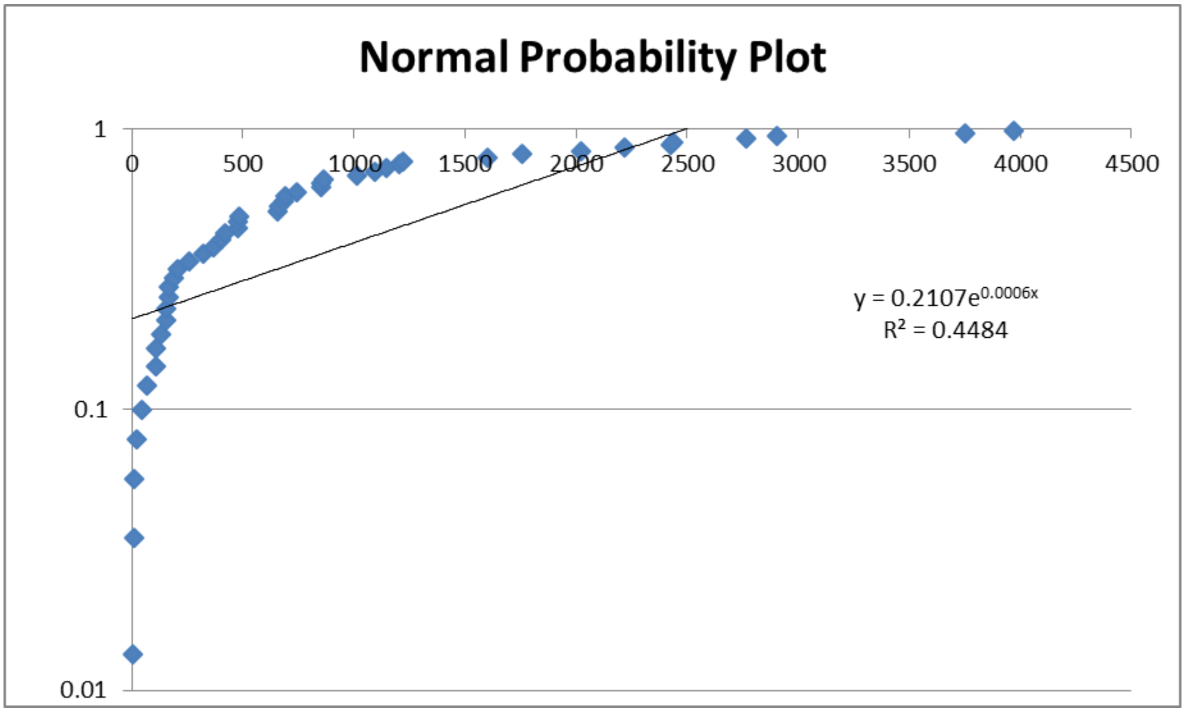


Figure I.14 – Normality Probability Plots for Waste Rock Acreage



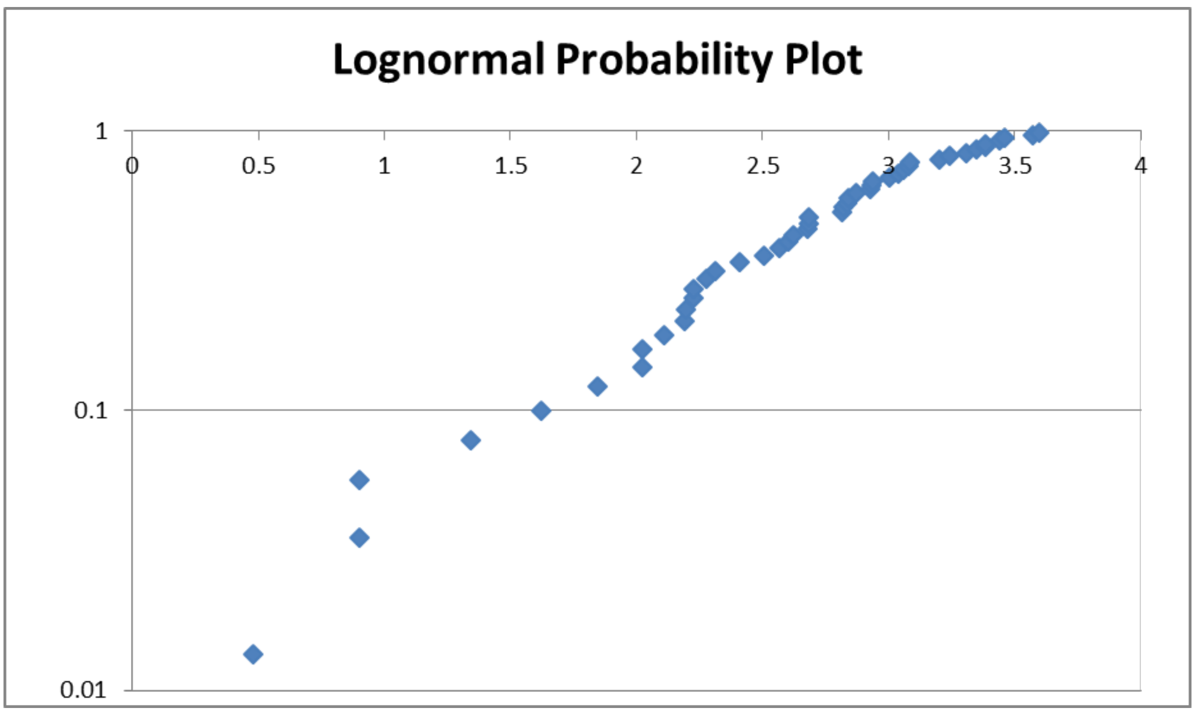
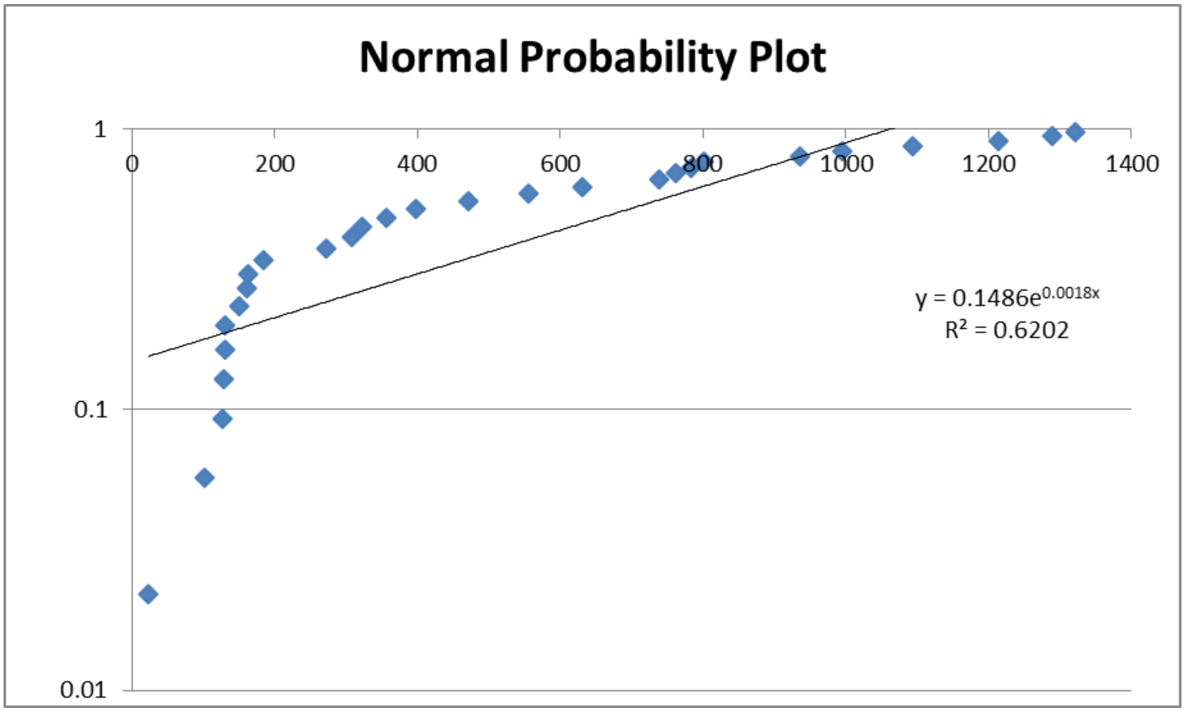


Figure I.15 – Normality Probability Plots for Heap/Dump Leach Acreage



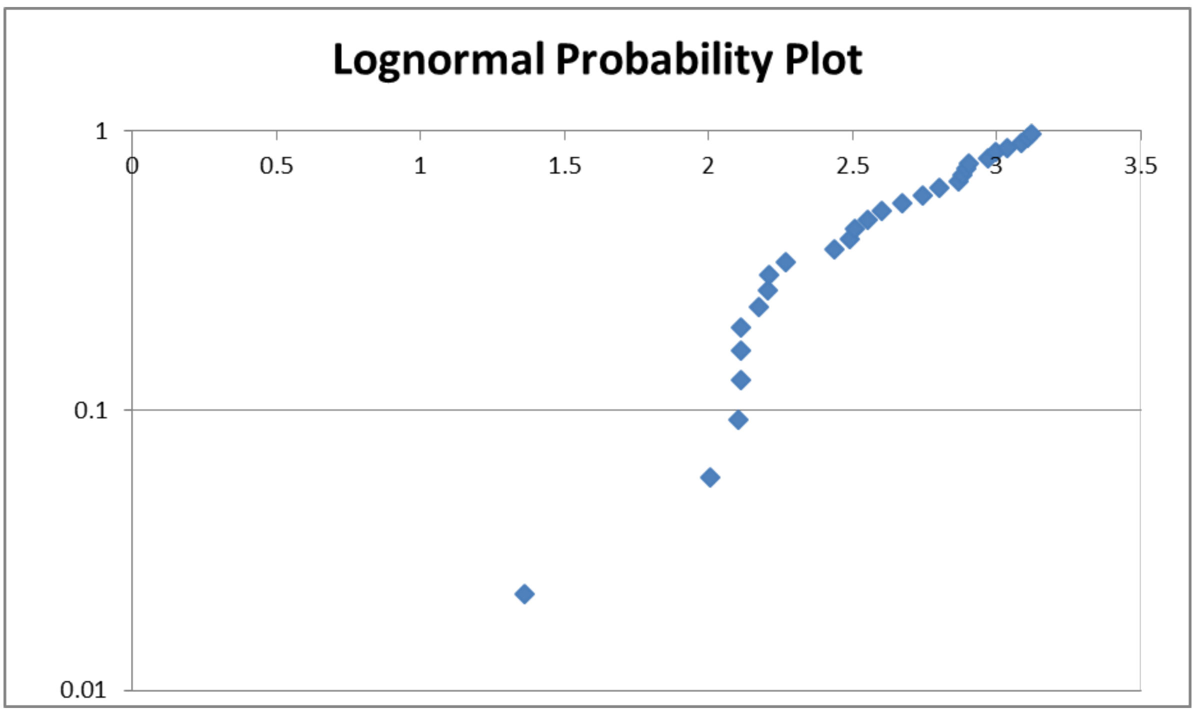
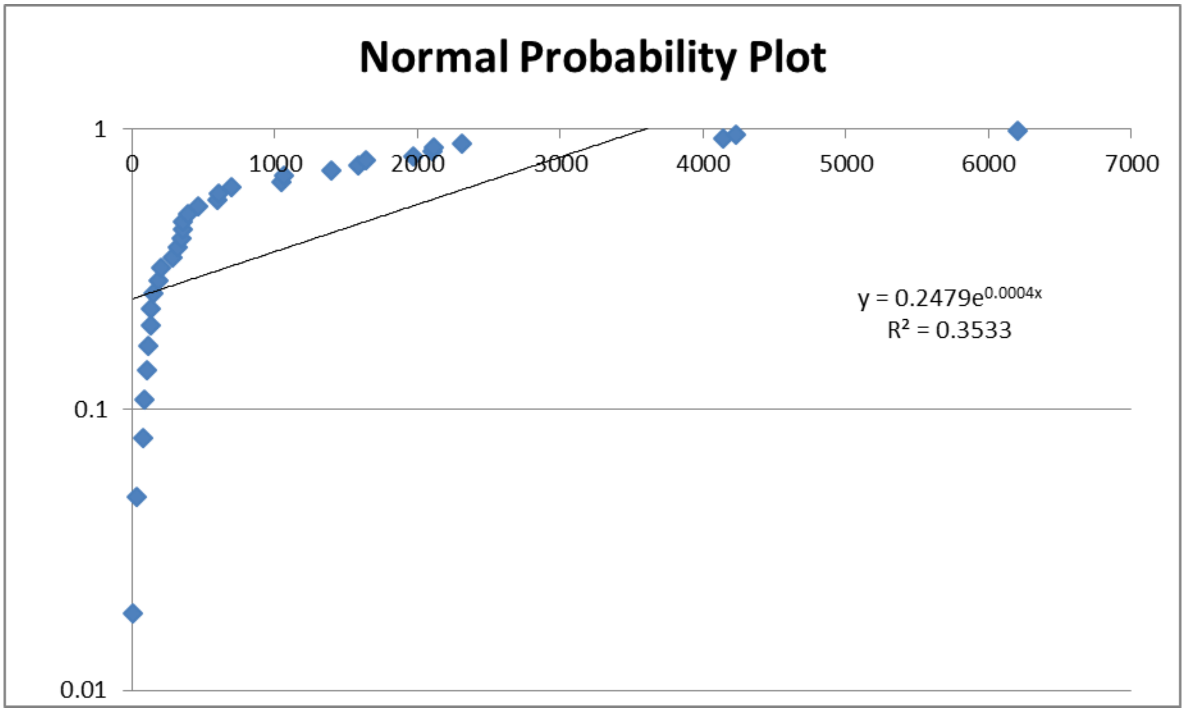


Figure I.16 – Normality Probability Plots for Tailings Facility Acreage



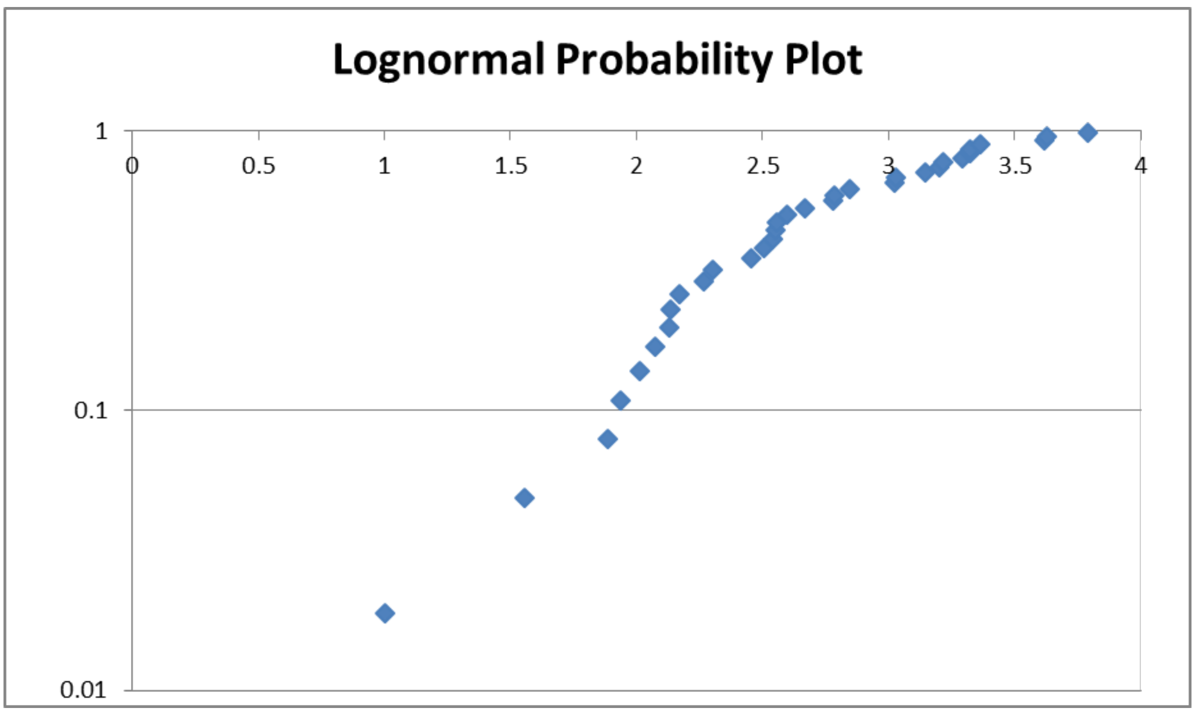
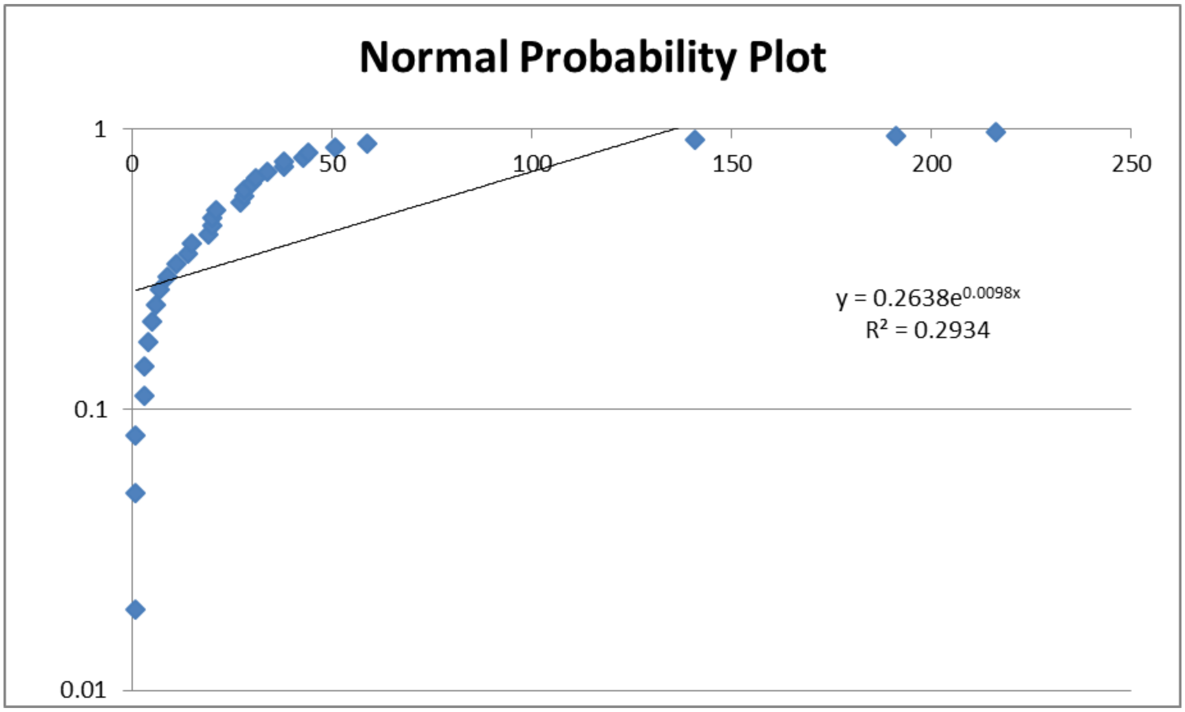


Figure I.17 – Normality Probability Plots for Process Pond/Reservoir Acreage



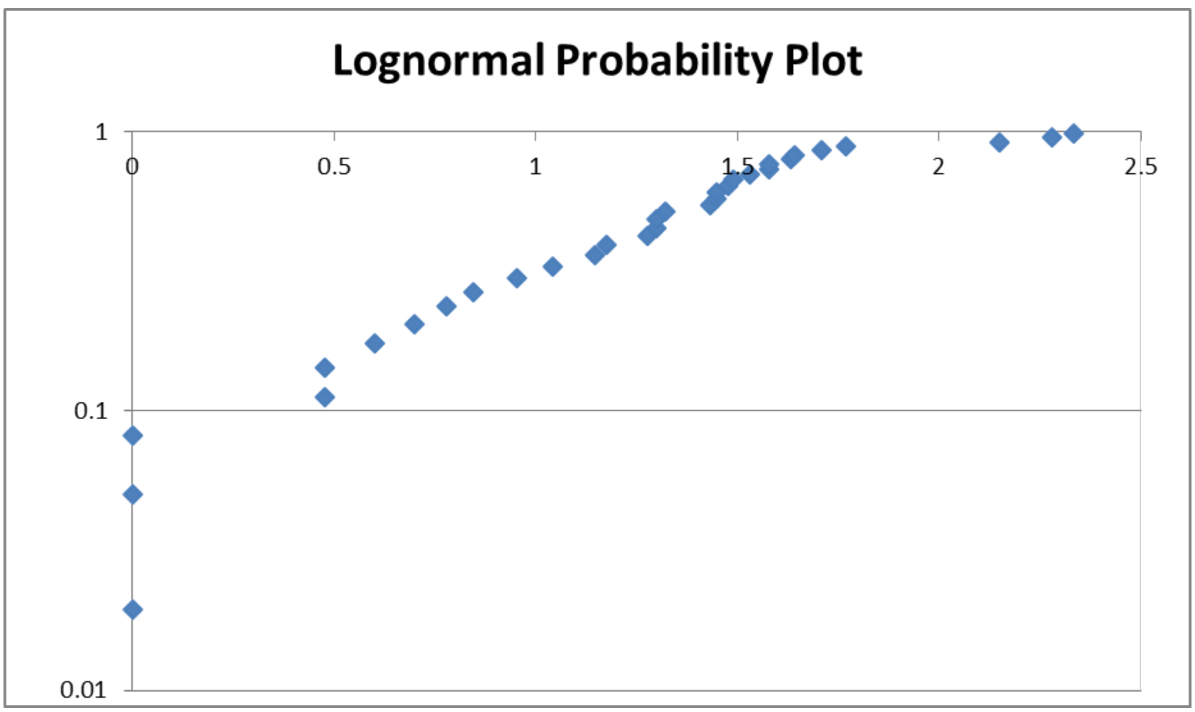
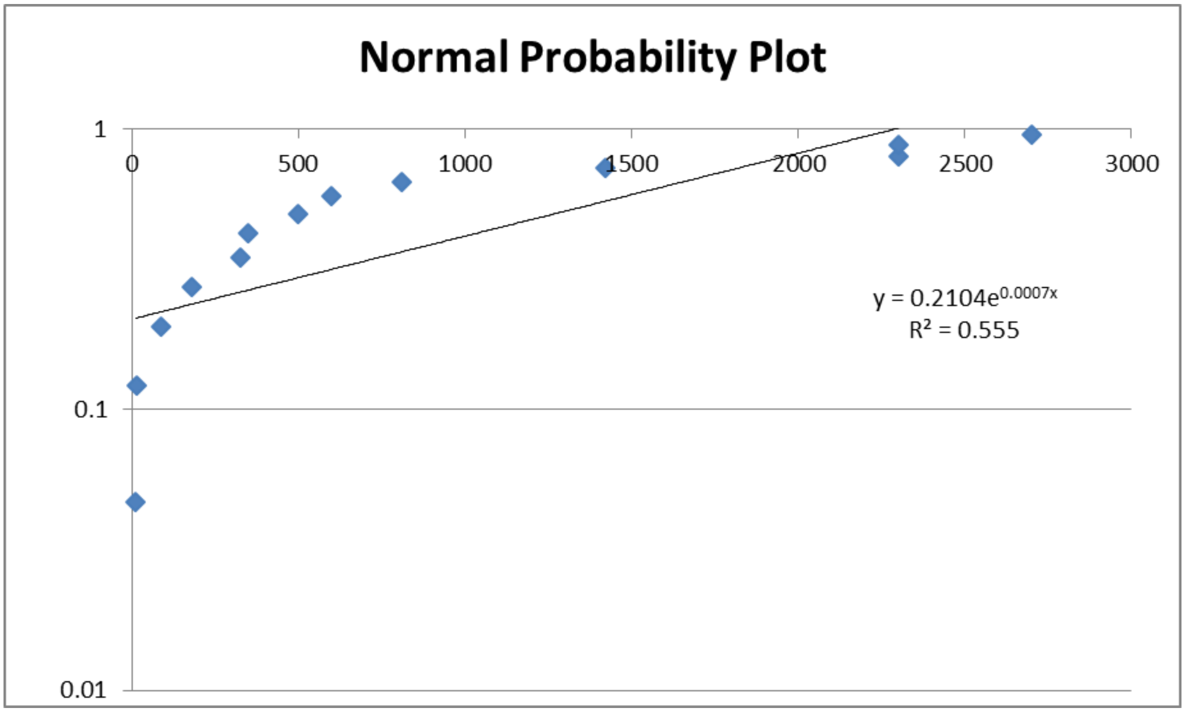


Figure I.18 – Normality Probability Plots for On-site Water Flows



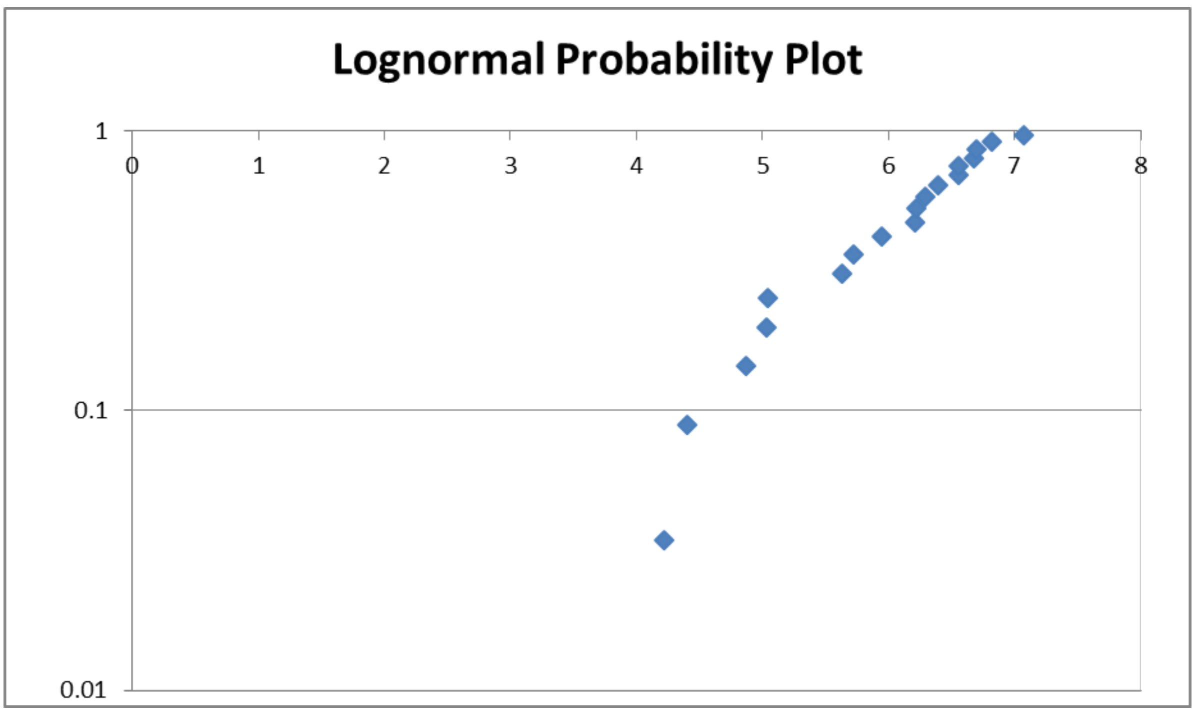
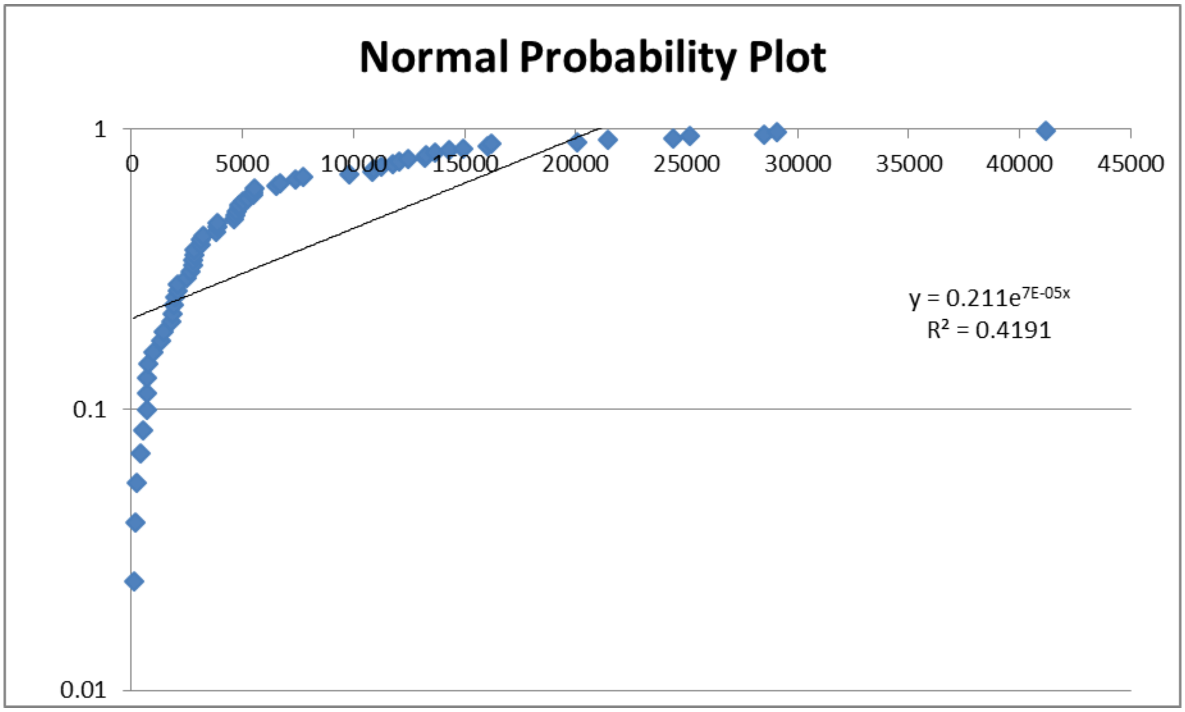


Figure I.19 – Normality Probability Plots for Distance to Surface Water



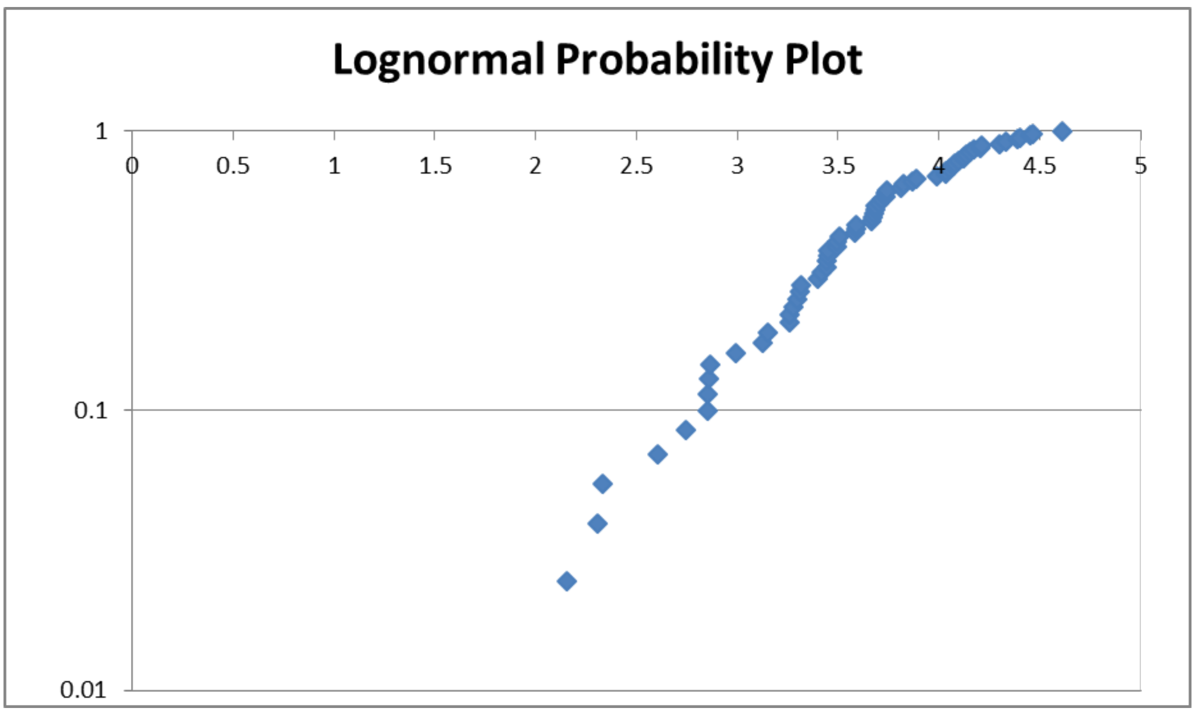
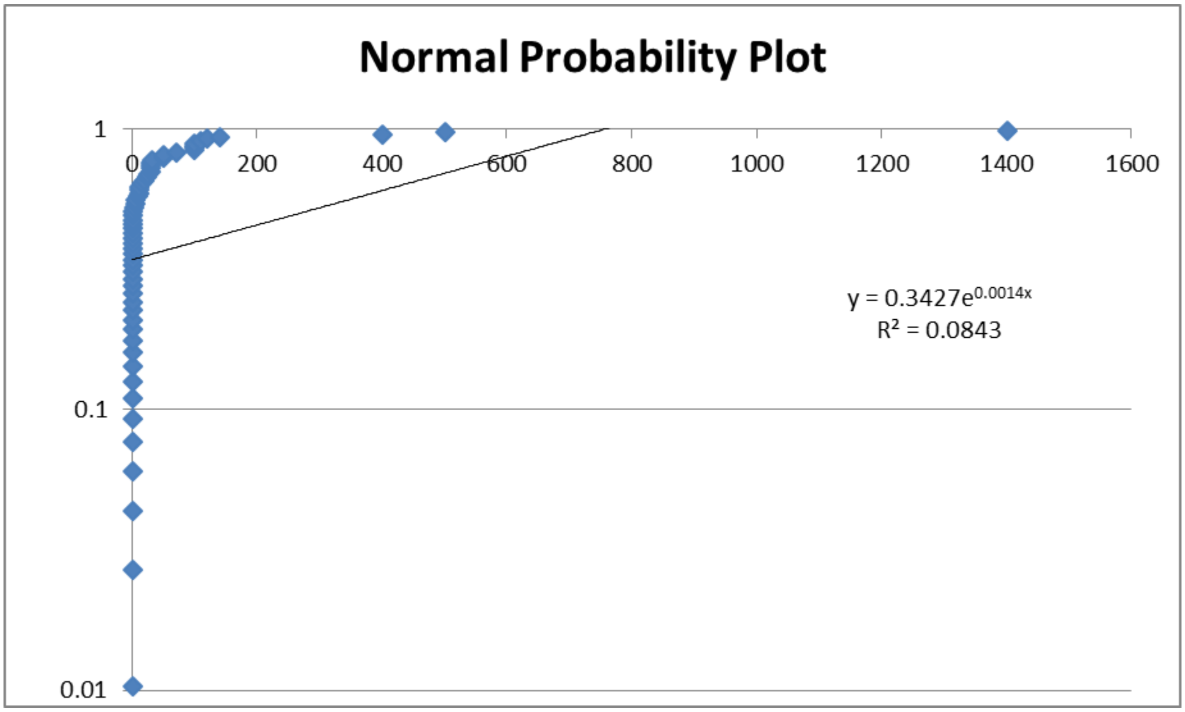


Figure I.20 – Normality Probability Plots for Depth to Groundwater



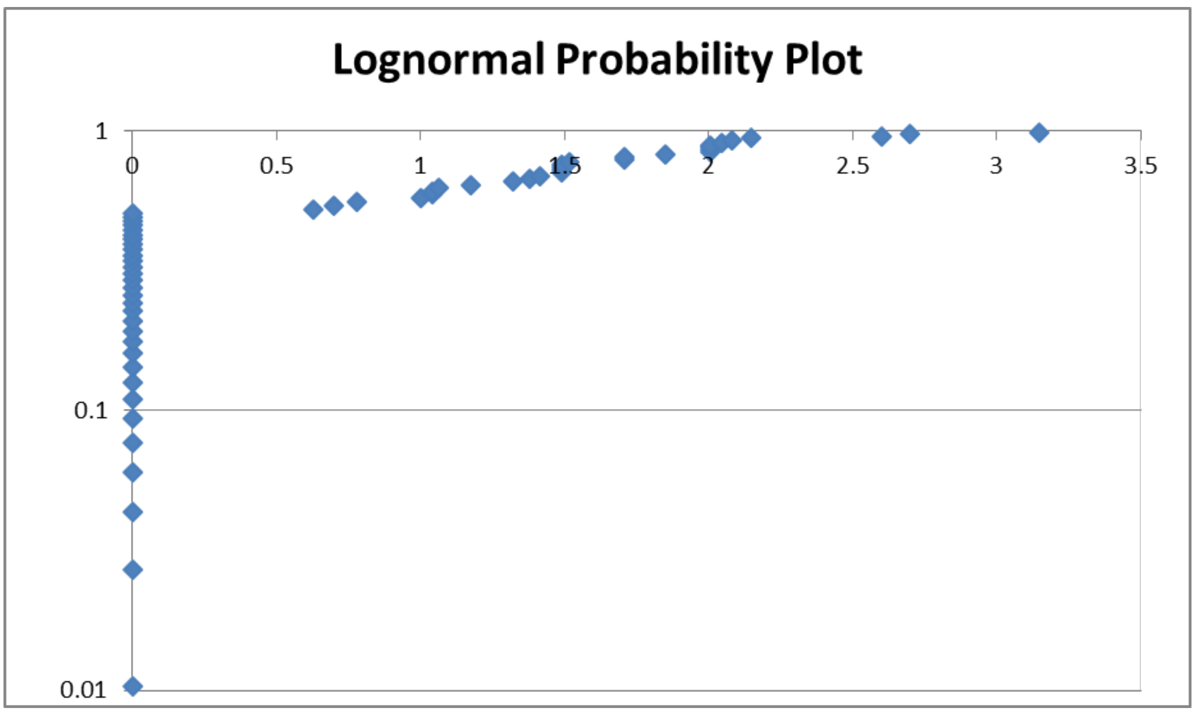
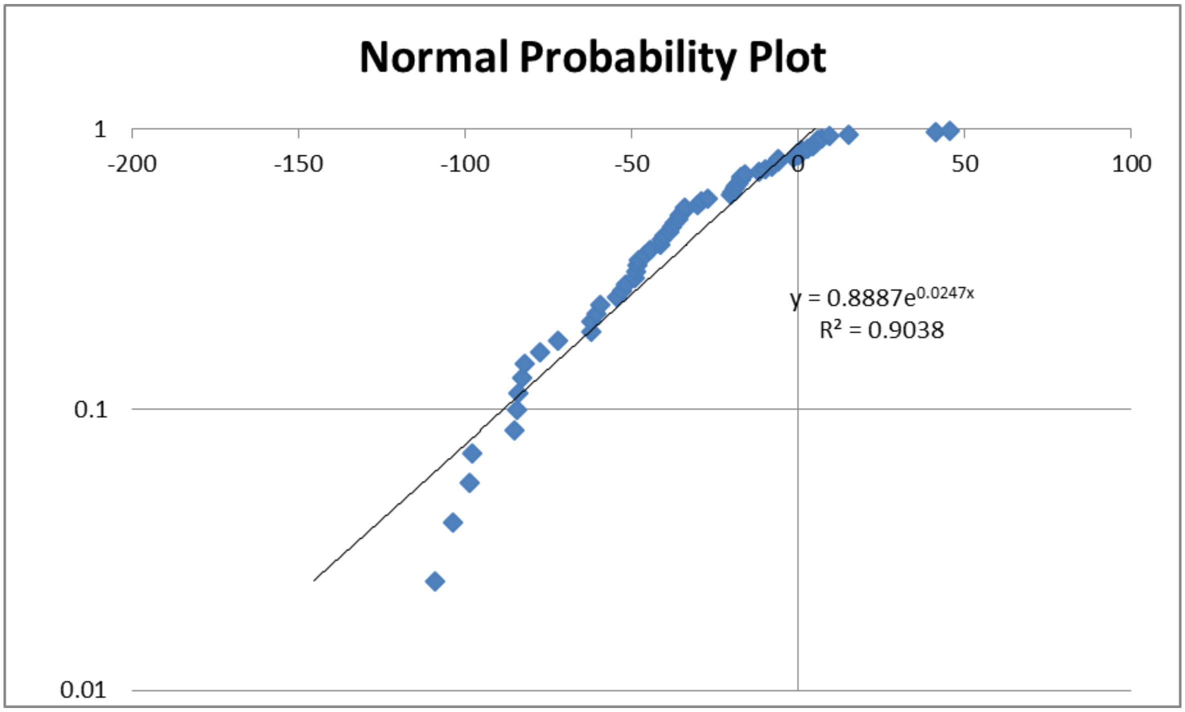


Figure I.21 – Normality Probability Plots for Net Precipitation



I.2. Visual Observation of Frequency Plots

To confirm the results of the Anderson-Darling test, EPA also visually examined the data in frequency plot form. To ensure data was visually inspected consistently, EPA binned data for each variable as follows:

- ≤ average – 2 x standard deviation
- > average – 2 x standard deviation, ≤ average – 1 x standard deviation
- > average – 1 x standard deviation, ≤ average
- > average, ≤ average + 1 x standard deviation
- > average + 1 x standard deviation, ≤ average + 2 x standard deviation
- > average + 2 x standard deviation

In **Figures I.22** through **I.42** below, the x-axis presents the maximum value in each bin. In most cases, data appeared right-skewed when presented linearly, but appeared to conform to a bell shape when presented in a lognormal format. There are four exceptions to this general pattern discussed below.

First, for drainage capital costs, the log-transformed data appeared to be uniformly distributed. However, this is more likely due to the small sample size than an actual uniform distribution as the results of the Anderson-Darling test returned a lognormal finding.

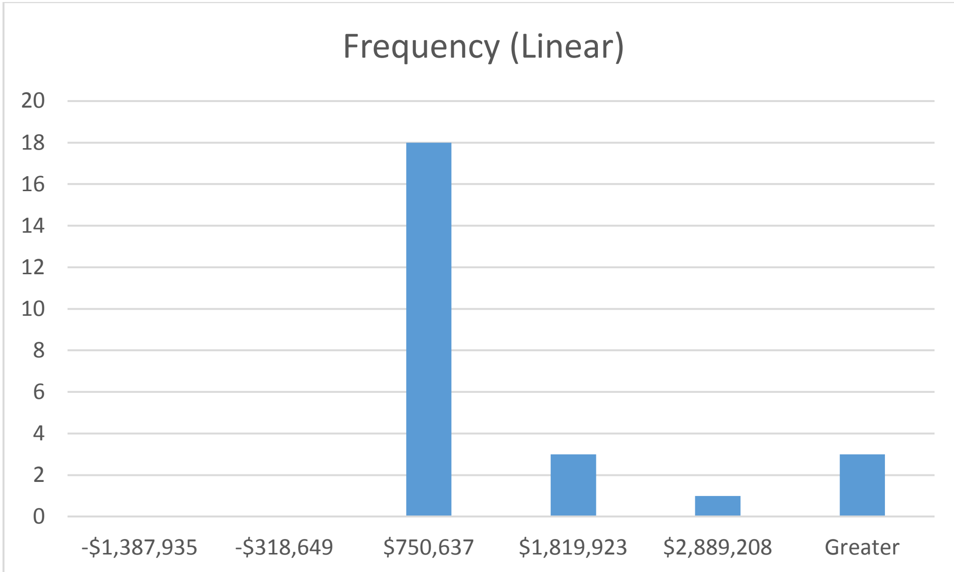
Additionally, both distance to surface water and depth to groundwater appeared right-skewed in both linear and lognormal formats. This is due to the high number of zero values in each data set. This is consistent with the findings of the Anderson-Darling tests that neither variable was normal, and neither variable was lognormal.

Finally, net precipitation appeared bell-shaped in a linear presentation, consistent with the finding of normality in the Anderson-Darling test. Thus, no log plot was developed. A summary of these findings is presented in **Table I.2** below.

Table I.2 – Graphical Examination of Normality Results

Variable	Normality Determination
DEPENDENT VARIBLES	
Solid/Hazardous Waste Disposal Capital Costs	lognormal
Open Pit Capital Costs	lognormal
Underground Mine Capital Costs	lognormal
Waste Rock Capital Costs	lognormal
Heap/Dump Leach Capital Costs	lognormal
Tailings Facility Capital Costs	lognormal
Process Pond/Reservoir Capital Costs	lognormal
Drainage Capital Costs	uncertain
Interim O&M Costs	lognormal
Water Treatment Costs	lognormal
Short-Term O&M/Monitoring Costs	lognormal
Long-Term O&M/Monitoring Costs	lognormal
INDEPENDENT VARIABLES	
Open Pit Acreage	lognormal
Waste Rock Acreage	lognormal
Heap/Dump Leach Acreage	lognormal
Tailings Facility Acreage	lognormal
Process Pond/Reservoir Acreage	lognormal
On-site Water Flows	lognormal
Distance to Surface Water	neither
Depth to Groundwater	neither
Net Precipitation	normal

Figure I.22 – Frequency Plots for Solid/Hazardous Waste Disposal Capital Costs



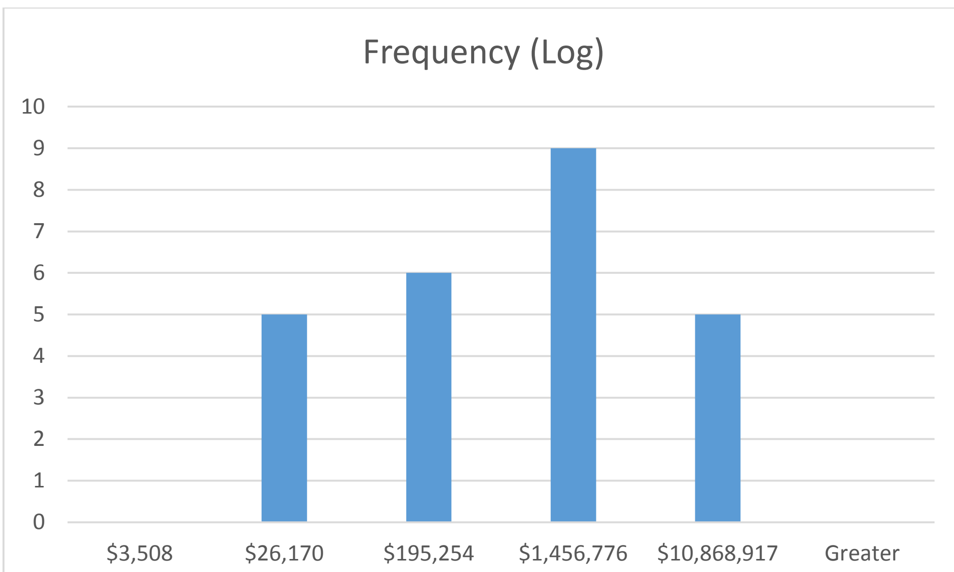
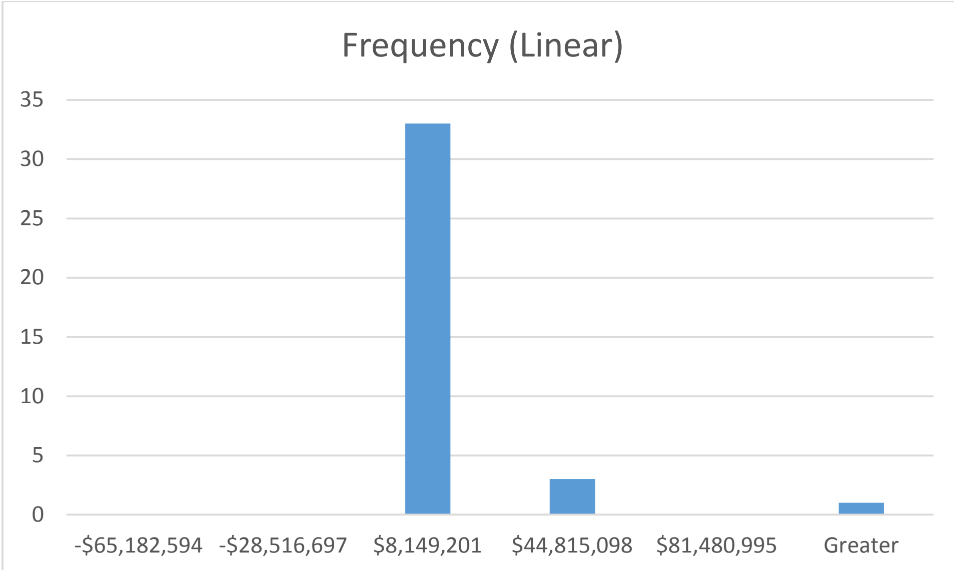


Figure I.23 – Frequency Plots for Open Pit Capital Costs



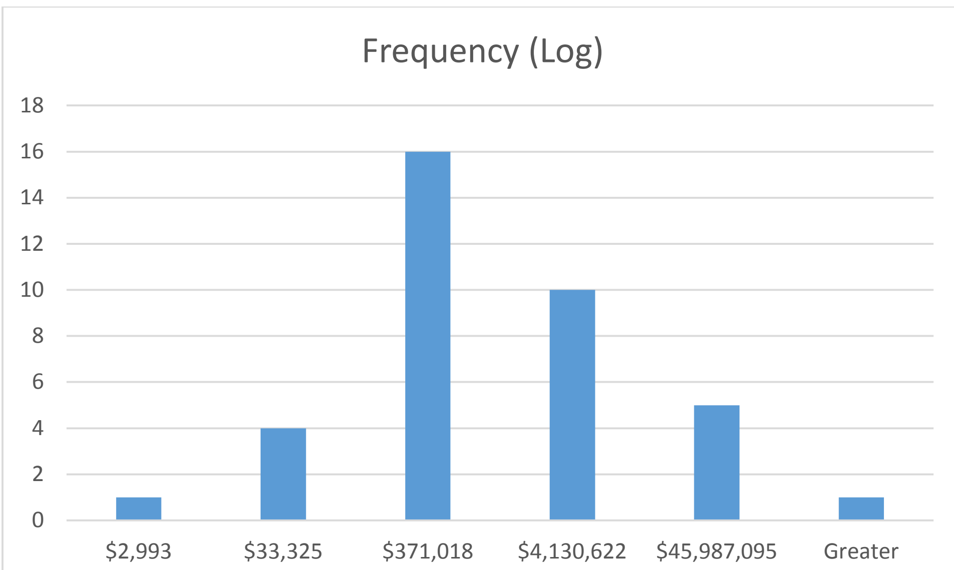
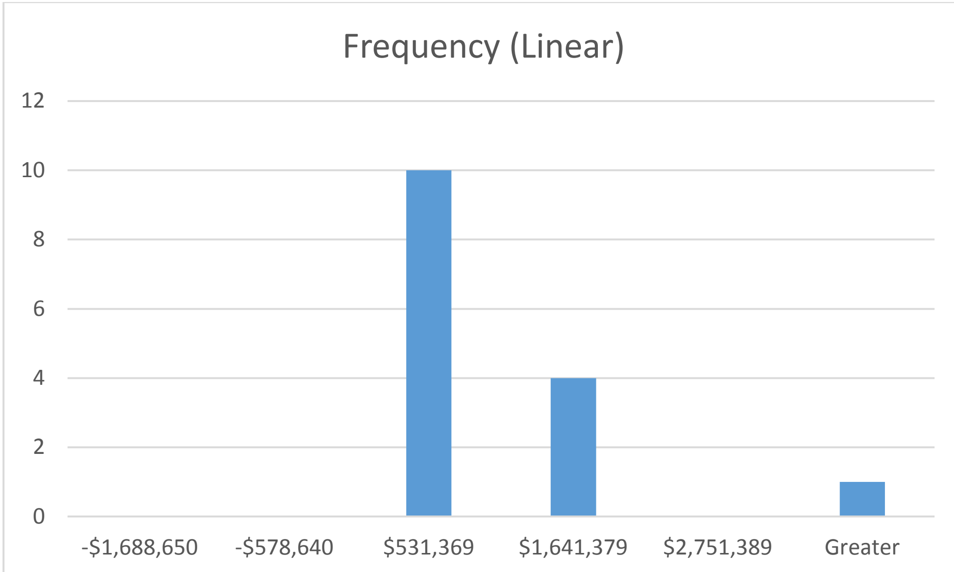


Table I.24 – Frequency Plots for Underground Mine Capital Costs



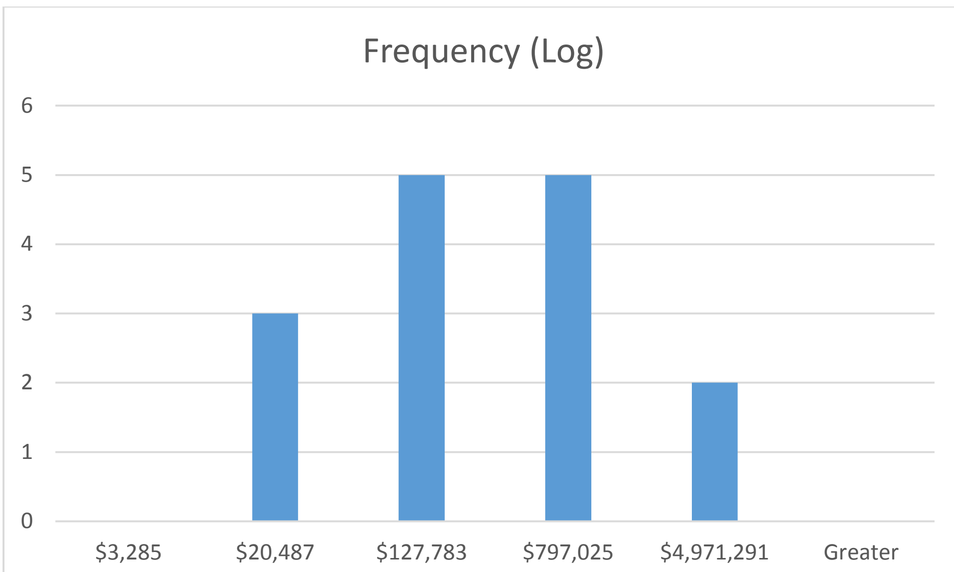
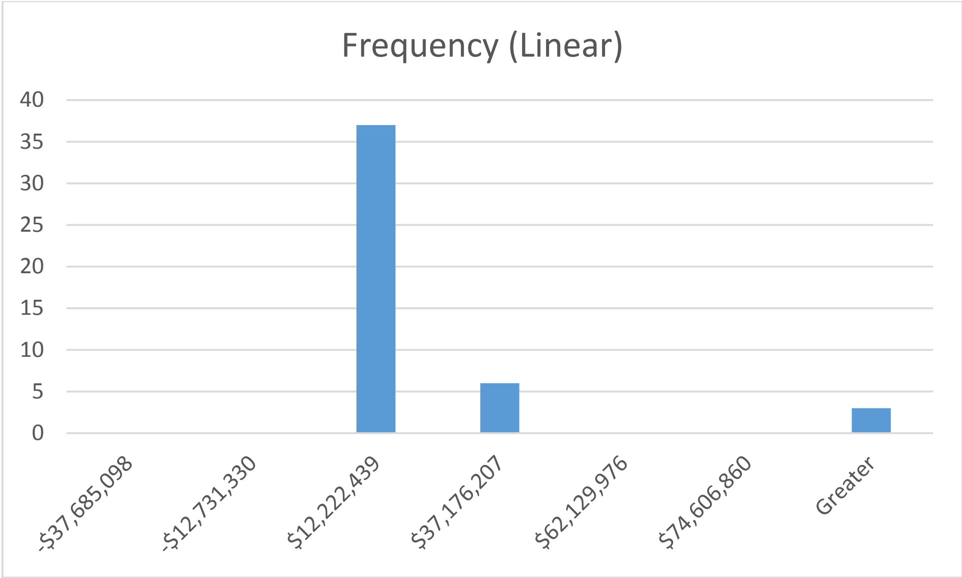


Figure I.25 – Frequency Plots for Waste Rock Capital Costs



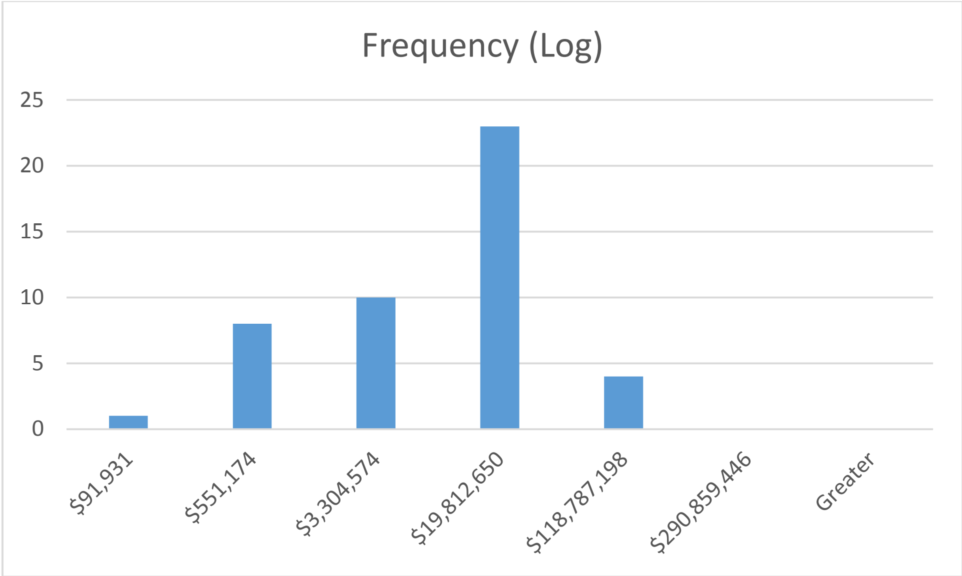


Figure I.26 – Frequency Plots for Heap/Dump Leach Capital Costs

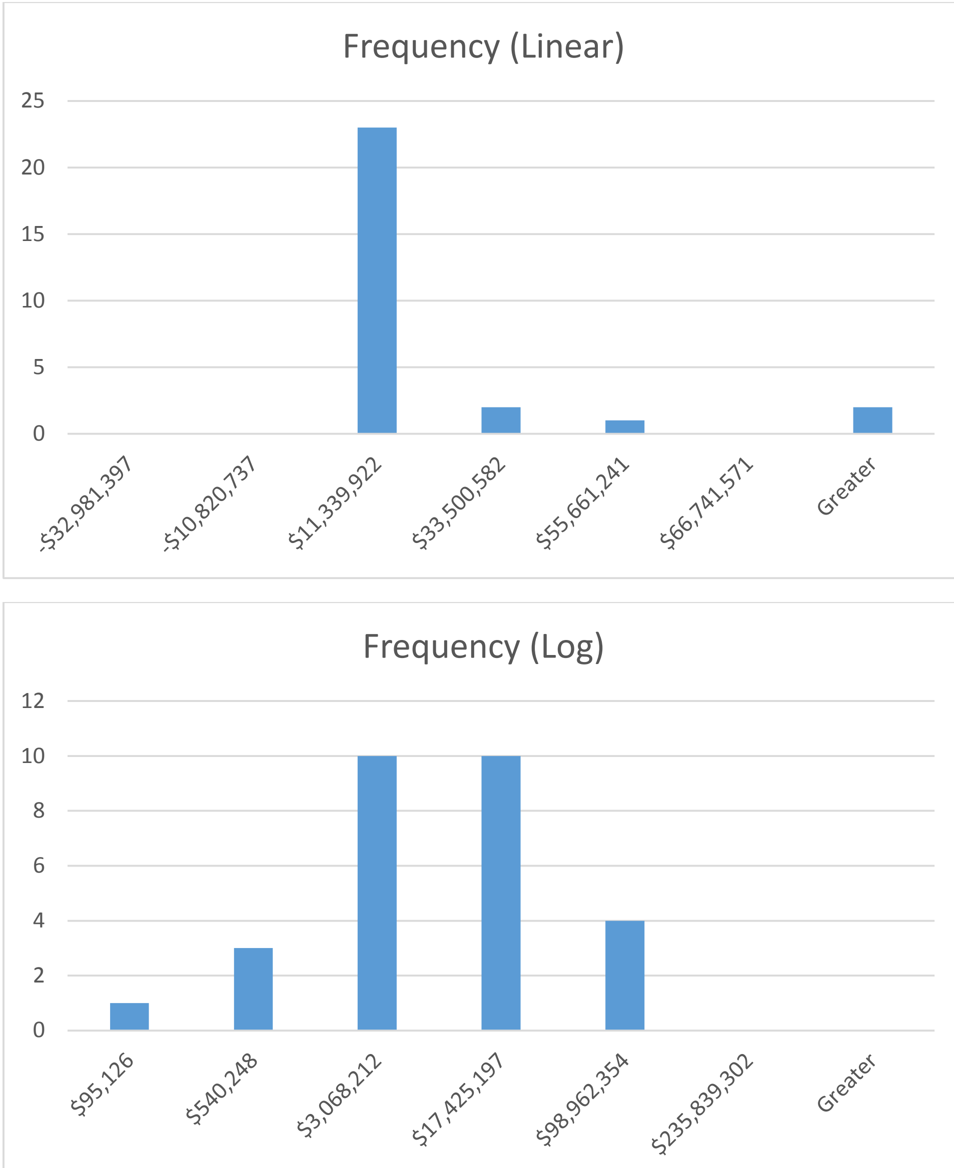
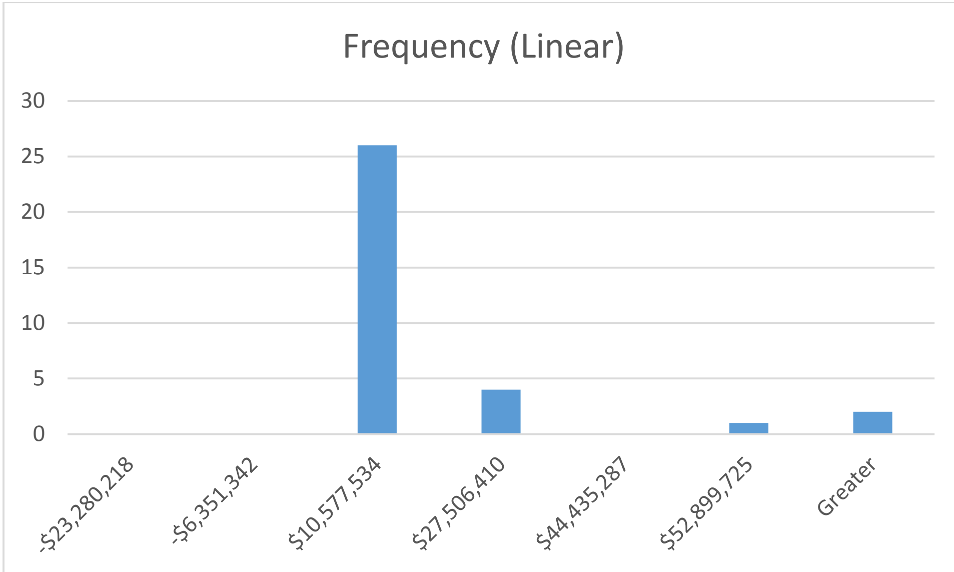


Figure I.27 – Frequency Plots for Tailings Facility Capital Costs



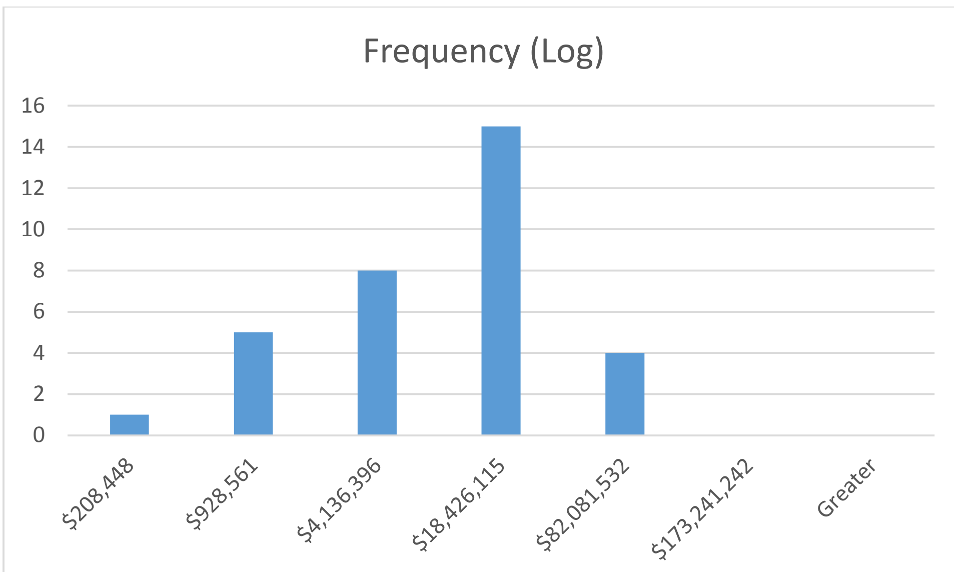
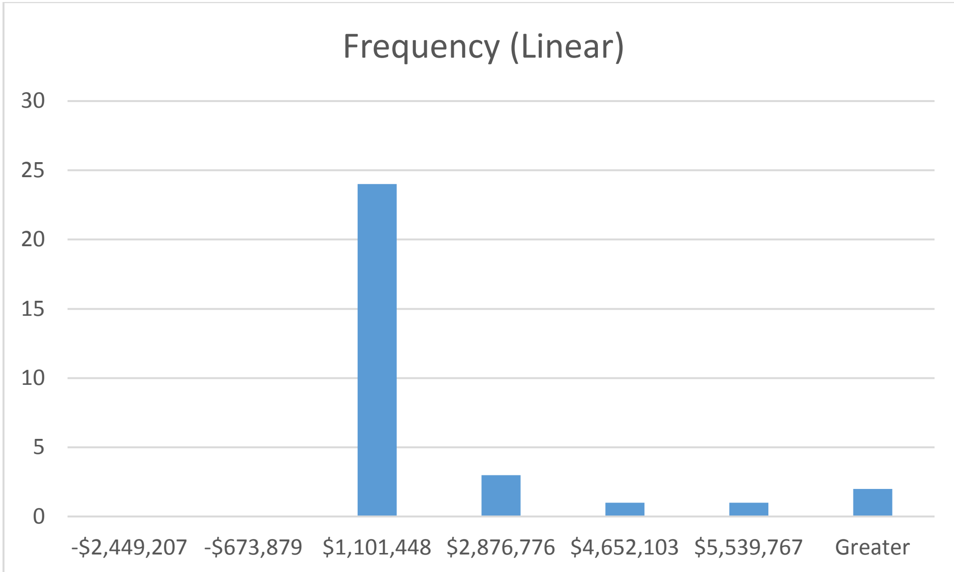


Figure I.28 – Frequency Plots for Process Pond/Reservoir Capital Costs



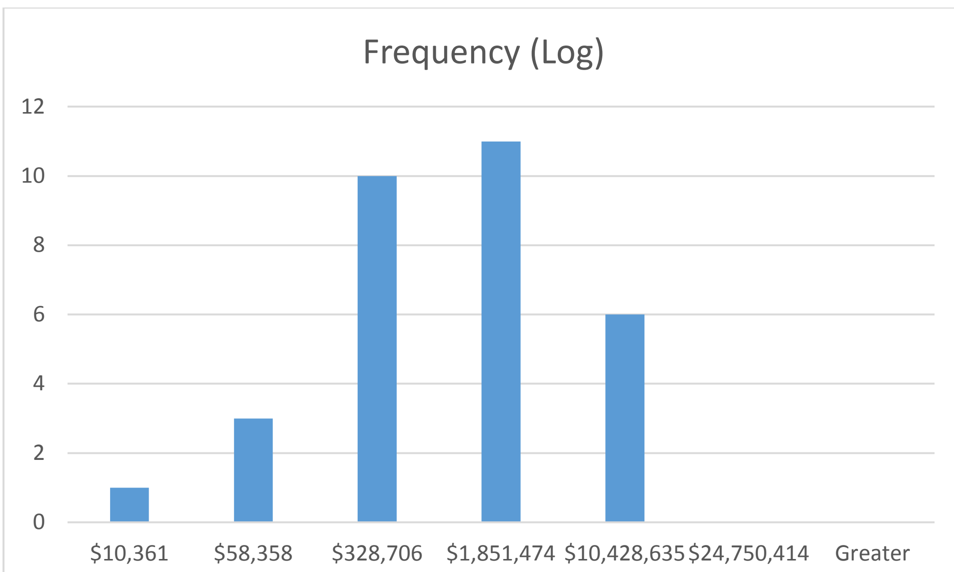
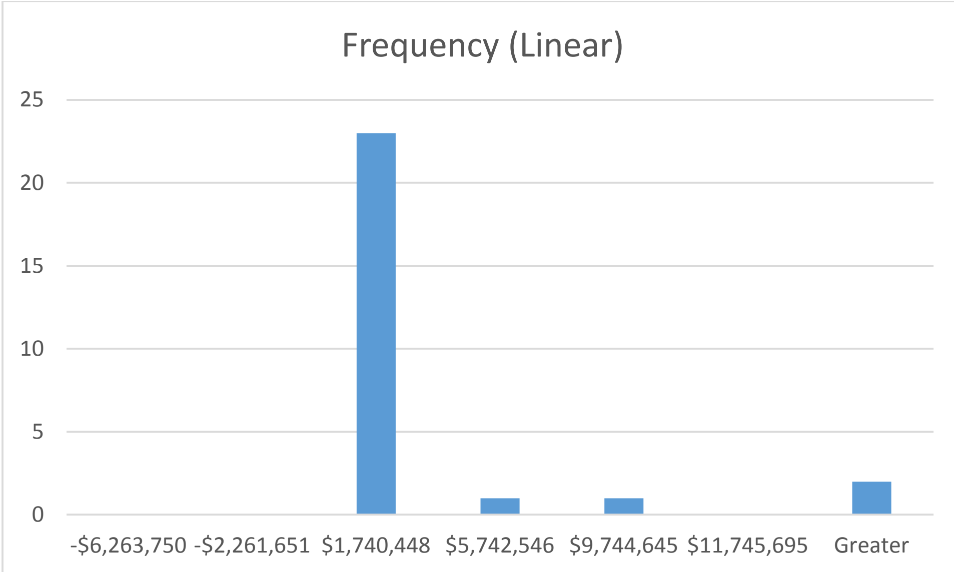


Figure I.29 – Frequency Plots for Drainage Capital Costs



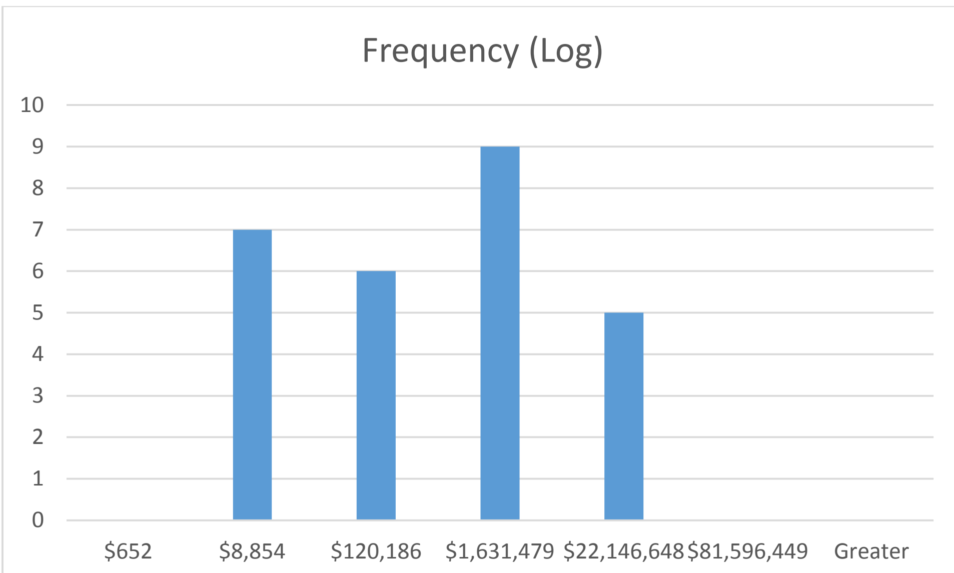
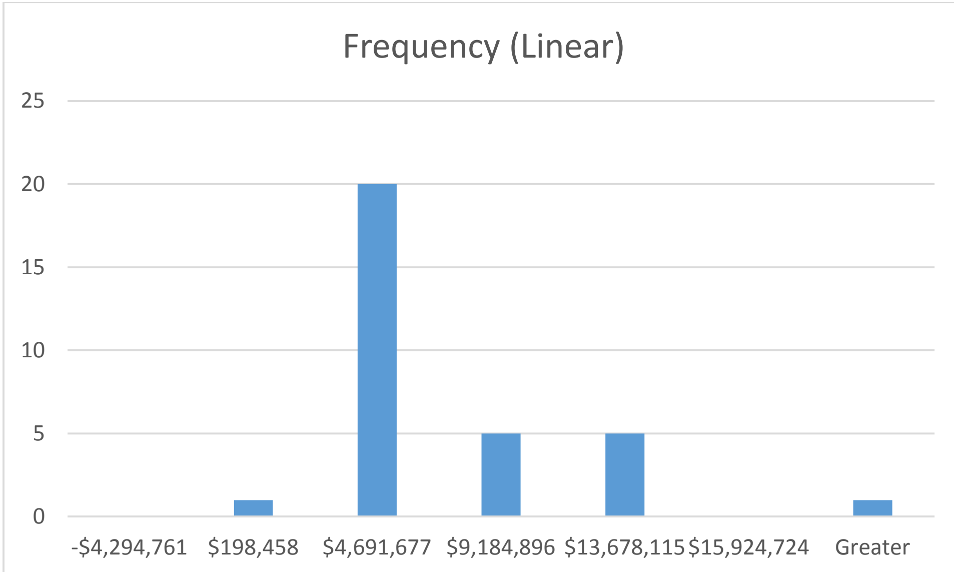


Figure I.30 – Frequency Plots for Interim O&M Costs



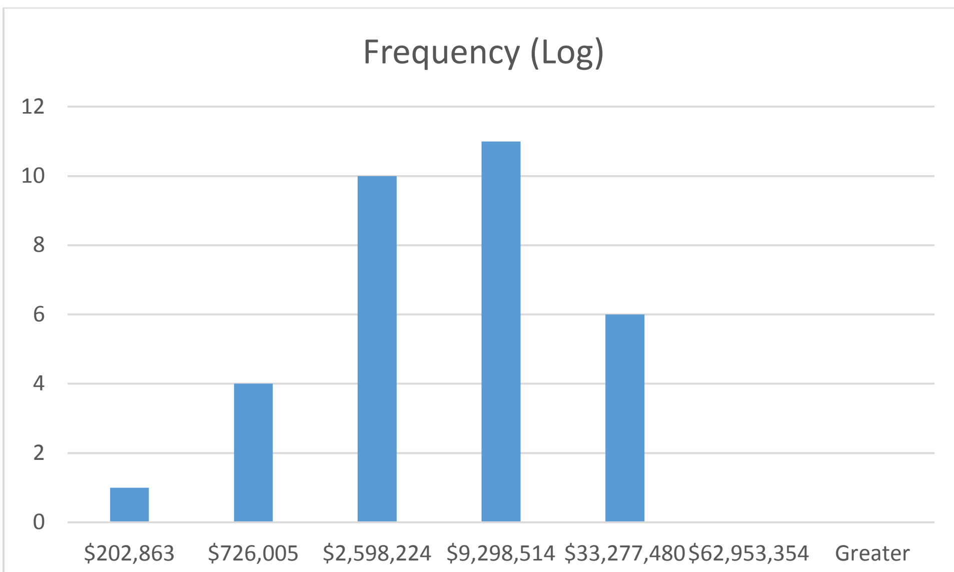
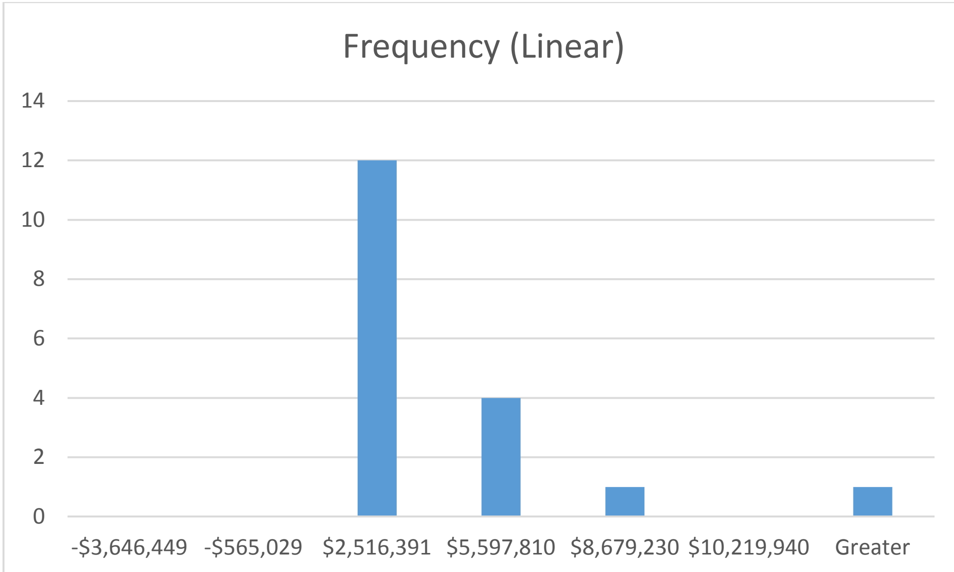


Figure I.31 – Frequency Plots for Water Treatment Costs



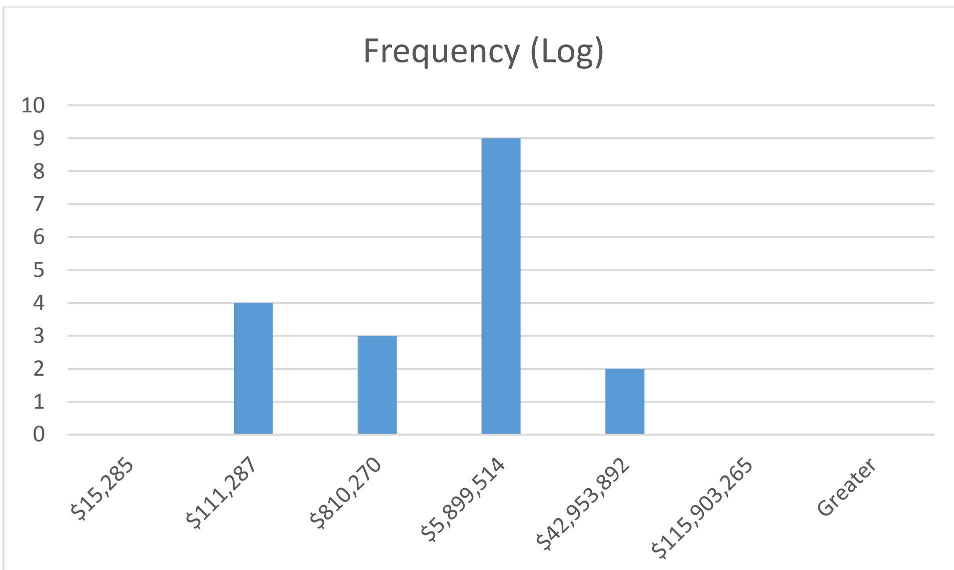
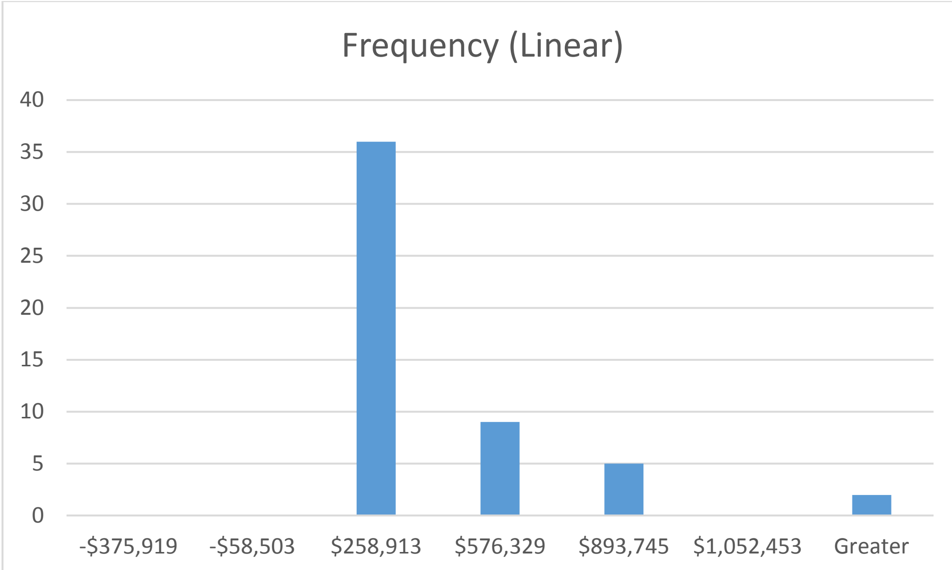


Figure I.32 – Frequency Plots for Short-Term O&M/Monitoring Costs



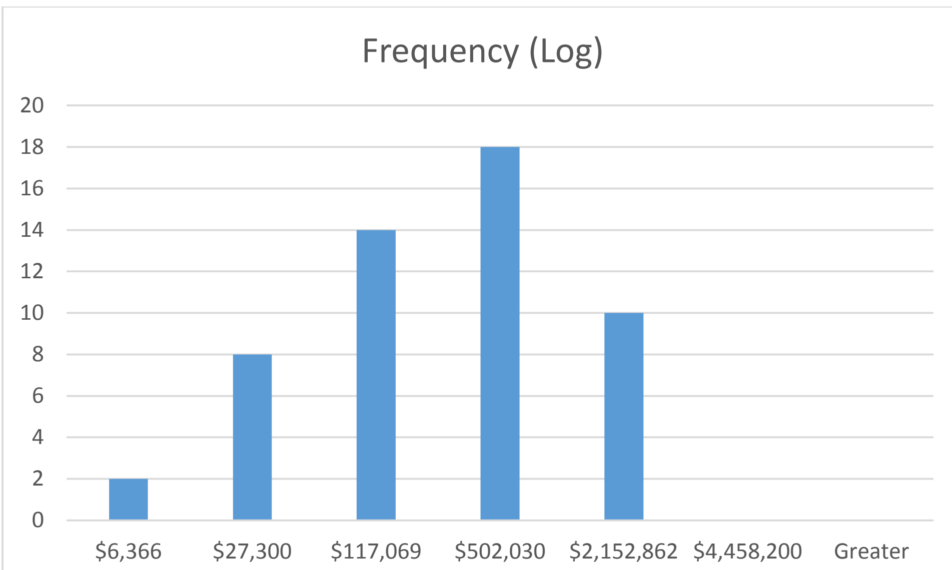
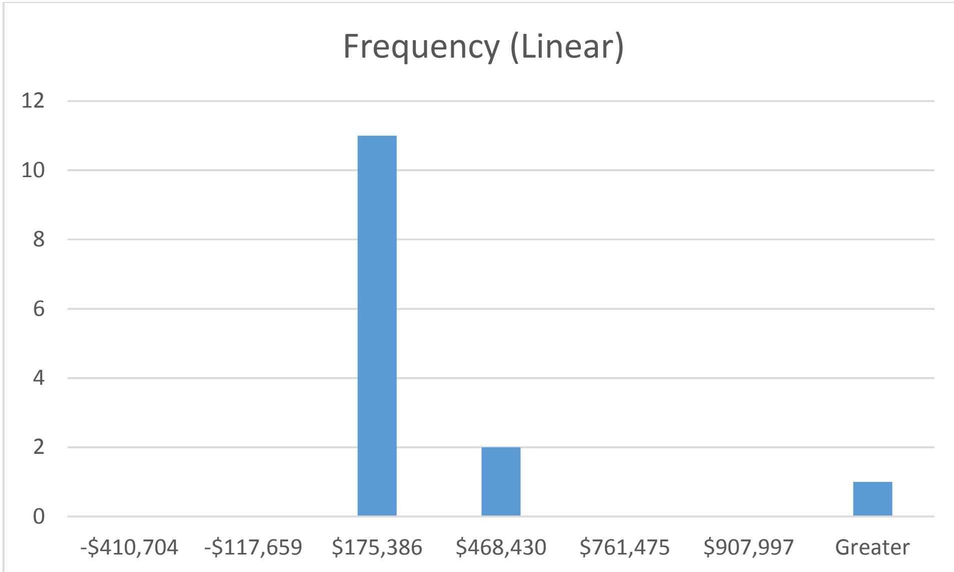


Figure I.33 – Frequency Plots for Long-Term O&M/Monitoring Costs



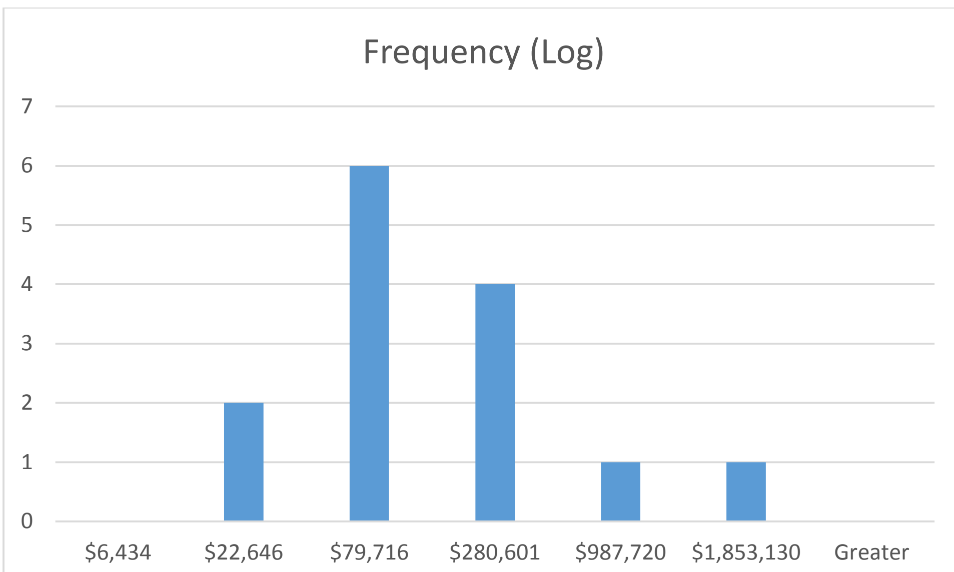
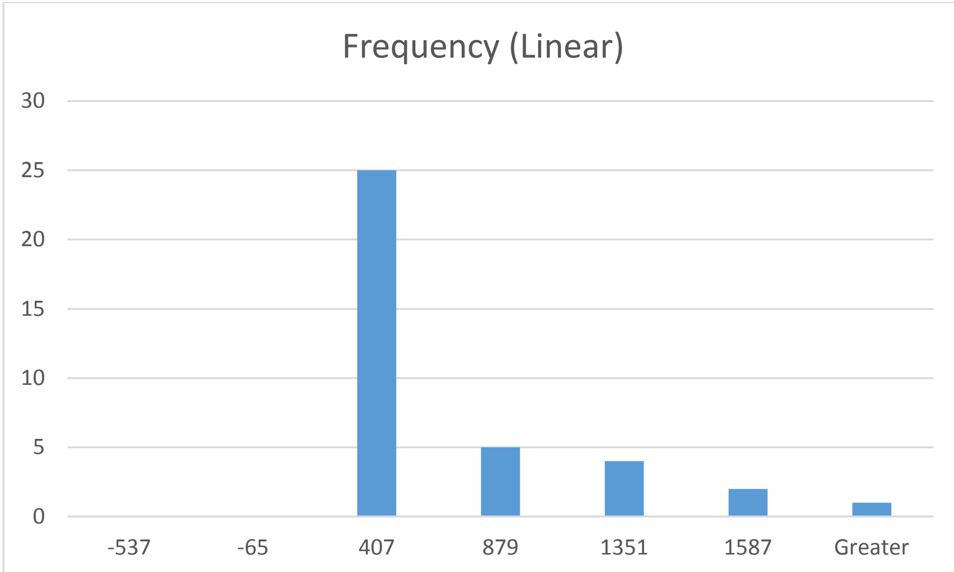


Figure I.34 – Frequency Plots for Open Pit Acreage (acres)



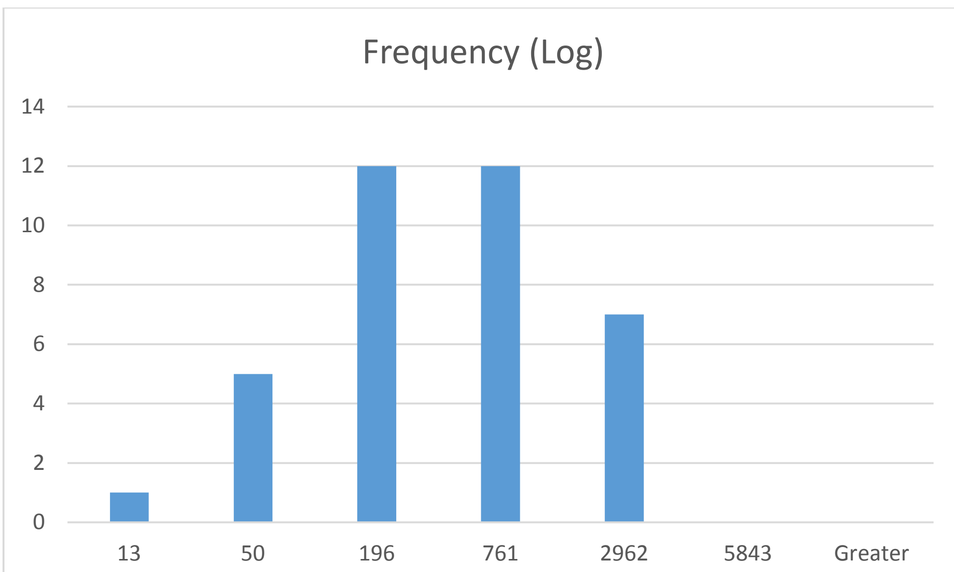
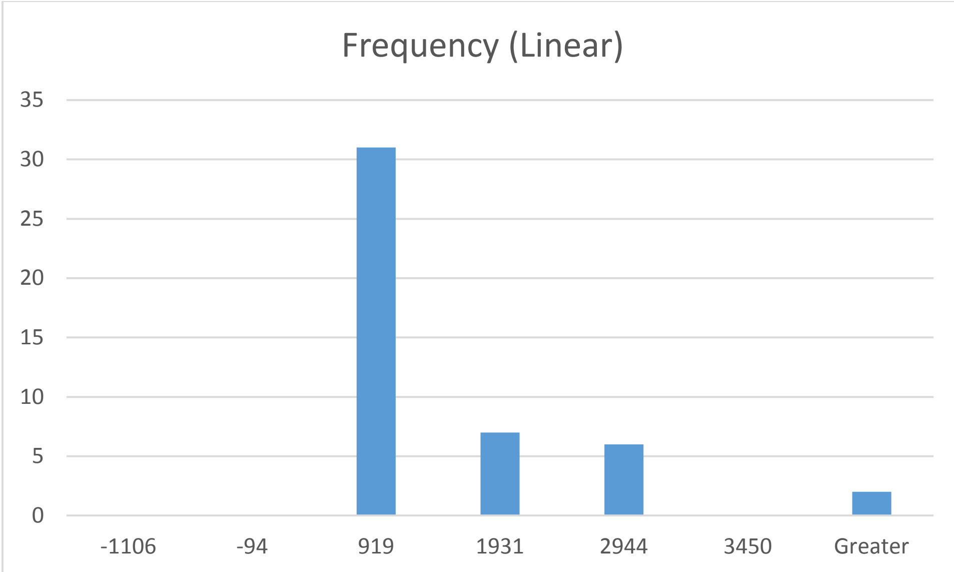


Table I.35 – Frequency Plots for Waste Rock Acreage (acres)



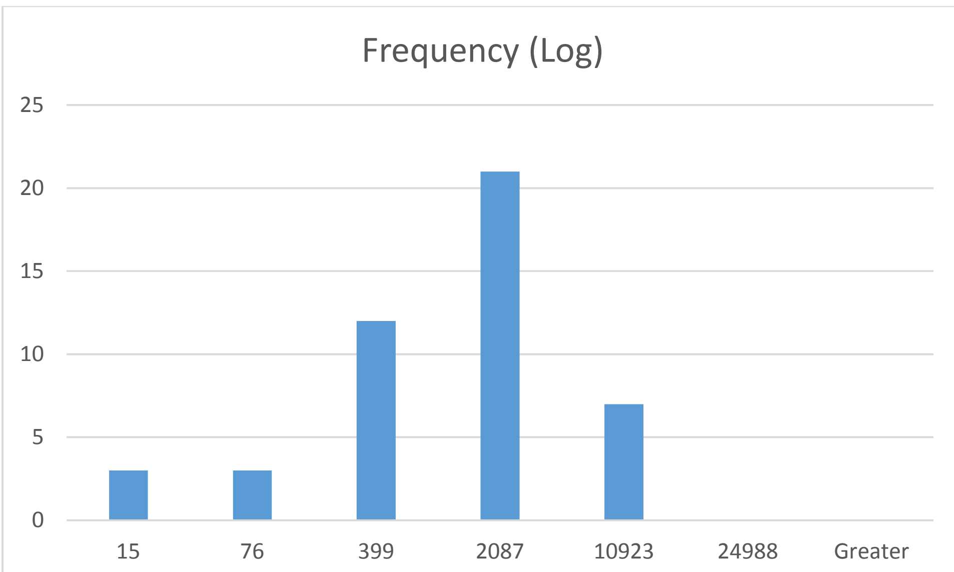
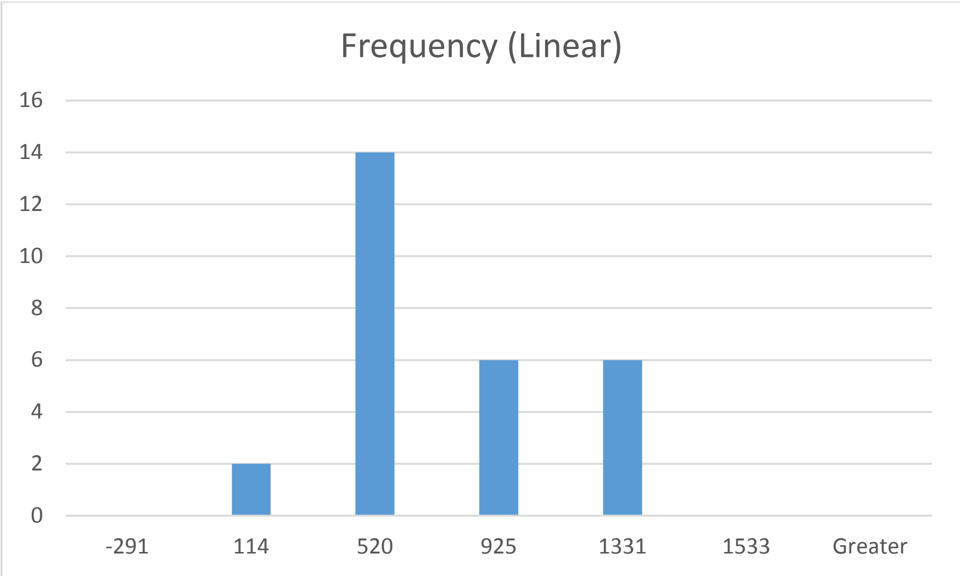


Figure I.36 – Frequency Plots for Heap/Dump Leach Acreage (acres)



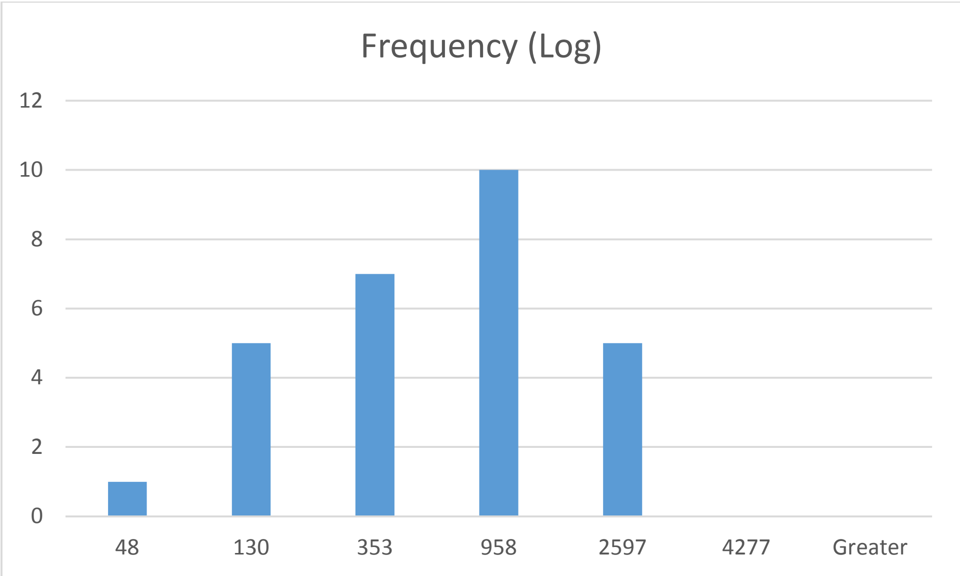


Figure I.37 – Frequency Plots for Tailings Facility Acreage (acres)

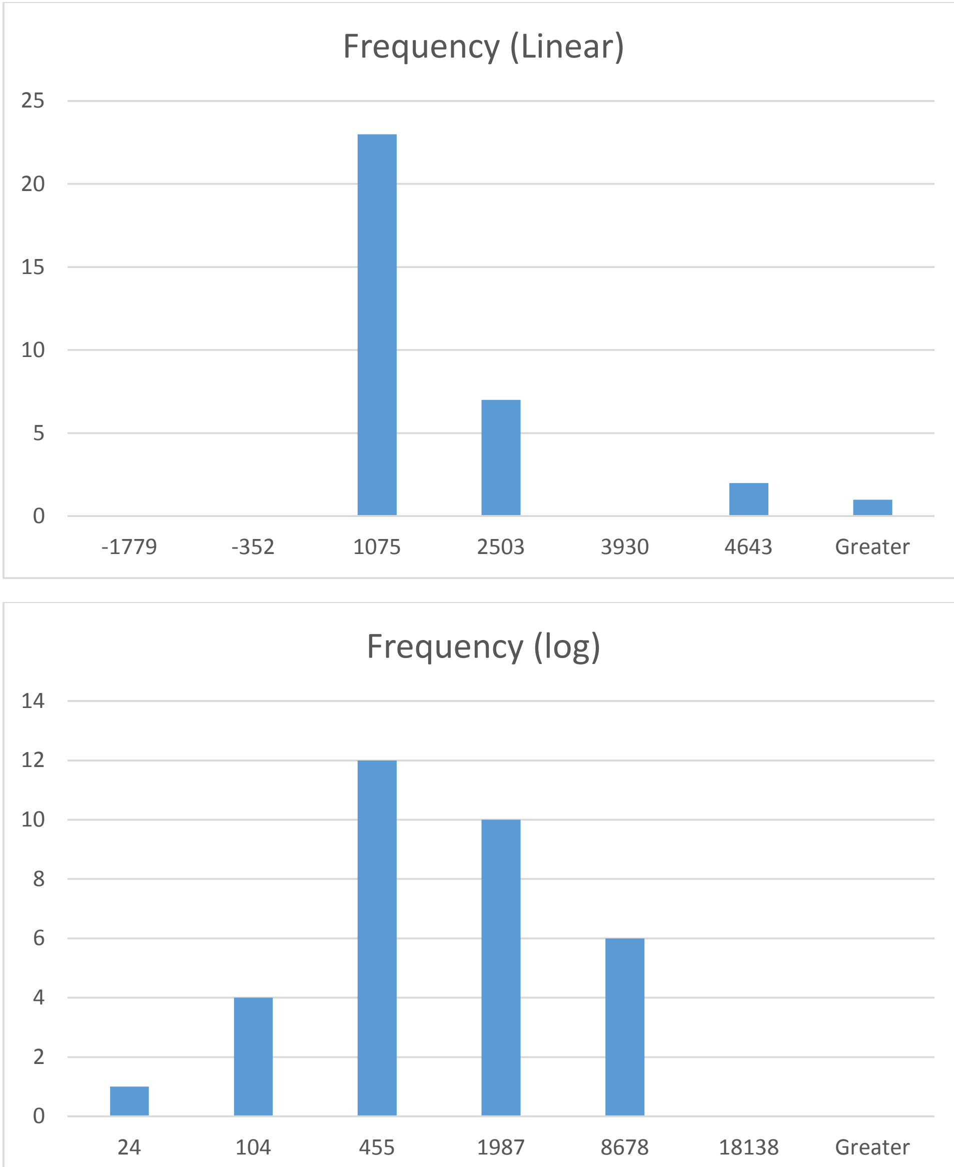
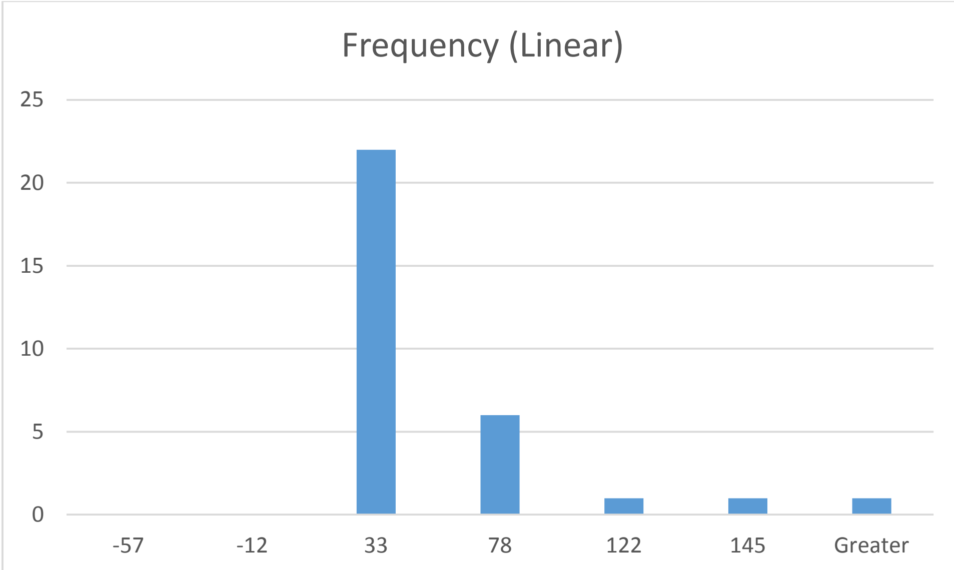


Figure I.38 – Frequency Plots for Process Pond/Reservoir Acreage (acres)



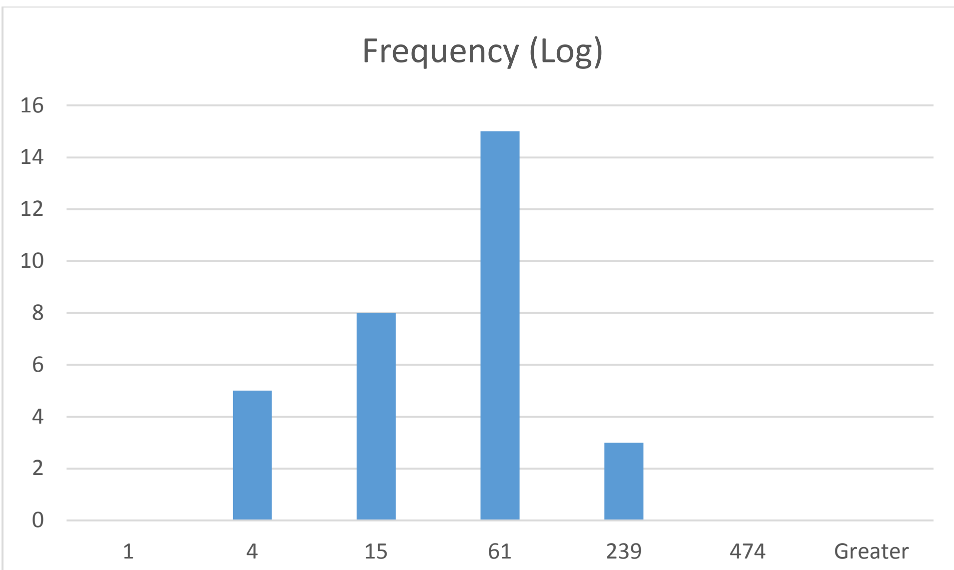


Figure I.39 – Frequency Plots for Site-wide Water Flow (gallons per minute)

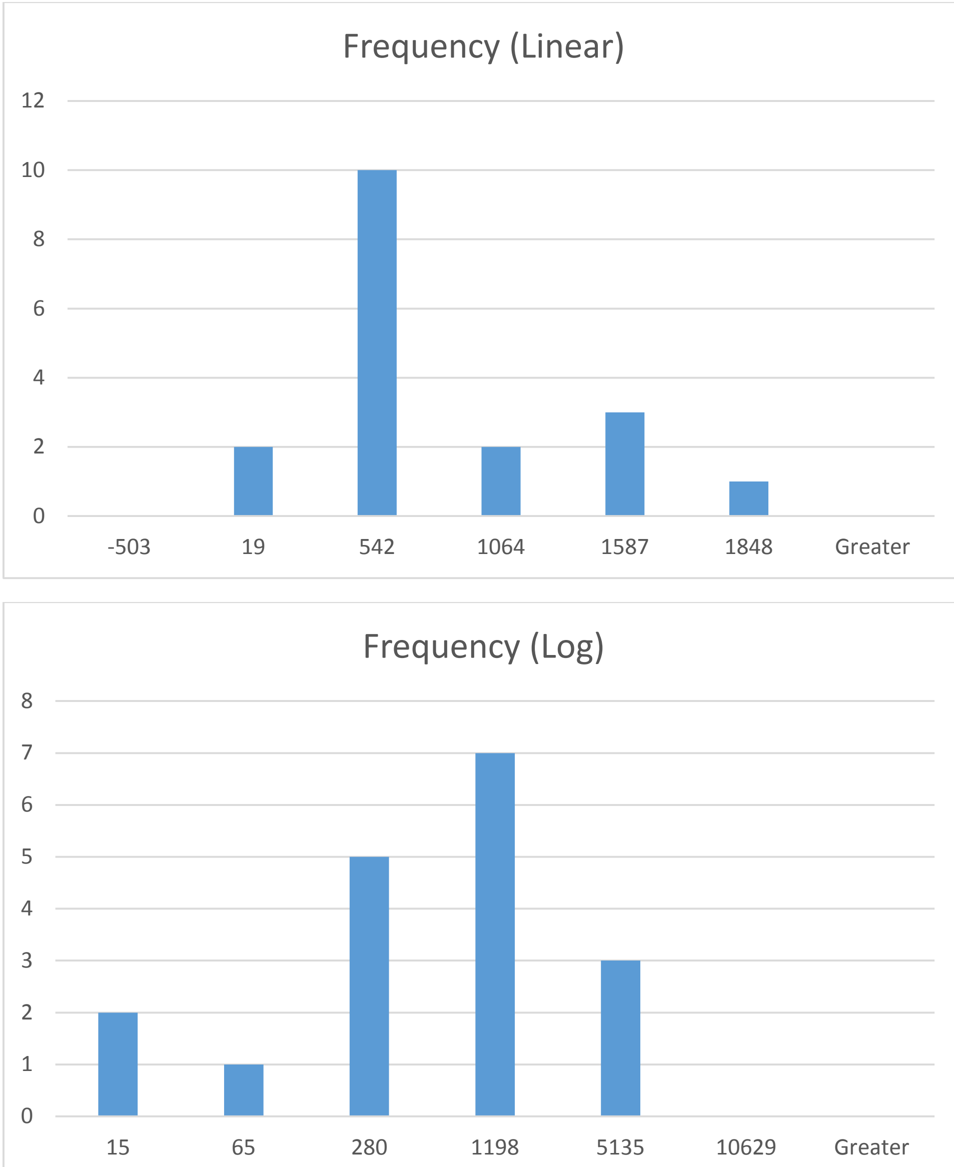
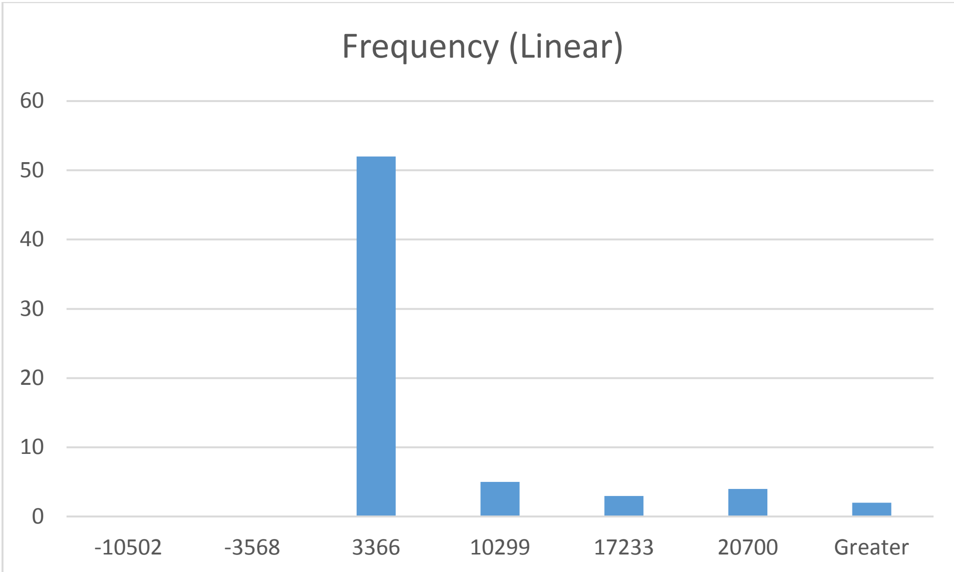


Figure I.40 – Frequency Plots for Distance to Surface Water (meters)



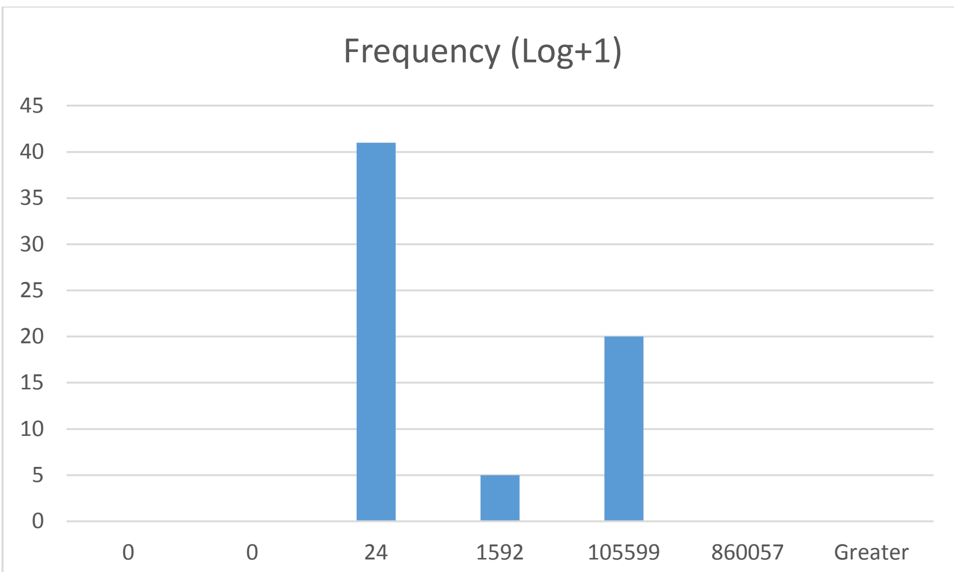
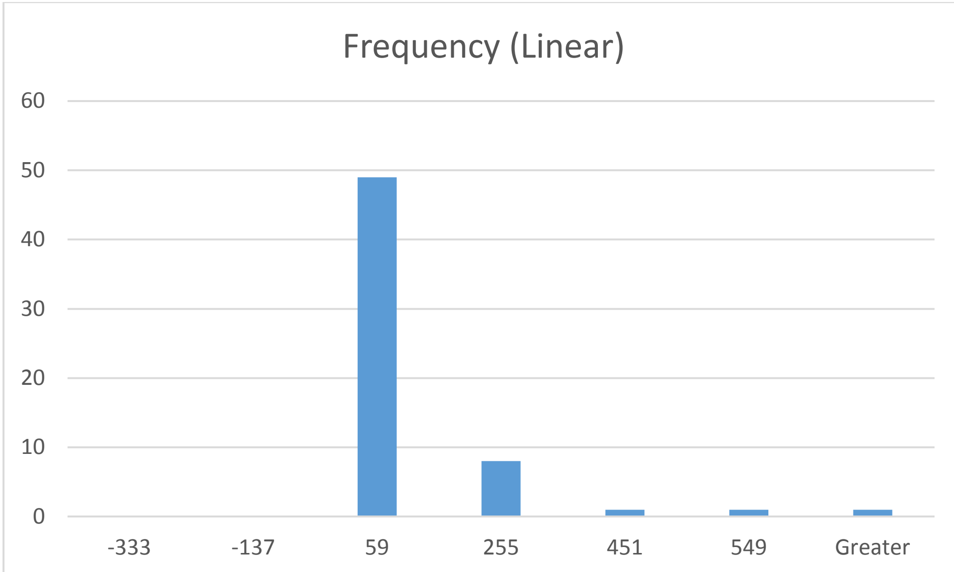


Figure I.41 – Frequency Plots for Depth to Groundwater (feet)



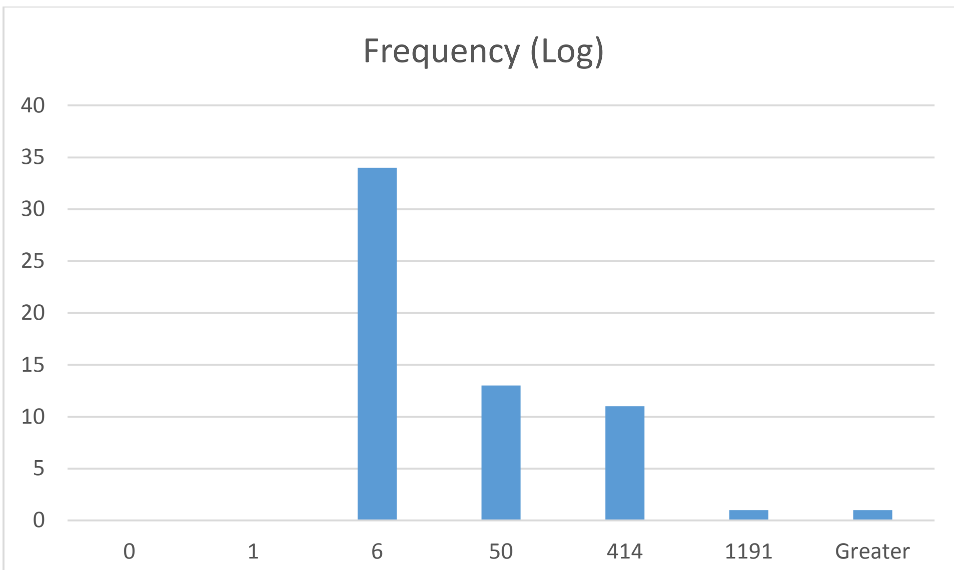
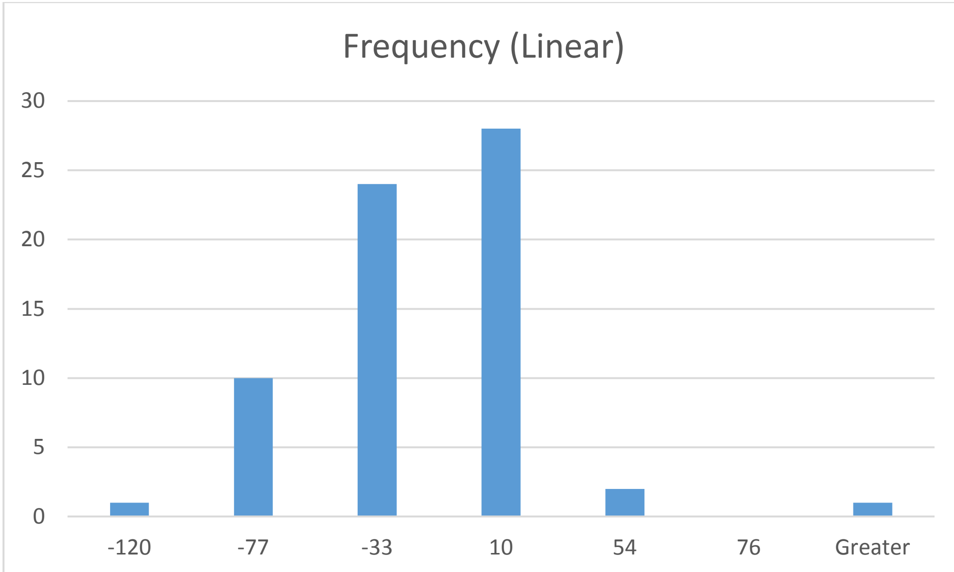


Figure I.42 – Frequency Plots for Net Precipitation (inches)



Appendix J:
Response Regression Results

This appendix summarizes the response regression results described in **Section 4** of this technical support document. The purpose of this appendix is to report the regression statistics and confidence intervals around the estimated coefficients. As described in **Section 3**, engineering cost and site acreage data were collected for 66 HRMFs. Then, EPA collected additional relevant site-specific data (i.e., explanatory variables) for the purpose of estimating the response component of the formula. EPA believed these explanatory variables, such as water-related factors and process methods, could potentially explain differences in costs likely to be incurred at different sites. Using these data, regression models were estimated for 11 engineering cost categories, including capital costs for various site features and site-wide O&M costs.

The 11 modeled engineering cost categories include the following:

- Capital costs of covering an open pit
- Capital costs of closing underground workings
- Capital costs of covering a waste rock pile
- Capital costs of covering a heap or dump leach
- Capital costs of covering a tailings impoundment or dry stack
- Capital costs of covering a process pond or reservoir
- Capital costs of installing drainage ditches and other drainage features
- Short-term emergency O&M and heap/dump leaches & tailings impoundment draindown
- Long-term O&M costs for water treatment
- Short-term O&M costs for short-term O&M and monitoring
- Long-term O&M costs for long-term O&M and monitoring

Regression models were not estimated for the following direct engineering cost categories due to data limitations:

- Capital costs of solid and hazardous waste disposal
- Capital costs of covering a slag pile

Table J.1 duplicates **Table 4.4** from the body of this document which lists the names and descriptions of all dependent and independent variables used in the regression analysis. Note that the variable names used in for performing the regressions make use of an underscore (or "_") where the subscript portion of the variable name begins. **Tables J.2** through **J.12** present the regression results for each modeled engineering cost category, the residuals for each observation in the regression, exponentiated residuals, and calculated smear factors. **Figures J.1** through **J.19** demonstrate the results in a series of line fit plots.

Table J.1. Variable Names and Forms Used in the Stepwise Regression Process

Variable	Description	Normality	Regression Form
DEPENDENT VARIABLES			
SolidHazardousWasteDisposal	Capital costs of solid and hazardous materials management and decontamination	lognormal	logarithmic, continuous
OpenPit	Capital costs of covering an open pit	lognormal	logarithmic, continuous
UndergroundMine	Capital costs of closing underground workings	lognormal	logarithmic, continuous
WasteRock	Capital costs of covering a waste rock pile	lognormal	logarithmic, continuous
HeapDumpLeach	Capital costs of covering a heap or dump leach	lognormal	logarithmic, continuous
TailingsFacility	Capital costs of covering a tailings impoundment or dry stack	lognormal	logarithmic, continuous
ProcessPondsReservoirs	Capital costs of covering a process pond or reservoir	lognormal	logarithmic, continuous
Drainage	Capital costs of installing drainage ditches and other drainage features	lognormal	logarithmic, continuous
InterimO&M	Short-term emergency O&M and heap/dump leaches & tailings impoundment draindown	lognormal	logarithmic, continuous
WaterTreatment	Long-term O&M costs for water treatment	lognormal	logarithmic, continuous
ShortTermO&MMonitoring	Short-term O&M costs for short-term O&M and monitoring	lognormal	logarithmic, continuous
LongTermO&MMonitoring	Long-term O&M costs for long-term O&M and monitoring	lognormal	logarithmic, continuous
INDEPENDENT VARIABLES			
$LogAcres_{OpenPit}$	Acres of open pit	lognormal	lognormal, continuous
$LogAcres_{WasteRock}$	Acres of waste rock piles	lognormal	lognormal, continuous
$LogAcres_{HeapDumpLeach}$	Acres of heap or dump leach	lognormal	lognormal, continuous
$LogAcres_{HeapDumpLeach+1}$	Acres of heap or dump leach (with linear transformation +1)	lognormal	lognormal, continuous

Variable	Description	Normality	Regression Form
$LogAcres_{Tailings}$	Acres of tailings impoundment or dry stack	lognormal	lognormal, continuous
$LogAcres_{WetTailings+1}$	Acres of wet tailings impoundment (with linear transformation +1)	lognormal	lognormal, continuous
$LogAcres_{ProcessPondReservoir}$	Acres of process ponds or reservoirs	lognormal	lognormal, continuous
$LogAcres_{Total+1}$	Total sitewide acreage (with linear transformation +1)	lognormal	lognormal, continuous
LogFlow	On-site water flows requiring long-term treatment in gallons per minute	lognormal	lognormal, continuous
$SourceControl_{OpenPit}$	If open pit capital costs include source controls = 1, else = 0	neither	binary
HydraulicHead	If underground workings had hydraulic head requiring a pressurized bulkhead = 1, else = 0	neither	binary
$SourceControl_{WasteRock}$	If waste rock pile capital costs include source controls = 1, else = 0	neither	binary
$SourceControl_{HeapDumpLeach}$	If heap or dump leach capital costs include source controls = 1, else = 0	neither	binary
$SourceControl_{Tailings}$	If tailings impoundment or dry stack capital costs include source controls = 1, else = 0	neither	binary
DistanceSurfaceWater	Distance to the nearest surface water = 1, else = 0	neither	binary
BelowGroundwater	Below groundwater table = 1, else = 0	neither	binary
NetPrecipitation	Net precipitation in inches	normal	linear, continuous
Flotation	Use of floatation chemicals = 1, else = 0	neither	binary
CyanideLeach	Use of cyanide leaching = 1, else = 0	neither	binary
AcidLeach	Use of acid leaching = 1, else = 0	neither	binary
InSituLeach	Use of in-situ leaching = 1, else = 0	neither	binary
Treat	Pumped water obtaining treatment = 1, else = 0	neither	binary

Table J.2. Open Pit Capital Cost Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.76
R Square	0.57
Adjusted R Square	0.55
Standard Error	0.70
Observations	37.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2.00	22.57	11.29	22.76	5.3E-07
Residual	34.00	16.86	0.50		
Total	36.00	39.43			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	2.88	0.48	6.03	7.8E-07	1.91	3.84	1.91	3.84
LogAcres_OpenPit	1.08	0.20	5.42	4.9E-06	0.67	1.48	0.67	1.48
SourceControl_OpenPit	1.36	0.31	4.33	1.3E-04	0.72	2.00	0.72	2.00

RESIDUAL OUTPUT

Observation	*Residual (û)*	*10^û*	*Observation*	*Residual (û)*	*10^û*
1	-0.33	0.47	20	0.55	3.57
2	-0.25	0.56	21	-0.33	0.47
3	-1.41	0.04	22	-0.54	0.29
4	-0.15	0.71	23	-0.36	0.44
5	-0.73	0.19	24	0.39	2.46
6	-0.12	0.76	25	0.95	8.92
7	0.22	1.67	26	-0.24	0.58
8	-0.19	0.65	27	-0.51	0.31
9	0.40	2.50	28	0.66	4.60
10	-0.24	0.57	29	0.12	1.31
11	-0.55	0.28	30	0.40	2.50
12	-1.34	0.05	31	1.20	15.67
13	-0.17	0.67	32	0.72	5.28
14	-0.89	0.13	33	0.04	1.10
15	-0.03	0.94	34	0.19	1.55
16	-0.33	0.47	35	0.89	7.72
17	0.16	1.45	36	0.42	2.60
18	-0.85	0.14	37	2.06	114.50
19	0.18	1.53	**Smear Factor (mean of 10^û)**		**5.07**

Figure J.1. Open Pit Line Fit Plot – Log Capital Costs (OpenPit) vs. Log Acreage (LogAcres_OpenPit)

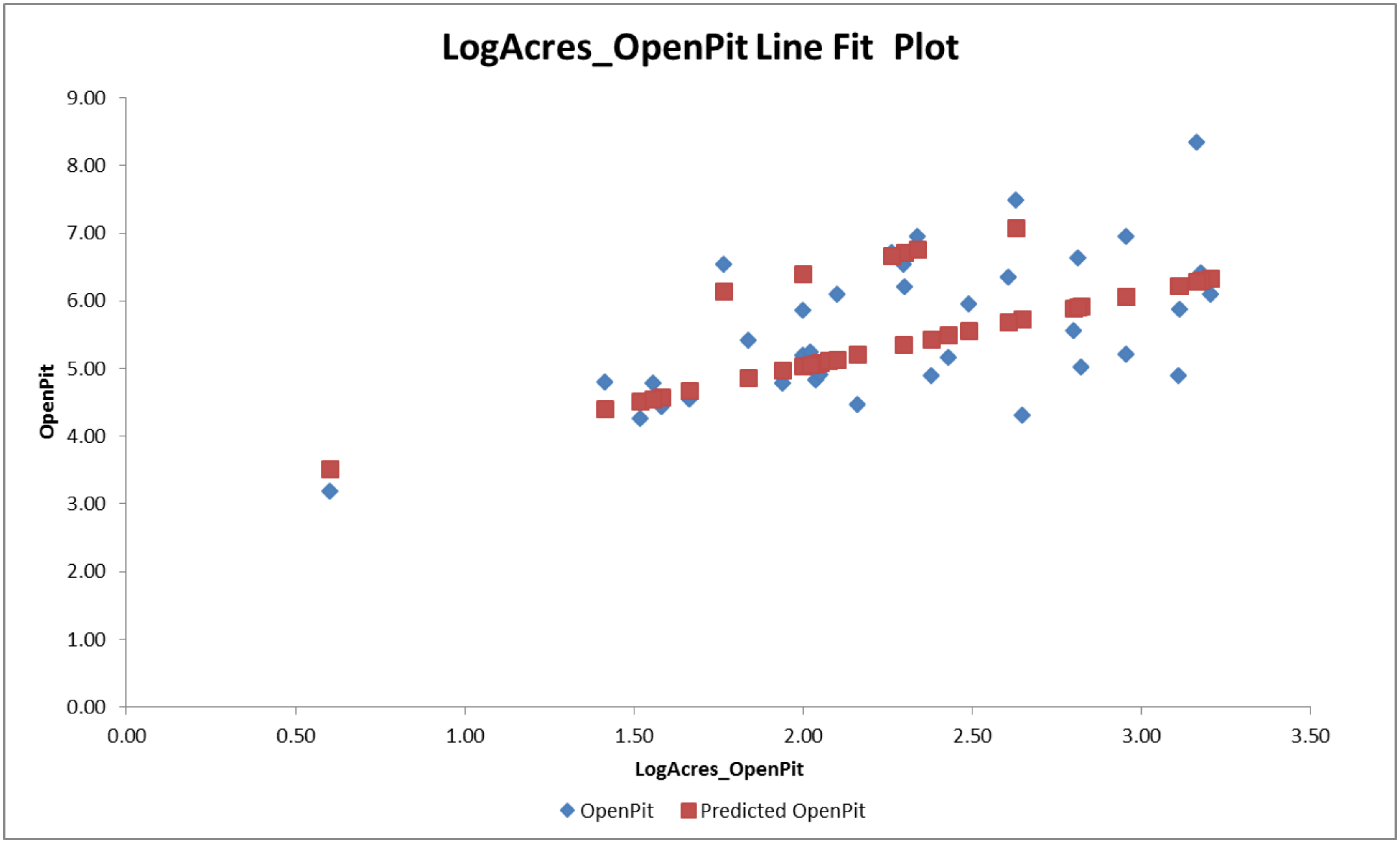


Figure J.2. Open Pit Line Fit Plot – Log Capital Costs (OpenPit) vs. Source Control (SourceControl_OpenPit)

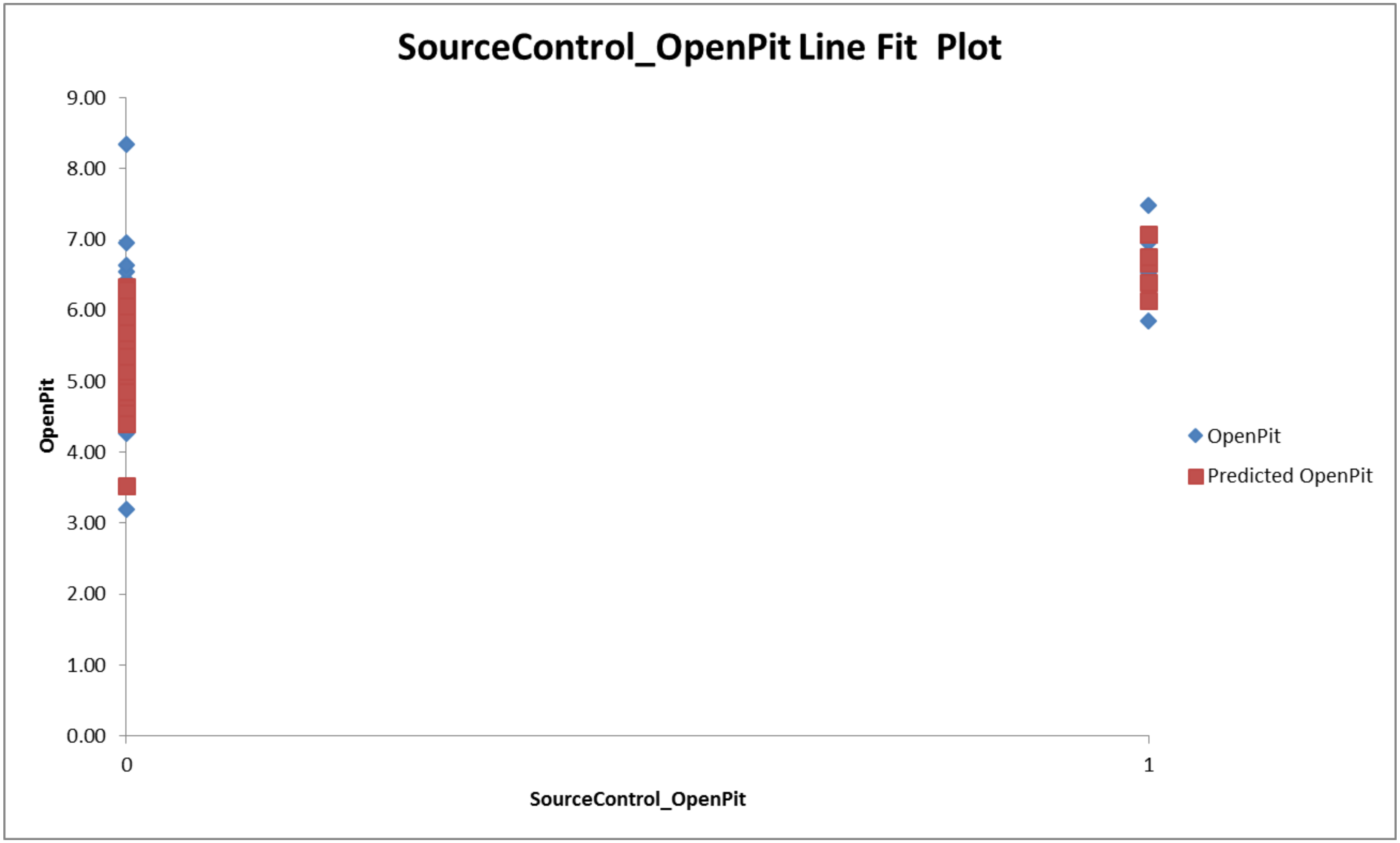


Table J.3. Underground Mine Capital Cost Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.61
R Square	0.37
Adjusted R Square	0.32
Standard Error	0.66
Observations	14.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1.00	3.11	3.11	7.05	2.1E-02
Residual	12.00	5.30	0.44		
Total	13.00	8.42			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	4.96	0.19	25.84	6.9E-12	4.54	5.38	4.54	5.38
HydraulicHead	1.35	0.51	2.65	2.1E-02	0.24	2.45	0.24	2.45

RESIDUAL OUTPUT

Observation	***Residual (û)***	***10^û***
1	-0.94	0.12
2	-0.85	0.14
3	-0.84	0.14
4	-0.57	0.27
5	-0.21	0.61
6	0.07	1.19
7	0.09	1.22
8	0.20	1.57
9	0.72	5.27
10	0.77	5.88
11	0.77	5.88
12	0.80	6.26
13	-0.34	0.46
14	0.34	2.17
Smear Factor (mean of 10^û)		**2.23**

Figure J.3. Underground Mine Line Fit Plot – Log Capital Costs (UndergroundMine) vs. Hydraulic Head (HydraulicHead)

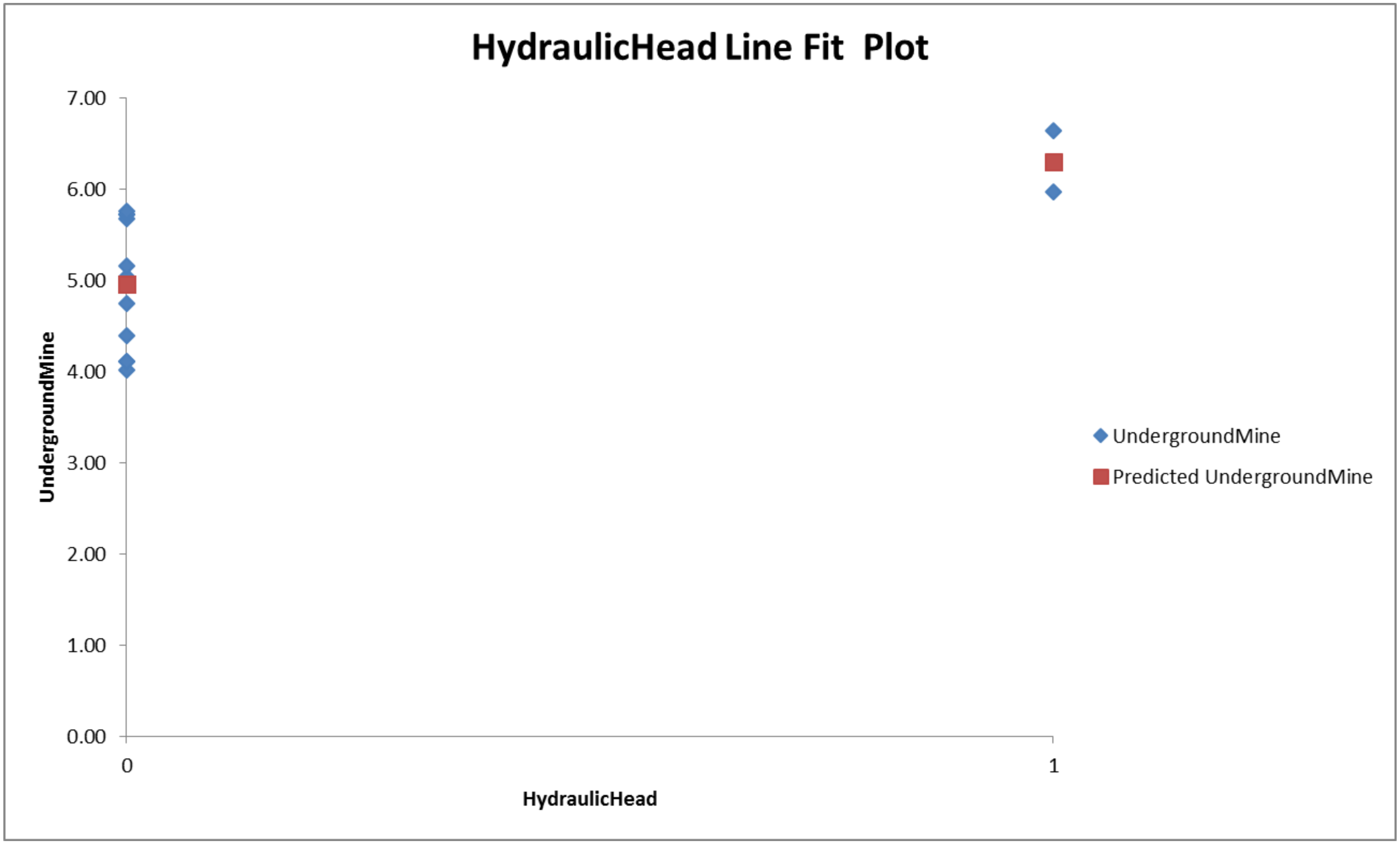


Table J.4. Waste Rock Capital Cost Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.78
R Square	0.61
Adjusted R Square	0.59
Standard Error	0.50
Observations	46.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2.00	16.68	8.34	34.02	1.4E-09
Residual	43.00	10.54	0.25		
Total	45.00	27.23			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	4.45	0.28	16.01	9.9E-20	3.89	5.01	3.89	5.01
LogAcres_WasteRock	0.75	0.10	7.33	4.2E-09	0.55	0.96	0.55	0.96
SourceControl_WasteRock	0.73	0.20	3.57	9.0E-04	0.32	1.14	0.32	1.14

RESIDUAL OUTPUT

Observation	*Residual (û)*	*10^û*	*Observation*	*Residual (û)*	*10^û*
1	-1.28	0.05	24	0.07	1.16
2	-0.13	0.74	25	0.35	2.25
3	0.46	2.91	26	0.09	1.23
4	0.17	1.48	27	-0.29	0.51
5	-0.61	0.24	28	-0.12	0.77
6	-0.60	0.25	29	-0.01	0.97
7	-0.39	0.41	30	0.30	1.99
8	-0.38	0.41	31	0.34	2.20
9	0.27	1.85	32	0.21	1.64
10	-0.26	0.54	33	0.52	3.30
11	-0.85	0.14	34	0.53	3.40
12	0.02	1.06	35	-0.28	0.53
13	-0.73	0.19	36	0.13	1.36
14	-0.37	0.42	37	0.65	4.48
15	-0.59	0.26	38	0.71	5.19
16	-0.11	0.78	39	-0.17	0.68
17	0.02	1.05	40	-0.51	0.31
18	-0.04	0.90	41	0.12	1.31
19	-0.09	0.82	42	0.96	9.09
20	-0.18	0.66	43	0.19	1.55
21	-0.34	0.46	44	0.26	1.81
22	-0.03	0.92	45	1.03	10.77
23	-0.09	0.82	46	1.04	11.00
				Smear Factor (mean of 10^û)	**1.85**

Figure J.4. Waste Rock Line Fit Plot – Log Capital Costs (WasteRock) vs. Log Acreage (LogAcres_WasteRock)

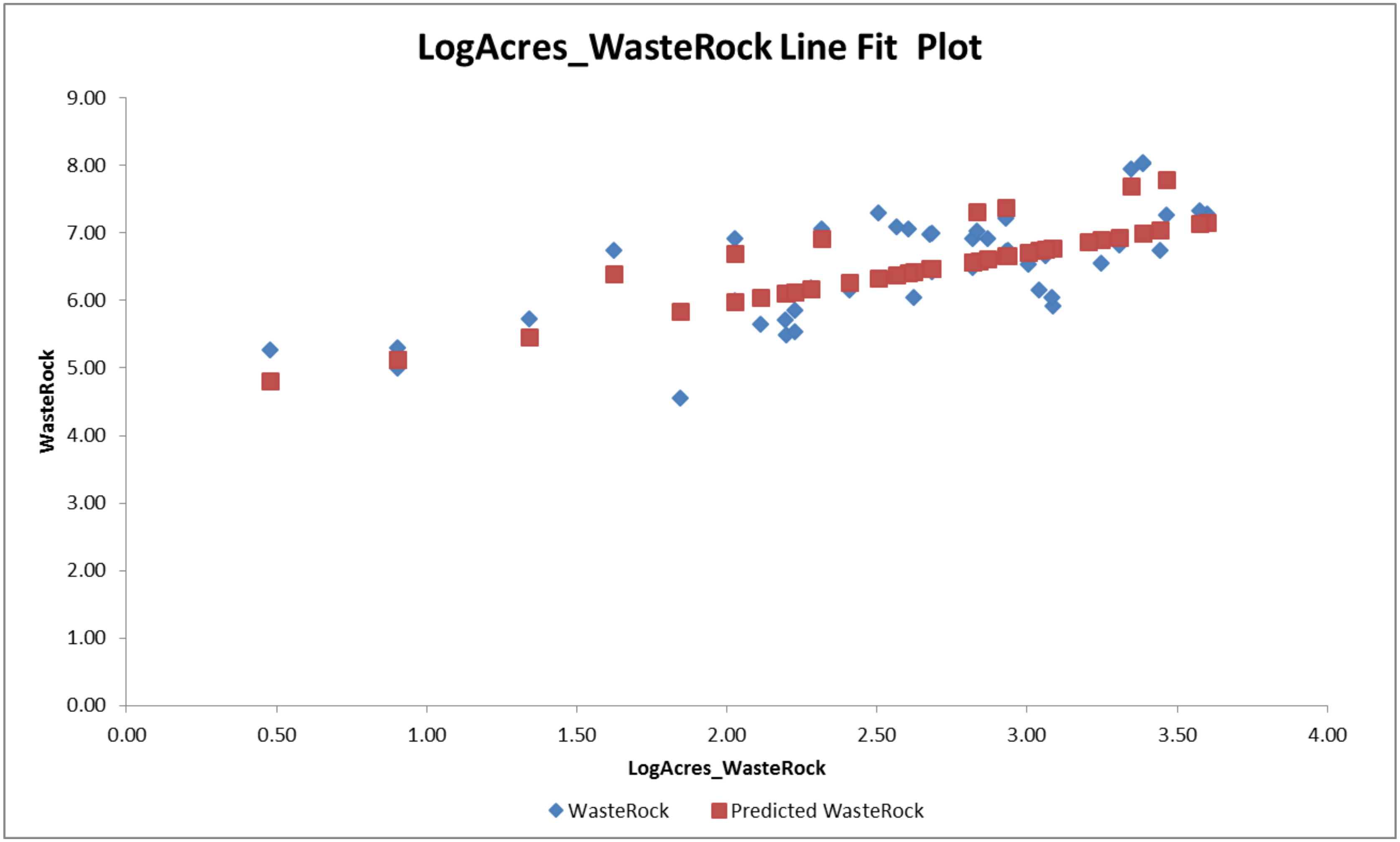


Figure J.5. Waste Rock Line Fit Plot – Log Capital Costs (WasteRock) vs. Source Control (SourceControl_WasteRock)

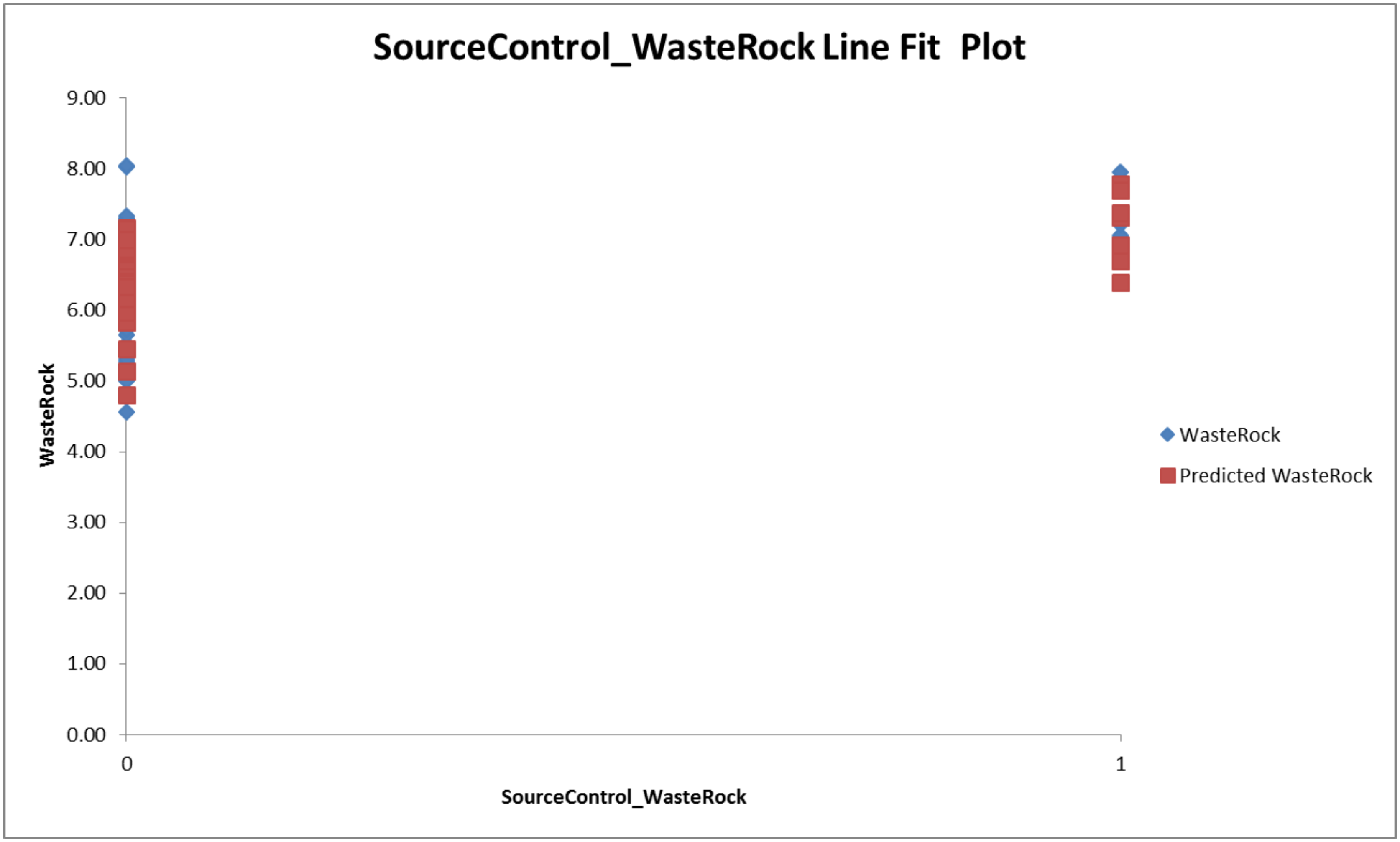


Table J.5. Heap and Dump Leach Capital Cost Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.60
R Square	0.36
Adjusted R Square	0.31
Standard Error	0.63
Observations	28.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2.00	5.59	2.80	7.16	3.5E-03
Residual	25.00	9.77	0.39		
Total	27.00	15.36			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	3.87	0.73	5.34	1.6E-05	2.38	5.37	2.38	5.37
LogAcres_HeapDumpLeach	1.01	0.28	3.61	1.4E-03	0.43	1.58	0.43	1.58
SourceControl_HeapDumpLeach	0.70	0.46	1.51	1.4E-01	-0.25	1.65	-0.25	1.65

RESIDUAL OUTPUT

Observation	*Residual (û)*	*10^û*	*Observation*	*Residual (û)*	*10^û*
1	-0.64	0.23	15	-0.04	0.92
2	-0.94	0.11	16	-0.14	0.73
3	-1.21	0.06	17	-0.40	0.40
4	-0.36	0.43	18	0.25	1.79
5	-0.11	0.78	19	-0.14	0.73
6	-0.53	0.29	20	0.06	1.15
7	-0.80	0.16	21	-0.08	0.84
8	-0.91	0.12	22	0.53	3.42
9	0.04	1.09	23	1.05	11.11
10	-0.30	0.50	24	0.39	2.44
11	0.38	2.39	25	0.31	2.04
12	0.41	2.57	26	0.90	7.99
13	-0.07	0.85	27	0.80	6.33
14	0.46	2.90	28	1.07	11.78
			Smear Factor (mean of 10^û)		**2.29**

Figure J.6. Heap and Dump Leach Line Fit Plot – Log Capital Costs (HeapDumpLeach) vs. Log Acreage (LogAcres_HeapDumpLeach)

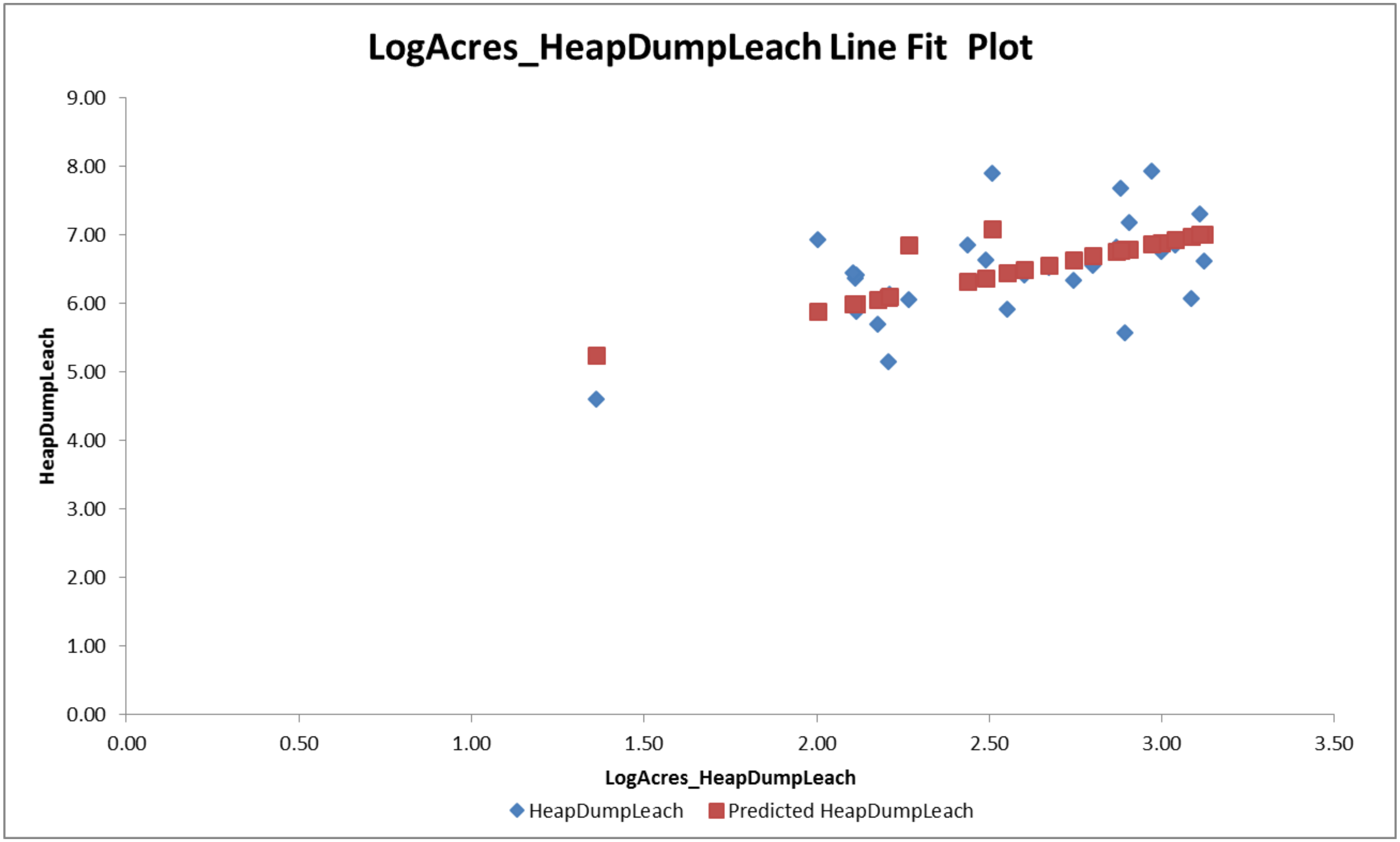


Figure J.7. Heap and Dump Leach Line Fit Plot – Log Capital Costs (HeapDumpLeach) vs. Source Control (SourceControl_HeapDumpLeach)

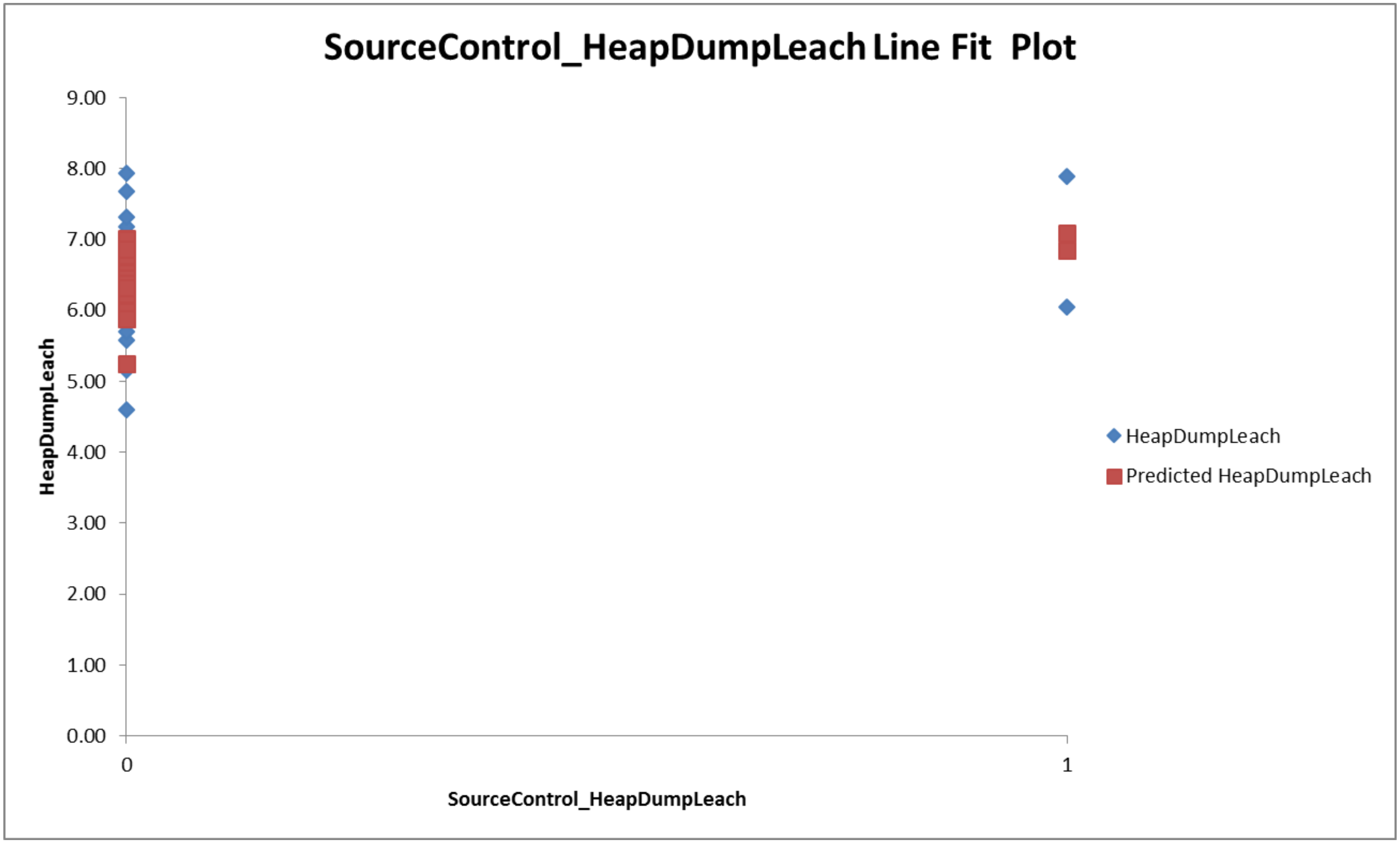


Table J.6. Tailings Facility Capital Cost Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.66
R Square	0.44
Adjusted R Square	0.40
Standard Error	0.50
Observations	33.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2.00	5.94	2.97	11.82	1.6E-04
Residual	30.00	7.53	0.25		
Total	32.00	13.47			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	4.73	0.40	11.74	9.7E-13	3.90	5.55	3.90	5.55
LogAcres_Tailings	0.68	0.14	4.73	5.1E-05	0.38	0.97	0.38	0.97
SourceControl_Tailings	0.59	0.25	2.35	2.6E-02	0.08	1.11	0.08	1.11

RESIDUAL OUTPUT

Observation	***Residual (û)***	***10^û***	***Observation***	***Residual (û)***	***10^û***
1	-0.99	0.10	18	-0.08	0.83
2	-1.08	0.08	19	0.37	2.32
3	-0.55	0.28	20	0.25	1.78
4	-0.37	0.42	21	-0.45	0.35
5	-0.61	0.25	22	0.07	1.19
6	-0.48	0.33	23	-0.08	0.83
7	-0.17	0.68	24	0.25	1.77
8	-0.14	0.72	25	0.48	3.05
9	0.30	2.00	26	-0.04	0.91
10	0.34	2.20	27	0.50	3.14
11	-0.47	0.34	28	0.31	2.04
12	0.34	2.21	29	0.14	1.38
13	0.08	1.21	30	0.37	2.32
14	-0.62	0.24	31	-0.09	0.81
15	0.24	1.73	32	0.77	5.85
16	-0.23	0.60	33	0.98	9.54
17	0.68	4.77	**Smear Factor (mean of 10^û)**		**1.71**

Figure J.8. Tailings Facility Line Fit Plot – Log Capital Costs (Tailings Facility) vs. Log Acreage (LogAcres_Tailings)

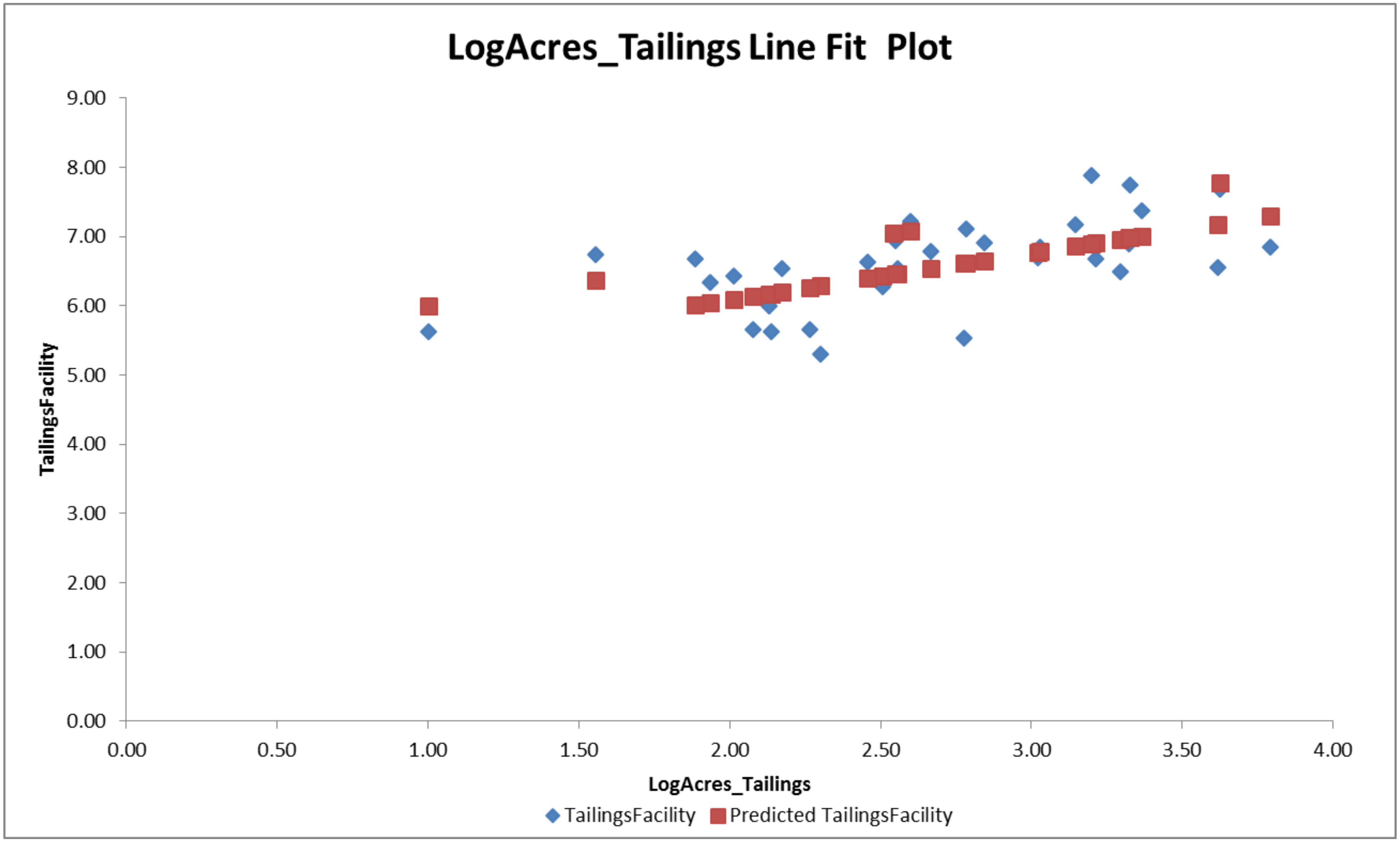


Figure J.9. Tailings Facility Line Fit Plot – Capital Costs vs. Source Control

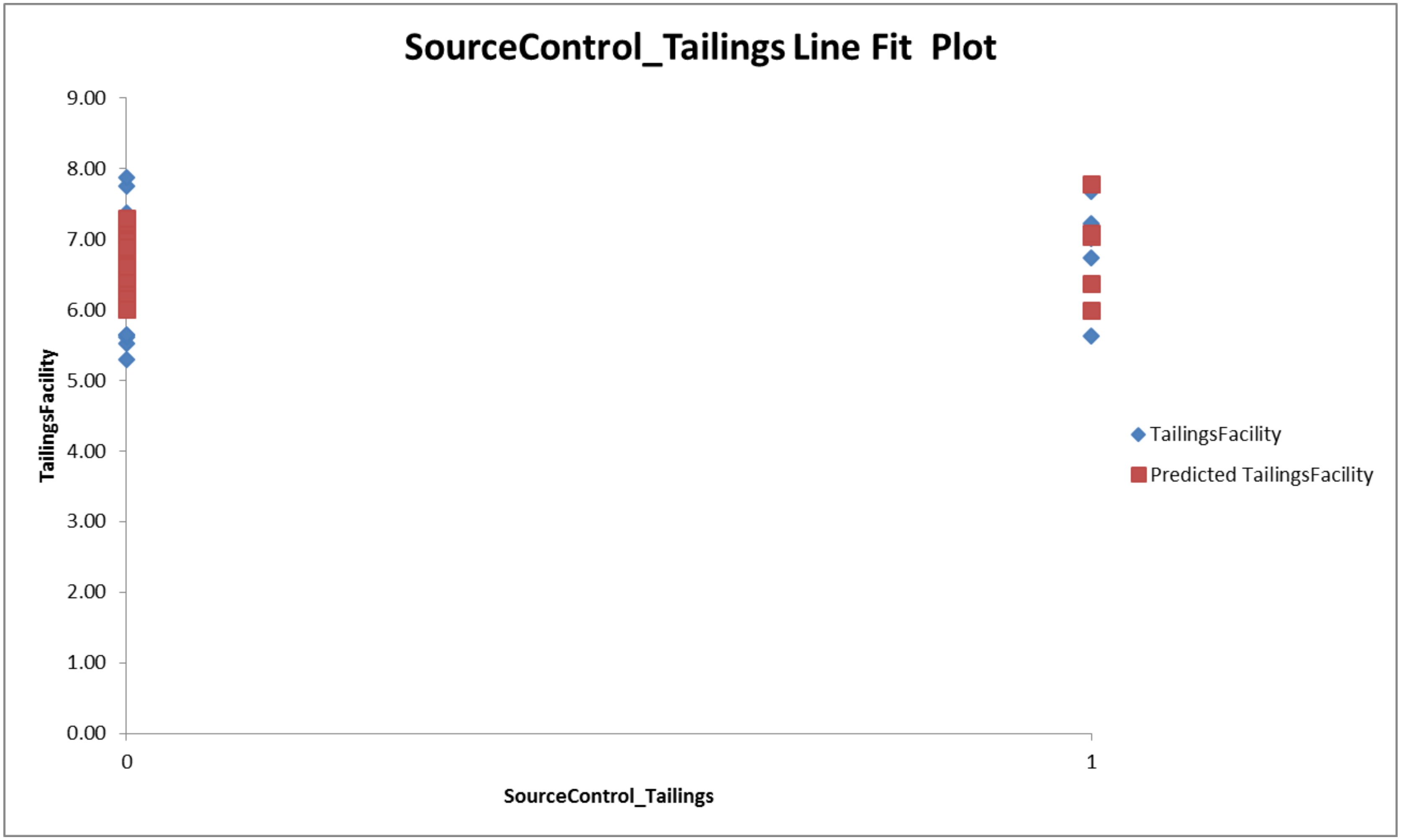


Table J.7. Process Ponds and Reservoirs Capital Cost Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.81
R Square	0.65
Adjusted R Square	0.64
Standard Error	0.45
Observations	31.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1.00	11.02	11.02	54.27	4.1E-08
Residual	29.00	5.89	0.20		
Total	30.00	16.91			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	4.29	0.18	23.26	2.7E-20	3.92	4.67	3.92	4.67
LogAcres_ProcessPondReservoir	1.03	0.14	7.37	4.1E-08	0.75	1.32	0.75	1.32

RESIDUAL OUTPUT

Observation	***Residual (û)***	***10^û***	***Observation***	***Residual (û)***	***10^û***
1	-0.53	0.30	17	-0.22	0.60
2	-0.04	0.90	18	-0.10	0.80
3	0.01	1.01	19	-0.40	0.39
4	-1.08	0.08	20	0.31	2.05
5	-0.30	0.51	21	-0.11	0.78
6	0.03	1.06	22	-0.04	0.92
7	0.24	1.74	23	0.18	1.53
8	-0.56	0.28	24	-0.03	0.93
9	-0.31	0.49	25	0.27	1.86
10	0.31	2.06	26	-0.44	0.36
11	-0.54	0.29	27	-0.08	0.84
12	0.34	2.19	28	0.54	3.44
13	0.20	1.60	29	0.84	6.92
14	-0.48	0.33	30	0.83	6.72
15	0.05	1.12	31	0.84	6.95
16	0.27	1.84	**Smear Factor (mean of 10^û)**		**1.64**

Figure J.10. Process Ponds and Reservoirs Line Fit Plot – Log Capital Costs (ProcessPondsReservoirs) vs. Log Acreage (LogAcres_ProcessPondReservoir)

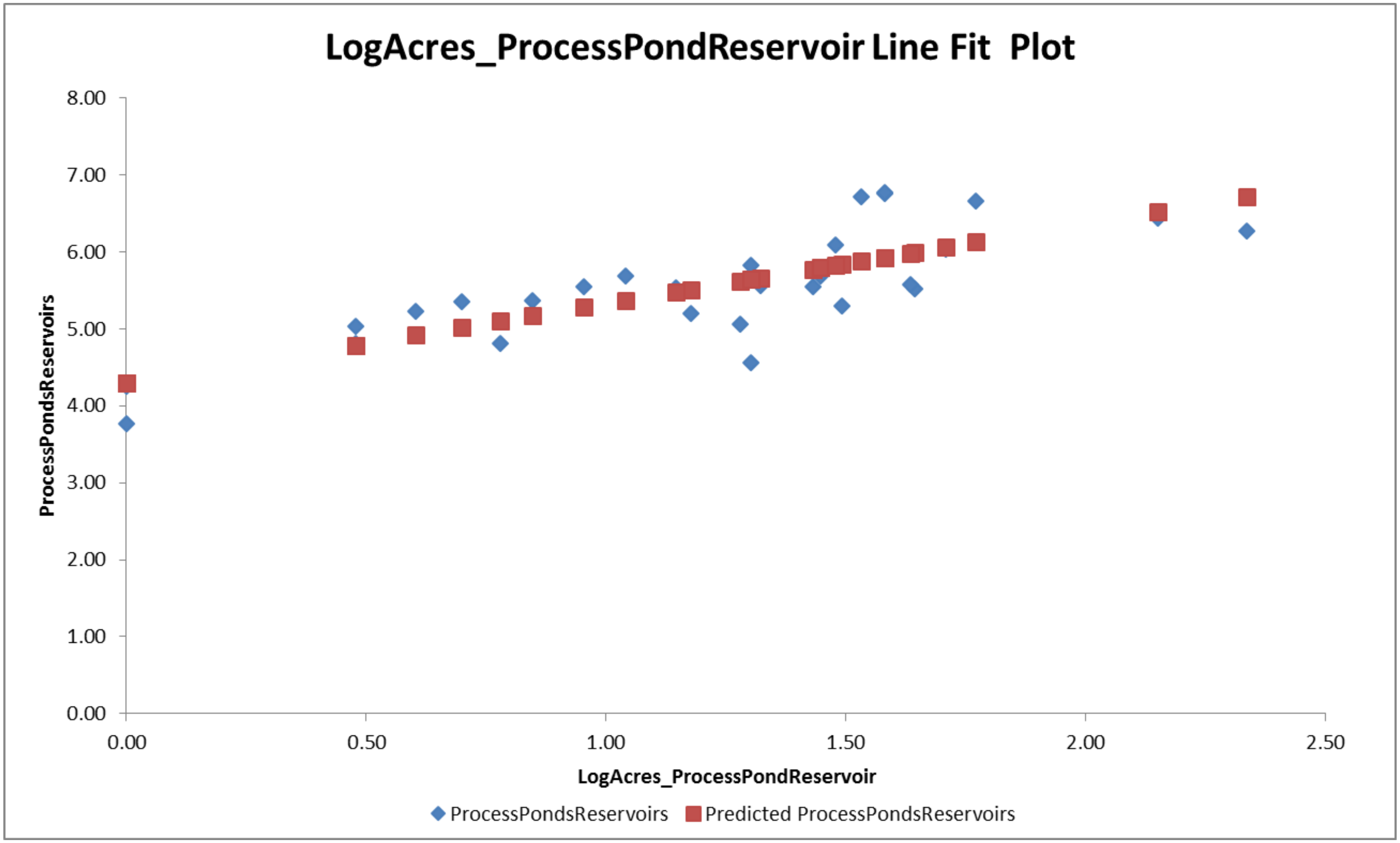


Table J.8. Drainage Capital Cost Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.39
R Square	0.16
Adjusted R Square	0.12
Standard Error	1.06
Observations	27.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1.00	5.17	5.17	4.59	4.2E-02
Residual	25.00	28.19	1.13		
Total	26.00	33.36			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	3.42	0.80	4.27	2.5E-04	1.77	5.07	1.77	5.07
LogAcres_Total+1	0.57	0.26	2.14	4.2E-02	0.02	1.11	0.02	1.11

RESIDUAL OUTPUT

Observation	***Residual (û)***	***10^û***	***Observation***	***Residual (û)***	***10^û***
1	-1.10	0.08	15	-0.33	0.47
2	-1.36	0.04	16	1.15	14.05
3	-1.05	0.09	17	-0.16	0.69
4	-1.36	0.04	18	0.17	1.49
5	-0.08	0.83	19	0.04	1.09
6	-1.39	0.04	20	0.44	2.76
7	-0.89	0.13	21	0.47	2.97
8	-1.36	0.04	22	0.93	8.46
9	-0.70	0.20	23	1.25	17.85
10	-0.89	0.13	24	1.62	41.62
11	-0.03	0.94	25	1.64	43.68
12	-0.43	0.37	26	1.90	78.94
13	0.41	2.54	27	1.58	38.27
14	-0.48	0.33	**Smear Factor (mean of 10^û)**		**9.56**

Figure J.11. Drainage Control Line Fit Plot – Log Capital Costs (Drainage) vs. Log Sitewide Acreage (LogAcres_Total+1)

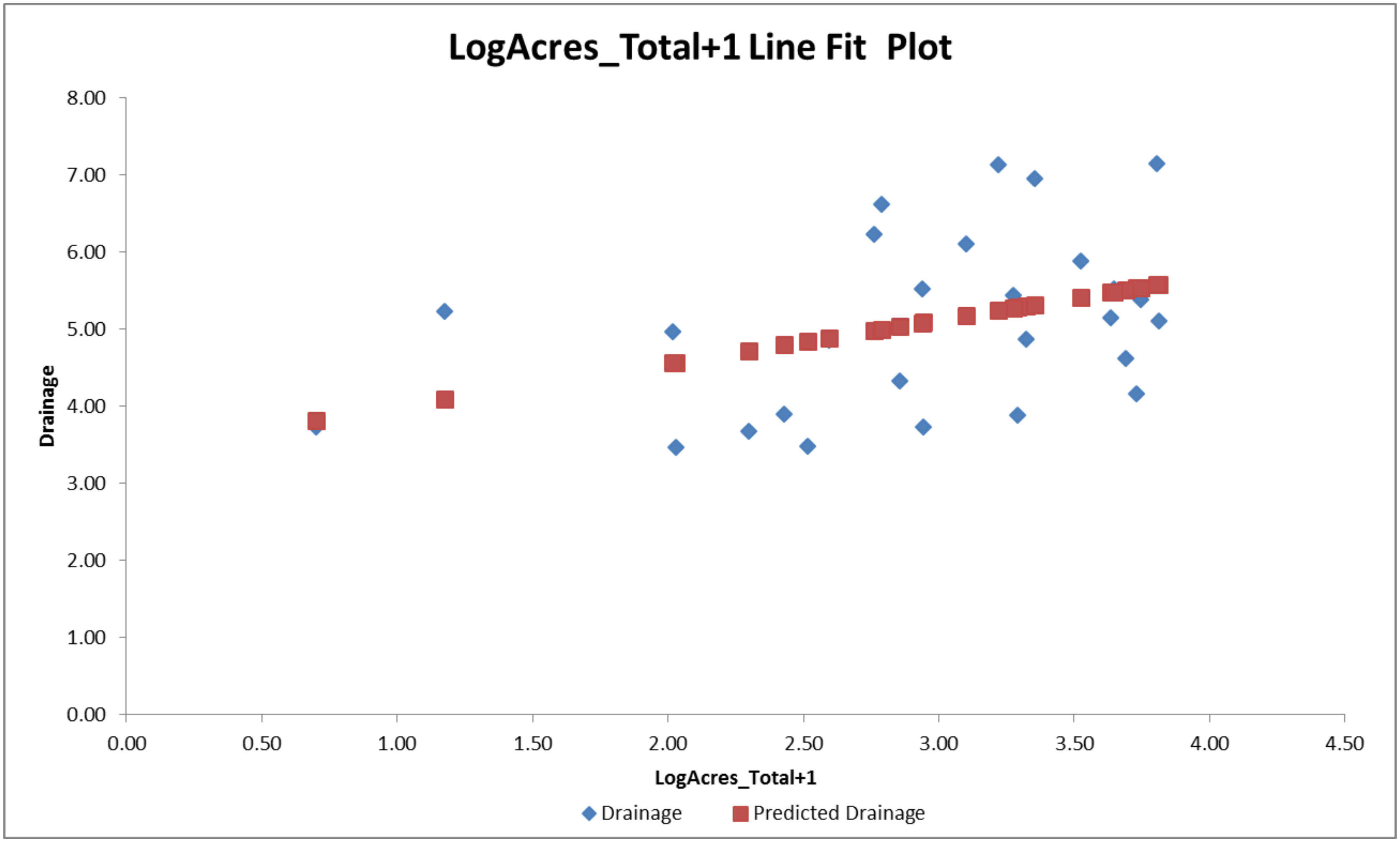


Table J.9. Interim O&M Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.70
R Square	0.49
Adjusted R Square	0.44
Standard Error	0.42
Observations	32.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3.00	4.68	1.56	9.04	2.4E-04
Residual	28.00	4.83	0.17		
Total	31.00	9.51			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	6.04	0.16	38.80	6.9E-26	5.72	6.36	5.72	6.36
NetPrecipitation	0.01	0.00	3.76	8.0E-05	0.00	0.01	0.00	0.01
LogAcres_HeapDumpLeach+1	0.34	0.07	4.89	3.8E-05	0.20	0.48	0.20	0.48
LogAcres_WetTailings+1	0.10	0.05	1.91	6.6E-02	-0.01	0.21	-0.01	0.21

RESIDUAL OUTPUT

Observation	***Residual (û)***	***10^û***	***Observation***	***Residual (û)***	***10^û***
1	-0.68	0.21	18	0.08	1.21
2	-0.41	0.39	19	-0.37	0.43
3	-0.50	0.32	20	0.11	1.28
4	-0.80	0.16	21	0.10	1.26
5	-0.58	0.26	22	0.05	1.12
6	-0.42	0.38	23	0.01	1.01
7	-0.03	0.94	24	0.43	2.71
8	-0.07	0.85	25	0.76	5.78
9	-0.07	0.84	26	0.09	1.22
10	0.11	1.29	27	-0.25	0.56
11	-0.18	0.67	28	0.31	2.02
12	0.52	3.34	29	0.34	2.19
13	-0.14	0.72	30	0.75	5.65
14	0.17	1.47	31	0.19	1.54
15	-0.49	0.32	32	0.36	2.27
16	0.49	3.07	33	0.08	1.21
17	0.12	1.32	34	-0.37	0.43
				Smear Factor (mean of 10^û)	**1.46**

Figure J.12. Interim O&M Line Fit Plot – Log Annual O&M Costs (InterimO&M) vs. Net Precipitation (NetPrecipitation)

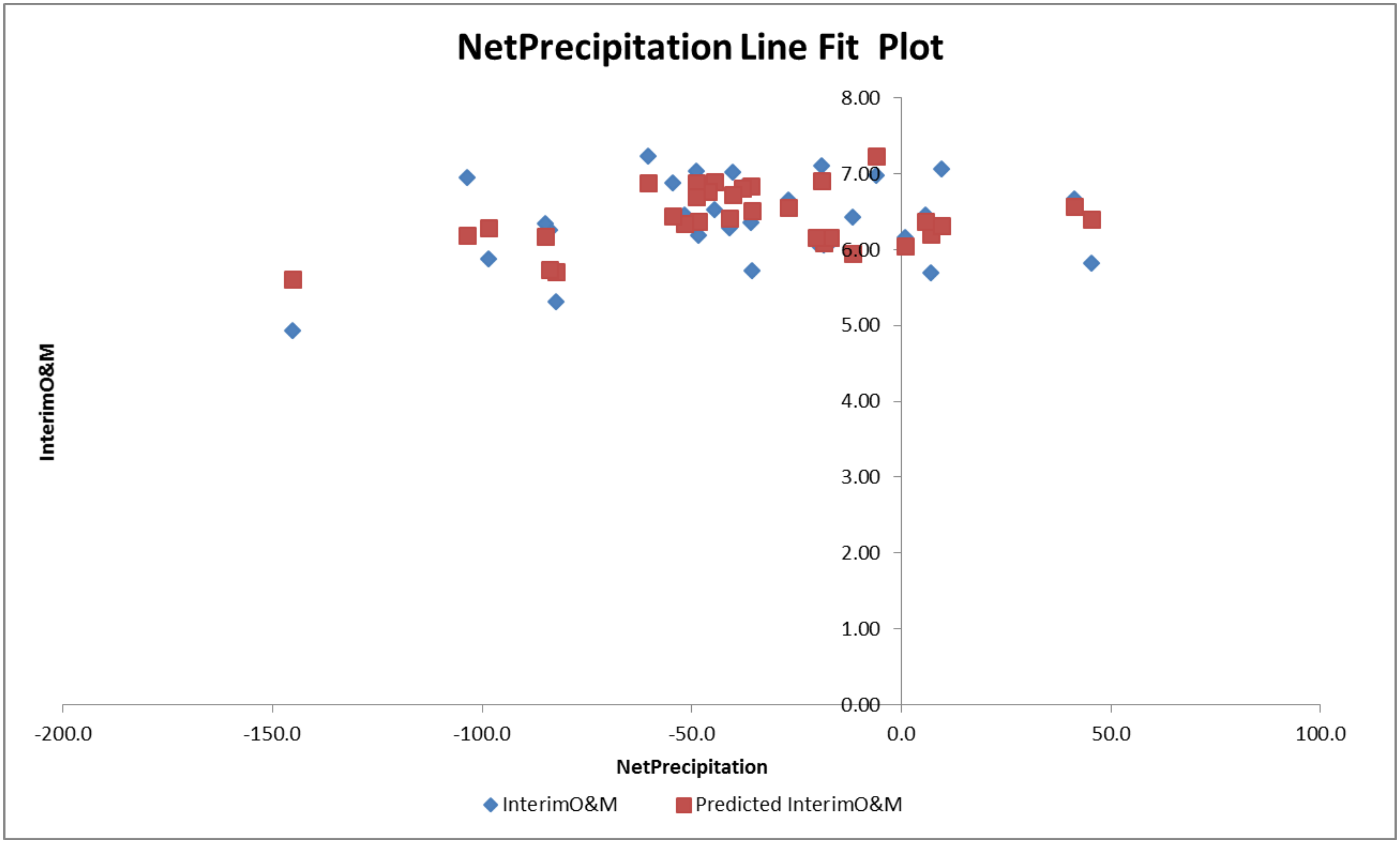


Figure J.13. Interim O&M Line Fit Plot – Log Annual O&M Costs (InterimO&M) vs. Log Heap and Dump Leach Acreage (LogAcres_HeapDumpLeach+1)

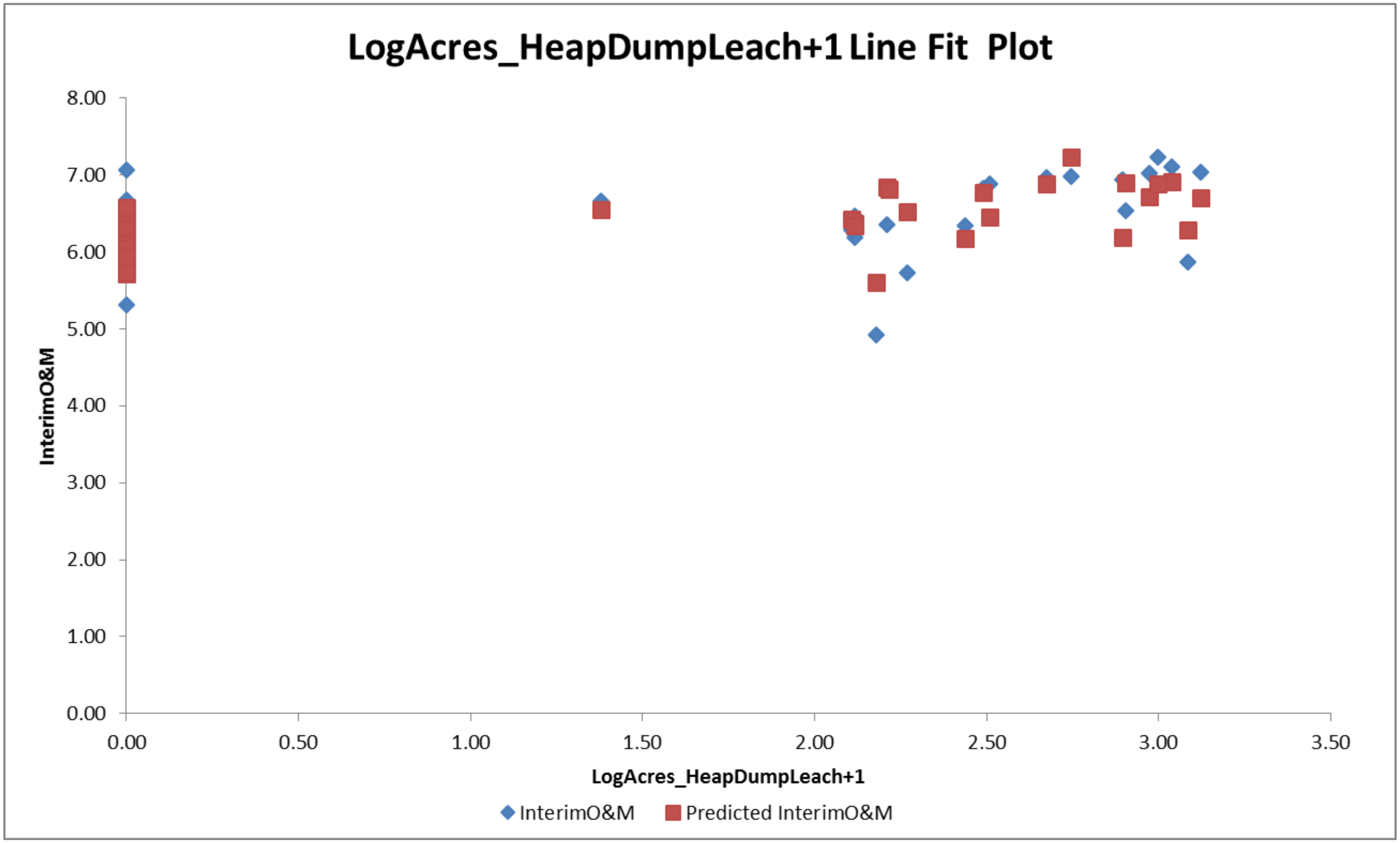


Figure J.14. Interim O&M Line Fit Plot – Log Annual O&M Costs (InterimO&M) vs. Log Wet Tailings Facility Acreage (LogAcres_WetTailings+1)

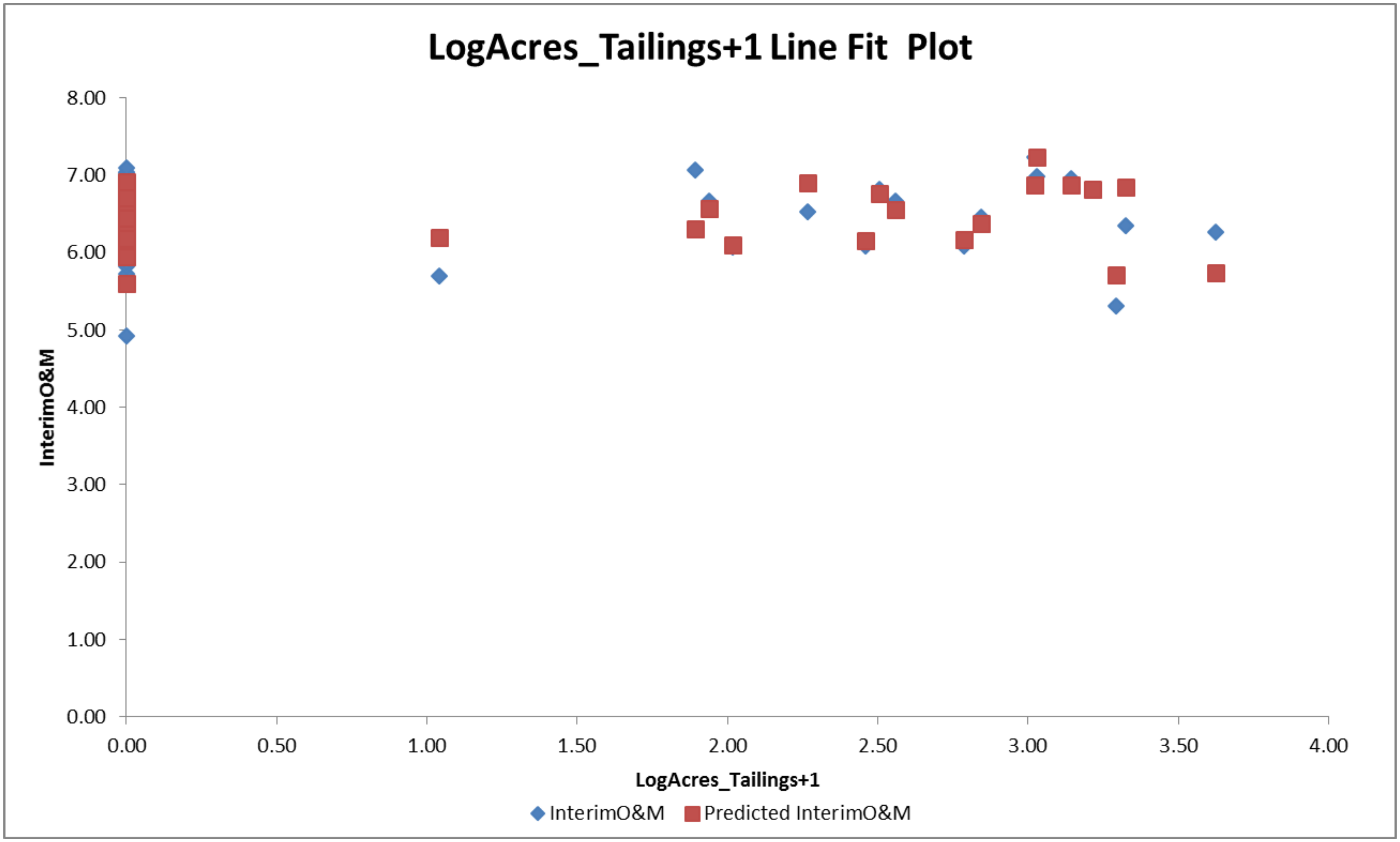


Table J.10. Water Treatment Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.96
R Square	0.91
Adjusted R Square	0.90
Standard Error	0.28
Observations	18.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3.00	11.56	3.85	49.92	1.0E-07
Residual	14.00	1.08	0.08		
Total	17.00	12.64			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	2.16	0.32	6.83	8.2E-06	1.48	2.84	1.48	2.84
LogFlow	1.10	0.11	10.00	9.4E-08	0.87	1.34	0.87	1.34
Treat	1.06	0.21	4.95	2.1E-04	0.60	1.51	0.60	1.51
InSituLeach	0.70	0.18	3.81	1.9E-03	0.30	1.09	0.30	1.09

RESIDUAL OUTPUT

Observation	***Residual (û)***	***10^û***
1	-0.09	0.82
2	-0.11	0.78
3	0.49	3.09
4	-0.67	0.22
5	0.09	1.22
6	-1.16	0.70
7	-0.11	0.78
8	-0.24	0.57
9	-0.13	0.73
10	-0.06	0.87
11	0.10	1.26
12	0.32	2.07
13	-0.03	0.93
14	0.01	1.02
15	0.03	1.07
16	0.15	1.41
17	0.07	1.18
18	0.34	2.17
	Smear Factor (mean of 10^û)	**1.16**

Figure J.15. Water Treatment Line Fit Plot – Log Annual O&M Costs (WaterTreatment) vs. Log Gallons Per Minute (LogFlow)

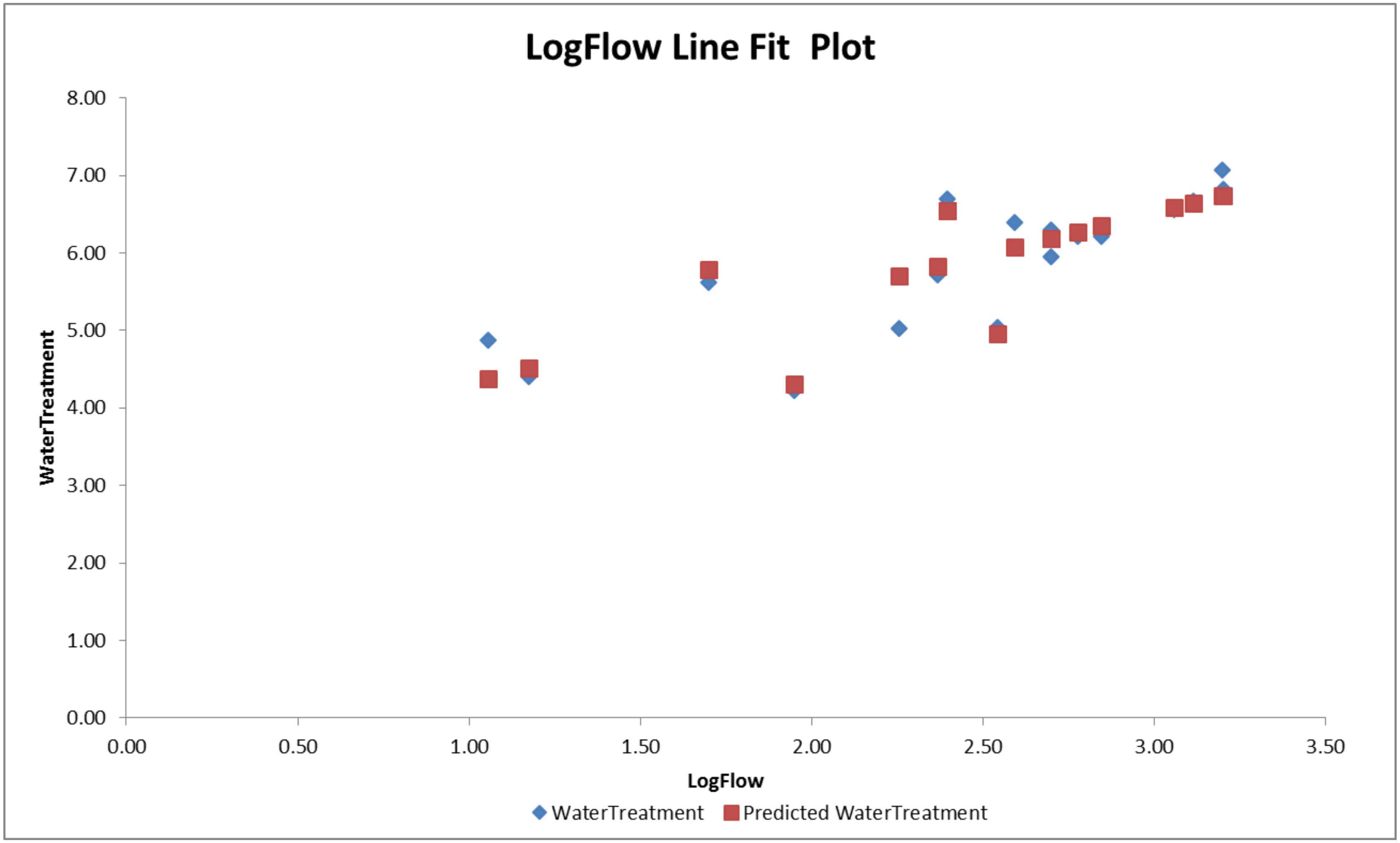


Figure J.16. Water Treatment Line Fit Plot – Log Annual O&M Costs (WaterTreatment) vs. Pumped Water Obtaining Treatment (Treat)

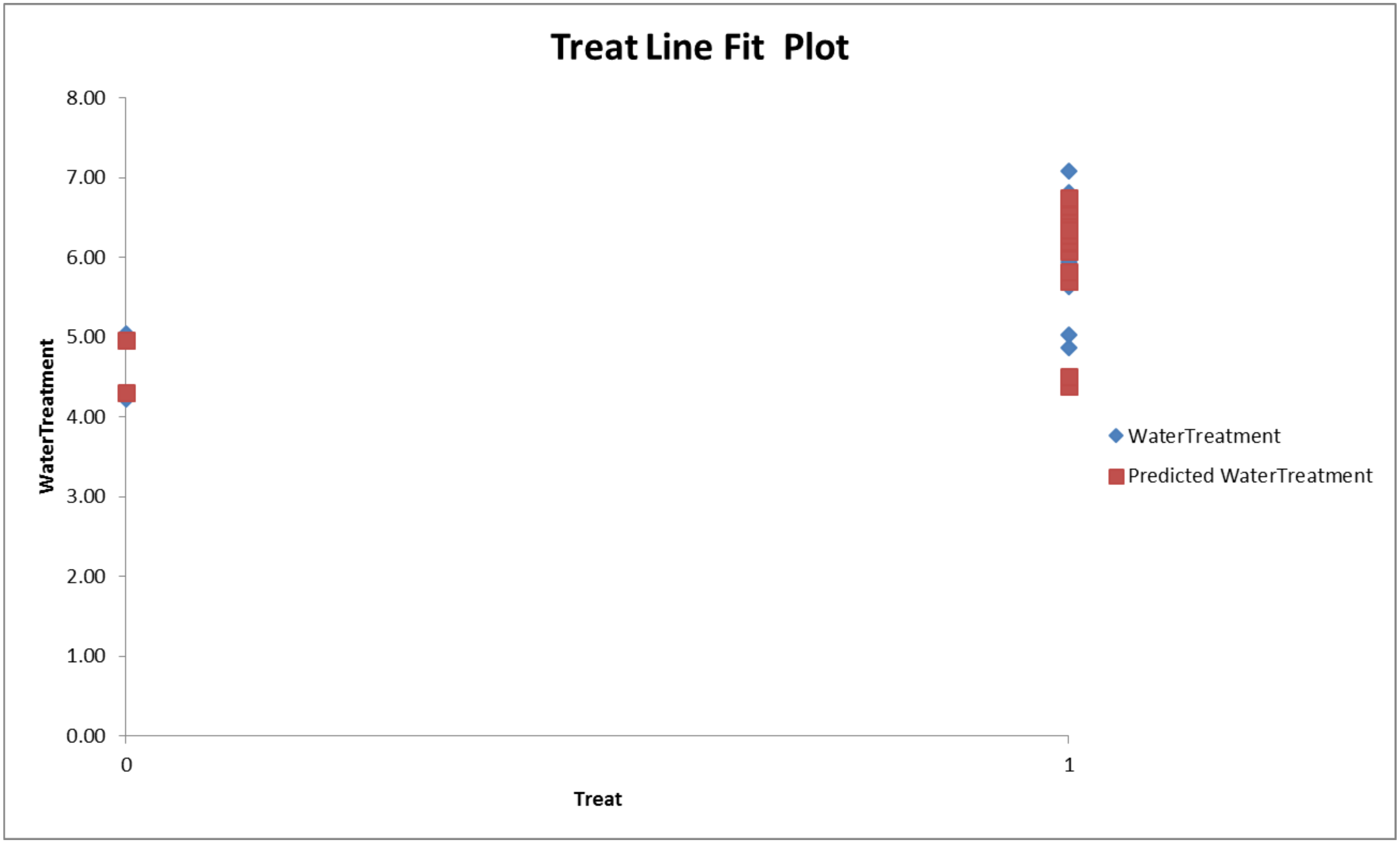


Figure J.17. Water Treatment Line Fit Plot – Log Annual O&M Costs (WaterTreatment) vs. In-Situ Leaching (InSituLeach)

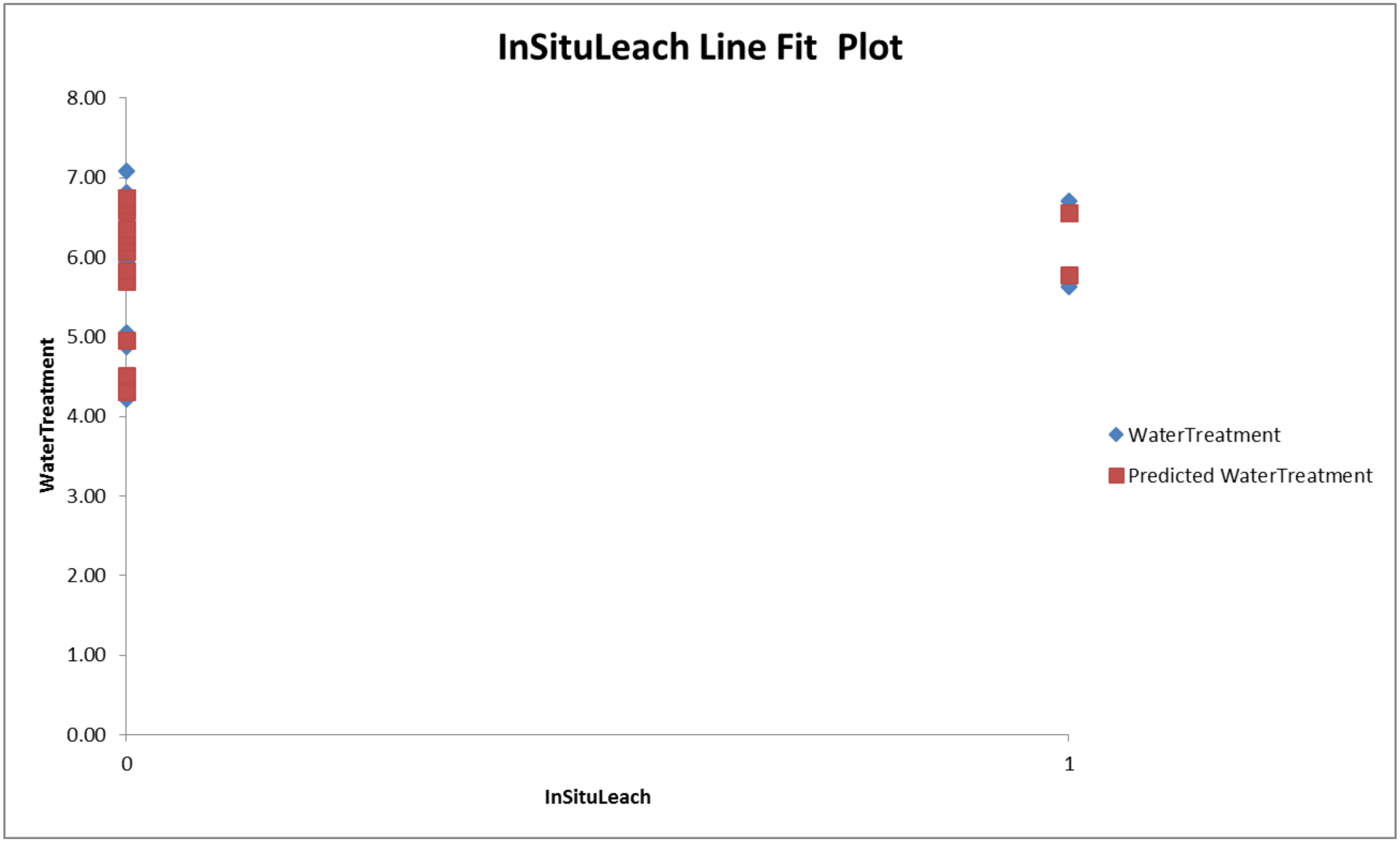


Table J.11. Short-term O&M Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.51
R Square	0.26
Adjusted R Square	0.25
Standard Error	0.55
Observations	52.00

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1.00	5.31	5.31	17.62	1.1E-04
Residual	50.00	15.08	0.30		
Total	51.00	20.39			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	4.01	0.26	15.21	2.2E-20	3.48	4.54	3.48	4.54
LogAcres_Total+1	0.38	0.09	4.20	1.1E-04	0.20	0.56	0.20	0.56

RESIDUAL OUTPUT

Observation	***Residual (û)***	***10^û***	***Observation***	***Residual (û)***	***10^û***	***Observation***	***Residual (û)***	***10^û***
1	-1.54	0.03	19	-0.05	0.90	37	0.04	1.11
2	-0.51	0.31	20	-0.16	0.69	38	0.54	3.47
3	-0.63	0.24	21	-0.35	0.45	39	0.87	7.34
4	-0.09	0.81	22	0.31	2.04	40	0.43	2.69
5	-0.95	0.11	23	-0.16	0.69	41	0.51	3.23
6	-0.62	0.24	24	0.05	1.11	42	0.16	1.44
7	-1.07	0.08	25	0.63	4.29	43	0.47	2.95
8	-0.97	0.11	26	-0.06	0.87	44	0.40	2.52
9	-0.98	0.10	27	-0.37	0.43	45	0.27	1.86
10	-0.53	0.30	28	0.38	2.42	46	0.41	2.55
11	-0.82	0.15	29	0.28	1.90	47	0.36	2.27
12	-0.39	0.40	30	0.02	1.05	48	0.42	2.61
13	-0.06	0.88	31	0.29	1.96	49	0.42	2.61
14	-0.14	0.72	32	0.23	1.70	50	0.93	8.45
15	0.00	1.00	33	0.11	1.29	51	0.98	9.61
16	-0.17	0.67	34	0.29	1.96	52	0.72	5.30
17	0.28	1.89	35	0.07	1.19	**Smear Factor (mean of 10^û)**		**1.82**
18	-0.40	0.40	36	0.18	1.51			

Figure J.18. Short-term O&M Line Fit Plot – Log Annual O&M Costs (ShortTermO&MMonitoring) vs. Log Sitewide Acreage (LogAcres_Total+1)

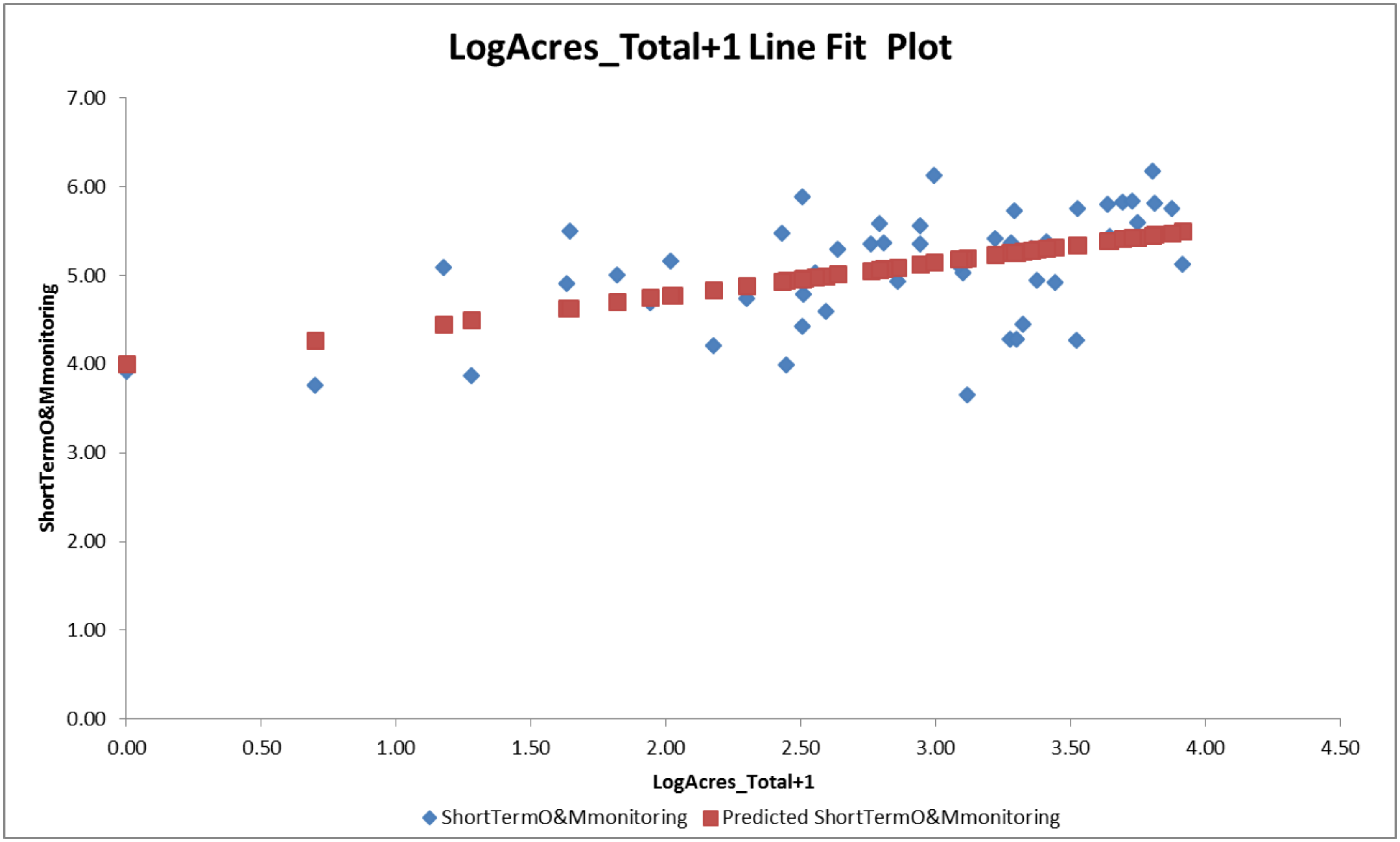


Table J.12. Long-term O&M Regression Results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.58
R Square	0.34
Adjusted R Square	0.28
Standard Error	0.46
Observations	14.00

ANOVA

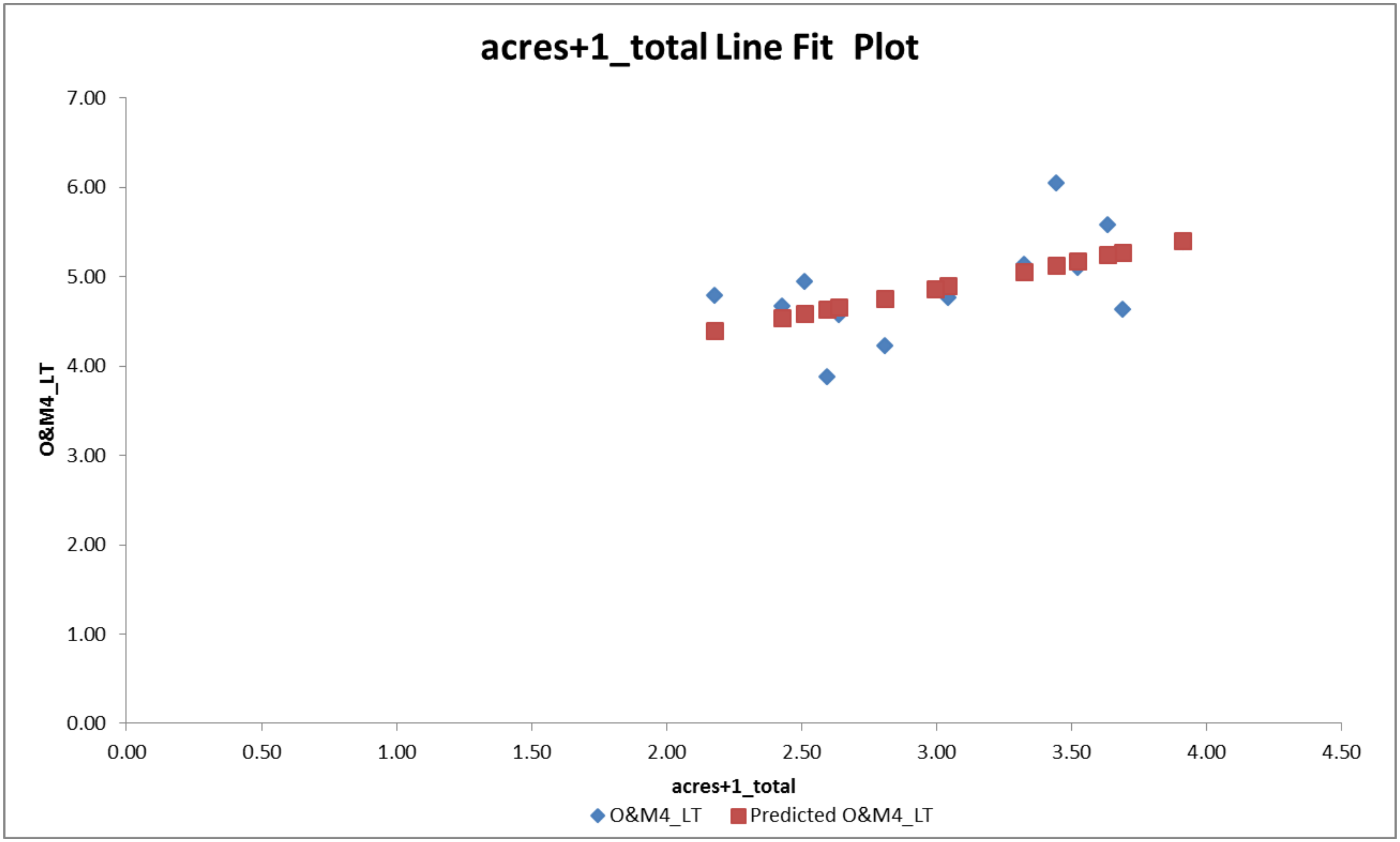
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1.00	1.31	1.31	6.09	3.0E-02
Residual	12.00	2.58	0.21		
Total	13.00	3.88			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	3.12	0.73	4.26	1.1E-03	1.52	4.72	1.52	4.72
LogAcres_Total+1	0.58	0.24	2.47	3.0E-02	0.07	1.10	0.07	1.10

RESIDUAL OUTPUT

Observation	***Residual (û)***	***10^û***
1	-0.75	0.18
2	-0.53	0.29
3	-0.09	0.82
4	-0.64	0.23
5	0.14	1.38
6	-0.13	0.74
7	0.40	2.51
8	0.00	1.00
9	0.36	2.31
10	-0.07	0.85
11	0.08	1.19
12	-0.02	0.96
13	0.34	2.18
14	0.92	8.38
Smear Factor (mean of 10^û)		**1.64**

Figure J.19. Long-term O&M Line Fit Plot – Log Annual O&M Costs (LongTermO&MMonitoring) vs. Log Sitewide Acreage (LogAcres_Total+1)



Appendix K:
Robustness Analyses

In an effort to ensure the most appropriate model specification was the selected for each cost feature, a series of robustness tests were performed. The eight robustness checks discussed in **Sections K.1** and **K.2** varied factors such as the direction of step-wise selection, the statistical significance selection criteria, and the suite of variables considered for estimation. An additional series of tests were conducted by withholding a single observation when estimating the regression and then comparing the predicted value from that regression with the observed value for the omitted observation. This appendix describes the analytical methods for the robustness tests, the results, and EPA's conclusions.

K.1 – Forward and Backward Robustness Method

Table 4-3 presents the independent variables that were considered in the step-wise regression procedure for each cost factor. Due to the fact that the final dataset was not perfectly balanced, the independent variables selected for consideration had the potential to impact the number of observations included in the regression. In particular there were 6 observations for which the status of the *BelowGroundwater* variable was unknown. In order to minimize the impact of these missing data points, the following procedure was followed:

1) Estimate a step-wise regression allowing the model to select independent variables from the appropriate range presented in **Table 4-3**.
2) If *BelowGroundwater* was not found to be statistically significant, repeat step 1, but do not consider *BelowGroundwater* as a potential independent variable.

On average, excluding *BelowGroundwater* resulted in an additional 2 observations being included in the models. The number of additional observations included ranged from zero to four. *BelowGroundwater* was only found to be statistically significant in the long-term O&M/monitoring cost model. However, the variable was still ultimately withheld from the final model because the negative value of the coefficient was opposite of the sign expected. The impact of withholding the *BelowGroundwater* variable from consideration can be seen in **Tables K-1** to **K-11**.

<u>*Direction of Step-wise Selection*</u>

As described in **Section 4.1**, the final models were selected by using a bidirectional elimination approach.[1] In order to test the robustness of these results, EPA also performed traditional forward and backward step-wise regressions for each cost feature using the stepwise function in STATA 14.[2] In general, the results of the bidirectional, forward, and backward regressions

[1] Wang, Mengchao, et al. "A comparison of approaches to stepwise regression for global sensitivity analysis used with evolutionary optimization." Proceedings of the BS2013, 13th Conference of International Building Performance Simulation Association, Chambéry, France. 2013.
[2] Rawlings, John O., Sastry G. Pantula, and David A. Dickey. *Applied regression analysis: a research tool*. Springer Science & Business Media, 1998.

yielded the same variables selected for inclusion. As shown in **Tables K-1** to **K-11**, the variables selected from all three stepwise methods at the 95% confidence level were the exact same for the following cost categories:

- Open pit capital costs,
- Waste rock capital costs,
- Heap/dump leach capital costs,
- Tailings facility capital costs,
- Process pond/reservoir capital costs,
- Underground mine capital costs,
- Drainage Capital Costs, and
- Short-term O&M/monitoring costs.

In cases where all three methods did not yield perfectly symmetrical outputs, the criteria for model selection included the significance of variables that logically should drive costs (e.g. site-feature acreage) and the avoidance of undesirable pitfalls such as insignificant intercepts or illogical coefficient values.

Level of Statistical Significance

The final bidirectional regressions made use of a significance level of .05 for addition and .10 for removal. Since there is no definitive method for selecting an appropriate significance level for a model, EPA also produced iterations of all regressions using .05 addition/.06 removal and .10 addition/.11 removal significance levels. Variables that were found to be significant at the .10 level, but not at the .05 level were considered in light of the context of their value added to the model. The results for all significance levels are displayed in **Tables K-1** to **K-11**.

Variable, Direction, and Significance Combinations

In order to avoid overlooking an important impact of any of the factors discussed above working in conjunction, EPA conducted eight robustness-check regressions, exhausting all possible combinations of the inclusion of the *BelowGroundwater* variable, forward versus backward stepwise regression procedures, and statistical significance thresholds for inclusion or exclusion of a variable. For each site feature, the following models were estimated and the results are presented in **Tables K-1** to **K-11**:

1) A forward stepwise regression including *BelowGroundwater* that added independent variables at the .05 significance level and removed independent variables at the .06 significance level.

2) A forward stepwise regression excluding *BelowGroundwater* that added independent variables at the .05 significance level and removed independent variables at the .06 significance level.

3) A forward stepwise regression including *BelowGroundwater* that added independent variables at the .10 significance level and removed independent variables at the .11 significance level.

4) A forward stepwise regression excluding *BelowGroundwater* that added independent variables at the .10 significance level and removed independent variables at the .11 significance level.

5) A backward stepwise regression including *BelowGroundwater* that added independent variables at the .05 significance level and removed independent variables at the .06 significance level.

6) A backward stepwise regression excluding *BelowGroundwater* that added independent variables at the .05 significance level and removed independent variables at the .06 significance level.

7) A backward stepwise regression including *BelowGroundwater* that added independent variables at the .10 significance level and removed independent variables at the .11 significance level.

8) A backward stepwise regression excluding *BelowGroundwater* that added independent variables at the .10 significance level and removed independent variables at the .11 significance level.

K.2 – Forward and Backward Robustness Results

Three of the regressions returned the same results under each of the eight robustness checks as were produced in the process discussed in **Section 4.1**. These were the regressions for waste rock capital costs, underground mine capital costs, and short-term O&M/monitoring costs. This gives EPA high confidence in the results for these regressions.

Four additional regressions were found to have the same results in a majority of the robustness checks. The regressions for open pit capital costs (6 of 8), tailings facility capital costs (7 of 8), process pond/reservoir capital costs (4 of 8), and drainage capital costs (6 of 8) each had at least half of the robustness checks verify the final result. The remaining checks came up with additional variables either because the backwards removal process was unable to remove variables that could not be added to the final result EPA reached or because the lower confidence level of 90 percent was used. In addition to these four regressions, the regression for heap/dump leach capital costs matched most of the robustness checks (6 of 8) to the final result. However, because EPA forced source controls into the final model, they do not appear shaded in the table below. Nonetheless, the robustness checks for these five regressions give EPA a high degree of confidence in the results for these regressions.

Finally, two of the O&M costs had no agreement between the raw robustness checks and the final reported regression. These regressions were water treatment and long-term O&M. The robustness checks for these two cost categories are discussed in further detail below.

Long-Term O&M/Monitoring Costs

For long-term O&M/monitoring costs, the robustness checks that included *BelowGroundwater* returned that variable as an additional explanatory variable to acreage. This is consistent with the results of **Section 4.2**. However, as explained in that section, the sign on *BelowGroundwater* was negative, the opposite of what EPA believes is appropriate. Thus, these four robustness checks are consistent with the stepwise regression results in **Section 4**, and confirm EPA's final result.

The robustness checks that did not include the groundwater variable returned *NetPrecipitation* as the only significant variable instead of $LogAcres_{Total+1}$. For these results, EPA notes that the sign on *NetPrecipitation* is negative. Again, this is the opposite sign expected, and would indicate that a mine in a wetter climate would have less O&M than a mine in a drier climate. Furthermore, EPA notes that the p-value for *NetPrecipitation* is virtually identical to the p-value for $LogAcres_{Total+1}$ that was the sole variable selected in the final regression in **Section 4**.

Finally, EPA notes that there were relatively few data points for long-term O&M. However, a very similar cost component, short-term O&M/monitoring costs, also returned $LogAcres_{Total+1}$ as the lone explanatory variable, and matched all eight robustness checks performed. Thus, it is more likely that long-term O&M/monitoring costs are actually explained by $LogAcres_{Total+1}$, and that the small sample size obscured this fact.

Interim O&M Costs

For interim O&M costs, the robustness checks EPA performed yielded two results. In four of the six results only $LogAcres_{HeapDumpLeach+1}$ and *NetPrecipitation* came out significant. However, where EPA performed robustness checks at a 90 percent confidence level and did not include the *BelowGroundwater* variable, the model also returned $LogAcres_{WetTailings+1}$ as a significant variable. Given the significance of $LogAcres_{WetTailings+1}$ at the 90 percent confidence level, the robustness tests gave the EPA confidence that the final model should include $LogAcres_{HeapDumpLeach+1}$, $LogAcres_{WetTailings+1}$, and *NetPrecipitation*.

Water Treatment Costs

For water treatment costs, the robustness checks performed at a 90 percent confidence level return *Flow* and *Treat* as significant, but also return *Flotation* in place of *InSituLeach*. However, the sign on *Flotation* is negative, the opposite sign expected, and would indicate that using chemicals decreases water treatment costs per gallon. It is likely that the order of variable addition or removal plays a key role here, as the initial suite of variables EPA considered found *InSituLeach* to be the most significant variable for addition. Furthermore, EPA notes that the adjusted R-squared is virtually identical between the robustness checks and the final model from **Section 4.2**. Due to the mistaken sign, the closeness of adjusted R-squared, and the low number of observations (18) for water treatment costs, EPA does not believe these robustness checks raise questions about the ultimate model.

For the results performed at a 90 percent confidence level, EPA finds that in addition to *Flow* and *Treat, Floatation, CyanideLeach, Acid Leach*, and *InSituLeach* are all significant. This is consistent with the relaxation of the confidence level. However, EPA notes that the sign on Floatation is negative, a result that indicates that using process chemicals decreases water treatment costs per gallon. In light of the small sample size, EPA does not believe that this suite of variables is a more accurate predictor of variability, but rather a potential collinearity issue among the four process variables.

Table K-1: Open Pit Capital Cost Regression Robustness Results

Direction and Confidence Level	**Forward 0.95**		**Forward 0.90**		**Backwards 0.95**		**Backwards 0.90**		**Section 5 Final Result**
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	34	37	34	37	34	37	34	37	**37**
Adjusted R-Squared	0.55	0.55	0.57	0.55	0.55	0.55	0.57	0.55	**0.55**
Estimated Coefficients									
Open Pit Acreage	1.08*** (0.21)	1.08*** (0.20)	0.99*** (0.21)	1.08*** (0.20)	1.08*** (0.21)	1.08*** (0.20)	0.99*** (0.21)	1.08*** (0.20)	**1.08*** (0.20)**
Open Pit Source Control	1.38*** (0.32)	1.36*** (0.32)	1.37*** (0.31)	1.36*** (0.32)	1.38*** (0.32)	1.36*** (0.315)	1.37*** (0.31)	1.36*** (0.32)	**1.36*** (0.31)**
Floatation			0.43* (0.25)				0.43* (0.25)		
Constant	2.85*** (0.51)	2.88*** (0.48)	2.85*** (0.49)	2.88*** (0.48)	2.85*** (0.51)	2.88*** (0.48)	2.85*** (0.49)	2.88*** (0.48)	**2.88*** (0.48)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-2: Waste Rock Capital Cost Regression Robustness Results

Direction and Confidence Level	Forward 0.95		Forward 0.90		Backwards 0.95		Backwards 0.90		Section 5 Final Result
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	43	46	43	46	43	46	43	46	**46**
Adjusted R-Squared	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	**0.59**
Estimated Coefficients									
Waste Rock Acreage	0.74*** (0.11)	0.75*** (0.10)	0.74*** (0.11)	0.75*** (0.10)	0.74*** (0.11)	0.75*** (0.10)	0.74*** (0.11)	0.75*** (0.10)	**0.75*** (0.10)**
Waste Rock Source Control	0.72*** (0.21)	0.73*** (0.20)	0.72*** (0.21)	0.73*** (0.20)	0.72*** (0.21)	0.73*** (0.20)	0.72*** (0.21)	0.73*** (0.20)	**0.73*** (0.20)**
Constant	4.48*** (0.29)	4.45*** (0.28)	4.48*** (0.29)	4.45*** (0.28)	4.48*** (0.29)	4.45*** (0.28)	4.48*** (0.29)	4.45*** (0.28)	**4.45*** (0.28)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-3: Heap/Dump Leach Capital Cost Regression Robustness Results

Direction Confidence Level	Forward 0.95		Forward 0.90		Backwards 0.95		Backwards 0.90		Section 5 Final Result
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	25	28	25	28	25	28	25	28	**28**
Adjusted R-Squared	0.42	0.28	0.52	0.28	0.42	0.28	0.52	0.28	**0.31**
Estimated Coefficients									
Heap/Dump Leach Acreage	1.25*** (0.29)	0.96*** (0.29)	1.209*** (0.272)	0.96*** (0.29)	1.25*** (0.29)	0.96*** (0.29)	1.209*** (0.272)	0.96*** (0.29)	**1.01*** (0.28)**
Heap/Dump Leach Source Control			0.949** (0.416)				0.949** (0.416)		**0.70 (0.46)^**
Floatation			0.431* (0.234)				0.431* (0.234)		
Constant	3.29*** (0.76)	4.04*** (0.74)	3.137*** (0.697)	4.04*** (0.74)	3.29*** (0.76)	4.04*** (0.74)	3.137*** (0.697)	4.04*** (0.74)	**3.87*** (0.73)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-4: Tailings Facility Capital Cost Regression Robustness Results

Direction and Confidence Level	Forward 0.95		Forward 0.90		Backwards 0.95		Backwards 0.90		Section 5 Final Result
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	31	33	31	33	31	33	31	33	**33**
Adjusted R-Squared	0.47	0.40	0.47	0.40	0.47	0.40	0.47	0.46	**0.40**
Estimated Coefficients									
Tailings Facility Acreage	0.73*** (0.14)	0.68*** (0.14)	0.73*** (0.14)	0.68*** (0.14)	0.73*** (0.14)	0.68*** (0.14)	0.73*** (0.14)	0.69*** (0.14)	**0.68*** (0.14)**
Tailings Facility Source Control	0.56** (0.23)	0.59** (0.25)	0.56** (0.23)	0.59** (0.25)	0.56** (0.23)	0.59** (0.25)	0.56** (0.23)	0.51** (0.25)	**0.59** (0.25)**
Cyanide								0.30* (0.17)	
Floatation								0.35* (0.20)	
Constant	4.64*** (0.39)	4.72*** (0.40)	4.64*** (0.39)	4.72*** (0.40)	4.64*** (0.39)	4.72*** (0.40)	4.64*** (0.39)	4.31*** (0.43)	**4.73*** (0.40)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-5: Process Pond/Reservoir Capital Cost Regression Robustness Results

Direction and Confidence Level	Forward 0.95		Forward 0.90		Backwards 0.95		Backwards 0.90		Section 5 Final Result
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	29	31	29	31	29	31	29	31	**29**
Adjusted R-Squared	0.64	0.64	0.67	0.67	0.64	0.64	0.67	0.67	**0.67**
Estimated Coefficients									
Process Pond Acreage	1.06*** (0.15)	1.04*** (0.14)	1.07*** (0.14)	1.04*** (0.14)	1.06*** (0.15)	1.04*** (0.14)	1.07*** (0.14)	1.04*** (0.14)	**0.96*** (0.13)**
Alkaline			0.51* (0.27)	0.49* (0.26)			0.51* (0.27)	0.49* (0.26)	
Constant	4.25*** (0.20)	4.29*** (0.19)	4.19*** (0.20)	4.24*** (0.18)	4.25*** (0.20)	4.29*** (0.19)	4.19*** (0.20)	4.24*** (0.18)	**4.32*** (0.16)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-6: Underground Mine Capital Cost Regression Robustness Results

Direction and Confidence Level	Forward 0.95		Forward 0.90		Backwards 0.95		Backwards 0.90		Section 5 Final Result
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level:	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level:	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations:	14	14	14	14	14	14	14	14	**14**
Adjusted R-Squared:	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	**0.32**
Estimated Coefficients									
High Hydraulic Head	1.34** (0.51)	1.34** (0.51)	1.34** (0.51)	1.34** (0.51)	1.34** (0.51)	1.34** (0.51)	1.34** (0.51)	1.34** (0.51)	**1.35** (0.51)**
Constant	4.96*** (0.19)	4.96*** (0.19)	4.96*** (0.19)	4.96*** (0.19)	4.96*** (0.19)	4.96*** (0.19)	4.96*** (0.19)	4.96*** (0.19)	**4.96*** (0.19)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-7: Drainage Capital Cost Regression Robustness Results

Direction and Confidence Level	Forward 0.95		Forward 0.90		Backwards 0.95		Backwards 0.90		Section 5 Final Result
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	25	27	25	27	25	27	25	27	**27**
Adjusted R-Squared	0.00	0.12	0.11	0.12	0.00	0.12	0.11	0.12	**0.12**
Estimated Coefficients									
Total Acreage (plus 1)		0.57** (0.26)	0.53* (0.27)	0.57** (0.26)		0.57** (0.26)	0.53* (0.27)	0.57** (0.26)	**0.57** (0.26)**
Constant	5.13*** (0.23)	3.42*** (0.80)	3.56*** (0.82)	3.42*** (0.80)	5.13*** (0.23)	3.42*** (0.80)	3.56*** (0.82)	3.42*** (0.80)	**3.42*** (0.80)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-8: Short-Term O&M/Monitoring Cost Regression Robustness Results

Direction and Confidence Level	Forward 0.95		Forward 0.90		Backwards 0.95		Backwards 0.90		Section 5 Final Result
Including BGW	Yes	No	Yes	No	Yes	No	Yes	No	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	48	52	48	52	48	52	48	52	**52**
Adjusted R-Squared	0.23	0.25	0.23	0.25	0.23	0.25	0.23	0.25	**0.25**
Estimated Coefficients									
Total Acreage (plus 1)	0.37*** (0.10)	0.38*** (0.09)	0.37*** (0.10)	0.38*** (0.09)	0.37*** (0.10)	0.38*** (0.09)	0.37*** (0.10)	0.38*** (0.09)	**0.38*** (0.09)**
Constant	4.03*** (0.28)	4.01*** (0.26)	4.03*** (0.28)	4.01*** (0.26)	4.03*** (0.28)	4.01*** (0.26)	4.03*** (0.28)	4.01*** (0.26)	**4.01*** (0.26)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-9: Long-Term O&M/Monitoring Cost Regression Robustness Results

Direction and Confidence Level	**Forward 0.95**		**Forward 0.90**		**Backwards 0.95**		**Backwards 0.90**		**Section 5 Final Result**
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	14	14	14	14	14	14	14	14	**14**
Adjusted R-Squared	0.48	0.30	0.48	0.30	0.48	0.30	0.48	0.30	**0.28**
Estimated Coefficients									
BGW	-0.52** (0.22)		-0.52** (0.22)		-0.52** (0.22)		-0.52** (0.22)		
Total Acreage (plus 1)	0.46** (0.21)		0.46** (0.21)		0.46** (0.21)		0.46** (0.21)		**0.58** (0.24)**
Net Precipitation		-0.01** (0.003)		-0.01** (0.003)		-0.01** (0.003)		-0.01** (0.003)	
Constant	3.76*** (0.68)	4.59*** (0.17)	3.76*** (0.68)	4.59*** (0.17)	3.76*** (0.68)	4.59*** (0.17)	3.76*** (0.68)	4.59*** (0.17)	**3.12*** (0.73)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-10: Interim O&M/Monitoring Cost Regression Robustness Results

Direction: **Confidence Level:**	**Forward** **0.95**		**Forward** **0.90**		**Backwards** **0.95**		**Backwards** **0.90**		**Section 5 Final Result**
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	30	32	30	32	30	32	30	32	**32**
Adjusted R-Squared	0.40	0.38	0.41	0.44	0.40	0.38	0.41	0.44	**0.44**
Estimated Coefficients									
Heap/Dump Leach Acreage (plus 1)	0.32*** (0.07)	0.31*** (0.07)	0.32*** (0.07)	0.34*** (0.07)	0.32*** (0.07)	0.31*** (0.07)	0.32*** (0.07)	0.34*** (0.07)	**0.34*** (0.07)**
Wet Tailings Facility Acreage (plus 1)				.10* (0.05)				.10* (0.05)	**0.10* (0.05)**
Net Precipitation	0.01*** (0.002)	0.01*** (0.002)	0.01*** (0.003)	0.01*** (0.002)	0.01*** (0.002)	0.01*** (0.002)	0.01*** (0.002)	0.01*** (0.002)	**0.01*** (0.002)**
Constant	6.22*** (0.13)	6.23*** (0.13)	6.22*** (0.13)	6.04*** (0.16)	6.22*** (0.13)	6.23*** (0.13)	6.122*** (0.13)	6.04*** (0.16)	**6.04*** (0.15)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

Table K-11: Water Treatment Cost Regression Robustness Results

Direction and Confidence Level	Forward 0.95		Forward 0.90		Backwards 0.95		Backwards 0.90		Section 5 Final Result
Including BGW	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	
Variable Addition Level	0.05	0.05	0.10	0.10	0.05	0.05	0.10	0.10	**0.05**
Variable Removal Level	0.06	0.06	0.11	0.11	0.06	0.06	0.11	0.11	**0.10**
Observations	17	17	17	17	17	17	17	17	**18**
Adjusted R-Squared	0.91	0.91	0.95	0.95	0.91	0.91	0.95	0.95	**0.90**
Estimated Coefficients									
Gallons Per Minute	1.20*** (0.11)	1.20*** (0.11)	1.50*** (0.15)	1.50*** (0.15)	1.20*** (0.11)	1.20*** (0.11)	1.50*** (0.15)	1.50*** (0.15)	**1.10*** (0.11)**
Treatment	0.93*** (0.21)	0.93*** (0.21)	1.21*** (0.20)	1.21*** (0.20)	0.93*** (0.21)	0.93*** (0.21)	1.21*** (0.20)	1.21*** (0.20)	**1.06*** (0.21)**
Acid			0.83** (0.34)	0.83** (0.34)			0.83** (0.34)	0.83** (0.34)	
Net Precipitation			0.01* (0.004)	0.01* (0.004)			0.01* (0.004)	0.01* (0.004)	
Floatation	-0.64*** (0.15)	-0.64*** (0.15)	-0.71*** (0.19)	-0.71*** (0.19)	-0.64*** (0.15)	-0.64*** (0.15)	-0.71*** (0.19)	-0.71*** (0.19)	
Alkaline			0.82*** (0.25)	0.82*** (0.25)			0.82*** (0.25)	0.82*** (0.25)	**0.70*** (0.18)**
Constant	2.57*** (0.30)	2.57*** (0.30)	1.42** (0.46)	1.42** (0.46)	2.57*** (0.30)	2.57*** (0.30)	1.42** (0.46)	1.42** (0.46)	**2.16*** (0.32)**

Standard errors in parentheses, Highlighted columns agree with final result presented in **Section 4** and **Appendix J**
*** p<0.01, ** p<0.05, * p<0.1
BGW: *BelowGroundwater*

K.3 External Transfer Models

The fact that the size of the potentially regulated universe exceeds that of the sample used to estimate the cost estimation model calls to attention the importance of selecting models with strong external validity. In order to assess the ability of the models to provide reasonably accurate cost estimates outside of the sample, an external validity test was conducted. This test entailed the estimation of a series of regressions based on the final set of independent variables, but where one observation is withheld from the estimation sample. The predicted value for this withheld observation was then compared to the actual observed value. The model was estimated iteratively, withholding each observation once.[3]

If the final regression for a site feature was based on n observations, then n new regressions were created (the first withholding observation 1, the second withholding observation 2, and so on). These new regressions were then used to obtain predicted values for the observation that was withheld from the sample. Thus, the estimated value for observation 1 is the result of applying the coefficients produced by the regression that dropped observation 1 from the sample. Finally, the average absolute external transfer error (AAETE) for cost category *x* was calculated using **Equation K-1** below:

Equation K-1. Average Absolute External Transfer Error Equation

$$AAETE_x = \frac{\sum_{i=1}^{n} |\, observed\ value_i - predicted\ value_i |}{n}$$

A lower value for a site feature's average absolute external transfer error (AAETE) indicates an increased level of confidence that the cost estimation model reasonably estimates costs for that particular feature. For the purpose of comparison, EPA also used this procedure to calculate the AAETE for two alternative model specifications: 1) a more comprehensive model that included all independent variables that were considered for inclusion in the step-wise process for that particular feature (regardless of their statistical significance), and 2) the most concise model, which simply assigned the mean value of the cost associated with a feature as the predicted cost for that feature.

The AAETE results are presented in **Table K-12**. In all eleven relevant regressions (the costs for hazardous waste and slag piles were excluded from this analysis, since the final models made use of average values), the final model produced the lowest AAETE, suggesting that the final chosen model specifications outperformed the "all variables" and "average" models with respect to out of sample prediction. The consistent performance of the final models in the average absolute external transfer error exercise in conjunction with the results of the other robustness tests discussed above reassured EPA that the criteria used to select the models were appropriate.

[3] Stapler, R. and R. Johnston (2009). "Meta-Analysis, Benefit Transfer, and Methodological Covariates: Implications for Transfer Error." Environmental and Resource Economics **42**(2): 227-246.

Table K-12: External Transfer Robustness Results

Regression	Final Model Mean External Transfer	All Variables Model Mean External Transfer	Simple-Average Model Mean External Transfer
Open Pit Capital Costs	0.56	0.64	0.88
Waste Rock Capital Costs	0.39	0.46	0.64
Heap/Dump Leach Capital Costs	0.52	0.67	0.57
Tailings Facility Capital Costs	0.43	0.44	0.51
Process Pond/Reservoir Capital Costs	0.36	0.46	0.64
Underground Mine Capital Costs	0.63	1.04	0.71
Drainage Capital Costs	0.92	1.26	0.95
Short-Term O&M/Monitoring Costs	0.44	0.50	0.52
Long-Term O&M/Monitoring Costs	0.38	0.56	0.43
Interim O&M Costs	0.37	0.38	0.45
Water Treatment Costs	0.23	0.37	0.78
* Shading highlights the lowest average external transfer value for a given feature			

Appendix L:
CERCLA Natural Resource Damages

This appendix lists the natural resource damage (NRD) settlement amounts and associated data sources for 64 CERCLA hardrock mining facilities. NRD settlement amounts were obtained from a review of public records such as consent decrees, complaints, injury assessments, fact sheets, and restoration plans, as well as from a review of Israel's (2013) comprehensive state-by-state overview of NRD programs.[1] This dataset was used in conjunction with the response cost data, presented in **Appendix B**, to develop the NRD multiplier discussed in **Section 5** of this document.

[1] Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP. Available online at http://www.arnoldporter.com/~/media/files/perspectives/publications/2015/03/statebystate-guide-to-nrd-programs-in-all-50-sta__/files/publication/fileattachment/nrd-statebystate-guide1.pdf.

Site Name	Settlement Year	NRD (2014$)	Data Source
Alcoa West and Alcoa East (Alcoa and Reynolds sites; Massena site)	2013	$25,557,000	Civil Action No. 7:13-cv-00337-NAM-TWD in US District Court for Northern District New York
American Tunnel (part of Silverton Sites)[1]	2009	$3,598,000	Civil Action No. 08-cv-02741-MSK-KMT in US District Court for District of Colorado
Antler Mine and Mill Site (part of Silverton Sites)	2009	$3,598,000	Civil Action No. 08-cv-02741-MSK-KMT in US District Court for District of Colorado
Arrastra Gulch Dump (part of Silverton Sites)	2009	$3,598,000	Civil Action No. 08-cv-02741-MSK-KMT in US District Court for District of Colorado
Ashtabula River Area	2012	$616,000	Civil Action No. 1:12cv1097 and 1:12cv1099 in US District Court for Northern District of Ohio Eastern Division
Blackhawk Mine (part of ASARCO Sites)[2]	2009	$222,000	2010 Office of Natural Resources Trustee "Restoration Plan for the New Mexico ASARCO Facilities"
Cherokee Lanyon #2 Site	2008	$70,000	Civil No. 5:08-cv-4019 in US District Court, District of Kansas
Chino Mine Site	2012	$6,487,000	Civil Action No. 11-1140 JAP/GBW in US District Court, District of New Mexico
Cleveland Mill	1995	$238,000	Final Natural Resource Restoration Plan for the Cleveland Mill Site, Grant County, New Mexico, June 29, 1996, page 2.
Cobre Mine Site	2012	$6,487,000	Civil Action No. 11-1140 JAP/GBW in US District Court, District of New Mexico
Commencement Bay/Hylebos Waterway	2003	$6,893,000	US Bankruptcy Court, District of Delaware, Chapter 11 cases in re Kaiser Aluminum Corporation, et al., Case No. 02-10429 (JKF)
Cotter Corporation Mill Facility	1988	$8,365,000	Civil Action No. 83-C-2389 in US District Court, District of Colorado Consent Decree SDMS Doc 296558
Couer D'Alene/Bunker Hill Mining & Metallurgical Complex	2011	$74,685,000	2009 Settlement with ASARCO: $67,500,000; also Case No. CV08-383-N-EJL; CV09-664-N-EJL; 10-525-EJL; 10-578-EJL in US District Court for the District of Idaho
CYPRUS TOHONO MINE	2009	$891,000	Civil Action No. 09-296 US District Court District of Arizona Tucson Division
Deming Mine (part of ASARCO Sites)	2009	$222,000	2010 Office of Natural Resources Trustee "Restoration Plan for the New Mexico ASARCO Facilities"
Denver Radium Superfund Site	2002	$1,917,000	Civil Action No. 01-D-2404
Dona Ana (part of ASARCO Sites)	2009	$222,000	2010 Office of Natural Resources Trustee "Restoration Plan for the New Mexico ASARCO Facilities"
Dupont Newport	2006	$1,573,000	Civ No. ? In US District Court for District of Delaware
Eastern Kansas Smelters Sites/Caney Smelter[3]	2011	$63,000	Case No. 11-4004-EFM in US District Court, District of Kansas, Topeka Division
Eastern Kansas Smelters Sites/Dearing Smelter	2011	$63,000	Case No. 11-4004-EFM in US District Court, District of Kansas, Topeka Division
Eastern Kansas Smelters Sites/Neodesha Smelter	2011	$63,000	Case No. 11-4004-EFM in US District Court, District of Kansas, Topeka Division

Site Name	Settlement Year	NRD (2014$)	Data Source
East Helena site	2009	$6,159,000	Case No. 05-21207 in United States Bankruptcy Court for the Southern District of Texas Corpus Christi Division
Elkem/Eramet Marietta	2006	$2,348,000	Civil Action No. 2:03cv528 in US District Court for the Southern District of Ohio, Eastern Division
Girard Zinc Works Site	2008	$70,000	Civil No. 5:08-cv-4019 in US District Court, District of Kansas
Grand Calumet River/United States Steel, LTV Steel and other parties	2005	$63,763,000	Civil No. 2: 04CV348RLin US District Court for Northern District of Indiana
Grand Mogul Mine (part of Silverton Sites)	2009	$3,598,000	Civil Action No. 08-cv-02741-MSK-KMT in US District Court for District of Colorado
Iron Mountain/Flat Creek	2009	$39,000	2009 Montana Sites settlement
Lavaca Bay	2005	$232,000	Civil Action No. V-04-119 in US District Court Southern District of Texas Victoria Division
Macalloy Site	2006	$403,000	Civil Action No. 2:06-2265-DCN in US District Court District of South Carolina Charleston Division
Magdalena Mine (part of ASARCO Sites)	2009	$222,000	2010 Office of Natural Resources Trustee "Restoration Plan for the New Mexico ASARCO Facilities"
Mayflower Mill (part of Silverton Sites)	2009	$3,598,000	Civil Action No. 08-cv-02741-MSK-KMT in US District Court for District of Colorado
Mobil Mining	1996	$142,000	Civ. No. H96 0605 US District Court Southern District of Texas
Mogul Mine (part of Silverton Sites)	2009	$3,598,000	Civil Action No. 08-cv-02741-MSK-KMT in US District Court for District of Colorado
Morenci Mine Site	2012	$6,929,000	Case No. CV-12-0307-TUC-CKJ (HCE) in US District Court, District of Arizona
Mulberry Phosphates Alafia River	2002	$4,673,000	Civil Action No. 8-01-CV-692-T-23TGW in US District Court for Middle District of Florida Tampa Division
National Zinc	2007	$554,000	CIVIL NO. 07-CV-4114-JAR in US District Court District of Kansas
Oak Ridge Reservation	2010	$208,000	Administrative Order on Consent dated October 6, 2010
Omaha Lead Superfund Site	2011	$105,000	Civil Action No. 8:11CV195 in US District Court District of Nebraska
Palmerton Zinc	2009	$20,072,000	Civil Action No. 3: CV-98-0654 in US District Court for the Middle District of Pennsylvania
Ray Mine Hayden Smelter	2009	$4,318,000	Memorandum of Agreement Between the State of Arizona and United States Department of Interior
Ross Adams Site (part of Silverton Sites)	2009	$3,598,000	Civil Action No. 08-cv-02741-MSK-KMT in US District Court for District of Colorado
Salt Lake Valley	1995	$53,425,000	Civ. No. 86-C-0902G in US District Court, District of Utah, Central Division
SOHIO L-Bar Facility	2005	$35,000	New Mexico Office of Natural Resources Trustee Restoration Plan for the SOHIO L-Bar Facility

Site Name	Settlement Year	NRD (2014$)	Data Source
Standard Mine (part of Silverton Sites)	2009	$3,598,000	Civil Action No. 08-cv-02741-MSK-KMT in US District Court for District of Colorado
Stephenson-Bennett (part of ASARCO Sites)	2009	$222,000	2010 Office of Natural Resources Trustee "Restoration Plan for the New Mexico ASARCO Facilities"
Sunnyside Mine (part of Silverton Sites)	2009	$3,598,000	Civil Action No. 08-cv-02741-MSK-KMT in US District Court for District of Colorado
Tyrone Mine Site	2012	$6,487,000	Civil Action No. 11-1140 JAP/GBW in US District Court, District of New Mexico
Upper Arkansas River/CALIFORNIA GULCH	2008	$11,512,000	Civil Action No. 83-cv-02388-WYD (Consolidated with Civil Action No. 86-cv-1675-WYD)
Uravan Uranium Facility	1987	$1,823,000	SDMS Doc 375910
Fernald Preserve	2008	$15,075,000	CASE NO. C-1-86-0217 in US District Court for Southern District of Ohio Western Division
Blackbird Mine Superfund Site	1995	$86,574,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
New Almaden Mine CERCLA Site	2013	$6,861,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
Iron Mountain Mine CERCLA Site	2013	$9,148,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
ASARCO LLC	2013	$7,115,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
Cherokee County Superfund Site	2008	$1,314,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
Cominco/Halliburton	2013	$50,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
Newton County Mine Tailings Superfund Site	2009	$21,845,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
Southeast Missouri Lead Mining District	2009	$44,777,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
Atlantic Richfield Company	1999	$412,542,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
Rio Tinto Mine	2013	$874,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
Freeport McMoRan	2010	$19,864,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
South Dakota v Homestake Mining Company	2006	$4,585,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.

Site Name	Settlement Year	NRD (2014$)	Data Source
Southwest Jordan Valley	1995	$53,388,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.
Consol Energy/Dunkard Creek	2009	$543,000	Israel, B.D. 2013. State-by-State Guide to NRD Programs in All 50 States. Arnold & Porter LLP.

Notes:
[1] The settlement for the nine Silverton Sites included up to $30 million in compensation for NRD and response costs. This value was divided by nine to estimate the NRD cost at each individual site.
[2] ASARCO settled NRD at five sites for a total of $1,029,598. This value was divided by five to estimate the NRD cost at each individual site.
[3] Blue Tee Corp. settled NRD at three smelter site for a total of $180,298.27. This value was divided by three to estimate the NRD cost at each individual smelter.

Appendix M:
CERCLA Hardrock Mining Facilities Searched for Health Assessment Cost Data

This appendix lists all of the sites for which EPA reviewed Agency for Toxic Substances and Disease Registry (ATSDR) documents looking for references to costs associated with health assessments. EPA reviewed one or more ATSDR documents for each state in which an HRMF with available response cost data is located. However, EPA was not able to find any relevant references to costs or level of effort associated with health assessments.

Site Name	City	State	Site ID	EPA ID
Interstate Lead Co. (ILCO)	Leeds	AL	0404344	ALD041906173
Puckett Smelter	Mountainboro	AL		ALN980824000
Iron King Mine - Humboldt Smelter	Dewey-Humboldt	AZ		AZ0000309013
Asarco Hayden Plant	Hayden	AZ	0900497	AZD008397127
Cane Valley Navajo Radioactive Structures	Cane Valley	AZ	0908623	NNN000908623
Cyprus Tohono Mine	Casa Grande	AZ	0905943	AZD094524097
McCleur Tailings	Prescott	AZ	0905054	AZ0000309096
Atlas Asbestos Mine	Coalinga	CA		CAD980496863
Celtor Chemical Works	Hoopa	CA	0901938	CAD980638860
Coalinga Asbestos Mine	Coalinga	CA	0902075	CAD980817217
Iron Mountain Mine	Redding	CA	0901755	CAD980498612
Klau/Buena Vista Mine	Paso Robles	CA	0903986	CA1141190578
Lava Cap Mine	Nevada City	CA	0904343	CAD983618893
Leviathan Mine	Markleeville	CA	0901943	CAD980673685
Sulphur Bank Mercury Mine	Clearlake Oaks	CA		CAD980893275
Abbott/Turkey Run Mine	Wliliams	CA	0908401	CAN000908401
Altoona Mine	Castella	CA	0908402	CAN000908402
Atlas Iron And Metal Co.	Los Angeles	CA	0908308	CAN000908308
Blue Ledge Mine	Rogue River NF	CA	0906063	CAN000906063
Central Eureka Mine	Sutter Creek	CA	0905147	CA0000726539
Cima Road Mine Waste Site		CA	0905903	CAN000905903
Gambonini Mercury Mine	Petaluma	CA	0905389	CA0002322469
Goldome Mill	Ivanpah	CA	0908600	CAN000908600
Grey Eagle Mine	Happy Camp	CA	0905319	CAD000629923
Kingsbury Creek Mine Lab	Hayfork	CA	0905390	CA0002373736
Marsh Creek Rd Abandoned Dump Site	Clayton	CA	0902010	CAD980736060
Morning Star Mine	Cima	CA	0905076	CA0000466748
Mta Vermiculite Rail Spur	Los Angeles	CA	0905933	CAN000905933
Pioneer Pir And Gardner's Point Placer Mines	La Porte	CA	0905978	CAN000905978
Polar Star Mine	Dutch Flat	CA	0905494	CASFN0905494
Riconada Mine	Santa Margarita	CA	0903987	CA0141190579
Shaharald Mine	Kramer Junction	CA	0908300	CAN000908300
Union Pacific Vermiculite Rail Spur	Newark	CA	0905932	CAN000905932
Zeibright Mine	Nevada City	CA	0905925	CAN000905925
Summitville Mine	Rio Grande County	CO	0801194	COD983778432
Denver Radium Site	Denver	CO	0800247	COD980716955
California Gulch	Leadville	CO	0801478	COD980717938
Central City, Clear Creek	Idaho Springs	CO	0800257	COD980717557
Vasquez Boulevard And I-70	Denver	CO	0801646	CO0002259588
Eagle Mine	Minturn/Redcliff	CO	0800159	COD081961518
Asarco, Inc. (Globe Plant)	Denver	CO	0800078	COD007063530

Site Name	City	State	Site ID	EPA ID
Standard Mine	Gunnison National Forrest	CO	0801669	CO0002378230
French Gulch	Breckenridge	CO	0801505	CO0001093392
Captain Jack Mill	Ward	CO	0800892	COD981551427
Smuggler Mountain	Aspen	CO	0800261	COD980806277
Nelson Tunnel/Commodore Waste Rock	Creede	CO	0802630	CON000802630
Smeltertown Site	Salida	CO	0801085	COD983769738
Belden Cribbings	Gilman	CO	0802450	CON000802450
Western Minerals Denver Plant	Denver	CO		CO0010165136
Lincoln Park	Canon City	CO	0800115	COD042167858
Bueno Mill & Mine Site	Jamestown	CO	0802129	CON000802129
Claim Jumper/Shock Hill	Breckenridge	CO	0802644	CON000802644
Rico - Argentine	Rico	CO	0800274	COD980952519
Gem Park Complex	Hillside	CO	0801985	CON000801985
Evening Star Mine	Jamestown	CO	0802651	CON000802651
Uravan Uranium Project (Union Carbide Corp.)	Uravan	CO	0800076	COD007063274
American Lead And Zinc Mill	Ouray	CO	0802649	CON000802649
NL Ind, Mine, Mill	Bonanza City	CO	0800194	COD980634604
Industrial Minerals	Denver	CO	0801558	CO0001407543
Iron Springs Mining District	Ophir	CO	0801614	CO0001916360
Stauffer Chemical Co. (Tarpon Springs)	Tarpon Springs	FL	0400578	FLD010596013
Blackbird Mine	Lemhi County	ID	1000256	IDD980725832
Bunker Hill Mining & Metallurgical Complex	Smelterville	ID	1000195	IDD048340921
Eastern Michaud Flats Contamination	Pocatello	ID	1001308	IDD984666610
Monsanto Chemical Co. (Soda Springs Plant)	Soda Springs	ID	1000213	IDD081830994
Stibnite/Yellow Pine Mining Area	Stibnite	ID	1000236	IDD980665459
Cinnabar Mine	Stibnite	ID	1000235	IDD980665160
Clayton Silver Mine & Assoc Properties	Clayton	ID		ID0000135798
Conjecture Mine	Lakeview	ID	1002661	IDN001002661
Continental Mine And Mill	Porthill	ID	1002317	IDN001002317
Grouse Creek Mine	Bonanza	ID	1002152	IDSFN1002152
Harmony Mine & Mill Site	Salmon	ID	1002104	IDSFN1002104
Idaho Lakeview Mine	Athol	ID	1002537	IDN001002537
Minnie Moore Mine	Bellevue	ID	1002295	IDN001002295
Monarch Mill	Murray	ID	1002609	IDN001002609
Salmon River Uranium Development	North Fork	ID	1002662	IDN001002662
Southeast Idaho Selenium Project	Soda Springs	ID	1002245	IDN001002245
Talache Mine	Atlanta	ID	1001999	ID0002007250
USDA FS Boise NF: Monarch Mine Stamp Mill	Atlanta	ID	1001916	ID0001413723
Asarco Taylor Springs	Taylor Springs	IL	0508170	ILN000508170

Site Name	City	State	Site ID	EPA ID
Circle Smelting Corp.	Beckemeyer	IL		ILD050231976
DePue/New Jersey Zinc/Mobil Chemical Corp.	Depue	IL	0500396	ILD062340641
Eagle Zinc Co Div T L Diamond	Hillsboro	IL	0500648	ILD980606941
Hegeler Zinc	Danville	IL	0508134	ILN000508134
Matthiessen And Hegeler Zinc Company	La Salle	IL	0507364	IL0000064782
U.S. Smelter And Lead Refinery, Inc.	East Chicago	IN	0501433	IND047030226
Mine Site 2028	Brazil	IN	0510234	INN000510234
Cherokee County	Galena	KS	0700667	KSD980741862
National Zinc Co.	Cherryvale	KS	0700558	KSD980406698
National Southwire Aluminum Co.	Hawesville	KY	0401991	KYD049062375
Pioneer Foundry	Hardwick	MA	0105854	MAN000105854
Powhatan Mining Company	Woodlawn	MD	0306665	MDN000306665
Callahan Mining Corp	Brooksville (Cape Rosier)	ME	0101028	MED980524128
Saco Steel	Saco	ME	0104208	MEN000104208
Torch Lake	Houghton County	MI		MID980901946
Western Mineral Products	Minneapolis	MN	0508056	MNN000508056
Annapolis Lead Mine	Annapolis	MO	0702917	MO0000958611
Big River Mine Tailings/St. Joe Minerals Corp.	Desloge	MO		MOD981126899
Madison County Mines	Fredericktown	MO	0701102	MOD098633415
Newton County Mine Tailings	Granby	MO	0701651	MOD981507585
Oronogo-Duenweg Mining Belt	Joplin	MO		MOD980686281
Southwest Jefferson County Mining	Jefferson County	MO	0705443	MON000705443
Washington County Lead District - Old Mines	Old Mines	MO	0705027	MON000705027
Washington County Lead District - Potosi	Potosi	MO	0705023	MON000705023
Washington County Lead District - Richwoods	Richwoods	MO	0705032	MON000705032
Bonne Terre Mine Tailings	Bonne Terre	MO	0702738	MOD985818236
Carthage City And Eastern Jasper County Lead	Carthage	MO	0705445	MON000705445
Central Mining District Lead – Camden Co.	Camden County	MO	0705679	MON000705679
Central Mining District Lead – Cole Co.	Cole County	MO		MON000705444
Central Mining District Lead – Miller Co.	Miller County	MO		MON000705678
Central Mining District Lead – Moniteau Co.	Moniteau County	MO		MON000705681
Central Mining District Lead – Morgan Co.	Morgan County	MO		MON000705680
Elvins Mine Tailings	Elvins	MO	0702739	MOD985818244
Fallow Road Lead	Caledonia	MO	0705453	MON000705453
Federal Mine Tailings	Park Hills	MO		MOD985808070
Franklin County Lead	Franklin County	MO	0705442	MON000705442
Herculaneum Lead Smelter Site	Herculaneum	MO		MOD006266373

Site Name	City	State	Site ID	EPA ID
Highway 00 Lead	Fredericktown	MO	0705438	MON000705438
Leadwood Mine Tailings	Leadwood	MO	0702736	MOD985818210
National Mine Tailings	Park Hills	MO	0702737	MOD985818228
St. Joe Mineral Corp – Viburnum	Viburnum	MO		MOD000823252
Tedder Road Lead	Belgrade	MO	0705452	MON000705452
Viburnum Trend Lead Haul Roads	Reynolds, Iron, & Dent Counties	MO	0704445	MON000704445
Washington County Lead – Furnace Creek	Washington County	MO	0705842	MON000705842
Anaconda Co. Smelter	Anaconda	MT	0800403	MTD093291656
Barker Hughesville Mining District	Great Falls	MT	0801208	MT6122307485
Basin Mining Area	Basin	MT	0801057	MTD982572562
Carpenter Snow Creek Mining District	Neihart	MT	0801507	MT0001096353
East Helena Site	East Helena	MT	0800377	MTD006230346
Flat Creek IMM	Superior	MT	0801914	MT0012694970
Libby Asbestos Site	Libby	MT	0801744	MT0009083840
Milltown Reservoir Sediments	Milltown	MT	0800445	MTD980717565
Mouat Industries	Columbus	MT	0800384	MTD021997689
Silver Bow Creek/Butte Area	Butte	MT	0800416	MTD980502777
Upper Tenmile Creek Mining Area	Helena	MT	0801699	MTSFN7578012
Asarco Sodium - East Helena	East Helena	MT	0802439	MTN000802439
Georgetown Railroad	Georgetown Lake	MT	0801137	MTD986068930
King Creek	Lodgepole	MT		MTD986069920
McLaren Mill Tailings	Cooke City	MT	0800025	MTD981550841
Rumsey Tailings	Philipsburgh	MT	0801622	MT0001992585
Ore Knob Mine	Ashe County	NC	0409895	NCN000409895
Loflin Gold Mine	Trinity	NC	0407301	NCN000407301
Unimin Mine Fire	Spruce Pine	NC		NCD097358766
Omaha Lead	Omaha	NE	0703481	NESFN0703481
Glen Ridge Radium Site	Glen Ridge	NJ		NJD980785646
Montclair/West Orange Radium Site	Montclair/West Orange	NJ	0200997	NJD980785653
Shieldalloy Corp.	Newfield Borough	NJ	0200203	NJD002365930
U.S. Radium Corp.	Orange	NJ		NJD980654172
W.R. Grace & Co., Inc./Wayne Interim Storage Site	Wayne Township	NJ	0100350	NJ1891837980
Barry Bronze Bearing Co.	Camden County	NJ	0204539	NJC200400018
W.R. Grace Hamilton Twp	Hamilton Township	NJ		NJD067387472
Cimarron Mining Corp.	Carrizozo	NM	0600897	NMD980749378
Cleveland Mill	Silver City	NM	0600952	NMD981155930
Homestake Mining Co.	Milan	NM	0600816	NMD007860935
Molycorp, Inc.	Questa	NM	0600806	NMD002899094
United Nuclear Corp.	Church Rock	NM	0600819	NMD030443303
Bluewater Uranium Mine	Prewitt	NM	0903969	NND983469891

Site Name	City	State	Site ID	EPA ID
Dona Ana Metal Survey	Sunland Park	NM		NM0000605387
Northeast Churchrock Mine Site	Coyote Canyon	NM		NNN000906132
San Vincente Creek Tailings	Silver City	NM	0600940	NMD980879415
Stephenson – Bennett Mine	Organ	NM		NMD986684231
Carson River Mercury Site	Dayton	NV		NVD980813646
Anaconda Copper Company	Yerrington	NV		NVD083917252
Eagle 1 Mill Site	Nelson	NV	0905359	NV0001995604
Veta Grande Mining Co	Gardnerville	NV	0902940	NVD038275020
Weiss Road Drum Site	Amargosa Valley	NV	0905819	NVN000905819
Li Tungsten Corp.	Glen Cove	NY	0202972	NYD986882660
Ormet Corp.	Hannibal	OH	0504223	OHD004379970
Shieldalloy Metallurgical Corporation	Cambridge	OH	0505780	OHD042319244
Tiger Metal Services Incorporated	Ironton	OH	0504212	OHD004294625
National Zinc Corp.	Bartlesville	OK	0601010	OKD000829440
Tar Creek (Ottawa County)	Ottawa County	OK	0601269	OKD980629844
Tulsa Fuel And Manufacturing	Collinsville	OK	0604674	OKD987096195
Black Butte Mine	Cotton Grove	OR		OR0000515759
Formosa Mine	Riddle	OR	1002616	ORN001002616
Fremont National Forest/White King And Lucky Lass Uranium Mines (USDA)	Lakeview	OR		OR7122307658
Martin-Marietta Aluminum Co.	The Dalles	OR	1000424	ORD052221025
Reynolds Metals Company	Troutdale	OR	1000383	ORD009412677
Teledyne Wah Chang	Albany	OR	1000421	ORD050955848
Foote Mineral Co.	East Whiteland Township	PA	0301103	PAD077087989
Franklin Slag Pile (MDC)	Philadelphia	PA	0305549	PASFN0305549
Jacks Creek/Sitkin Smelting & Refining, Inc.	Maitland	PA	0301569	PAD980829493
Palmerton Zinc Pile	Palmerton	PA	0300624	PAD002395887
Sharon Steel Corp. (Farrell Works)	Hickory Township	PA	0300530	PAD001933175
Hutchinson Mine Pcb Site	Hutchinson	PA	0303302	PAD982364275
Vermiculite Wrg4	Ellwood City	PA	0305592	PAN000305592
Barite Hill/Nevada Goldfields	Mccormick	SC	0407714	SCN000407714
Brewer Gold Mine	Jefferson	SC	0405550	SCD987577913
Macalloy Corporation	North Charleston	SC	0406784	SCD003360476
Gilt Edge Mine	Lead	SD	0801668	SDD987673985
Whitewood Creek	Whitewood	SD	0800570	SDD980717136
North Cave Hills Mining Sites	Buffalo	SD	0801907	SD0012261936
Chemet Co.	Moscow	TN	0405468	TND987768546
Copper Basin Mining District	Copperhill	TN	0406638	TN0001890839
RSR Corporation	Dallas	TX	0602297	TXD079348397
Tex-Tin Corp.	Texas City	TX	0602105	TXD062113329
American Smelting Co – El Paso Smelting Wk	El Paso	TX		TXD990757668

Site Name	City	State	Site ID	EPA ID
Davenport And Flagstaff Smelters	Sandy	UT	0801257	UTD988075719
Eureka Mills	Eureka	UT	0801644	UT0002240158
International Smelting And Refining	Tooele	UT	0800650	UTD093120921
Jacobs Smelter	Stockton	UT	0801674	UT0002391472
Midvale Slag	Midvale	UT	0800641	UTD081834277
Monticello Mill Tailings (USDOE)	Monticello	UT	0800867	UT3890090035
Monticello Radioactively Contaminated Properties	Monticello	UT	0800679	UTD980667208
Murray Smelter	Murray City	UT	0800697	UTD980951420
Richardson Flat Tailings	Park City	UT	0800705	UTD980952840
Sharon Steel Corp. (Midvale Tailings)	Midvale	UT	0800694	UTD980951388
U.S. Magnesium	Tooele County	UT	0802704	UTN000802704
American Fork Canyon/Uinta National	Pleasant Grove	UT		UTD988074951
Bigham Magna Ditch	West Valley City	UT	0802691	UTN000802691
Butterfield Mine (St Joe's Tunnel)	Herriman	UT	0800744	UTD981548993
Empire Canyon	Park City	UT	0801634	UT0002005981
Jordan View Lot	West Jordan	UT	0801185	UTD988073466
Kennecott (North Zone) (Sa)	Magna	UT	0800636	UTD070926811
Kennecott (South Zone) (Sa)	Copperton	UT	0800601	UTD000826404
Kennecott Ne Stockton Property	Stockton	UT	0802693	UTN000802693
Kern River/Bingham Creek Pipeline	West Jordan	UT	0801184	UTD988073458
Lark Waste Rock And Tailings (Kennecott)	Bingham Canyon	UT	0800717	UTD980959258
Old Cobalt Tailings Pond	Lake Point	UT	0800688	UTD980717987
Ophir Mills And Smelter	Ophir	UT	0801869	UT0010221516
Southwest Assay Site	Leeds	UT	0800977	UTD988066239
Tooele Valley Railroad	Tooele	UT	0801893	UT0011980278
U.S. Titanium	Piney River	VA	0302737	VAD980705404
V & V Mining PCB Site	Big Stone Gap	VA	0305626	VAN000305626
Elizabeth Mine	Strafford	VT	0102071	VTD988366621
Ely Copper Mine	Vershire	VT	0102065	VTD988366571
Pike Hill Copper Mine	Corinth	VT	0102121	VTD988366720
Vermont Asbestos Group Mine	Eden	VT	0105222	VTN000105222
Commencement Bay, Near Shore/Tide Flats	Tacoma	WA	1000981	WAD980726368
Kaiser Aluminum (Mead Works)	Mead	WA	1000551	WAD000065508
Midnite Mine	Wellpinit	WA	1001070	WAD980978753
Silver Mountain Mine	Loomis	WA	1000948	WAD980722789
Alder Mill	Twisp	WA	1000950	WAD980722847
Anderson-Calhoun Mine/Mill	Leadpoint	WA	1002309	WAN001002309
Cleveland Mine And Mill	Hunters	WA	1002247	WAN001002247
Everett Smelter	Everett	WA	1002564	WAN001002564
Grandview Mine	Metaline Falls	WA	1002165	WASFN1002165

Site Name	City	State	Site ID	EPA ID
Kaaba Texas Mine	Nighthawk	WA		WASFN1002145
Le Roi Co Smelter	Northport	WA	1001661	WAD988507323
Pend Oreille Village	Metaline Falls	WA	1002719	WAN001002719
Silverton Mercury (Hg) Concentrators	Silverton	WA	1002702	WAN001002702
Allis Chalmers Dupont Landfill	Oak Creek	WI	0505612	WID982071839
Kentucky/West Virginia Coal Slurry Spill	Fort Gay	WV	0305636	WVN000305636