STATEMENT OF BASIS

Chevron Gasoline Release

At Chillum, Maryland

August 30, 2007

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GLOSSARY

ACE – U.S. Army Corps of Engineer

ATSDR - The Agency for Toxic Substances and Disease Registry

BTEX - Benzene, toluene, ethylbenzene, and xylenes

COC – Contaminants of Concern

DOH – District of Columbia Department of Health

EPA- U.S. Environmental Protection Agency

FDRTC - Final Decision Document and Response to Comments

MCL - Maximum Contaminant Levels

MDE - Maryland Department of Environment

MTBE - Methyl tertiary-butyl ether

OSHA - Occupational Safety and Health Administration

PCE – Perchlorethylene, also known as Tetrachloroethylene

ppb – Parts per billion

RBC – Risk Based Concentrations

RCRA – Resource Conservation and Recovery Act

FDRTC - Final Decision Document and Response to Comments

SB – Statement of Basis

TI - technical impracticability

UAO - Unilateral Administrative Order

ug/l – Micro grams per liter

UST – Underground Storage Tank

VOC - Volatile organic compounds

I. INTRODUCTION

This Statement of Basis (SB) explains the United States Environmental Protection Agency's (EPA's) proposed remedy for the gasoline release originating from the gas station formerly owned by Chevron U.S.A. Inc. (Chevron) and located at 5801 Riggs Road in Chillum, Prince George's County, Maryland (the Facility) under the Resource Conservation and Recovery Act, as amended, 42 U.S.C. § 6901 to 6939(e) (RCRA). After reviewing extensive groundwater, soil vapor, and indoor air sampling data generated by EPA, Chevron and the District of Columbia (District), EPA is proposing as the remedy for the Facility the expansion of the existing groundwater remediation system, the installation of vapor mitigation systems in homes impacted by subsurface vapor intrusion, and the implementation of institutional controls.

The purpose of this document is to solicit public comment on EPA's proposed remedy prior to making its final remedy selection for the Facility. The information presented in this SB can be found in greater detail in the work plans and reports submitted by the Facility to EPA, the District Department of Health (DOH), and the Maryland Department of Environment (MDE). To gain a more comprehensive understanding of the RCRA activities that have been conducted at the Facility, EPA encourages the public to review these documents which are found in the Administrative Record. The Administrative Record and index are available for public review at the EPA Region III Office in Philadelphia and the Lamond Riggs Branch Library located on 5401 South Dakota Avenue, N.E., Washington, D.C.

The public may participate in the remedy selection process by reviewing this SB and documents contained in the Administrative Record and submitting written comments to EPA during the public comment period. Public participation is discussed in further detail in Section X, below. EPA will address all significant comments submitted in response to the proposed remedy described in this SB. EPA will make a final remedy decision and issue a Final Decision and Response to Comments after it considers information submitted during the public comment period. If EPA determines that new information or public comments warrant a modification to the proposed remedy, EPA may modify the proposed remedy or select other alternatives based on such new information and/or public comments.

II. FACILITY BACKGROUND

The Facility is located at the eastern corner of the intersection of Eastern Avenue and Riggs Road in Chillum, Maryland. The north side of the right-of-way of Eastern Avenue delineates the boundary between Prince George's County, Maryland and the District. The southern extent of the Facility property abuts the District.

Gulf Oil Corporation (Gulf) constructed a service station on the Facility property on or about 1954. Standard Oil Company of California merged with Gulf in 1984, and after restructuring, changed its name to Chevron. Chevron owned and operated the Facility until it was sold to an independent owner in 1993.

In October 1989, as required by the newly promulgated Underground Storage Tank (UST) regulations codified at 40 C.F.R. Part 280, Chevron conducted an UST tightness test on its underground storage tanks. The UST tightness test and subsequent investigations by Chevron under MDE oversight confirmed the release of gasoline from the Facility and the presence of gasoline product in groundwater. Since 1990, Chevron has been recovering gasoline product from the groundwater by operating a groundwater remediation system at the Facility.

In 2001, Chevron discovered that the gasoline contaminated groundwater (plume) had migrated into the District affecting a residential neighborhood known as Riggs Park. Because the plume impacts two separate political jurisdictions (the State of Maryland and the District), at the request of District Councilmember Adrian Fenty, who was later elected as Mayor of the District, EPA assumed the lead investigatory role for the Facility.

In December 2002, EPA issued a unilateral Administrative Order (Order), RCRA-03-2003-0006th, pursuant to Section 7003 of RCRA, 42 U.S.C. § 6973, to Chevron. The Order requires Chevron to perform interim measures to mitigate threats to human health and the environment; to perform a Site Investigation to determine the nature and extent of petroleum related contaminants in the groundwater; and to perform a Corrective Measure Study to evaluate alternatives for corrective action necessary to protect human health and the environment.

During the summer of 2002, as a result of the Site Investigation, perchlorethylene (PERC) was discovered in the gasoline plume. Since PERC is not a contaminant associated with gasoline, but rather is commonly associated with dry cleaning activities, EPA determined that PERC is not a Facility-related contaminant. The PERC contamination, therefore, is not within the scope of EPA's RCRA corrective action investigation and is not addressed in EPA's proposed remedy for the Facility. EPA's Superfund Removal program has taken the lead on investigating the PERC release.

III. SUMMARY OF GASOLINE RELEASE INVESTIGATION

As required by the Order, Chevron has collected soil, soil vapor, indoor air and groundwater samples, and has conducted pilot tests to upgrade the existing groundwater remediation system. Between 2001 and 2007, Chevron installed 232 temporary Geoprobe wells, 80 groundwater monitoring wells, 7 product recovery wells, and 4 soil vapor monitoring wells. Cumulatively, during the same period, Chevron has collected over 3000 groundwater samples, 300 soil samples, 250 soil vapor samples from 90 properties, 50 indoor and ambient air samples from 20 properties, and 14 basement sump samples.

Between 2002 and 2005, EPA's Superfund Removal program collected indoor air samples from 32 properties and installed 24 soil vapor wells for its PERC investigation; and the U.S. Army Corps of Engineer (ACE), on behalf of EPA, generated split /quality control data from over half the properties sampled by Chevron. In 2006, DOH initiated

an independent indoor air sampling effort, based on voluntary participation by the Riggs Park residents. During that investigation, DOH collected indoor air data from 97 homes in Riggs Park bounded geographically by four streets: Kennedy Street, Madison Street, Eastern Avenue, and Riggs Road. While EPA's proposed remedy does not address the DOH or PERC investigation, EPA has relied on data collected by both investigations to support its proposed remedy for the Facility.

Based on soil, soil vapor, indoor air and groundwater data collected through September 2005, EPA has delineated a shallow benzene plume and a shallow methyl tertiary-butyl ether (MTBE) plume as shown in Figures 2 and 3. The shallow benzene plume extends approximately 700 feet from the Facility into the District, and the shallow MTBE plume is about twice as long, extending about 1400 feet from the Facility into the District. For the purposes of this SB, the combined maximum boundary of both plumes will be referred to as the gasoline plume.

The primary direction of groundwater movement from the Facility is towards the southeast as evidenced by the southeasterly orientation of the plume that crosses the Maryland State line into the District. A clay body in the middle of Riggs Park has divided the plume into two lobes. Since the Riggs Park is serviced by public water and there are no known private groundwater wells in Riggs Park, there is no human health threat associated with consumptive uses of the contaminated groundwater. The primary health concern is that vapor can volatilize from the plume and migrate vertically through soil into basements through cracks, joints and utilities openings. This effect is referred to as subsurface vapor intrusion.

Subsurface vapor intrusion can impact only those homes located above the gasoline plume. Homes located outside the extent of the gasoline plume cannot be impacted by vapor intrusion from the plume. Therefore, EPA required Chevron to use the gasoline plume boundaries as a selection criterion for identifying homes to be sampled for subsurface vapor intrusion. DOH's indoor air sampling differs from Chevron's approach because DOH relied upon voluntary participation from residents within designated geographic boundaries which did not correlate with the plume boundaries.

EPA has statistically characterized the indoor air data collected from 97 homes by DOH in Figure 4. The data in Figure 4 indicate that there is elevation in benzene and MTBE vapor concentrations in homes above the gasoline plume as compared to homes situated outside the plume boundaries, suggesting that there is likelihood of subsurface vapor intrusion associated with the gasoline plume. Based on EPA's review of 151 indoor air samples collected by EPA, Chevron, and DOH, EPA has identified up to 5 homes above the gasoline plume where measured vapor concentrations have exceeded EPA's remediation standards as presented in Section VI, below. EPA has also statistically characterized the outdoor ambient air data collected by Chevron, DOH, and ACE in Figure 5. On average, outdoor benzene and MTBE concentrations are at levels of about one-third to equal that of indoor air concentrations.

IV. INTERIM MEASURES

In 1990, under MDE oversight, Chevron installed and began operating a skimmer system at the Facility to recover gasoline product from groundwater. In 1994, the system was modified into a dual phase extraction system to recover gasoline product from both groundwater and soil vapor. For the purposes of this SB, both the skimmer system and the dual phase extraction system, along with any modifications to those systems, are hereinafter collectively referred to as the groundwater remediation system or system.

Between 1997 and 2000, Chevron conducted several shut-down tests of the groundwater remediation system to evaluate whether the system had met its objective of removing all gasoline product. The system was turned back on after each shut-down test because each test failed to demonstrate that the objective was met. In 2000, after the last failed shut-down test, Chevron conducted an additional site investigation during which it discovered additional gasoline product beneath the parking lot outside the Facility and a gasoline plume that had migrated into the District.

Under the interim measures provision of the Order, Chevron was required to upgrade the groundwater remediation system to recover the additional gasoline product sources discovered in the parking lot. Chevron completed the system upgrade in early 2005. This upgraded groundwater remediation system is currently pumping about 20 gallons per minute, versus about 2 gallons per minute the old system was pumping before the upgrade. The upgraded system has noticeably increased the capture zone and groundwater movement, thereby enhancing the remediation efficiency. As of March 2007, the system has recovered 4,800 gallons of gasoline product cumulatively since the beginning of its operation in 1990.

V. SCOPE OF REMEDIATION

EPA proposes to expand the existing groundwater remediation system and install vapor mitigation systems in homes impacted by subsurface soil vapor intrusion.

A. Groundwater Remediation Strategy

The gasoline plume is 1400 feet long and extends from the Facility to the intersection of Eighth Street and Nicholson Avenue (Figures 2 and 3). EPA proposes to remove all liquid phase hydrocarbons (gasoline product sources) that are present at or near the Facility, as depicted by Areas A and B in Figure 4. Although gasoline product has only been detected once in a monitoring well within Area B, non-mobile product is believed to be present in Area B soil within the water table fluctuation zone known as the "smear zone." Non-mobile product will not migrate with groundwater or enter wells in measurable or recoverable quantities. The objective of the remediation system is to eliminate all gasoline product sources, mobile and non-mobile, from further tainting the groundwater. EPA anticipates that once the sources are eliminated, the plume will be

self-cleaning due to rapid biodegradation of dissolved phase hydrocarbons (benzene, toluene, ethylbenzene, xylenes and MTBE).

B. Vapor Mitigation Strategy

Homes located above the gasoline plume are vulnerable to subsurface vapor intrusion coming from the plume and entering basements through cracks, joints and utilities openings. Extensive soil vapor and indoor air samples have been collected to evaluate the health impact from this pathway. Based on data collected to date, up to 5 homes above the plume have measured vapor concentrations exceeding EPA's remediation standards as identified in Section VI.B below. EPA proposes to have Chevron install a subslab depressurization system, commonly used in radon mitigation, to prevent vapor entry into residential basements impacted by the gasoline plume. The depressurization system operates by creating a slight vacuum beneath the subslab by drawing a slow stream of air through subslab venting pipes, thereby reversing the vapor movement gradient and direction.

VI. REMEDIATION STANDARDS

The contaminants of concern (COC) relating to the Facility are benzene, toluene, ethylbenzene, xylenes (BTEX) and MTBE. These COCs are present in groundwater and soil vapor within the gasoline plume boundaries.

A. Groundwater Remediation Standards

EPA proposes to cleanup groundwater to meet drinking water standards established by the Maximum Contaminant Levels (MCLs) promulgated at 40 C.F.R. Part 141 pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. Section 300g-1, except for MTBE. MTBE does not have a MCL. EPA's proposed remediation standard for MTBE is based on taste and odor thresholds adopted by the District and Maryland. EPA's proposed groundwater remediation standards are as follows:

Benzene	5 micrograms per liter (ug/l)
Toluene	1,000 ug/l
Ethylbenzne	700 ug/l
Xylenes	10,000 ug/l
MTBE	20 ug/l

B. Vapor Remediation Standards

EPA proposes to mitigate subsurface soil vapor intrusion into homes to meet the following remediation standards:

Benzene	8 micrograms per cubic meter (ug/m^3)
Toluene	5,000 ug/m^3
Ethylbenzene	1,000 ug/m^3
Xylenes	100 ug/m^3
MTBE	17 ug/m^3

EPA considered both the background concentrations of BTEX constituents and MTBE and the acceptable risk ranges for those contaminants in establishing the above remediation standards. According to EPA remediation guidelines, the acceptable risk range for cancer protection is between one in 10,000 to one in 1,000,000, and for non-cancer protection is a Hazard Quotient equaling one. Benzene is a known human carcinogen. The carcinogenic status of MTBE has not been established by EPA, however, EPA Region III conservatively treats MTBE as a possible carcinogen. All other petroleum compounds of concern, toluene, ethylbenzene and xylenes, are not considered to be carcinogenic by EPA.

EPA used the indoor air sampling data provided by DOH to identify the background concentrations of benzene and MTBE. DOH collected indoor air samples from 97 homes in 2006; 52 homes are located outside the plume boundaries and 45 homes are located above the plume. Based on statistical analyses of the indoor air data collected from the 52 homes located outside the plume, the mean background concentrations for benzene and MTBE are 2.7 ug/m^3 and 2.8 ug/m^3, respectively, with standard deviations of 2.7 ug/m^3 and 7.2 ug/m^3, respectively. Since these 52 homes are located outside the plume, the measured values cannot be affected by the gasoline plume and therefore represent local background concentrations.

In selecting remediation standards, EPA must consider implementation factors such as background concentrations. EPA is not aware of any practical technology that can reduce indoor air vapor concentrations to below background concentrations, or any measurement technique that can distinguish background concentrations from vapor intrusion concentrations if the two are numerically similar. A 95 percentile value (mean value plus two standard deviations) will provide confidence that the measured value is likely caused by vapor intrusion, and that technology will be available to reduce the elevated concentrations to background concentrations. Therefore, EPA selects the 95 percentile values; that is, 8 ug/m^3 and 17 ug/m^3, as the remediation standards for benzene and MTBE, respectively. Lifetime excess cancer risks associated with the selected standards are estimated to be 3.5×10^{-05} and 1.1×10^{-05} for benzene and MTBE, respectively, and are within the EPA acceptable risk range. These values are more stringent than the national background concentrations default in EPA's national data base for the J&E Vapor Intrusion Model, which lists the background concentrations for benzene and MTBE as 10 ug/m^3 and 18 ug/m^3, respectively.

For toluene, ethylbenzene and xylenes, the remediation standards were established by adopting the concentrations corresponding to a Hazard Quotient of one; that is 5000 ug/m^3, 1000 ug/m^3 and 100 ug/m^3, respectively. The measured background

concentrations of these compounds are far lower than the risk-based concentrations and will have no impact on the overall risk or attainment of the remediation goal. Therefore, the selected remediation standards for these compounds are purely risk-based without factoring in the background concentrations.

The Agency for Toxic Substances and Disease Registry (ATSDR), a division of the Center of Disease Control, has reviewed EPA's remediation standards. In a letter to EPA, dated May 10, 2007, ASTDR supports EPA's proposed remediation standards as appropriate and protective of human health.

VII. PROPOSED REMEDY

A. Expansion of Existing Groundwater Remediation System

EPA proposes to have Chevron continue to operate the existing groundwater remediation system in Area A, and expand the system into Area B by installing angle recovery wells. Groundwater and vapor extraction wells will be installed at an angle in the parking lot on the Maryland side for completion on the District side across Eastern Avenue up to the boundaries of private properties. EPA will determine the exact locations and number of angle recovery wells to be installed in the design phase subject to boring exploration. All new recovery wells will be connected to the existing groundwater treatment unit.

Although gasoline product has been detected only once in a monitoring well in Area B, non-mobile product is believed to be present in Area B soil within the water table fluctuation zone known as the "smear zone." It is also possible that mobile product is present beneath Eastern Avenue where traffic condition has restricted exploration in the past. Angle drilling can overcome that restriction. Although non-mobile product will not migrate with groundwater or enter wells in measurable or recoverable quantities, the residual product in the smear zone will continue to contaminate groundwater and soil vapor. The proposed angle recovery wells will enlarge the capture zone, accelerate groundwater movement, extract contaminated soil vapor, and enhance product degradation in Area B even if the product may not be recoverable.

Chevron will be required to operate the expanded system and provide adjustment or upgrades as appropriate in the future with the goal to restore groundwater to drinking water standards. If the goal of restoring drinking water standards is not attainable within a reasonable time frame from an engineering perspective, EPA may grant a technical impracticability (TI) waiver in accordance with EPA's Guidance for Evaluating TI for Groundwater Restoration (October 1993**).**

B. Installation of Vapor Mitigation System

EPA proposes to require Chevron to install a subslab vapor mitigation system, similar to a radon system, in all homes located above the gasoline plume where the measured indoor petroleum vapor concentrations have exceeded EPA's remediation

standards. EPA will provide Chevron with the addresses of homes where installation of such a system is necessary, or where retesting is necessary prior to installation of such a system. All installation and testing will be subject to home owner consent.

EPA proposes that Chevron install, maintain and provide annual testing of each system and reimburse the energy cost to the homeowners to run the system for as long as necessary to protect human health. A testing protocol will be established during the design phase of the system. EPA will evaluate the test results to determine the effectiveness of each system in reducing indoor air concentrations and preventing subsurface vapor intrusion. If the test results in accordance with EPA's approved protocol can demonstrate that the remediation standards for vapor intrusion have been met without further operation of the system, Chevron may request that EPA allow it to shut down of the system.

C. Institutional Controls

EPA proposes that institutional controls be implemented in order to prevent any activities which would interfere with or adversely affect the integrity and protectiveness of the final remedy. The institutional controls are necessary to ensure that contaminated groundwater is not used for consumptive purposes; the integrity and protectiveness of the groundwater remediation system is maintained; and subsequent purchasers of the Facility property are informed of the environmental conditions at the Facility and of EPA's final remedy for the Facility. During the design phase of the remedy, EPA will require Chevron to identify specific actions that will accomplish the institutional controls objectives.

Institutional controls may include, but may not be limited to:

1. A notice to be placed on the deed to the Facility property which would notify successors-in-interest that Chevron entered into the Order requiring it to implement the final remedy selected by EPA for the Facility.

2. Restrictive covenants between Chevron and the owners of properties on which components of the groundwater remediation system are placed ensuring that (a) Chevron and its successors, contractors, and authorized representatives have the ability to implement, facilitate and/or monitor the final remedy; (b) the properties will be used only for purposes that are compatible with EPA's final remedy; (c) the properties will not be used in a manner that will pose a threat to human health or adversely affect the environment and (d) no new wells are installed at the properties unless they are necessary to implement the final remedy.

VIII. EVALUATION OF PROPOSED REMEDY

This section provides a description of the criteria EPA used to evaluate the proposed remedy in accordance with EPA's guidance. The criteria are applied in two phases. In the first phase, EPA evaluates three remedy threshold criteria as general goals.

In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

A. Threshold Criteria

EPA's evaluation of the threshold criteria is as follows:

1. Protect human health and the environment

There are no human health threats associated with domestic uses of the contaminated groundwater originating from the Facility because groundwater is not used for drinking water purposes. Riggs Park is serviced by public water from a source not affected by Facility related contamination and there are no private wells located in the area. Several tap water samples were collected by EPA and the ACE for volatile organic compounds (VOCs) analyses and the results show that the community tap water is safe for consumption.

According to DOH, the public water supply for the District comes from the Potomac River or reservoirs and the District does not rely on groundwater for its water supply. There are no known private water supply wells in Riggs Park. The nearest water supply source for Riggs Park is the McMillan Reservoir, which is located approximately 5 miles southwest of Riggs Park. Even though there are no current consumptive uses of Facility-contaminated groundwater, the goal of EPA's proposed groundwater remediation is to restore groundwater to drinking water standards to be protective of potential future use. Until groundwater is restored to drinking water standards, EPA is proposing to require institutional controls, as necessary, to prevent consumptive use of the groundwater. EPA's proposed remedy also requires the implementation of institutional controls to prevent any activities which would interfere with or adversely affect the integrity or effectiveness of the remedial actions performed at the Facility.

The primary health concern of the contaminated groundwater under current conditions is vapor intrusion into basements. The proposed remedy will require Chevron to install a vapor mitigation system in each home where the measured vapor concentrations have exceeded EPA's vapor remediation standards. Based on extensive sampling, up to five homes above the gasoline plume have measured indoor air vapor concentrations above EPA's vapor remediation standards. The proposed groundwater remediation objective which is to restore groundwater to drinking water standards will also achieve the long-term goal to eliminate all subsurface vapor intrusion sources.

2. Achieve media cleanup objectives

The proposed groundwater remediation will achieve the media cleanup objectives by restoring groundwater to drinking water standards and by eliminating all subsurface vapor intrusion sources linking to Chevron's gasoline release.

The proposed vapor mitigation systems will achieve the media cleanup objective by preventing subsurface vapor intrusion into all homes affected by the gasoline plume. The vapor remediation standards presented in Section VI, above, are within EPA's acceptable risk range guideline.

3. Control the source(s)

The existing groundwater remediation system was designed to remove gasoline product sources in Area A. The proposed expansion of the system will further reduce the sources in Area B not previously captured by the existing system. EPA recognizes that no remedy will be fully effective unless there is cessation of future releases from the Facility. MDE has informed EPA that the current operation of the Facility is in compliance with the MDE's UST leak detection requirements. Therefore, adequate safeguards are in place at the Facility to prevent another major release. Moreover, should a release occur, the remediation system can act as a sentinel and emergency containment system.

B. Balancing Criteria

After satisfying the threshold criteria, EPA evaluates the following balancing criteria to demonstrate the suitability of the proposed remedy:

1. Long-term Reliability and Effectiveness

As of March 2007, the existing groundwater remediation system has recovered over 4,800 gallons of gasoline product since the beginning of its operation in 1990. Its effectiveness is evidenced by the fact that 7 of the 8 recovery wells currently in operation are outside the Facility, because the initial release has largely been depleted allowing abandonment of all but one of the original recovery wells located inside the Facility. Since the system was upgraded in 2005, it has drastically reduced benzene and MTBE concentrations in Area B wells, further demonstrating the effectiveness of the existing system. The proposed expansion of the system is expected to be more effective and efficient in remediating the sources in Area B.

The proposed vapor mitigation systems to be installed in those homes affected by vapor intrusion are proven technology adopted from the radon mitigation industry. Similar systems have been installed in millions of homes throughout the nation to mitigate radon intrusion. The proposed systems are expected to be equally reliable and effective because the mechanism to prevent vapor and radon intrusion is identical.

A monitoring plan has been in place whereby Chevron is required to submit quarterly progress reports to EPA, MDE and DOH to monitor the effectiveness of the groundwater remediation system, in addition to notification requirements to all agencies immediately if the operation of the system is disrupted. During the design phase of the remedy, EPA will require Chevron to update the groundwater remediation system

monitoring plan, and to propose a testing protocol to evaluate the effectiveness of the individual home vapor mitigation systems.

2. Reduction of Waste Toxicity, Mobility or Volume

The volume and mobility of the sources (liquid phase hydrocarbons) and the contaminated groundwater (dissolved phase hydrocarbons) have reached equilibrium and will begin to shrink as the remediation progresses. The sources are confined in Areas A and B, and the saturation level is so low that much of the product is non-mobile. Non-mobile product will not enter wells in measurable or recoverable quantities, and will not migrate with groundwater. Currently, only 4 monitoring wells and 7 recovery wells located in Area A contain measurable product, and none of the wells in Area B contains measurable product.

The volume and mobility of the contaminated groundwater have reached equilibrium as the shallow plumes have reached the maximum extent at the intersection of Eighth Street and Nicholson Avenue. Nicholson Avenue is a natural groundwater divide where an ancient creek, which is now replaced by a storm interceptor, existed. Eighth Street is also a groundwater divide for unknown reasons as evidenced by the fact that the plumes terminate on Eighth Street.

The objective of the groundwater remediation system is to aggressively deplete all product sources. EPA anticipates that once the sources are depleted from further contaminating the groundwater, the plume will be self-cleaning because dissolved phase hydrocarbons are known to biodegrade rapidly. However, the shrinking of the plume will not be apparent until the sources are further depleted in the next 5 to 10 years by the expanded groundwater remediation system.

3. Short-Term Effectiveness

The short-term effectiveness criterion is intended to address hazards posed during construction of the remedy. Short-term effectiveness is designed to take into consideration the impact on site workers and nearby residents such as potential for volatilization of contaminants, the spread of contamination through dust generation, and disposal and/or transportation of the wastes. Workers are required to comply with the Occupational, Safety and Health Administration rules and to follow the Health and Safety Plans submitted to EPA. No short-term hazards to the residents have been identified for the proposed remedy.

4. Implementability

The implementability criterion addresses various constraints such as regulatory constraints, ability to obtain access agreements, technological and practicability limitations, and intrusiveness to residents due to noise, traffic and aesthetic disruptions.

The existing groundwater remediation system has been operating for the last 17 years and no new regulatory requirements are anticipated. The proposed angle recovery wells will stop at private property boundaries so that the constraint to obtain access agreements from residents is eliminated. The proposed angle recovery wells will not interfere with the busy traffic on Eastern Avenue during testing, construction and future maintenance of the completed wells.

The vapor mitigation system proposed is a proven technology with no implementation constraints except for obtaining access agreements from homeowners to install, maintain and test the systems. Installation of the systems in private properties is contingent upon consent from homeowners.

5. Cost

The proposed remedy is cost effective in meeting the remediation objectives. Chevron has already expended capital costs in upgrading the groundwater remediation system. According to Chevron, the estimated cost to install the angle wells and connect to the existing groundwater remediation system is $280,000.

6. Community Acceptance

Community acceptance of EPA's proposed remedy will be evaluated based on comments received during the public comment period and will be described in the Final Decision and Response to Comments.

7. State Acceptance

State acceptance will be evaluated based on comments received from MDE and the District during the public comment period and will be described in the Final Decision and Response to Comments.

IX. OTHER ALTERNATIVES

EPA has evaluated four other alternatives which are not recommended for a variety of reasons. Each alternative is briefly described below with an explanation of the key reasons as to why it is not recommended.

A. Electrical Resistive Heating

This technology consists of heating the subsurface to the boiling point of water via electrical current flow between electrodes installed in Area B. Volatile constituents would be evaporated and stripped from the subsurface by the steam produced during heating. Vapors and steam would be collected using a soil vapor extraction system and would be treated prior to discharge to the atmosphere.

EPA does not recommend this alternative because of safety concerns and excessive disruption to the community. Although precautionary safety measures would be implemented to protect the homes above the remediation zone, the short-term risks outweigh the long-term benefit. It is unknown how the high temperature would affect existing foundations and utility materials as application of this technology has been known to melt PVC pipes. The operation of the electrodes is highly disruptive because the electrodes must be placed at close spacing on private properties and a trailer must be placed on one property to house the high voltage equipment for up to a year.

B. In-situ Chemical Oxidation

This technology involves the injection of an oxidizing agent through temporary wells into the subsurface to oxidize hydrocarbons on contact. The complete oxidation or mineralization of the BTEX would result in water and carbon dioxide as final end products.

EPA does not recommend this technology due to uncertainty of its effectiveness and disruption to residents. According to the Corrective Action Plan submitted by Chevron, pilot tests must be conducted on this technology prior to its full implementation. EPA does not recommend selection of an experimental technology for this phase of the clean up. Another obstacle of this technology is that it is highly intrusive as temporary Geoprobe wells must be installed at close spacing on private properties several times a year to inject the oxidizing agent.

An alternative and less intrusive application of this technology would be to inject the oxidizing agent through new horizontal or angle wells. However, the spacing of horizontal or angle wells would not be close enough for this technology to be effective.

C. Expansion of Existing System by Horizontal Wells

This alternative involves expansion of the existing groundwater remediation system by installing horizontal wells beneath Area B. The horizontal wells would be installed by directional drilling from the parking lot on the Maryland side for completion across Eastern Avenue in Area B on the District side.

EPA does not recommend this alternative due to difficulty in long-term maintenance of horizontal wells and the intrusiveness of the construction. A horizontal well is not a straight well, but has a mild curvature in the entrance and exit transition, and the bore hole tends to wriggle along a straight line. Maintaining a horizontal well can be challenging due to the difficulty in retrieving and reinstalling pump and sensors, and the redevelopment of aging wells. Another obstacle is that the construction is disruptive to properties downhill of Area B because the bore holes would need to exit at that location and enough horizontal space must be available to pull several hundred feet of well casing and screen through the bore holes.

D. Installation of an Independent Recovery and Treatment System in Riggs Park

This alternative involves installation of conventional recovery wells in Area B connected to an independent treatment system which would be constructed in Riggs Park. The housing for the treatment system is considered a commercial building which will require a zoning waiver from the District to be placed in a residential area.

EPA does not recommend this alternative because of the concern that an independent recovery system can overpower the existing system by pulling the plume from the Maryland side further into the District, and excessive disruption to the community. There are also numerous implementation obstacles to overcome, such as obtaining a zoning waiver, acquiring a private property for placement of the treatment building, securing a separate power source, installing recovery wells and underground piping at private properties for tie-in with the treatment system and discharge to the storm sewer, and noise, esthetic, emission and traffic interference during construction and long-term operation of the system in a residential neighborhood.

X. PUBLIC PARTICIPATION

A repository of documents generated from all investigations of this Facility is maintained at the following location:

Lamond Riggs Branch Library
5401 South Dakota Avenue, N.E.
Washington D.C. 20011

On August 30, 2007, EPA placed an announcement in the Washington Times and Washington Post to notify the public of EPA's proposed remedy and of the location of the Administrative Record. The Administrative Record, including this SB, is available for review during business hours at the following two locations:

U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103
Telephone Number: (215) 814-3426
Attention: Mr. Andrew Fan (3WC23)

and

Lamond Riggs Branch Library
5401 South Dakota Avenue, N.E.
Washington D.C. 20011
Phone: (202) 541-6255

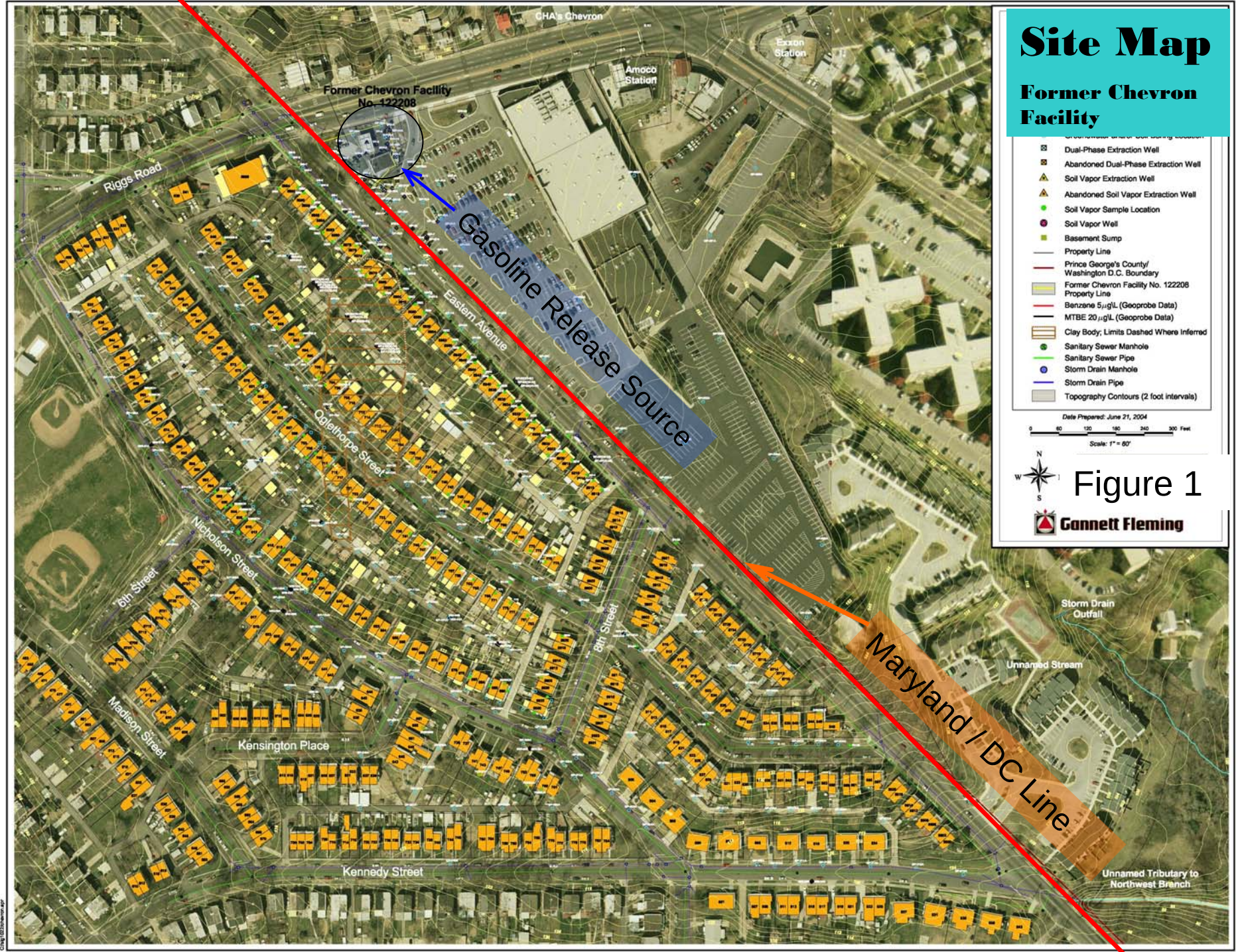
EPA is requesting comments from the public on the remedy proposed in this SB. The public comment period will last sixty (60) calendar days beginning August 30, 2007 and ending October 29, 2007. Comments on, or questions regarding, EPA's identification of a proposed remedy may be submitted to:

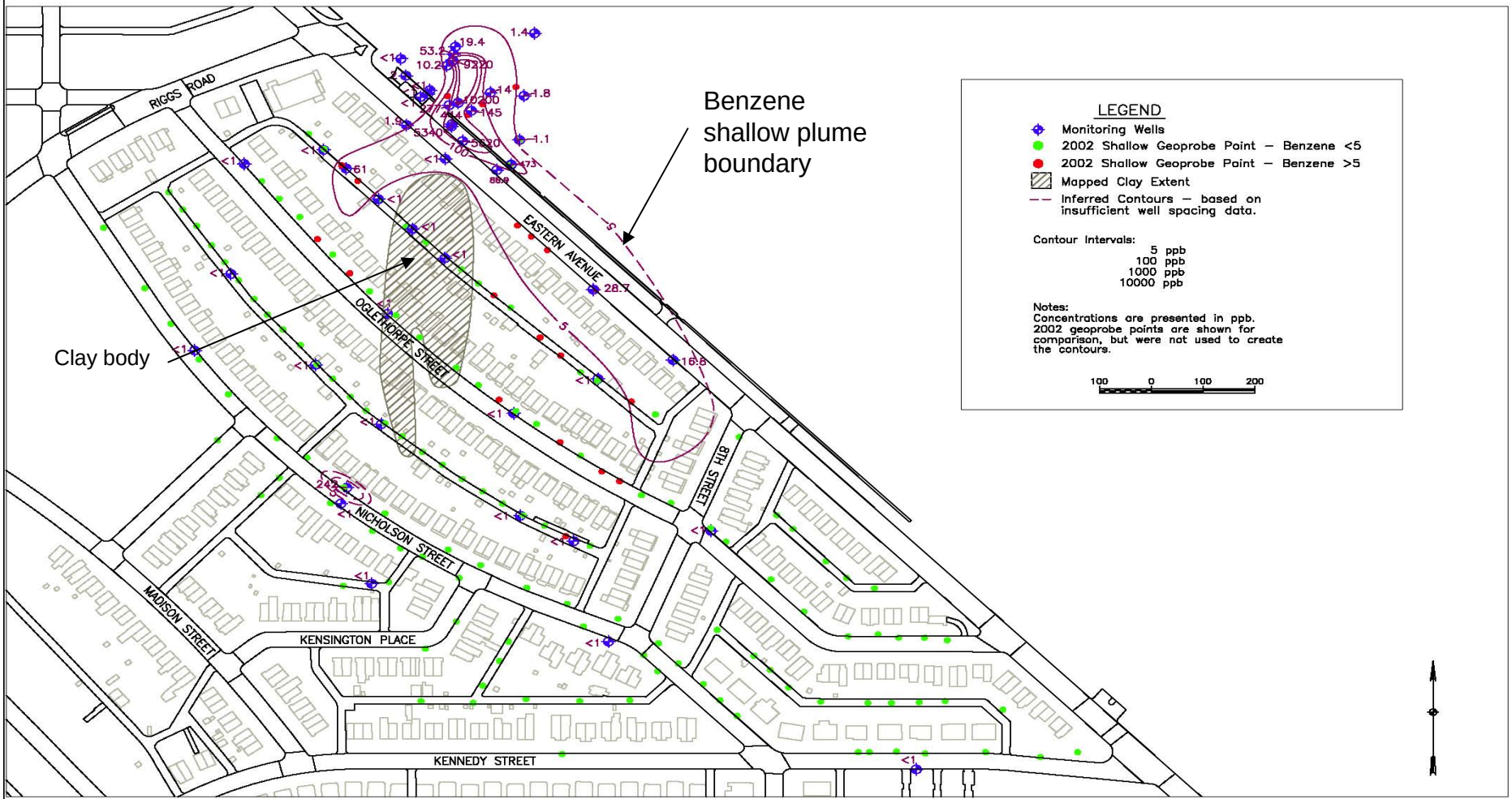
Mr. Andrew Fan (3WC23)
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103
Phone: (215) 814-3426
FAX: (215) 814-3113
Email: fan.andrew@epa.gov

During the sixty-day public comment period, EPA will hold a public meeting on EPA's proposed remedy if sufficient public interest indicates that a meeting would be valuable for distributing information and communicating ideas. Requests for a public hearing must be received by EPA by close of business on October 29, 2007. EPA will determine by October 29, 2007, if a public hearing is warranted. After October 29, 2007, any interested parties may contact Mr. Andrew Fan at the EPA address or telephone number above to find out whether or not a public hearing will be held. Handicapped persons with a need for special services should contact Mr. Fan far enough in advance of any hearing to enable the services to be secured.

After evaluation of all comments, EPA will prepare a Final Decision Document and Response to Comments (FDRTC) that identifies final selected remedy. The FDRTC will address all significant written comments and any significant oral comments generated at the public meeting and will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are proposed to be made to the corrective measures identified by EPA in this SB, EPA may seek additional public comments.

EPA anticipates that the final remedy will be implemented using available legal authorities including, but not necessarily limited to, RCRA Section 7003, 42 U.S.C. 6973.


Site Map
Former Chevron Facility
CHA's Chevron
Exxon Station
Amoco Station
Former Chevron Facility No. 122208
Riggs Road
Gasoline Release Source
Eastern Avenue
Oglethorpe Street
Nicholson Street
6th Street
8th Street
Madison Street
Kensington Place
Kennedy Street
Maryland / DC Line
Storm Drain Outfall
Unnamed Stream
Unnamed Tributary to Northwest Branch
Dual-Phase Extraction Well
Abandoned Dual-Phase Extraction Well
Soil Vapor Extraction Well
Abandoned Soil Vapor Extraction Well
Soil Vapor Sample Location
Soil Vapor Well
Basement Sump
Property Line
Prince George's County/ Washington D.C. Boundary
Former Chevron Facility No. 122208 Property Line
Benzene 5 µg\L (Geoprobe Data)
MTBE 20 µg\L (Geoprobe Data)
Clay Body; Limits Dashed Where Inferred
Sanitary Sewer Manhole
Sanitary Sewer Pipe
Storm Drain Manhole
Storm Drain Pipe
Topography Contours (2 foot intervals)
Date Prepared: June 21, 2004
Scale: 1" = 60'
Figure 1
Gannett Fleming



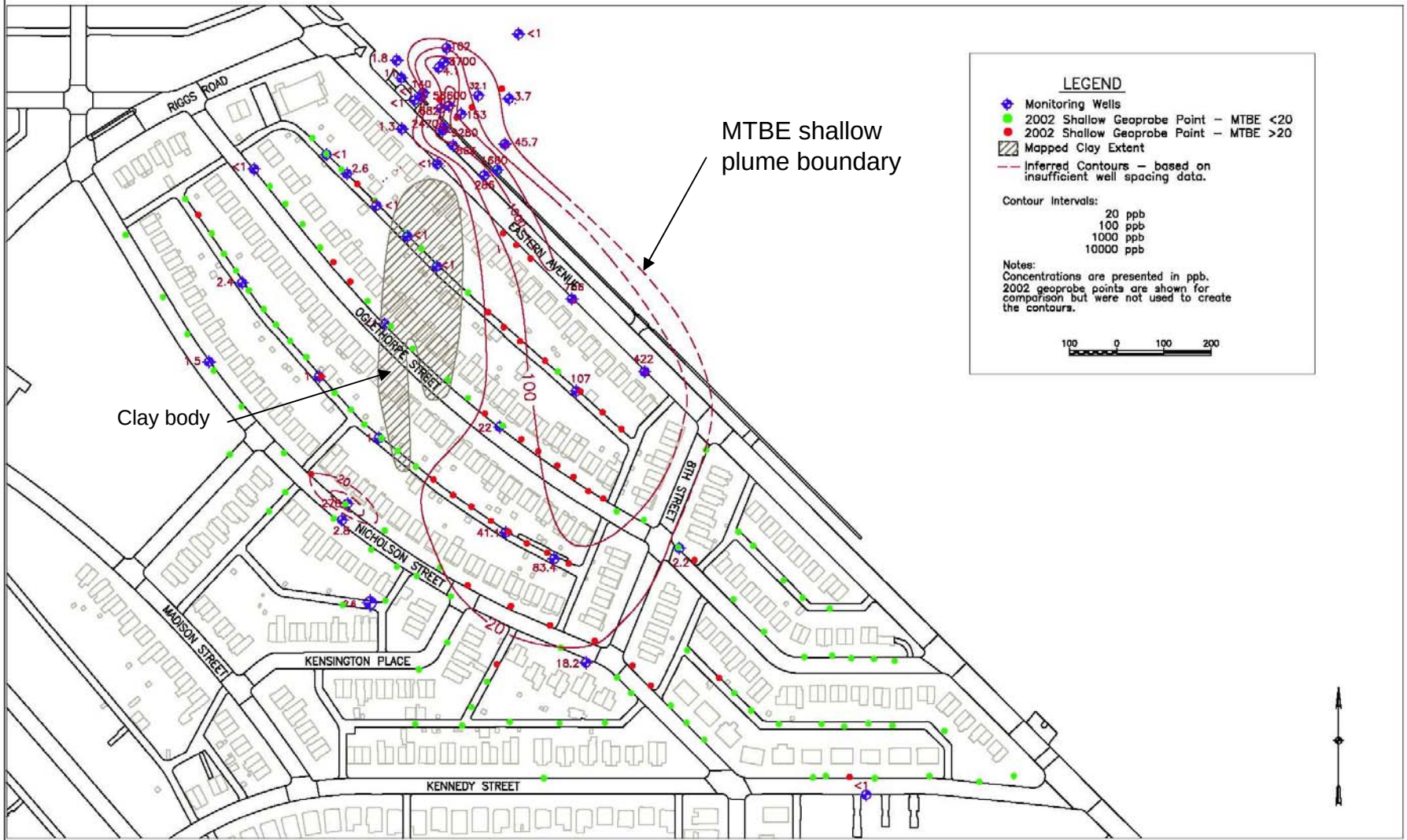
U.S. Army Corps of Engineers
10 S. Howard Street
Baltimore, Maryland 21040

PREPARED BY: PAD

DATE: December 2004

Figure 2

Benzene Shallow Plume May–June 2004 Data from Shallow Wells



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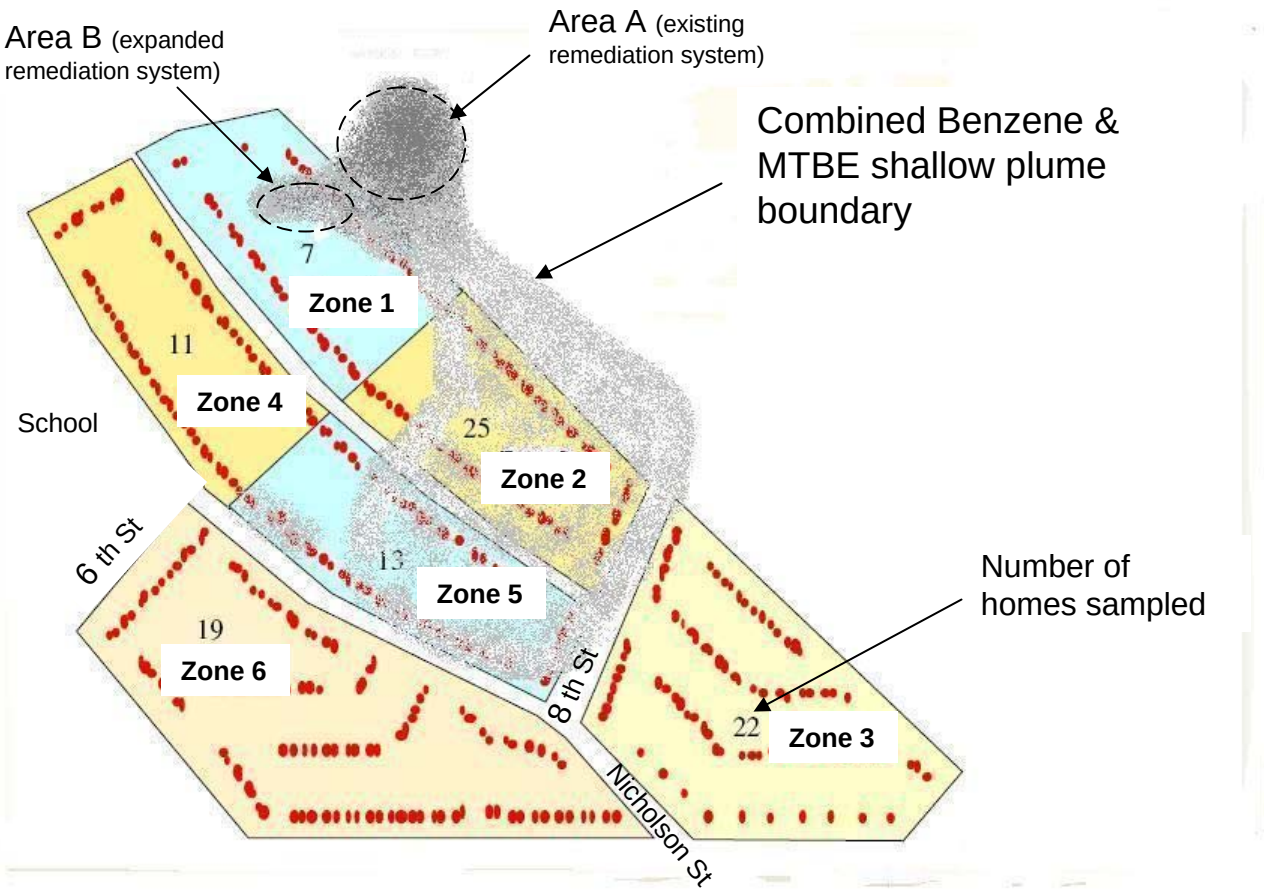
DATE: December 2004

Figure 3

MTBE Shallow Plume
May–June 2004 Data from Shallow Wells

Figure 4		Benzene	(ug/m^3)	MTBE	(ug/m^3)
DOH indoor air sampling data 2006	Number of Samples	Average	95%	Average	95%
Outside plume (Zones 3,4,6)	52	2.7	**8.0**	2.8	**17.2**
Above plume (Zones 1,2,5)	45	3.0	10.7	3.5	25.8



Outdoor Ambient Air

Figure 5		Benzene	(ug/m^3)	MTBE	(ug/m^3)
	Number of Samples	Average	95%	Average	95%
DOH 2006 outdoor air data (Zones 3,5,6)	22	0.9	1.3	0.3	0.5
Chevron 2005 outdoor air data (Zone 5)	12	0.8	1.4	2.9	3.5
ACE 2005 outdoor air data (Zone 5)	12	0.8	1.2	2.7	6.1
McMillan Reservoir Station 1 (2006 DOH data) about 5 miles from Riggs Park	61	4.6		2.5	
McMillan Reservoir Station 2 (2006 DOH data) about 5 miles from Riggs Park	30	6.2		27.1	