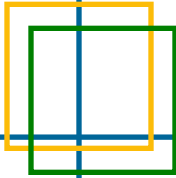




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# Effectiveness Assessment of the Region 4 Superfund Alternative Approach

**Promoting Environmental Results**



**Through Evaluation**

# Acknowledgements

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## EXECUTIVE SUMMARY

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, EPA has, since 1980, evaluated contaminated sites, and undertaken enforcement and remediation activities to ensure protection of human health and the environment. The process of identifying, investigating, and “listing” a site on the National Priorities List (NPL) requires a number of detailed assessments and process requirements, including identification of potentially responsible parties (PRPs), coordination with state and Tribal jurisdictions, and assessment of the level of risk at the site. Sites that require a long-term remedial response action, and have a hazard ranking system (HRS) score above a threshold value of 28.5, are eligible for listing as an NPL site. NPL sites are typically remediated by PRPs (PRP-lead sites), or, in the absence of viable PRPs, by EPA (Fund-lead sites). In some cases, EPA may defer sites to other authorities (e.g., remediation under the Resource Conservation and Recovery Act, or state or tribal governments).

The NPL listing process is a significant undertaking involving a formal rulemaking. Over the past decade, EPA has developed the Superfund Alternative approach (SA approach, or SAA) as an option for negotiating cleanups with PRPs without formally listing the sites on the NPL. Sites using the SA approach are identified and investigated using the same processes and standards that are used for sites listed on the NPL, and sites using the SA approach undergo the same “pipeline” steps of remedial investigation, development of records of decision (RODs) and remedial design and action. EPA’s Superfund Alternative Approach website indicates that the “Superfund alternative (SA) approach uses the same investigation and cleanup process and standards that are used for sites listed on the NPL. The SA approach is really an alternative to listing a site on the NPL; it is not an alternative Superfund process.”<sup>1</sup>

This evaluation examines whether the SA approach is having the expected outcome of reducing site costs and speeding remediation. In addition, this evaluation examines the effectiveness of the SA approach in achieving the goals of the Superfund program. Finally, the evaluation revisits key questions of prior evaluations, to update information about community and PRP experiences with the approach.

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<sup>1</sup> <http://www.epa.gov/oecaerth/cleanup/superfund/saa.html>

This evaluation was guided by seven questions organized under four key purposes:

**Purpose 1:** *Examine the factors influencing the use of the SA approach*

1. What is the response of potentially responsible parties (PRPs) to the Superfund Alternative approach (SA approach)?
  - a. What aspects of the SA approach are appealing or unappealing to PRPs, and why?
  - b. Do PRPs generally prefer the SA approach over NPL listing, or vice-versa? Why or why not?
2. What do available data reveal about community member involvement in and perceptions of the NPL and SAA processes?
  - a. What is the initial response of community members to NPL listing compared to EPA's decision to use the SA approach?
  - b. Ultimately, what do available data reveal about the satisfaction of community members with the SAA process and structure compared to the NPL process and structure?
  - c. To what extent do communities use technical assistance funding at SA approach and NPL sites? Is there a difference in funding availability and/or expenditures for SA approach or NPL sites?

**Purpose 2:** *Assess the effectiveness of the SA approach in achieving the goals of the Superfund program*

3. Does a pattern of difference exist in the specific remedies selected for sites using the SA approach?
  - a. Do sites with SAA agreements use capping remedies, institutional controls, or other remedies that mitigate risk but do not remove all contamination, more frequently or less frequently than similar sites listed on the NPL?
  - b. Do data suggest that SA remedies are comparable to remedies used for similar sites listed on the NPL (e.g., Do sites using the SA approach involve greater or fewer remedies resulting in unrestricted use)?
4. Is there a difference in the potential for reuse/redevelopment at sites using the SA approach compared with more sites listed on the NPL? If there is a difference, does the evidence suggest why this difference exists?

**Purpose 3:** *Assess the efficiency of the SA approach in terms of potential time and cost savings*

5. What are the total cost, cost net of cost recovery, and time differences of the SA and NPL approaches, for both EPA and PRPs?

- a. What are differences in the early part of the process (from discovery through RI/FS)?
- b. What are differences in the middle part of the process (from RI/FS through ROD)?
- c. What are differences in the later part of the process (from ROD through RD/RA, or through construction complete where applicable)?

**Purpose 4:** *Identify strategies to improve the implementation, efficiency and effectiveness of the SA approach*

6. What has EPA done to improve the consistency of implementing the SA approach since an internal evaluation and an IG report on the approach was published in 2007?
  - a. Do areas of inconsistent implementation remain? If yes, how should EPA address them?
  - b. Have other questions related to implementation of guidance and consistent tracking of site data been addressed?
7. What additional factors or variables should EPA take into account when deciding if and when to use the SA approach in the future?

Since EPA issued its first formal policy guidance on the SA approach in 2002, EPA has conducted two assessments of the SA approach, both focusing on the process of program implementation. EPA's Office of Enforcement and Compliance Assurance (OECA) and Office of Solid Waste and Emergency Response (OSWER) conducted a joint internal evaluation of the SA approach and EPA's Office of the Inspector General conducted an audit of the approach. Both of these evaluations were completed in 2007.

This evaluation builds upon these existing evaluations by updating information on SA approach implementation, and by expanding the analytic scope of the evaluation to specifically consider costs and effort associated with activities at SA approach and NPL sites.

This evaluation focuses on the 21 sites with SAA agreements in Region 4, as these sites represent a broad range of site types within a single Region, and represent a significant percentage of all SAA agreements. The Region 4 sites therefore provide a sound basis for comparing sites with SAA agreements to NPL sites with similar characteristics. While this evaluation focuses on Region 4 sites, the sites with SAA agreements in this Region reflect a range of contaminants and media, and therefore, the evaluation results will be generally relevant to other Regions that use the SA approach.

**EVALUATION METHODOLOGY**

As discussed in Chapter 2 of this report, this evaluation uses a range of data sources and analytic techniques, including a review of existing published reports and site data from EPA’s Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) and RODs, a quantitative comparative analysis focusing on site data from CERCLIS and Office of the Chief Financial Officer’s Integrated Financial Management System (IFMS), and a qualitative assessment of information collected in targeted interviews. The analyses of site data employ a “paired site” approach that links specific SA approach and NPL sites with similar features. This method helps account for other site variables and increases the possibility of identifying clear differences between sites that use different approaches. Exhibit ES-1 provides an overview of methods and data used to answer each evaluation question.

**EXHIBIT ES-1: CROSSWALK OF EVALUATION QUESTIONS AND DATA COLLECTION METHODS**

EVALUATION QUESTION	PRIMARY DATA AND METHODS	SECONDARY DATA AND METHODS
<b>EVALUATION PURPOSE: EXAMINE THE FACTORS INFLUENCING THE USE OF THE SUPERFUND ALTERNATIVE APPROACH</b>		
<b>1. What is the response of potentially responsible parties (PRPs) to the Superfund Alternative Approach (SA approach)?</b>		
1a) What aspects of the SA approach are appealing or unappealing to PRPs, and why? 1b) Do PRPs generally prefer the SA approach over NPL listing, or vice-versa? Why or why not?	Interviews: <ul style="list-style-type: none"> <li>• EPA Region 4 staff</li> <li>• PRP representatives</li> <li>• Community representatives</li> </ul>	Data Review: <ul style="list-style-type: none"> <li>• Previous evaluations</li> </ul>
<b>2. What do available data reveal about community member involvement in and perceptions of the NPL and SAA processes?</b>		
2a) What is the initial response of community members to NPL listing compared to EPA’s decision to use the SA approach? 2b) Ultimately, what do available data reveal about the satisfaction of community members with the SAA process compared to the NPL process?	Interviews: <ul style="list-style-type: none"> <li>• EPA Region 4 staff</li> <li>• PRP representatives</li> <li>• Community representatives</li> </ul>	Data Review: <ul style="list-style-type: none"> <li>• Previous evaluations</li> </ul>
2c) To what extent do communities use technical assistance funding at SA approach and NPL sites? Is there a difference in funding availability and/or expenditures for SA approach or NPL sites?	Quantitative Analysis: <ul style="list-style-type: none"> <li>• CERCLIS and IFMS data</li> <li>• Spatial analysis</li> </ul>	Data Review: <ul style="list-style-type: none"> <li>• Superfund records</li> </ul> Interviews: <ul style="list-style-type: none"> <li>• EPA Region 4 staff</li> <li>• PRP representatives</li> <li>• Community representatives</li> </ul>



EVALUATION QUESTION	PRIMARY DATA AND METHODS	SECONDARY DATA AND METHODS
EVALUATION PURPOSE: ASSESS THE EFFECTIVENESS OF THE SA APPROACH IN ACHIEVING THE GOALS OF THE SUPERFUND PROGRAM		
<b>3. Does a pattern of difference exist in the specific remedies selected for sites using the SA approach? If yes:</b>		
3a) Do sites with SAA agreements use capping remedies, institutional controls, or other remedies that mitigate risk but do not remove all contamination, more frequently or less frequently than similar sites listed on the NPL?	Quantitative Analysis: <ul style="list-style-type: none"> <li>• CERCLIS data</li> <li>• Superfund Records</li> </ul>	
3b) Do data suggest that SA remedies are comparable to remedies used for similar sites listed on the NPL (e.g., Do sites with SAA agreements involve greater or fewer remedies resulting in unrestricted use)?		
<b>4. Is there a difference in the potential for reuse/redevelopment at sites using the SA approach compared with more sites listed on the NPL? If there is a difference, does the evidence suggest why this difference exists?</b>		
What plans exist for reuse/redevelopment of sites?	Quantitative Analysis: <ul style="list-style-type: none"> <li>• CERCLIS data</li> <li>• Superfund Records</li> </ul>	Interviews: <ul style="list-style-type: none"> <li>• EPA Region 4 staff</li> <li>• PRP representatives</li> <li>• Community representatives</li> </ul>
EVALUATION PURPOSE: ASSESS THE EFFICIENCY OF THE SA APPROACH IN TERMS OF POTENTIAL TIME AND COST SAVINGS		
<b>5. What are the total cost, cost net of cost recovery, and time differences of the SA and NPL approaches, for both EPA and PRPs?</b>		
5a) What are differences in the early part of the process (from discovery through RI/FS)?	Quantitative Analysis: <ul style="list-style-type: none"> <li>• CERCLIS and IFMS data</li> </ul>	Data Review: <ul style="list-style-type: none"> <li>• Superfund records</li> </ul>
5b) What are differences in the middle part of the process (from RIFS through ROD)?	Quantitative Analysis: <ul style="list-style-type: none"> <li>• CERCLIS and IFMS data</li> </ul>	Data Review: <ul style="list-style-type: none"> <li>• Superfund records</li> </ul> Interviews: <ul style="list-style-type: none"> <li>• EPA Region 4 staff</li> <li>• PRP representatives</li> <li>• Community representatives</li> </ul>
5c) What are differences in the later part of the process (from ROD through RD/RA, or through construction complete where applicable)?	Quantitative Analysis: <ul style="list-style-type: none"> <li>• CERCLIS data</li> </ul>	

EVALUATION QUESTION	PRIMARY DATA AND METHODS	SECONDARY DATA AND METHODS
EVALUATION PURPOSE: IDENTIFY STRATEGIES TO IMPROVE THE IMPLEMENTATION, EFFICIENCY AND EFFECTIVENESS OF THE SA APPROACH		
<b>6. What has EPA done to improve the consistency of implementing the SA approach since an internal evaluation and an IG report on the approach was published in 2007?</b>		
6a) Do areas of inconsistent implementation remain? If yes, how should EPA address them?	Data Review: • Program records Interviews: • EPA Region 4 staff	Data Review: • Previous evaluations
6b) Have other questions related to implementation of guidance and consistent tracking of site data been addressed?		
<b>7. What considerations should EPA take into account when deciding if and when to use the SA approach in the future?</b>		
What considerations should EPA take into account?	Interviews: • EPA Region 4 staff • PRP representatives • Community representatives	Data Review: • Previous evaluations

### EVALUATION FINDINGS

Chapter 3 presents the evaluation findings, organized by the evaluation purposes and then the evaluation questions. We provide a short summary below:

Consistent with the general objective of the evaluation, we have explored the extent to which the SA approach is achieving the same outcomes as the traditional NPL pipeline, and the extent to which the SA approach is reducing site costs and speeding remediation.

Overall, interview respondents were uniformly positive in their opinions of the SA approach. EPA respondents noted that all PRPs who are given the opportunity to pursue the SA approach have agreed to do so, suggesting broadly that PRPs find value in the approach. PRPs confirmed that the SA approach is preferable to an NPL listing due to avoided negative publicity and a perception that the approach is more collaborative. Overall, while communities differ in initial reactions to both SA approach designation and NPL listing, the use of the SA approach does not appear to have a significant impact on community participation in or impressions of the site remediation process. A demographic review revealed no difference in the concentration of minority and low-income populations at SA approach or NPL sites, and community representatives interviewed confirmed that EPA’s outreach to environmental justice and other communities is consistent across sites.

EPA, PRP, and community interviewees stressed that the SA approach generally mirrors the NPL process for most EPA activities. Consistent with this input, CERCLIS and IFMS data reveal that the SA approach does not appear to result in significant cost or

time savings for EPA, though some preliminary data suggest that certain negotiations proceed more quickly at some sites using the SA approach, and cost data are incomplete. Anticipated future use patterns for NPL and SA approach sites are similar. Interviews with EPA staff suggest that sites using the SA approach may have a higher potential for redevelopment than comparable NPL sites if avoided “stigma” increases financing options and willingness to redevelop.

These findings suggest that the approach has value to participants, particularly related to avoiding “stigma” associated with NPL listings. PRP interviews have confirmed that PRPs typically regard avoiding the NPL listing process as an advantage, in spite of limited direct cost savings, because the SA approach eliminates the “adversarial” structure of the NPL process. PRP respondents noted that community concerns about stigma from NPL sites are often, but not always, a key factor; investors and lenders, however, do not appear to differentiate NPL and SA approach sites. The issue of stigma remains an elusive but potentially significant factor in assessing SA approach impacts.

#### **EVALUATION PURPOSE 1: EXAMINE THE FACTORS INFLUENCING THE USE OF THIS APPROACH**

##### **RESPONSE OF PRPS TO THE SA APPROACH**

General agreement by PRPs to pursue the SA approach when it is proposed by EPA provides a strong indication that PRPs see value in this approach, though not all PRPs reach SAA agreements with EPA. PRP interviews confirm a willingness to participate, in spite of the fact that the SA approach involves additional financial liquidity requirements and typically results in only modest cost savings. Interview data focus on two key incentives for PRPs to participate:

- **Avoiding NPL stigma:** Specifically, interview information collected suggests that most PRPs, and many community leaders, are concerned about the perceived reduction in property values and redevelopment opportunities associated with an NPL listing. The SA approach provides an option for avoiding this without altering the technical cleanup options. PRP respondents also noted that customers and even prospective employees often are aware of NPL sites and view them as a drawback, though one PRP respondent felt that the differences between NPL and SA approach site stigma are no longer significant.
- **Cost savings associated with multiple sites:** EPA and PRP interview responses indicate that a key potential benefit of the SA approach is the possibility of developing multi-site protocols for PRPs with sites across states or Regions. PRP respondents also noted that the more collaborative “tone” of the SA approach typically simplifies the negotiation process for them, though cost savings are limited by the overall similarity of the approaches.

A literature review confirmed that while stigma is a well-established phenomenon at contaminated sites, economists have not yet considered whether stigma specific to NPL sites is a greater impediment to site reuse than stigma at SA approach or other non-NPL (e.g., Brownfields) sites.

Interview responses suggest that SA approach site PRPs have additional incentive to be cooperative to avoid NPL listing, but respondents also noted that level of cooperation varies widely among individual PRPs and sites.

#### COMMUNITY PERCEPTIONS OF THE SA APPROACH

Interviews with EPA and community representatives suggest that initial responses to the SA approach can be mixed. The SA approach is often considered advantageous by community members and leaders concerned about property values and stigma. Other community members, however, require confirmation that the process will not result in more limited resources or reduced remediation. EPA Community Involvement Coordinators conclude that most concerns about both NPL and SA processes peak initially and abate as communities become familiar with the sites and see progress.

Data on community expenditures and on the demographics of communities surrounding sites using the SA approach reveal no pattern of difference between SA approach sites and NPL sites, but analysis of expenditures at sites with higher concentrations of minority and low-income populations reveals a weak positive relationship (i.e., slightly higher expenditures overall at sites with higher concentrations of minority and low income populations).

#### EVALUATION PURPOSE 2: ASSESS THE EFFECTIVENESS OF THE SA APPROACH IN ACHIEVING THE GOALS OF THE SUPERFUND PROGRAM

In general, comparison of NPL and SA approach sites reveals that they are similar in current and anticipated future use, and the majority of both NPL and SA approach sites examined are industrial facilities and likely to remain industrial or commercial in nature.

#### SPECIFIC REMEDIES SELECTED

A review of available ROD data was inconclusive regarding the selection of remedies. While NPL sites examined appear to employ remedies that remove and treat contamination more often than paired sites, this pattern does not consider site features (e.g., extent of contamination) or the relative effectiveness of newer *in situ* treatment technologies that may be employed at newer sites using the SA approach.

#### INSTITUTIONAL CONTROLS AND FUTURE USE

A screening assessment of “long-term” institutional controls reveals that use of institutional controls such as restrictive covenants or “use restrictions” is comparable among paired sites, suggesting that future site use is not affected by SA approach or NPL status. Sites in the sample are generally not yet available for reuse, but examination of potential future use options confirmed that sites in both groups have similar use options. Interviews with EPA staff suggest that sites using the SA approach may have a higher

potential for redevelopment than comparable NPL sites if avoided “stigma” increases financing options and willingness to redevelop.

### **EVALUATION PURPOSE 3: ASSESS THE EFFICIENCY OF THE SA APPROACH IN TERMS OF POTENTIAL TIME AND COST SAVINGS**

Generally, findings from the analysis of CERCLIS and IFMS data on the efficiency of the SA approach concur with information provided in interviews: the similarity of the SA approach to the NPL approach within EPA limits the opportunities to save significant resources, with the exception of NPL listing effort. However, responses emphasize the potential for the SA approach to improve the speed and tone of PRP negotiations.

#### **TIME DIFFERENCES**

A review of time to complete several specific actions reveals that sites using the SA approach are not significantly different from NPL sites, though data also suggest that negotiations at different stages of the process (e.g., RI/FS and RD/RA negotiations) may in some cases be quicker at sites using the SA approach; this observation is consistent with PRP and EPA interviews noting that the tone of SA negotiations is more productive. However, large variability across sites and small sample size prevent any clear conclusions. In addition, data tracking limitations for both SA approach and NPL sites prevent a comprehensive assessment of site progress.

#### **COST DIFFERENCES**

A review of available cost data similarly concludes that the SA approach has modest, if any, cost savings for EPA. PRP costs are not reflected in available data, but PRP representatives also noted that the costs do not differ significantly across approaches). In addition to wide variability across sites, a key limitation of cost data is the change in cost recovery practices after 1995; several sites with significant expenditures prior to 1995 may have incomplete cost data. Because NPL sites in this evaluation are typically older, this analysis may understate NPL site costs and obscure differences between NPL and SA approach costs. It is not possible, however, to quantify this impact.

### **EVALUATION PURPOSE 4: IDENTIFY STRATEGIES TO IMPROVE THE IMPLEMENTATION, EFFICIENCY AND EFFECTIVENESS OF THE SA APPROACH**

A review of EPA practices and interview responses suggests that EPA has effectively implemented the recommendations of prior evaluations. EPA’s OIG also indicated that all recommendations from its 2007 audit were implemented by September 30, 2009.

A compelling outcome of this evaluation is that the interviewed EPA staff from Region 4 and PRPs are unanimously positive about the use of the SA approach. Respondents did not identify any significant difficulties in implementing the SA approach, due in part to its similarity to the NPL process.

A few respondents expressed frustration that EPA does not count SA approach and NPL sites in the same manner for planning purposes (while in 2010 EPA began allocating resources similarly across both SAA and NPL sites, SA accomplishments are not

reflected in GPRA scoring), and respondents offered a few suggestions to improve the implementation of both NPL and SA approaches. Overall, however, the consistent, positive tone and clear input from respondents presents a strong indication that the Region 4 SA approach is well-integrated into general site management operations.

## **RECOMMENDATIONS**

Chapter 4 of this report provides recommendations for the future implementation of Superfund Alternative Approach. In summary, they include recommendations that EPA:

1. Further investigate the role that “stigma” may play in the effectiveness of site remediation programs.
2. Continue to improve tracking of community involvement activities to document successes and challenges in remediation programs.
3. Update and expand the analysis of SA approach effectiveness as sites achieve construction completion and reuse.
4. Examine the potential of the SA approach to be used as a method to efficiently address multiple sites.
5. Investigate opportunities to integrate SA approach where appropriate in other regions, using Region 4 management approach as a template.
6. Normalize accounting for SA approach site progress to reflect similarity with NPL site activities.

## CHAPTER 1 | INTRODUCTION AND PURPOSE

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, EPA has, since 1980, evaluated contaminated sites, and undertaken enforcement and remediation activities to ensure protection of human health and the environment. The process of identifying, investigating, and “listing” a site on the National Priorities List (NPL) requires a number of detailed assessments and process requirements, including identification of potentially responsible parties (PRPs), coordination with state and Tribal jurisdictions, and assessment of the level of risk at the site. Sites that require a long-term remedial response action, and have a hazard ranking system (HRS) score above a threshold value of 28.5, are eligible for listing as an NPL site. NPL sites are typically remediated by PRPs (PRP-lead sites), or, in the absence of viable PRPs, by EPA (Fund-lead sites). In some cases, EPA may defer sites to other authorities (e.g., remediation under the Resource Conservation and Recovery Act, or state or tribal governments).

The NPL listing process is a significant undertaking involving a formal rulemaking. Over the past decade, EPA has developed the Superfund Alternative approach (SA approach, or SAA) as an option for negotiating cleanups with PRPs without formally listing the sites on the NPL. Sites using the SA approach are identified and investigated using the same processes and standards that are used for sites listed on the NPL, and sites using the SA approach undergo the same “pipeline” steps of remedial investigation, development of records of decision (RODs) and remedial design and action. EPA’s Superfund Alternative Approach website indicates that the “Superfund alternative (SA) approach uses the same investigation and cleanup process and standards that are used for sites listed on the NPL. The SA approach is really an alternative to listing a site on the NPL; it is not an alternative Superfund process.”<sup>2</sup>

This evaluation examines whether the SA approach is having the expected outcome of reducing site costs and speeding remediation. In addition, this evaluation examines the effectiveness of the SA approach in achieving the goals of the Superfund program. Finally, the evaluation revisits key questions of prior evaluations, to update information about community and PRP experiences with the approach.

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<sup>2</sup> <http://www.epa.gov/oecaerth/cleanup/superfund/saa.html>

This evaluation has four key purposes:

- **Purpose 1:** Examine the factors influencing the use of the SA approach
- **Purpose 2:** Assess the effectiveness of the SA approach in achieving the goals of the Superfund program
- **Purpose 3:** Assess the efficiency of the SA approach in terms of potential time and cost savings
- **Purpose 4:** Identify strategies to improve the implementation, efficiency and effectiveness of the SA approach

The evaluation uses a range of data sources and analytic techniques, including a review of existing published reports and site data from EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) and RODs, a quantitative comparative analysis focusing on site data from CERCLIS and Office of the Chief Financial Officer's Integrated Financial Management System (IFMS), and a qualitative assessment of information collected in targeted interviews. The analyses of site data employ a "paired site" approach that links specific SA approach and NPL sites with similar features. This method helps account for other site variables and increases the possibility of identifying clear differences between sites that use different approaches.

## **OVERVIEW OF THE SUPERFUND ALTERNATIVE APPROACH**

In 2002, EPA issued its first formal policy guidance on the SA approach. In June 2004, EPA revised and reissued the guidance, and announced an 18-month pilot of the SA approach. Findings from the pilot are discussed below in the "Previous Evaluations of the Superfund Alternative Approach" section.

The SA approach developed and evolved in response to cooperative PRPs willing to enter into agreements with EPA without first being listed on the NPL. However, as it evolved, EPA saw the potential for the SAA approach to achieve time and cost savings associated with the NPL listing process, as it provided a cooperative context for PRPs and communities that valued avoiding perceived stigma related to NPL sites. As of May 31, 2010, EPA's web site lists 63 sites with Superfund alternative approach agreements in place (Exhibit 1-1).<sup>3</sup> Currently, sites with SA approach agreements are a small subset of all Superfund cleanup agreements. Regions 4 and 5 collectively represent the largest number of sites using the SA approach, with 54 (or 86 percent) of the total sites listed. The web site reports that Region 4 and Region 5 have 21 and 33 sites using the SA approach, respectively.<sup>4</sup>

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<sup>3</sup> Some sites have more than one Superfund alternative approach agreement. Other sites share a single Superfund alternative approach agreement (for example, six of the Wisconsin Public Service sites in Region 5 share a single Superfund alternative approach agreement to perform a remedial investigation and feasibility study at each of the six sites and all eleven of the Peoples Gas sites in that Region share one agreement for RI/FS). It is also possible for a site to have a Superfund alternative approach agreement and another, non-Superfund alternative approach agreement in place at the same time.

<sup>4</sup> <http://www.epa.gov/oecaerth/cleanup/superfund/saa-sites.html>. A more accurate estimate for Region 4 is 19 sites, due to the recent NPL listing of the Kerr-McGee site and the management of Brown's Dump and Jacksonville Ash as one site.



EXHIBIT 1-1: SITES USING THE SA APPROACH BY REGION

REGION	PERCENT OF ALL SITES WITH SAA AGREEMENTS	SUPERFUND ALTERNATIVE APPROACH SITE	REGION	PERCENT OF ALL SITES WITH SAA AGREEMENTS	SUPERFUND ALTERNATIVE APPROACH SITE
3	3.17%	68th Street Dump, Rosedale, MD Foster-Wheeler Energy Corp/Church Rd TCE, Mountain Top, PA			ALCOA Properties, East St. Louis, IL Cedar Creek, Cedarburg, WI
4	33.33%	Admiral Home Appliances, Williston, SC Anniston PCB Site, Anniston, AL Browns Dump, Jacksonville, FL* Copper Basin Mining District, Copper Hill, TN Coronet Industries, Plant City, FL Ecusta Mill, NC Gurley Pesticide Burial, Selma, NC Henry's Knob, Clover, SC Holtra Chem, Riegelwood, NC  Illinois Central Railroad/Johnston Yard, Memphis, TN ITT- Thompson, Madison, FL Jacksonville Ash, Jacksonville, FL* Kerr-McGee Chemical Corporation, Navassa, NC** Lyman Dyeing and Finishing, Lyman, SC National Fireworks, Cordova, TN Orlando Gasification Plant, Orlando, FL Sanford Gasification Plant, Sanford, FL Sixty One Industrial Park, Memphis, TN Solitron Devices, West Palm Beach, FL Sprague Electric Company, Longwood, FL Weyerhaeuser Plymouth Wood Treat. Plant, Plymouth, NC	5	52.38%	Dow- Tittabawassee River/ Saginaw River/Saginaw Bay Ellsworth Industrial Park, Downers Grove, IL Evergreen Manor Groundwater Contamination, Winnebago, IL Ford Road Landfill, Elyria, OH Miller Compressing Co/Burnham Canal, Milwaukee, WI North Shore Gas - North Plant, Waukegan, IL North Shore Gas - South Plant, Waukegan, IL Old American Zinc Plant, Fairmont City, IL Peoples Gas Former Manufactured Gas Plant, Crawford Station, Chicago, IL Peoples Gas Former MGP, Hawthorne Ave, Chicago, IL Peoples Gas Former MGP, Hough Place Station, Chicago, IL Peoples Gas Former MGP, North Shore Ave Station, Chicago, IL Peoples Gas Former MGP, Pitney Court, Chicago, IL Peoples Gas Former MGP, South Station, Chicago, IL Peoples Gas Former Manufactured Gas Plant, Throop St, Chicago, IL Peoples Gas Light & Coke, 22nd St, Chicago, IL Peoples Gas Light & Coke, Division St, Chicago, IL Peoples Gas Light & Coke, North Station, Chicago, IL Peoples Gas Light & Coke, Willow St Station, Chicago, IL Peters Cartridge Factory, Kings Mills, OH Solvay Coke and Gas Company, Milwaukee, WI South Dayton Dump, OH Town of Pines Groundwater Plume, Town of Pines, IN Tremont City Barrel Fill Site, Tremont City, OH Wisconsin Public Service Company Manufactured Gas Plant, Green Bay, WI Wisconsin Public Service Company Manufactured Gas Plant, Manitowoc, WI Wisconsin Public Service Company Manufactured Gas Plant, Marinette, WI Wisconsin Public Service Company Manufactured Gas Plant, Oshkosh, WI Wisconsin Public Service Company Manufactured Gas Plant, Stevens Point, WI Wisconsin Public Service Company Manufactured Gas Plant, Two Rivers, WI Wisconsin Public Service Company Manufactured Gas Plant/Camp Marina, Sheboygan, WI
			6	3.17%	Falcon Refinery, Ingleside, TX (PDF) (5pp, 260KB, About PDF) Highway 71/72 Refinery, Bossier City, LA (PDF) (4pp, 361KB)
			7	1.59%	Iowa City Former Manufactured Gas Plant (FMGP), Iowa City, IA
			8	1.59%	Kennecott - South Zone, Copperton, UT
			9	3.17%	Asarco - Hayden Plant, AZ
					Cyprus Tohono Mine, AZ
			10	1.59%	Alaska Railroad Anchorage Yard , Anchorage, AK
* Brown's Dump and Jacksonville Ash sites are being managed as a single site. agreement as an NPL site.		** Kerr-McGee has been listed on the NPL due to bankruptcy of the parent company but will complete the work agreed to under the SAA			

IEc initially considered including both Regions 4 and 5 in this evaluation. However, very few sites with SAA agreements in Region 5 (or any other Regions) have completed RODs; this limits the ability to compare progress at these sites to NPL sites.<sup>5</sup> In addition, over half of the SAA agreements in Region 5 involve one of two PRPs (Peoples Gas and Wisconsin Public Service Corporation). It is not clear whether this site ownership pattern is comparable to or relevant to other Regions. This evaluation therefore reviews the 21 sites with SAA agreements in Region 4, as these sites represent a broad range of site types within a single Region, and represent a significant percentage of all SAA agreements. The Region 4 sites therefore provide a sound basis for comparing sites with SAA agreements to NPL sites with similar characteristics. While this evaluation focuses on Region 4 sites, the sites with SAA agreements in this Region reflect a range of contaminants and media, and therefore, the evaluation results will be generally relevant to other Regions that use the SA approach.

#### **SUPERFUND ALTERNATIVE APPROACH REMEDIATION PROCESS**

Under the SA approach, a PRP enters into an SAA consent agreement with EPA and stays in compliance with that agreement, which requires the same remediation process used at NPL sites. EPA will suspend listing the site on the NPL as long as the PRP meets the obligations of the agreement.

Eligibility for the SA approach is based on the following three criteria:

1. Site contamination is significant enough that the site would be eligible for listing on the NPL (i.e., the site's HRS score is 28.5 or greater);
2. A long-term response (i.e., a remedial action) is anticipated at the site; and
3. There is at least one willing, capable party (e.g., a company or person) that has responsibility under Superfund, who will sign an agreement with EPA to perform the investigation and cleanup.

EPA has discretion to determine whether the SA approach is appropriate at a particular site. If a site meets criteria 1 and 2 above, EPA may approach a PRP, or a PRP may approach EPA, to negotiate an SAA agreement. The SAA agreement is equivalent to an agreement negotiated at an NPL site, with additional provisions to keep EPA and communities in an equivalent position to sites listed on the NPL (i.e., an agreement on conditions under which EPA may unilaterally list the site on the NPL, and requirements regarding liquid financial reserves to ensure equivalent financing). If EPA or the PRP decides not to negotiate an SAA agreement, the site remediation will proceed either as a NPL listing or as a remediation under another authority (e.g., a state cleanup program).

EPA negotiates agreements with PRPs for site investigation and site cleanup. For sites using the SA approach, the agreement for investigation is usually in the form of an

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<sup>5</sup> Only one site using the SA approach each in Regions 6, 7, and 8, have achieved RODs, and it is therefore difficult to identify patterns among these sites, because differences in performance could reflect Regional or site-specific conditions that cannot be isolated.

Administrative Order on Consent (AOC). The agreement for remedial action is always in the form of a judicial Consent Decree (CD). Both the AOC and the CD include language specific to the SA approach that keeps sites using the SA approach in an equivalent position to sites listed on the NPL. EPA has model language for SA provisions that address technical assistance for communities, financial assurance, natural resource damage claims, and potential NPL listing.

After site studies are completed and the hazards identified, the SA approach anticipates that EPA will undertake remedy selection in the same manner as NPL remedy selection.

At sites listed on, or proposed to be listed on the NPL, a qualified community group may apply for a technical assistance grant (TAG) to hire an independent technical advisor. Under SAA agreements, EPA negotiates a technical assistance plan (TAP) for the PRP to provide funds should a qualified community group apply for such an advisor.

Under the SA approach, EPA's oversight role is the same as its role on PRP-lead NPL sites. When the cleanup is complete, EPA maintains an oversight role in monitoring and reviews.

The benefits of the SA approach can vary depending on the site circumstances. EPA staff in Region 4 have implemented the SA approach with the expectation that resources and time are saved by suspending the NPL listing process. In addition, in some cases community and PRP support for the SA process may facilitate other parts of the pipeline process (e.g., community relations). As a result, the remediation process at sites using the SA approach should be more cost-effective than implementation of equivalent remedies at NPL sites.

#### **PREVIOUS EVALUATIONS OF THE SUPERFUND ALTERNATIVE APPROACH**

Since EPA issued its first formal policy guidance on the SA approach in 2002, EPA has conducted two assessments of the SA approach, both focusing on the process of program implementation. EPA's Office of Enforcement and Compliance Assurance (OECA) and Office of Solid Waste and Emergency Response (OSWER) conducted a joint internal evaluation of the SA approach and EPA's Office of the Inspector General conducted an audit of the approach. Both of these evaluations were completed in 2007.

OECA's Office of Site Remediation Enforcement (OSRE) and the OSWER's Office of Superfund Remediation and Technology Innovation (OSRTI) conducted an evaluation of the SA pilot to better understand how EPA Regions are implementing the SA approach, whether it leads to successful site cleanups, and the concerns expressed by stakeholders. In addition to EPA RPMs, nine external stakeholders were consulted for the evaluation, including state representatives, attorneys, PRPs, and community groups. A summary of the results from the evaluation were published in September 2007, *Results of the Superfund Alternative Approach Evaluation*.

The evaluation found that the SA approach yielded about 20 agreements, primarily in Region 4 and Region 5, and that the SAA agreements generally used language that was consistent with the Response Selection and Enforcement Approach for Superfund

Alternative Sites guidance. The evaluation recommended retaining the SA approach as an available option in appropriate circumstances and recommends several actions:

- Track SAA agreements rather than sites using the SA approach by flagging only agreements consistent with the guidance at sites satisfying the SA approach eligibility criteria.
  - Revise the Superfund Program Implementation Manual (SPIM) language for national consistency.
- Improve consistency of SA approach implementation.
  - Offer training to Regional staff on the SA approach, including the SA criteria, setting the CERCLIS flag, negotiating model language, improving transparency, approaching the PRP and community, and understanding how the SA approach fits with other CERCLA enforcement tools.
  - Consider developing case studies of successful agreements at sites using the SA approach and best practices summaries as additional guidance.
  - Modify Superfund model settlement documents to include the approach's provisions.
- Continue to improve the transparency of the SA approach.
  - Use CERCLIS to provide an accurate picture of how the SA approach is used (e.g., develop standardized national reports).
- Continue to evaluate how EPA refers to the approach (e.g., consider using the term NPL-Equivalent or NPL-Alternative to more accurately reflect the intent of the approach to be an alternative to listing on the NPL, not an alternative to the Superfund process).

In June of 2007, EPA's Inspector General issued a summary report on its audit of the SA approach, entitled *EPA Needs to Take More Action in Implementing Alternative Approaches to Superfund Cleanups*, Report No. 2007-P-00026. OIG conducted interviews with Superfund program managers and staff, PRPs, and representatives of National Association of Manufacturers (NAM) and the Superfund Settlements Project (SSP) to review their experiences with the SA approach. The report recommended that EPA track and report cleanup progress at sites using the SA approach, and improve communications, information, and transparency associated with the SA approach. Specific recommendations included:

- Publish a universe of sites using the SA approach that meets the Superfund Alternative site eligibility criteria and are designated as SA approach sites and regularly update the list as the universe changes.

- Develop specific instructions on when to use the SA designation (e.g., for sites or agreements) and update the Superfund Program Implementation Manual (SPIM) accordingly.
  - The instructions should include provisions that state the Superfund Alternative site flag should not be removed even if the site is deleted, cleaned up, or proposed for the NPL, so that controls over documentation of sites using the SA approach are maintained.
- Establish and direct Regions to use a consistent HRS scoring method that is acceptable and reliable for designating a Superfund Alternative site.
- Track and report all Superfund GPRA measures at sites using the SA approach.
  - This includes construction completions, final remedy selection, human exposure under control, migration of contaminated groundwater under control, and sitewide ready-for-reuse.
  - Report GPRA measures at sites using the SA approach separately from GPRA measures at NPL sites.
- Revise applicable guidance, manuals, or directives to reflect that these performance measures will be tracked and reported for sites using the SA approach.

IEc reviewed the findings and recommendations from these two prior evaluations to inform the current evaluation questions and method. IEC also requested access to the underlying data for both evaluations to ensure that information collection did not overlap. IEC received the questions that were asked of stakeholders and EPA attorneys for the OECA/OSWER Evaluation, but did not receive response data. EPA did not provide data for the OIG Evaluation.

This evaluation builds upon these existing evaluations by updating information on SA approach implementation, and by expanding the analytic scope of the evaluation to specifically consider costs and effort associated with activities at SA approach and NPL sites.

## **PROGRAM PIPELINE LOGIC MODEL**

To illustrate the various components of the Superfund NPL and SA approaches, and to inform development of specific evaluation questions, EPA developed an alternate form of a traditional logic model (i.e., a graphical representation of the relationships between program inputs, outputs, and intended outcomes). As shown in Exhibit 1-2, the key components of the model include:

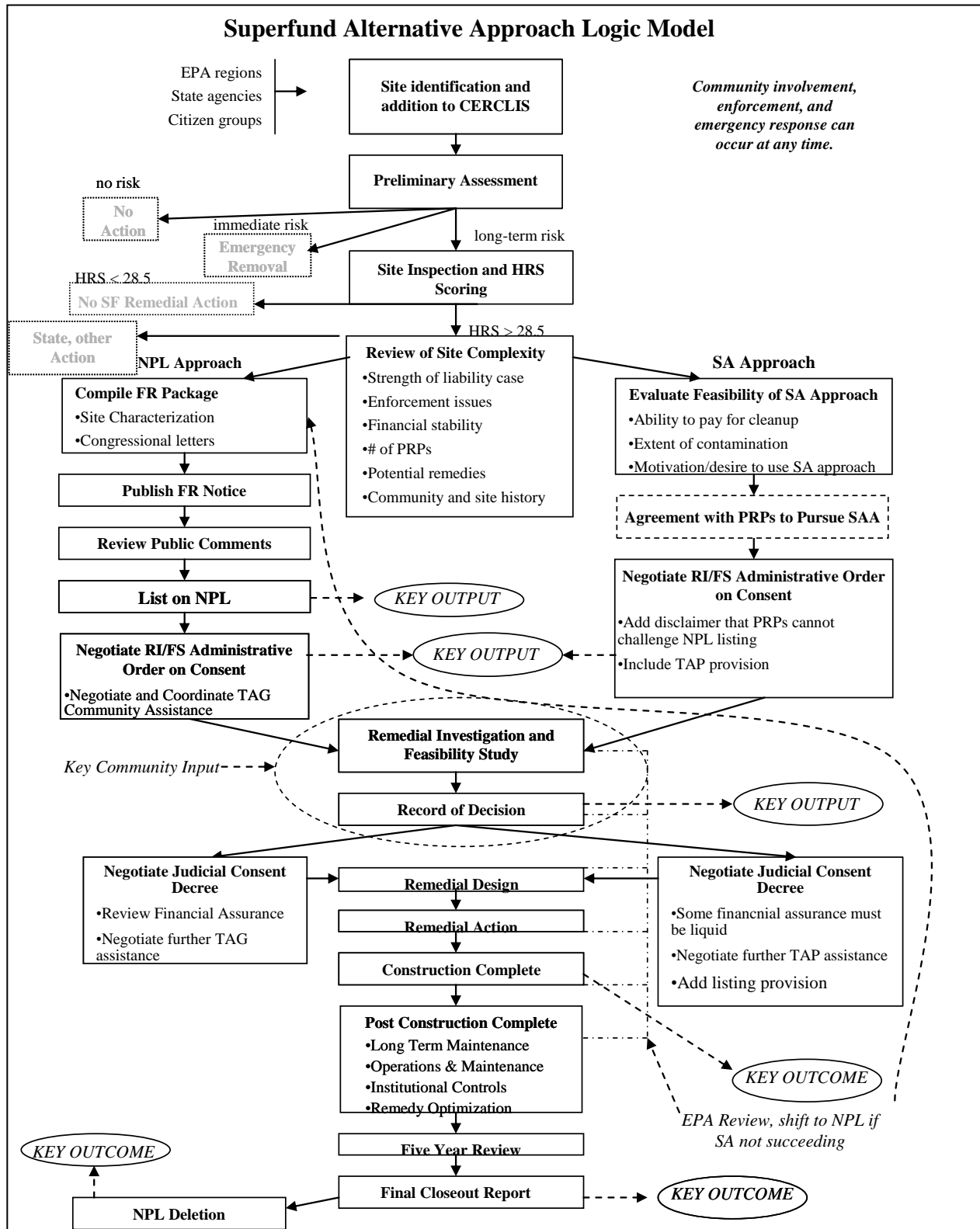
- **Activities** — the specific procedures or processes used to achieve program goals.
- **Outputs** — the immediate products that result from activities and are often used to measure short-term progress. For example, EPA outputs include listing on the

NPL, negotiating RI/FS', preparing administrative orders on consent, and achieving records of decision (RODs).

- **Outcomes** — the overarching goals of the program, which include achieving construction complete, preparing final closeout reports, and deleting sites from the NPL.

As authorized by CERCLA, the Superfund program has a primary goal of identifying and remediating the most serious contaminated sites in the country. The program's structured "pipeline" summarizes the key activities needed to assess and remediate each site that is discovered.

EXHIBIT 1-2: SUPERFUND PROGRAM PIPELINE LOGIC MODEL



For this evaluation, the Superfund program pipeline forms the central structure of an alternative design for a logic model. The pipeline represents the program activities, which are typically conducted in a structured, linear fashion. While a typical site remediation has many outputs in the form of legal agreements, public information, and in some cases, enforcement actions, this logic model focuses on the outputs that are most relevant to the SA approach and the ability to measure its progress.

This evaluation will not be organized specifically to measure the development of key outputs. However, comparisons between “paired” sites using the SA approach and NPL sites will, to the extent that data allow, focus on any differences in the effort needed to reach key milestone outputs such as RODs and SAA agreements. Because the SA approach is a relatively recent innovation, NPL sites are generally further along in the “pipeline” and have completed more actions such as remedial design, remediation action, and in some cases, construction complete designations. For these sites, comparisons with sites with SAA agreements will be limited to the most recently completed phase for the site with an SAA agreement in each pair of sites.

## EVALUATION QUESTIONS

To develop and refine evaluation questions, IEc conducted an initial data and document review, and engaged in several discussions with EPA regarding the implications of our findings for the scope of this evaluation. Subsequently, IEc and EPA finalized the following evaluation questions, organized here by Evaluation Purpose:

### **Purpose 1:** *Examine the factors influencing the use of the SA approach*

8. What is the response of potentially responsible parties (PRPs) to the Superfund Alternative approach (SA approach)?
  - a. What aspects of the SA approach are appealing or unappealing to PRPs, and why?
  - b. Do PRPs generally prefer the SA approach over NPL listing, or vice-versa? Why or why not?
9. What do available data reveal about community member involvement in and perceptions of the NPL and SAA processes?
  - a. What is the initial response of community members to NPL listing compared to EPA’s decision to use the SA approach?
  - b. Ultimately, what do available data reveal about the satisfaction of community members with the SAA process and structure compared to the NPL process and structure?
  - c. To what extent do communities use technical assistance funding at SA approach and NPL sites? Is there a difference in funding availability and/or expenditures for SA approach or NPL sites?



**Purpose 2:** *Assess the effectiveness of the SA approach in achieving the goals of the Superfund program*

10. Does a pattern of difference exist in the specific remedies selected for sites using the SA approach?
  - a. Do sites with SAA agreements use capping remedies, institutional controls, or other remedies that mitigate risk but do not remove all contamination, more frequently or less frequently than similar sites listed on the NPL?
  - b. Do data suggest that SA remedies are comparable to remedies used for similar sites listed on the NPL (e.g., Do sites using the SA approach involve greater or fewer remedies resulting in unrestricted use)?
11. Is there a difference in the potential for reuse/redevelopment at sites using the SA approach compared with more sites listed on the NPL? If there is a difference, does the evidence suggest why this difference exists?

**Purpose 3:** *Assess the efficiency of the SA approach in terms of potential time and cost savings*

12. What are the total cost, cost net of cost recovery, and time differences of the SA and NPL approaches, for both EPA and PRPs?
  - a. What are differences in the early part of the process (from discovery through RI/FS)?
  - b. What are differences in the middle part of the process (from RI/FS through ROD)?
  - c. What are differences in the later part of the process (from ROD through RD/RA, or through construction complete where applicable)?

**Purpose 4:** *Identify strategies to improve the implementation, efficiency and effectiveness of the SA approach*

13. What has EPA done to improve the consistency of implementing the SA approach since an internal evaluation and an IG report on the approach was published in 2007?
  - c. Do areas of inconsistent implementation remain? If yes, how should EPA address them?
  - d. Have other questions related to implementation of guidance and consistent tracking of site data been addressed?
14. What additional factors or variables should EPA take into account when deciding if and when to use the SA approach in the future?

Exhibit 1-3 on the next page provides a summary of the evaluation questions as they link to the key objectives (purposes) of the evaluation. Exhibit 1-3 also includes a brief map of the key data sources employed to answer each of the questions.

EXHIBIT 1-3: EVALUATION QUESTIONS AND KEY DATA SOURCES

EVALUATION QUESTION	DATA SOURCES					NOTES ON DATA SOURCE(S):
	PREVIOUS EVALUATIONS	CERCLIS DATA	IFMS DATA	SUPERFUND RECORDS (E.G., RODS)	INTER-VIEWS	
<b>EVALUATION PURPOSE: EXAMINE THE FACTORS INFLUENCING THE USE OF THE SUPERFUND ALTERNATIVE APPROACH</b>						
<b>1. What is the response of potentially responsible parties (PRPs) to the Superfund Alternative Approach (SA approach)?</b>						
1a) What aspects of the SA approach are appealing or unappealing to PRPs, and why?	x				x	Interviews with community involvement coordinators (CICs) in Region 4, other EPA staff, PRPs Review existing evaluation data
1b) Do PRPs generally prefer the SA approach over NPL listing, or vice-versa? Why or why not?	x				x	Interviews with Region 4 CICs, other EPA staff, PRPs Review existing evaluation data
<b>2. What do available data reveal about community member involvement in and perceptions of the NPL and SAA processes?</b>						
2a) What is the initial response of community members to NPL listing compared to EPA's decision to use the SA approach?	x				x	Interviews with Region 4 CICs, other EPA staff, PRPs Review existing evaluation data
2b) Ultimately, what do available data reveal about the satisfaction of community members with the SAA process compared to the NPL process?	x				x	Interviews with Region 4 CICs, other EPA staff, PRPs Review existing evaluation data
2c) To what extent do communities use technical assistance funding at SA approach and NPL sites? Is there a difference in funding availability and/or expenditures for SA approach or NPL sites?	x		x	x	x	Interviews with Region 4 CICs, other EPA staff, PRPs Consent Decrees, Community Involvement Plans, existing evaluation data IFMS: TAG/TAP expenditures data

EVALUATION QUESTION	DATA SOURCES					NOTES ON DATA SOURCE(S):
	PREVIOUS EVALUATIONS	CERCLIS DATA	IFMS DATA	SUPERFUND RECORDS (E.G., RODS)	INTER-VIEWS	
EVALUATION PURPOSE: ASSESS THE EFFECTIVENESS OF THE SA APPROACH IN ACHIEVING THE GOALS OF THE SUPERFUND PROGRAM						
<b>3. Does a pattern of difference exist in the specific remedies selected for sites using the SA approach? If yes:</b>						
3a) Do sites with SAA agreements use capping remedies, institutional controls, or other remedies that mitigate risk but do not remove all contamination, more frequently or less frequently than similar sites listed on the NPL?		x		x		CERCLIS fields: Remedies, Unrestricted Use Designations, Institutional Controls Superfund Records: Remedies and Institutional Controls listed in RODs
3b) Do data suggest that SA remedies are comparable to remedies used for similar sites listed on the NPL (e.g., Do sites with SAA agreements involve greater or fewer remedies resulting in unrestricted use)?		x		x		CERCLIS fields: Remedies, Unrestricted Use Designations, Institutional Controls Superfund Records: Remedies and Institutional Controls listed in RODs
<b>4. Is there a difference in the potential for reuse/redevelopment at sites using the SA approach compared with more sites listed on the NPL? If there is a difference, does the evidence suggest why this difference exists?</b>						
What plans exist for reuse/redevelopment of sites?		x		x	x	CERCLIS fields: date of discovery, date of Sitewide Anticipated for Reuse Interviews with all community involvement coordinators in Region 4, other EPA staff CERCLIS website: Online reuse and redevelopment data from CERCLIS profiles ROD Documents: Current, future use data

EVALUATION QUESTION	DATA SOURCES					NOTES ON DATA SOURCE(S):
	PREVIOUS EVALUATIONS	CERCLIS DATA	IFMS DATA	SUPERFUND RECORDS (E.G., RODS)	INTER-VIEWS	
EVALUATION PURPOSE: ASSESS THE EFFICIENCY OF THE SA APPROACH IN TERMS OF POTENTIAL TIME AND COST SAVINGS						
<b>5. What are the total cost, cost net of cost recovery, and time differences of the SA and NPL approaches, for both EPA and PRPs?</b>						
5a) What are differences in the early part of the process (from discovery through RI/FS)?		x	x	x		CERCLIS fields: date of discovery, RI/FS IFMS: cost evaluating site complexity, feasibility of SA approach, negotiating AOC, TAG/TAP negotiation/oversight. Interviews with EPA staff Superfund Documents: AOCs
5b) What are differences in the middle part of the process (from RIFS through ROD)?		x	x	x	x	CERCLIS fields: ROD date(s) IFMS: effort involved in preparing ROD(s). Superfund Documents: RODs Interviews with EPA Staff
5c) What are differences in the later part of the process (from ROD through RD/RA, or through construction complete where applicable)?		x				CERCLIS fields: dates for: RD/RA, Construction Complete, and Sitewide Anticipated for Reuse
EVALUATION PURPOSE: IDENTIFY STRATEGIES TO IMPROVE THE IMPLEMENTATION, EFFICIENCY AND EFFECTIVENESS OF THE SA APPROACH						
<b>6. What has EPA done to improve the consistency of implementing the SA approach since an internal evaluation and an IG report on the approach was published in 2007?</b>						
6a) Do areas of inconsistent implementation remain? If yes, how should EPA address them?	x				x	Interviews with Region 4 CICs. other EPA staff Review existing evaluations Review of current documentation, procedures
6b) Have other questions related to implementation of guidance and consistent tracking of site data been addressed?	x				x	Interviews with Region 4 CICs, other EPA staff Review existing evaluations Review of current documentation, procedures
<b>7. What considerations should EPA take into account when deciding if and when to use the SA approach in the future?</b>						
What considerations should EPA take into account?	x				x	Interviews with Region 4 CICs; other EPA staff; PRPs Review of existing evaluation data

## **REPORT ORGANIZATION**

This evaluation report is organized as follows:

- Chapter 2 presents the methodology used in this evaluation. IEC used several methods to assess SA approach outcomes, including a review of existing published reports and site data from CERCLIS and RODs, a quantitative comparative analysis focusing on site data from CERCLIS and Office of the Chief Financial Officer's Integrated Financial Management System (IFMS), and a qualitative assessment of information collected in targeted interviews. We also discuss our quality assurance procedures.
- Chapter 3 presents the evaluation findings, organized by the evaluation purposes and then the evaluation questions. The chapter concludes with a summary of key findings.
- Chapter 4 presents recommendations for potential improvements to the Superfund Alternative approach.

We include all major program evaluation deliverables in a series of appendices at the end of this report. See the Table of Contents for the list of appendices.

## CHAPTER 2 | METHODOLOGY

This chapter presents IEC's methodology for conducting this evaluation. This chapter outlines evaluation design, key data collection efforts, and analytic approaches to selecting sites and analyzing data. In addition, Appendix A provides the detailed methodology for this evaluation as finalized in June, 2010. Some information in this chapter reflects updates to that methodology to address data limitations and to pursue key insights identified in interviews.

### EVALUATION DESIGN

This evaluation is designed to synthesize available information on the effectiveness of the Region 4 Superfund Alternative approach. The information to support this evaluation is from a variety of sources, including:

- EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
- Expenditure and category data from EPA's Workload Allocation Model (an internal EPA model which integrates CERCLIS schedule and action data with expenditure data from EPA's Integrated Financial Management System (IFMS) data system)
- Superfund records, including Records of Decision (RODs) and Community Involvement Plans
- Findings from EPA's OECA and OSWER evaluation of the SAA Pilot
- Recommendations from EPA's Office of the Inspector General audit
- Interviews with EPA Region 4 Community Involvement Coordinators (CICs), Remedial Program Managers (RPMs), managers in R4 information, enforcement, and remedial branches, EPA Headquarters staff with expertise in CERCLIS and IFMS, representatives of community organizations and PRPs with experience at both NPL sites and sites using the SA approach, and representatives of a site redevelopment company.

This evaluation uses a mixed methods approach involving both qualitative and quantitative methods to compare NPL sites and sites using the SA approach. The design for this evaluation relies primarily on analysis of existing data. In addition, IEC conducted interviews to collect supplemental data and/or resolve issues raised by the analysis of quantitative data.

To quantitatively assess the cost-effectiveness of sites using the SA approach relative to NPL sites, IEC uses a matched pairs approach that compares data for a limited number of paired sites using the SA approach and NPL sites in Region 4. Paired NPL sites have viable and willing potentially responsible parties (PRPs) that published at least one Record of Decision (ROD), and have features similar to specific sites using the SA approach to ensure “comparability.” The limited number of sites using the SA approach precludes a robust statistical analysis of differences among sites of different types, but the matched pairs assessment supports evaluation of quantitative information about specific sites, as well as descriptive information about patterns among different site types.

IEC examined matched pairs to identify differences in costs and time required for paired sites to achieve key outputs, with a specific focus on publications of RODs. IEC has reviewed existing quantitative data from CERCLIS and IFMS to determine whether a pattern of difference exists in the expenditures or time associated with actions completed at paired sites. While we qualitatively review conditions that may contribute to differences, we are not able to investigate causality.

While we were able to match eleven sites using the SA approach to NPL sites in Region 4, our analyses of several of these sites is limited by unique site features at certain sites using the SA approach that prevented identification of a “good match” and by limited expenditure data at some NPL sites that had significant activity prior to 1995. These sites are generally included in the qualitative analyses, but are identified and in some cases considered separately in analyses such as cost or remedy comparisons.

Similarly, three sites using the SA approach are identified as Megasites or potential Megasites, with combined extramural, actual and planned, removal and remedial action costs expected to exceed \$50 million.<sup>6</sup> Thus, time and cost data at these sites and their NPL pairs are reported but are not included in aggregate results, because the paired NPL sites are not adequately similar in scope. Two sites using the SA approach in particular – Jacksonville Ash and Brown’s Dump, were not able to be paired adequately because their scope, large scale residential contamination, and public-sector PRP are a combination of factors unique to these sites.

To supplement the quantitative assessment and provide insights into factors that influence the use of the SA approach, we reviewed findings and data from prior OECA/OSWER and OIG evaluations. This information was also used to identify and verify strategies to improve the SA approach and identify potential reasons why differences may exist between sites using the SA approach and NPL sites.

After analyzing and reviewing the existing data and evaluations, IEC conducted interviews to expand on results and issues identified with existing data, and to gather perspectives on key aspects of the SA approach. This effort involved a limited number of interviews with individuals experienced with both the SA and NPL approach.

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<sup>6</sup> U.S. EPA Megasites. Available at <http://www.epa.gov/oswer/docs/naceptdocs/megasites.pdf>

Interviewees included EPA Superfund and OECA staff, PRPs, and community groups. In addition, we interviewed a Brownfield developer involved with multiple Region 4 sites.

## **ANALYSIS OF EXISTING DATA AND NEW DATA COLLECTION EFFORTS**

The three broad methodological steps in this evaluation are: (1) developing and implementing a selection process for identifying paired sites; (2) collecting and analyzing data from *existing* evaluations, files, and databases to assess paired sites and other key aspects of the approach; and (3) collecting and analyzing information and data from interviews to expand on existing data. Exhibit 2-1 summarizes our approach to each of these steps.

### **EXHIBIT 2-1: EVALUATION STEPS**

1. Develop list of variables to align for comparison of sites using the Superfund Alternative approach and NPL sites.
  - Collect site-level CERCLIS data for SA and NPL sites in Region 4
  - Match sites using the SA approach with similar NPL sites
2. Collect and analyze data from existing databases and files
  - Analyze quantitative data from CERCLIS
  - Analyze quantitative IFMS data from the Workload Allocation Model
  - Review findings from previous evaluations
3. Collect new data through interviews
  - Identify EPA Community Involvement Coordinators to interview
  - Identify other EPA staff, PRPs, state officials, or other stakeholders to interview
  - Schedule and conduct interviews
  - Analyze trends and patterns in data from interviews

To evaluate the cost-effectiveness and other key aspects of the SA approach, IEC identified nine NPL sites to pair with the 12 sites using the SA approach in Region 4 that obtained at least one Record of Decision (ROD).<sup>7</sup> Two of these sites – Jacksonville Ash and Brown’s Dump – are being managed as a single site, resulting in a total sample of 11 sites using the SA approach.

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<sup>7</sup> As noted, IEC initially considered including paired sites from Regions 4 and 5 in order to capture the majority of sites in the SA universe. However, IEC limited the evaluation to sites in Region 4, because Region 5 sites reflected unique, multi-site agreements and were generally in the early stages of the pipeline. Region 4 sites represent the majority of all sites using the SA approach in the U.S. that have achieved RODs.



IEc identified paired sites that are similar enough in key site descriptors to provide a reasonable basis for comparison of the two approaches to remediation.

The SA approach is an option only when at least one willing and capable PRP is available to enter an agreement with EPA to perform the investigation and site remediation. Thus, this evaluation examines only sites using the SA approach and “PRP-lead” NPL sites in Region 4 that have agreements with one or more private parties. Federal facility and Fund-lead sites are not considered because they are not eligible for the SA approach.

To identify additional variables that might affect pairing of PRP-lead NPL sites and sites using the SA approach in Region 4, IEC relied on prior research, and also consulted with subject matter experts from EPA staff in Region 4 and Headquarters.<sup>8</sup> In addition, IEC collected qualitative insights about potential thresholds for pairing (e.g., the extent to which variations were acceptable). Based on this input, IEC used the following variables to pair sites:

- **Industry:** To the extent possible, paired sites reflect similar types of industrial activity, and reflect similarity of contaminants and facility configurations.
- **Number and type of media contaminated:** To the extent possible, paired sites have the same types of contaminated media (e.g., soil and groundwater contamination).
- **Type of contaminant:** To the extent possible, paired sites should have the same general types of contamination (e.g., metals, organics) because these factors often drive remedial investigation and remedial designs. IEC matched sites using the following assumptions:
  - Polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), persistent organic pollutants (POPs), and pesticides likely involve similar amounts of effort for planning and investigative phases.
  - Inorganics and base neutral acids likely require similar amounts of effort for the planning and investigative phase
  - Dioxins/Dibenzofurans, metals, and volatile organic compounds (VOCs) are each unique substances that likely require different efforts, even in the early stages of the pipeline.
  - Other specific contaminant profiles (e.g., mercury, creosote) were also used to describe and match specific facilities, based on CERCLIS and Region 4 staff input.
- **Proximity to residential or densely populated areas:** Paired sites are generally similar in the type of location (e.g., industrial zoned areas, residential areas).

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<sup>8</sup> Prior research by IEC on site variables that appear to have a causal relationship with cost at Fund-lead NPL sites identified the following variables as potentially important: Number of PRPs, type and number of media contaminated, and number of operable units (OUs).

- For NPL sites, IEC used the CERCLIS “Population Within One Mile” field; for sites using the SA approach, IEC used population density data from RODs, Google Maps and other sources to identify three categories of population near sites using the SA approach: fewer than 1,000 people, 1,000 – 10,000 people, and over 10,000 people.
- **State governments:** To the extent that state government involvement affects remediation processes, IEC matched sites in similar states.
  - Region 4 staff indicated that Florida NPL sites and Florida sites using the SA approach should be paired. All other states in Region 4 are comparable.
- **Number of PRPs:** To the extent possible, paired sites have similar numbers of viable PRPs. In most cases these involve sites with six or fewer PRPs.
- **Number of Records of Decision (RODs):** To the extent possible, paired sites have a similar number of RODs.
- **Number of Operable Units (OUs):** To the extent possible, paired sites have similar numbers of OUs.

In addition, IEC considered the following variables to ensure that specific sites do not differ significantly in complexity as a result of one or more of the following variables:

- **Specific contaminant age/source:** To the extent possible, paired sites have similar contaminant history (e.g., manufacturing facilities or waste facilities of similar ages).
- **Extent of infrastructure near site:** IEC verified that no sites in the sample have significant costs related to new infrastructure to support remediation (e.g., roads, utilities).
- **Environmental justice (EJ) or disadvantaged communities:** IEC did not select sites based on proximity to EJ communities, but did review the proximity of EJ communities in assessing patterns of time, cost, and community involvement.

IEC adopted a ranked but qualitative decision tree format to select sites in a manner that ensured that the above variables were reviewed. However, because the number of sites in Region 4 is limited and sites have a range of unique features, and because the management of sites (e.g., definition of OUs) often varies, paired sites are not necessarily “perfect matches” across all variables. Exhibit 2-2 summarizes the decision logic for site selection, noting how the variables above are considered; Exhibit 2-3 lists the final site pairs selected. Appendix B contains details of the paired sites, including contamination, number of PRPs, number of OUs, and other data used to inform site pairing.

EXHIBIT 2-2: LOGIC FOR PAIRING OF SUPERFUND ALTERNATIVE APPROACH AND NPL SITES

1. Site Characteristics

- EPA ID
- Site Name
- State
- Zip Code
- County
- Region: 4
- Federal Facility: N
- Non-NPL Status: SAA
- NPL Status: Currently on the Final NPL
- Responsibility: Potentially Responsible Party (limited to sites that are PRP-lead)

2. Site Selection Criteria (in order of importance for selecting sites)

- Site Characterization (as provided by Region 4 staff)
- Major Contaminants/Contaminants of Concern (if applicable, also provided by Region 4 staff)
- Contaminated Media
- Types of Contaminants
- Site Description (Region 4 NPL caliber sites website)

3. Additional Fields for Consideration in Pairing Sites

- Number of PRPs
- Number of OUs
- Most Recent ROD (primarily limited to sites that have obtained at least one ROD since 1995)
- Number of RODs

EXHIBIT 2-3: SA APPROACH AND NPL PAIRED SITES

SITE PAIR	SA APPROACH SITE	NPL SITE	LOGIC FOR PAIRING
A	Admiral Home Appliances SCD047563614	Shuron, Inc. SCD003357589	Manufacturing plant  Drinking water contamination  VOC and metal contaminants
B	Gurley Pesticide Burial NCD986172526	Agrico Chemical Co. FLD980221857	Phosphate fertilizer manufacturer  Arsenic and Lead in soil
C	Nocatee Hull Creosote FLD980709398	Cabot/ Koppers FLD980709356	Wood treater  Creosote  Arsenic contamination
D	Sanford Gasification Plant FLD984169193	Cabot/ Koppers FLD980709356	Waste from coal tar  PAH contaminants
E	Sixty One Industrial Park TND987790300	Diamond Shamrock Corp. Landfill GAD990741092	Metals and VOCs in groundwater
F	Ecusta Mill NCD003166675	Olin Corp. (Mcintosh Plant) ALD008188708	Chlorine production  Mercury contamination
G	Solitron Devices Inc FLD032845778	Harris Corp. (Palm Bay Plant) FLD000602334	Electronics manufacturing  Solvents in groundwater and drinking water
H	Itt-Thompson Industries, Inc FLD043047653	Harris Corp. (Palm Bay Plant) FLD000602334	Metal industry  Solvent groundwater plume
I	Lyman Dyeing And Finishing SCD987584653	Leonard Chemical Co. Inc. SCD991279324 <sup>9</sup>	Industrial waste disposal  VOCs in groundwater
J	Weyerhaeuser Co Plymouth Wood Trtng Pt NCD991278540	Stauffer Chemical Co. (Cold Creek Plant) ALD095688875	Chlorine manufacturing  Mercury contamination of fish and sediment
K	Brown's Dump FLD980847016 Jacksonville Ash Site FL0002264810	Hipps Road Landfill FLD980709802	Sites are all in Jacksonville  Residential contamination

<sup>9</sup> Lyman Dyeing and Finishing was originally matched to Martin-Marietta Sodyeco Inc. because the sites shared a number of similar characteristics. However, due to its age, the Martin-Marietta site did not have complete cost or action data. As a result, we replaced it with Leonard Chemical Co. Inc., our next closest matching NPL site to Lyman Dyeing and Finishing. Some older appendices, however, cite information on the Martin-Marietta site, because they pre-date the substitution.

#### Limitations and Caveats Related to Site Pairs

The key limitation in site selection is the limited number of appropriate PRP-lead sites in Region 4. In selecting site pairs, IEC encountered two sites using the SA approach with limited or no feasible comparison sites in Region 4. The combined “Jacksonville Ash sites” (which include Jacksonville Ash and Brown’s Dump sites) have no appropriate comparison site in the Region; these sites are characterized by significant and widely distributed residential soil contamination, as well as a unique public-sector PRP. The complexity of the residential contamination has contributed to the Megasite designation of these sites. In addition, Weyerhaeuser is also a Megasite due to the large size of the facility, but is in other ways well-matched to its paired site. We include all of these sites in our qualitative analyses and, where appropriate, in quantitative analyses.

To the extent possible, paired sites have published at least one ROD since 1995. Actions completed prior to 1995 have limited financial information. Sites with significant remedial activity prior to 1995 may not reflect all cost data that newer sites record.

Ultimately, all NPL-caliber sites (including both sites using the SA approach and NPL sites) reflect unique site and location-related characteristics, and IEC’s site matching approach is therefore imperfect. Where unique site features or events at any of the sample sites create anomalies in the data, we attempt to identify and highlight these issues.

#### COLLECT AND ANALYZE DATA FROM EXISTING FILES AND DATABASES

This evaluation relies primarily on existing data sources, including action data from EPA’s CERCLIS database; IFMS and cost category data from EPA’s Workload Allocation Model; remedy, reuse, community participation, and other site data from RODs and other site documents, and prior evaluations. IEC used data from CERCLIS and IFMS to assess time and cost differences between paired sites, and ROD and other site document data to examine community activities, remedies, and site uses. Findings from prior evaluations inform a review of key perception issues and to identify how these have evolved, and how EPA has updated implementation of the approach since the internal evaluation and OIG report. Finally, existing data sources and findings inform questions for interviewees.

#### Analysis of Existing Superfund Data

IEC analyzed CERCLIS data provided by Randy Hippen at EPA Headquarters, and CERCLIS data downloaded from the public CERCLIS website.<sup>10</sup>

IEC’s analysis of cost and time data focuses on site actions between discovery and publication of RODs. However, if both sites in a pair have completed remedial design or at least one remedial action, we also examine the time required to complete these actions. IEC used IFMS cost data combined with CERCLIS action data to examine the efficiency of the SA approach in achieving similar actions in terms of time and cost. Exhibit 2-4

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<sup>10</sup> (<http://www.epa.gov/superfund/sites/phonefax/products.htm>).

lists the key CERCLIS fields used to support the comparison of SA approach and NPL sites for Evaluation Questions 3, 4, and 5.

**EXHIBIT 2-4: CERCLIS FIELDS FOR COMPARISON OF SITES WITH SAA AGREEMENTS AND NPL SITES**

<b>Site Activities</b>
<ul style="list-style-type: none"><li>• Action</li><li>• Action ID</li><li>• Actual Start Date</li><li>• Actual End Date/Completion</li><li>• Planned Outcome</li><li>• Urgency</li><li>• Initial Remedial Measure</li><li>• Institutional Controls</li><li>• Long Term Response Action</li><li>• Site-Wide Ready for Anticipated Use (if any paired sites achieve SWRAU)</li><li>• Cleanup Technologies Used</li><li>• Cleanup Status (at OU)</li><li>• Human Exposure Environmental Indicator Measure</li></ul>

**Analysis of CERCLIS Action Time Data**

IEc analyzed available CERCLIS data on site actions and designations for paired sites to identify any patterns of difference in time to complete actions, and any differences in outcomes at paired sites. We also examined differences across paired sites and, where possible, present descriptive statistics. However, due to the limited sample size we do not test statistical significance.

Exhibit 2-5 outlines the actions reviewed and available time stamp data for each action; actions analyzed are highlighted in bold. Because the paired sites are at different points in the Superfund pipeline, IEC limited the analyses of time to actions that include an end date. For example, Ecusta Mill only includes an end date for the RI/FS negotiations. The RI/FS action was the only action that included start and end dates for all paired sites. Thus, the number of paired sites evaluated for each action varies.

EXHIBIT 2-5: CERCLIS DATA FOR SUPERFUND PIPELINE ACTIONS

ACTION	CERCLIS START DATE?	CERCLIS END DATE?	SITE OR OU-LEVEL DATA
Discovery	N	Y	Y
Preliminary Assessment/Site Inspection	N	Y	N
Hazard Ranking System Score	N	Y	N
Review of Site Complexity	N	Y	N
Negotiate SAA Agreement or proceed with National Priorities Listing	<i>Identified in CERCLIS as NPL list date, SAA agreement date, and site status designation (NPL/SA)</i>		
<b>Remedial Investigation/Feasibility Study Negotiations</b>	Y	Y	Y
<b>Consent Decree</b>	Y	Y	N
Administrative Order on Consent (often same date as end of RI/FS Negotiations)	N	Y	Y
<b>Remedial Investigation/Feasibility Study</b>	Y	Y	Y
Record of Decision	N	Y	Y
<b>Remedial Design/Remedial Action Negotiations</b>	Y	Y	Y
<b>Remedial Design/Remedial Action</b>	Y	Y	Y
Construction Completion	N	Y	N
Post Construction Completion	N	Y	N
National Priorities List Deletion	N	Y	N

To measure each action, IEc totaled the number of days between start and end dates reported in CERCLIS for each unique action.

RI/FS, RI/FS Negotiation, and RD/RA Negotiation actions are sometimes reported by OU.<sup>11</sup> For these actions, IEc reviewed each action individually to determine whether the action was a unique action or a follow-up to a previous action. Typically, we assume that each action happens once per OU, and totaled the time spent on that action within each OU, even if the action has multiple start and end dates (e.g., an OU with three RI/FS negotiations of 100 days each would have a total RI/FS negotiation time of 300 days). We then calculate an average value for the action at the site level by averaging OU-level values.<sup>12</sup>

<sup>11</sup> A site may have a “sitewide” RI/FS negotiation; when these cases could be identified, we divided the total time by the number of OUs to be consistent with other sites.

<sup>12</sup> For example, Harris Corp. has 3 RI/FS actions with start and end dates. However, one RI/FS action is for OU1 and two RI/FS actions are for OU2. IEc summed the 3 RI/FS actions and then divided by the two OUs that the actions were completed at to determine the average amount of time spent on the RI/FS at that site.

For actions that are recorded at the site level (Consent Decrees, Remedial Designs, and Remedial Actions), we typically assume that these actions are distinct and do not directly tie into the number of OUs at the site. For these actions, we calculate an average value by taking the average of the length of each action.

*Analysis of IFMS Cost and Cost Category Data from EPA's Workload Allocation Model*  
IEc coordinated with Alan Youkeles of OSRTI's Budget, Planning and Evaluation Branch to obtain detailed IFMS data on Superfund obligations and expenditures for all sites in Region 4.<sup>13</sup> The IFMS data address only activities conducted by EPA, and therefore do not support analysis of PRP costs. In the context of this evaluation, this limitation has little impact because few sites using the SA approach have completed remedial actions, and these are the key expenditures for PRPs. Our analysis focuses on EPA actions up to and including publication of RODs at each site. To reduce the potential for double counting, we considered only expenditure data, and did not examine obligation data.

IEc consulted with EPA staff from Region 4, as well as Alan Youkeles, to develop a methodology for analyzing and comparing site costs. This methodology involved: (1) "grouping" actions into broad expenditure categories to facilitate cross-site comparisons; (2) identifying specific actions and categories to include in and exclude from the assessment; (3) adjusting expenditure data for yearly inflation; and (4) identifying any remaining corrections needed.

**Expense Categories:** To ensure consistency with other EPA data and analyses, we sort expenditure data into categories using a protocol developed OSRTI. All expenditures fall into one of seven broad categories: site assessment, remedial, response support, enforcement, removal, Brownfields, and Federal Facilities.

For this evaluation, we eliminated from consideration all expenditures associated with Federal Facilities and Brownfields, because these categories are generally incompatible with PRP-lead and NPL sites. In addition, in consultation with OSRTI staff, we determined that removal-related expenditures are not likely to be affected by NPL or SAA agreement status. We examined data on removal expenditures to verify that expenditures in this category do not follow any clear patterns, and removed the category from consideration.<sup>14</sup>

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<sup>13</sup> Alan Youkeles of OSRTI provided the data and explained the coding system. The data are described as follows: these data represent cumulative, site-specific, agency-wide, direct obligation and expenditure data for Superfund appropriated and reimbursable resources, extracted from the US EPA Integrated Financial Management System (IFMS) as of the end of FY 2009 for programmatic analysis by the Office of Superfund Remediation and Technology Innovation (OSRTI). Data do not include indirect costs, costs incurred by private or other parties performing response actions, or future costs to be incurred at these sites and do not represent official agency financial statements regarding Superfund resource use.

<sup>14</sup> We could identify no difference in removal costs at sites using the SA approach and NPL sites. Among the sites we examined, 18 of 21 have expenditures related to removal. At the 10 sites identifies, median removal costs are \$19,109 with a low of \$107 and a high of \$543,401. At the 8 NPL sites, median removal costs are \$10,575 with a low of \$580 and a high of \$435,045 (estimates not adjusted for inflation). A t-test to determine whether removal costs of SA approach and NPL sites



**Actions:** To ensure comparability of expenditures between paired sites, we focused only on costs for actions that have been completed at both NPL sites and sites using the SA approach. Because few sites using the SA approach in Region 4 have completed remedial design (RD) or remedial actions (RAs), we eliminated from consideration all expenditures associated with actions that took place after ROD publication, including all RD/RA expenditures.

Exhibit 2-6 describes specific actions that were excluded from our cost comparisons, and the rationale for each exclusion. Exhibit 2-7 presents expenditure categories and actions included in this evaluation.

**EXHIBIT 2-6: ACTIONS EXCLUDED FROM COMPARISON OF SITE COSTS BY REASON**

RATIONALE	EXCLUDED ACTIONS (ACTION CODE NAME)
Brownfields (not an expenditure of interest)	Brownfields General
Removal-related	Old Removal Actions Old Removal Post PA/OSC Intramural Old Removal TAT Activities PRP Removal Removal Removal Assessment Removal Community Relations Removal On-Scene Monitor Old Removal Support and Management Removal Support/Management Old Removal Enforcement Removal Negotiations
Actions only appearing after RODs	Complete Draft RI Workplan Five Year Remedy Assessment Groundwater Monitoring (Post-ROD) Operations and Maintenance PRP LR Admin/Voluntary Cost Recovery Claim in Bankruptcy Proceeding Section 107 Litigation State Enf. Management Assistance
RD/RA-related	Old Remedial Analysis Old Remedial Design PRP RA PRP RD Remedial Action Remedial Design

differed significantly reveals no statistically significant difference. In addition, removal expenditures occurred at different time across sites, with no clear trend in removal cost timing at SA or NPL sites.

RATIONALE	EXCLUDED ACTIONS (ACTION CODE NAME)
	RD/RA Negotiations
Federal Facilities-related (not an expenditure of interest)	Federal Facilities Oversight FF Community Involvement FF RI/FS

EXHIBIT 2-7: ACTIONS INCLUDED IN COMPARISON OF SITE COSTS BY TYPE

ACTION CODE CATEGORY	INCLUDED ACTIONS (ACTION CODE NAME)
Site Assessment	ESI/RI Expanded Site Inspection Final Listing on NPL Generic PA/SI HRS Package Old Pre-Remedial Proposal to the NPL Site Inspection
Remedial	Combined RI/FS Community Involvement Ecological Risk Assessment Feasibility Study Human Health Risk Assessment Management Assistance Multi-Site Cooperative Agreement Old Oversight Old RI/FS Old TAG Pre-Design Activity Pre-REM/Aerial Survey PRP FS PRP RI PRP RI/FS Remedial Investigation Technical Assistance Technical Assistance Grant
Response Support	Administrative Records Bulk Funding Contract Program Management General Support/Management Information Management Support Laboratory Support Old General Superfund Support & Management Old Lab Analysis Old Remedial Support & Management Records Management Remedial Contract Management (Technical)

ACTION CODE CATEGORY	INCLUDED ACTIONS (ACTION CODE NAME)
	Remedial Support/Management
Enforcement	Admin Order on Consent
	Compliance Enforcement
	Cost Recovery Negotiations
	Cost Recovery Decision Document - No Sue
	General Enforcement
	Litigation (Generic)
	Negotiation (Generic)
	Non-NPL PRP Search
	NPL RP Search
	Old (1999) Legal Review of Documents
	Old Enforcement Actions
	Old General Enforcement
	Old Judicial Activity
	Old Pre-Enforcement Activity
	Old Remedial Enforcement
	PPA Assessment
Preparation of Cost Documentation Package	
RI/FS Negotiations	
Section 106 107 Litigation	

**Inflation Adjustment:** To ensure comparability of expenditure data across sites, IEc adjusted annual expenditure data to be in constant 2009 dollars using chained price index GDP deflators provided by OMB in their fiscal year 2011 budget.<sup>15</sup>

**Other Adjustments and Caveats:** Finally, we note several limitations related to IFMS data that affect our analysis:

- Expenditure data provides only the year of a given expenditure, and does not identify day or month. IEc therefore included all relevant expenditures that occurred within one calendar year after the ROD. This may include in some cases costs associated with this, it is impossible to accurately determine the point at which all pre-ROD expenditures were completed and post-ROD expenditures began.
- The workload allocation model classifies actions by an OU at a site. However, an action can be associated with a particular OU, classified as site-wide, or contain no information about whether it pertains to a particular OU or is a site-wide action. For those actions lacking this information, it is impossible to know whether these actions occurred at a particular OU or on a site-wide basis. Thus, it was difficult to accurately determine whether an expenditure should be considered

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<sup>15</sup> See Office and Management and Budget, Fiscal Year 2011 President’s Budget, Table 10.1: “Gross Domestic Product and Deflators Used in the Historical Tables: 1940-2015,” column 3.

or excluded due the possibility that it occurred after the ROD for one OU, but prior to the ROD for another OU.

- Older CERCLIS data contains fewer categories than newer data. For example, older RI/FS actions tend to be labeled “Old RIFS” while newer actions break out the costs associated with the RI/FS negotiations and RI/FS.

These three issues make it difficult to indentify the cost associated with specific actions (e.g., RI/FS). Thus, our analysis does not attempt to compare costs of paired sites for specific actions, and we are unable to separately assess costs according to the “early,” “middle,” and “late” parts of NPL pipeline, as outlined in Evaluation Question 5. Rather, our methodology aggregates the expenditures of all relevant actions through the ROD for each site. These costs can then be compared across pairings, as well as among all sites.

As a result of these caveats, we developed a set of rules for aggregating costs based on category that attempt to mitigate the problems with the caveats detailed above. Exhibit 2-8 illustrates our aggregation of costs for each site.

**EXHIBIT 2-8: PROCESS FOR AGGREGATION OF SITE EXPENDITURES**

1. Exclude expenditures associated with all site actions included in Exhibit 2-6
2. Inflate all expenditures to 2009 year-dollars
3. Group all expenditures via action code categories as described in Exhibit 2-7
4. Aggregate expenditures:
  - For actions with an associated OU, the sum of all expenditures through one calendar year after the ROD of that OU
  - For actions listed as site-wide or with no OU information provided, the sum of all expenditures through one calendar year after the last ROD at the site
5. Aggregated expenditures compared by:
  - Total expenditures as aggregated above
  - Total expenditures as aggregated above divided by the number of OUs at the site
  - Total expenditures as aggregated above divided by the number of completed OUs at the site

To aggregate site expenditures, we include the costs for all actions in Exhibit 2-7 so that we do not omit any expenditures associated with relevant actions at the site. Accurately aggregating site expenditures through the ROD requires that we choose the correct cutoff date that allows for a sufficient lag between when expenditures occur and when they are recorded. We chose a cutoff date of one year after the ROD; however, this may

overestimate costs if some actions taking place after the ROD are recorded with expenditure years of less than a year after the ROD. In addition, to the extent that at some sites, expenditures are not recorded until cost recovery and cost recovery occurs more than a year after the ROD, these expenditures will not be aggregated with our methodology and site costs will be underestimated.

#### REVIEW OF PREVIOUS EVALUATIONS AND DATA COLLECTION EFFORTS

EPA's Office of Enforcement and Compliance Assurance (OECA) and Office of Solid Waste and Emergency Response (OSWER) conducted a joint internal evaluation of the SA approach and EPA's Office of the Inspector General also conducted an audit of the approach. Both of these evaluations were completed in 2007.

##### OECA/OSWER Evaluation

OECA's Office of Site Remediation Enforcement (OSRE) and the OSWER's Office of Superfund Remediation and Technology Innovation (OSRTI) conducted an evaluation of the SA pilot to better understand how EPA Regions are implementing the SA approach, whether it leads to successful site cleanups, and the concerns expressed by stakeholders. The results of that evaluation were published in September 2007, *Results of the Superfund Alternative Approach Evaluation*.

In addition to EPA attorneys and RPMs, nine external stakeholders were consulted for this evaluation, including state representatives, PRP attorneys, PRPs, and community groups. IEC requested access to examine the survey questions, responses, and a list of survey recipients. As previously noted, IEC received the questions that were asked of stakeholders and EPA attorneys for the OECA/OSWER Evaluation, but did not receive response data.

IEC reviewed all available resources related to the OECA/OSWER Evaluation to avoid duplicating previous efforts, and to develop the evaluation questions and inform Evaluation Question 6, specifically. In addition, IEC considered all prior evaluation results in addressing all evaluation questions.

##### OIG Evaluation

In June of 2007, EPA's Inspector General issued a report on the SA approach entitled EPA Needs to Take More Action in Implementing Alternative Approaches to Superfund Cleanups, Report No. 2007-P-00026. OIG conducted interviews with Superfund program managers and staff, PRPs, and representatives of NAM and the Superfund Settlements Project (SSP) to review their experiences with the SA approach.

In addition, OIG administered six short questionnaires on PRP general views and experiences with the SA approach. Detailed information about the specific interviews conducted is not available from the OIG;

IEC requested access to the interview questions, responses, and list of interviewees. However, OIG did not provide any of the requested data. Thus, IEC relied on publicly available report data and interviews to inform Evaluation Question 6.

#### Additional Data Resources: RODs, Community Involvement Plans

IEc reviewed EPA's Superfund Alternative Approach website to review SA criteria and requirements (<http://www.epa.gov/compliance/cleanup/superfund/saa.html>) and Region 4's NPL Caliber website (<http://www.epa.gov/region4/waste/npl/index.htm#FL>) to fill in missing data items and provide supplemental information (e.g., location/population density, technical assistance funding). IEC also reviewed individual site profiles on the Region 4 website and contacted EPA Region 4 staff to collect the following resources:

- Site fact sheets
  - Site background
  - Site reuse/redevelopment
  - Community Involvement
- RODs
  - Institutional controls
  - Remedy options
- Community involvement plans
  - Plans for community involvement and engagement of community groups

#### NEW DATA COLLECTION EFFORTS

In addition to using existing files and data sources, IEC conducted thirteen in-person interviews to expand on the results and issues identified with existing data, and to gather perspectives on the key aspects of the SA approach, including perceptions of the SA process and perceived stigma of sites using the SA approach compared to NPL sites.

IEc interviewed six managers who are responsible for different aspects of site remediation for both SA approach and NPL sites; this set of interviews included a group interview with three Region 4 Superfund managers. In addition, IEC interviewed four Community Involvement Coordinators (CICs), and three remedial project managers (RPMs) who have experience with both the SA and NPL approaches. IEC has also interviewed three community representatives at two communities, six representatives at three PRPs that have experience with both NPL and SA approach sites, and a representative from an investment firm that is involved in redeveloping sites in Region 4.

See Appendix C for a list of interviewees and the “master list” of interview questions, and Appendix D for a summary of interview responses. When possible, respondents from different backgrounds were asked the same questions to allow comparison.

#### QUALITY ASSURANCE PROCEDURES

In conducting the evaluation, IEC, Office of Policy's Evaluation Support Division (ESD), and Region 4 Superfund staff agreed on a set of three key quality assurances:

- IEC and EPA agreed on the key data sources to inform the evaluation, including:

- Existing Superfund data, including Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) data provided by Randy Hippen at EPA Headquarters and CERCLIS data downloaded from the public CERCLIS website (<http://www.epa.gov/superfund/sites/phonefax/products.htm>).
  - Analysis of expenditure data provided by Alan Youkeles at EPA Headquarters. The Workload Allocation Model and other budget and expenditure tools incorporate financial data from the Integrated Financial Management System (IFMS) that have been categorized by CERCLIS Action code to reflect broad categories describing the type of effort undertaken by EPA (e.g., enforcement, remedial).
  - Existing evaluations of the Superfund Alternative Approach process. EPA's Office of Enforcement and Compliance Assurance (OECA) and Office of Solid Waste and Emergency Response (OSWER) conducted a joint internal evaluation of the SA approach and EPA's Office of the Inspector General conducted an audit of the approach. Both of these evaluations were completed in 2007.
  - Additional Data Resources: RODs, Community Involvement Plans, Site Fact Sheets, and Consent Decrees
- IEC designed the methodology in the context of the project's overarching evaluation questions and the Superfund program pipeline logic model, and used and applied the quantitative and qualitative data in a manner that is appropriate for its scope and for the purposes of the evaluation report.
  - EPA staff from ESD and Superfund reviewed IEC's outputs, including:
    - Program Evaluation Methodology
    - Summary of Time to Complete Actions
    - Summary of Cost Associated with Actions
    - Summary of Interviews

Appendix G contains the Quality Assurance Plan that IEC delivered to EPA in June 2010.

## CHAPTER 3 | FINDINGS

This chapter summarizes the results of our analyses as outlined in Chapter 2. We organize our results first by evaluation purpose, and then by the individual evaluation questions pertaining to that evaluation purpose. For each evaluation question, we first identify the purpose of the question in the context of evaluating the SA approach as a whole. We follow with a discussion and tabulation of our findings related to the question. The chapter concludes with a brief summary of the general findings for each of the four evaluation purposes.

### **EVALUATION PURPOSE #1: EXAMINE THE FACTORS INFLUENCING THE USE OF THE SA APPROACH**

To examine the factors influencing the use of the SA approach, IEC interviewed CICs, RPMs, Managers, PRP and community representatives, and a representative of a development company working with contaminated sites in Region 4. To review the factors influencing the use of the SA approach, IEC investigated:

- Evaluation Question 1: What is the response of potentially responsible parties (PRPs) to the Superfund Alternative Approach?; and
- Evaluation Question 2: “What do available data reveal about community member involvement in and perceptions of the NPL and SA processes?”

The findings for this purpose are based largely on information gathered directly in interviews. In addition, we use a targeted literature search and CERCLIS data to attempt to validate interview responses. Finally, we perform a screening assessment of community demographics to determine whether SA approach or NPL site locations are differently correlated with low income or minority populations.

In general, respondents in interviews stressed the similarity of the SA approach to the NPL approach from an EPA perspective, and noted that the similarity of the two approaches limited opportunities for PRPs to realize significant savings in remediation or site management costs in all cases. Discussion of the advantages to PRPs associated with the SA approach focused therefore on avoided NPL “stigma” – defined generally as the potential negative impact that giving a site “NPL” status could have on company image and options for site redevelopment. While stigma could not be quantified, EPA respondents noted that PRPs do not turn down the option to pursue the SA approach, and representatives for two PRPs confirmed that stigma is a significant issue and “all other things equal” it is better to avoid the NPL label. The representatives from a third PRP and the investment firm felt that “Superfund” stigma affects both SA approach and NPL



sites equally. Findings for Question 1 explore PRP responses to the SA approach from different perspectives; findings for Question 2 consider the response of communities to the SA approach.

#### **EVALUATION QUESTION #1: WHAT IS THE RESPONSE OF POTENTIALLY RESPONSIBLE PARTIES (PRPS) TO THE SUPERFUND ALTERNATIVE APPROACH (SA)?**

To obtain different perspectives on PRP response to the SA approach, IEC interviewed a number of stakeholders with different roles in conducting remediation, including CICs (who work with many PRPs across numerous sites in the context of community coordination), RPMs (who manage the remediation process), managers in remediation, enforcement, and cost recovery (who work with PRPs on developing and implementing legal agreements) and representatives of specific PRPs who can speak to their own experience at specific SA approach and NPL sites.

In response to the general question of PRP response to the SA approach, respondents noted the following:

- **PRPs generally prefer the SA approach:** Most respondents, including PRPs and CICs in particular, noted that PRPs generally appear to prefer the SA approach, and consistently enter SA negotiations when given the opportunity. PRPs in particular cited a “cooperative model” that encourages quicker negotiations. One PRP noted that the actual SA experience had been frustrating due to delays, shifts in EPA policy, and changes in site management, but still felt that the SA approach has promise as a more cooperative model.
- **Avoiding the “stigma” of an NPL listing is a key concern:** Several EPA and PRP respondents specifically mentioned that PRPs wish to avoid “stigma” associated with an NPL site. While respondents could not specifically quantify “stigma,” EPA respondents noted concern by PRPs for long-term property values and redevelopment potential, and PRPs also noted that additional publicity related to NPL status could complicate remediation efforts.
- **Limited cost-saving opportunities may also exist for PRPs:** Several respondents (including PRPs) noted that for PRPs or sectors with multiple, similar sites (e.g., manufactured gas plants), the SA approach may represent an opportunity to develop a more efficient, consistent approach to addressing multiple sites.

More detailed answers are presented below, organized by specific sub-question:

Evaluation Question 1a) What aspects of the SA approach are appealing or unappealing to PRPs, and why?

Key responses to this question are as follows:

**Avoided Stigma:** In response to this question, virtually all EPA stakeholder respondents identified avoiding “NPL stigma” as a key advantage to SA approach for PRPs and, in many cases, communities.<sup>16</sup> Specifically:

- CICs and RPMs noted that communities and PRPs express concern about the need to maintain property values near a site, and appear to believe that the NPL label has a negative impact on property values and on site redevelopment potential. One respondent noted that this is particularly the case when the PRP continues to have an operating facility at the site.
- Two respondents suggested that PRPs are also concerned about national corporate image, and the definition of NPL “stigma” may include impacts on the firm’s national reputation with customers and shareholders. One RPM noted that although the SA approach is still “Superfund,” a key benefit is that the PRP avoids having a site on the “list of the worst sites in the country.”
- Respondents noted that while community residents had different initial reactions to the potential for NPL listing in different locations, local officials consistently appear to prefer the SA approach due to the belief that long-term property value and redevelopment potential would be adversely affected by an NPL listing.<sup>17</sup>

PRP respondents generally agreed that avoiding stigma is a motivation for using the SA approach, and concurred with EPA respondents that some local officials are concerned about redevelopment, though representatives of one PRP note that stigma is less of an issue than it used to be, and does not differ between NPL and SA approach sites. PRP respondents also noted that NPL sites historically have had more publicity and can require more coordination in response. One PRP representative noted that high-profile sites can affect company reputation and even hiring, if candidates have a negative perception of the company’s record due to contaminated sites. Finally, representatives from all PRPs noted that participation in the SA approach supports company reputations as proactive and cooperative, which can have value among company stakeholders.

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<sup>16</sup> To further examine and measure stigma impacts, IEC consulted the economics literature for empirical information on the scope of NPL stigma. While the literature documents clear short- and long-term property value impacts associated with various hazardous sites, no researchers have specifically examined the stigma associated with NPL sites in comparison to other hazardous sites. This represents a key area of future exploration for EPA in considering options for optimizing cleanup programs.

<sup>17</sup> Respondents explained that most community members appear to identify the site only as “Superfund,” though some communities are concerned that an SA designation means that they may receive fewer resources or less remediation than an NPL site. Respondents also noted, however, that as communities learn more about the SA approach, these concerns typically abate. Community reactions to the SA approach are explored more in Question 2.

Community representatives agreed that concern for property values is often a significant issue, and many see an NPL listing as a negative impact on property values. However, community representatives also noted that property value impacts vary, with parcels near the sites, particularly in poor areas, often unable to be sold regardless of whether the site is an NPL or an SA approach site. A representative of an investment firm specializing in Brownfield sites, however, said that while “Superfund” stigma may exist, investors and bankers do not typically see a difference between SA approach and NPL sites. More important to investors and developers is the intended use of the property. While redevelopment of an industrial site may be relatively straightforward, it requires additional outreach effort to ensure that a mixed-use or residential redevelopment is financially successful.

**Cooperative Model:** All PRP representatives noted that the SA approach seems to be a more cooperative model for negotiating agreements, though they stressed that the actual process is identical. They noted, however that the tone of NPL approach typically seems to be more adversarial than the SA approach, in part because of its formality, and they perceive the SA approach as supporting more collaborative and effective negotiations.

- Representatives of two PRPs noted that the structure of the NPL process is very effective for sites with large numbers of PRPs where the possibility of EPA undertaking the cleanup can motivate PRPs to come to agreement about liabilities, and can provide structure for liability negotiations among PRPs.<sup>18</sup>
- One PRP also suggested that the SA approach might at some point allow for use of the innovative remediation strategies (e.g., the Triad approach, which encourages a dynamic site assessment and remediation process), while the formality of the NPL structure is less flexible.<sup>19</sup>

**Multiple Site Coordination and Efficiencies:** In addition to stigma, several respondents noted that the SA approach might be attractive to PRPs with several similar sites:

- Two RPMs cited manufactured gas plants as an example of sites where similarity of contamination, facility function, and ownership patterns seems to encourage use of a multi-site strategy that in many cases involves the SA approach. Region 5, for example, has a single SAA agreement that covered multiple sites with similar ownership and contamination.

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<sup>18</sup> The representative noted that even PRPs in dispute about assignment of liability typically agree that if EPA takes over the site, costs will be higher. Therefore the NPL process can be very effective in ensuring agreements for these sites. This dynamic, though, is absent at sites with a very small number of PRPs and clear liability.

<sup>19</sup> For more information on the Triad approach, see <http://www.triadcentral.org/>, as cited on the CLU-In program site ([http://www.clu-in.org/greenremediation/subtab\\_b4.cfm](http://www.clu-in.org/greenremediation/subtab_b4.cfm)). Overall, the approach implements a dynamic structure for site assessment and remedy selection that does not typically fit well with the process outlined under CERCLA.

- One EPA manager, in particular, noted that PRPs with multiple NPL-caliber sites in different states appear to prefer a consistent, Federal SA approach to coordinating with multiple state lead agencies or multiple NPL sites.<sup>20</sup>
  - Multiple sites with similar contamination could allow for the development of a conceptual model with a “presumptive remedy.” This could reduce negotiation costs, particularly if sites are under a single authority (e.g., EPA rather than agencies in different states).

Though the PRPs interviewed are not in the position to have multiple sites using the SA approach, one PRP noted that the company has a site using the SA approach in Region 5 and feels that the process has worked well in both regions. Another PRP noted that while its Region 4 site using the SA approach has taken longer than anticipated, the company has entered another SAA agreement in a different Region.

**Avoided NPL Listing Process:** Several respondents noted that a key cost-saving impact of the SA approach on EPA staff is avoiding the need for a formal NPL listing. However, they did not generally believe that PRPs would consider this a top concern, since it is typically an internal EPA process. PRPs did also note that the NPL listing process lengthens the overall remediation process, though it doesn’t have a specific cost. One PRP noted that avoiding the listing process likely accelerated the site schedule by a year.

**Financial Assurance Requirements:** While most respondents did not know of any significant disadvantages of the SA approach to the PRPs, one RPM and one Manager noted that one unappealing aspect is that the SA approach necessitates additional financial assurance requirements for PRPs. However, the respondents noted that this drawback does not seem to dissuade PRPs from using the approach, suggesting that the advantages of the SA approach outweigh the disadvantages. The PRP representatives did not identify the additional financial insurance requirements as a problem.

Exhibit 3-1 contains a summary of the key responses to Question 1.

**EXHIBIT 3-1: INSIGHTS: ASPECTS OF THE SA APPROACH APPEALING OR UNAPPEALING FOR PRPS**

SA APPROACH FEATURE IDENTIFIED	CICS	RPMS	MANAGERS	PRPS/INVESTORS
<b>Appealing Features</b>				
Avoided stigma (general)	3	2	1	3
Property values (specific stigma)	2	2	0	2

<sup>20</sup> One RPM also suggested that the SA approach could provide a model for cleanup of “non-NPL-caliber sites” among PRPs with multiple sites. For example, Region 4 negotiated multiple cleanups at numerous Exxon Mobile sites in different states using a model similar to the SA approach. These sites received an HRS score below 28.5, but the PRP was interested in working with EPA on a voluntary cleanup process for sites in multiple states in Region 4.

SA APPROACH FEATURE IDENTIFIED	CICS	RPMS	MANAGERS	PRPS/INVESTORS
Potential for redevelopment (specific stigma)	1	1	0	1
Cooperative tone	3	1	2	3
Potential cost savings - multiple sites	0	2	1	2
Avoided listing costs	1	2	2	2 noted time, but not cost
<b>Unappealing Features</b>				
Financial Assurance requirements	0	1	1	1
Uncertain recovery of costs from other PRPs	0	0	0	1

In addition to directly identifying aspects of the SA approach that would be appealing or unappealing to PRPs, respondents addressed a number of other specific questions about PRP behavior during the SA process.

***Do sites using the SA approach tend to have more or less PRP-EPA cooperation than NPL sites?*** Most respondents, including PRPs, generally consider PRPs at sites using the SA approach more cooperative. Several EPA respondents suggested that a key incentive to cooperate is the “threat” of listing the site on the NPL if the PRP does not make progress.<sup>21</sup> Both EPA and PRP respondents also noted, however, that cooperation varies widely by PRP at both NPL and SA approach sites, and similar issues appear to be contentious at both types of sites. Representatives of one PRP noted that multiple changes in site managers by both EPA and the PRP had a negative impact on cooperation, but still felt that the process was more cooperative.

One CIC noted that for both SA approach and NPL sites, PRP cooperation is sometimes complicated by a lack of clear guidance for PRPs regarding the community involvement requirements that EPA employs through policy, such as notification procedures, announcement requirements, and public meeting requirements. According to the respondent, at both NPL and SA approach sites, PRPs that interpret guidance to limit community involvement requirements typically signal a less cooperative process. The respondent felt that clearer documentation of requirements could improve cooperation at all sites.

***What is the perceived speed in cleaning up sites using the SA approach compared to NPL sites?*** Several respondents noted that, in general, sites using the SA approach have the potential to move more quickly at times because motivated PRPs may move faster in negotiating and conducting cleanup activities. However, respondents also noted that the similarity of the two processes resulted in similar

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<sup>21</sup> Two respondents also noted that SA agreements have stipulated penalties, which may encourage cooperation. The respondents did not specify stipulated penalties in detail, but EPA’s option to list the site on the NPL appears to be a key penalty.

time frames, and the time and cost to clean sites frequently varies with specific site conditions.

Notably, in discussing differences among specific sites, respondents identified key cost drivers that were not related to SA approach or NPL status, such as the complexity and cost of contacting residences in the Jacksonville Ash sites to coordinate residential site remediation.

1b) Do PRPs generally prefer the SA approach over the NPL listing, or vice-versa? Why or why not?

Responses to this question reiterated that PRPs typically participate in SA negotiations when given the option, and emphasized that PRPs – and in some cases, communities – appear to wish to avoid potential stigma associated with NPL listing.

All respondents stressed the similarity of the activities that they undertake in dealing with PRPs in their respective roles. As a result, while PRP willingness to participate in the SA approach suggests an advantage, the respondents did not identify significant cost or schedule advantages associated with the process for PRPs.

Respondents noted that PRPs are typically enthusiastic about the SA approach, using phrases like “jump at the opportunity.” One Manager noted that he had not heard of any PRP requests to use the NPL approach over the SA approach, indicating that PRPs prefer the SA approach when it is available. However, PRPs in some cases prove to be unwilling to cooperate during SA negotiations – this can result in NPL listings.

PRP representatives generally concurred that the SA approach is preferable, though one representative of a PRP (an attorney) pointed out that the more significant financial assurance requirements and the TAG requirements should be considered by PRPs, and it should be the case that stakeholders such as shareholders or the Board of Directors should agree that the benefits of being perceived as proactive and cooperative outweigh the cost of these requirements.

In addition to this general question, respondents addressed the following questions:

***Who typically suggests the SA approach?*** Most respondents did not comment on who suggests the approach, but managers have noted in several discussions that EPA approaches PRPs and proposes the approach. One RPM noted one instance where a PRP – Orlando Gasification – approached EPA.

***How many times have PRPs suggested the SA approach and EPA refused? Why was the SA approach not selected?*** No respondents could identify a site where EPA refused to negotiate an SAA Agreement, though some negotiations did not end in agreements. However, EPA staff noted that EPA prefers the NPL approach when it is not clear that the PRP is financially viable. In addition, one Manager also emphasized that over the past year Region 4 has become more reluctant to use the SA approach when there are many unorganized PRPs. EPA Region 4 prefers to enter the SA approach with a limited number of PRPs or have

numerous PRPs form a steering committee or organization for one point of contact.

Finally, while IEC did not consult state and local government representatives for this evaluation, one EPA Manager indicated that state directors in Region 4 publicly endorsed the SA approach when polled by Headquarters staff two years ago.

#### **EVALUATION QUESTION #2: WHAT ARE COMMUNITY MEMBER PERCEPTIONS OF THE NPL AND SA PROCESSES?**

To examine community perceptions of the SA approach, IEC interviewed a range of EPA staff, including CICs, RPMs, and various managers, as well as community representatives and PRPs (see Appendix C for a complete list of interviewees). Separately, IEC explored whether the two approaches differ empirically (e.g., degree of community involvement and funding, proximity to environmental justice communities). This question includes several specific sub-questions; some are informed by interviews and some by examination of key data.

In general, respondents noted that community responses to all aspects of site listing and remediation vary widely across and within communities. Specific to sites using the SA approach, respondents noted that many communities do not express a preference for either the NPL or SA approach. Some prefer the SA approach to avoid the stigma of the NPL, and others are concerned that the SA approach will produce fewer resources and/or a less effective cleanup. Overall, however, respondents note that the federal presence at a “Superfund” site is all that matters to many, and often community members are unaware of either the “NPL” or “Superfund Alternative Approach” designation. Interviews with community leaders at the Jacksonville Ash sites and the Anniston site confirmed that the key concern of most residents is that the EPA remains active in the cleanup. One of the interviewees – a community leader – was not able to identify whether the sites were NPL or Superfund Alternative.

CICs noted that while some community members are initially concerned that the SA approach may not be comparable to listing on the NPL, typically these concerns are addressed as the sites progress and communities become more familiar with the process. Two CICs noted that communities tend to be less concerned about the stigma for sites using the SA approach, while another CIC noted that some communities still consider the SA approach to be associated with the Superfund stigma.<sup>22</sup>

More detailed responses to specific sub-questions are provided below.

#### **2a) What is the initial reaction of community members to NPL listing compared to EPA’s decision to use the SAA?**

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<sup>22</sup> Note that as part of interviews with EPA and community respondents were asked about the importance of the public comment process on NPL listings as a venue for community involvement. Both EPA and community respondents indicated that generally the comment process is of limited importance to communities, and more frequent and direct personal contact with EPA and PRP representatives is critical.



While respondents emphasized that responses vary across communities and individuals within the communities, they provided the following insights:

- Two CICs noted that some community members are initially concerned that sites using the SA approach are not given the same “priority” and resources as NPL sites. Two other CICs noted that typically community members are generally not concerned about NPL or SA approaches, but local community and political leaders are sometimes interested in avoiding the NPL, due to concerns about property values, tax revenues, and development opportunities. One RPM reiterated that communities often focus on property values and relocation, and noted that sometimes residents have conflicting concerns, with some concerned that EPA will “take” their properties, while others want EPA to purchase their properties and relocate them.
- Two RPMs also noted that “most” people at the sites they are familiar with “do not know the difference” between NPL and SA approach sites; both are “Superfund.” An interview with a community leader at the Jacksonville Ash sites confirmed this viewpoint.
- CICs noted that a key role for EPA is to explain the process to PRPs, and they stressed that the community involvement process is identical for SA approach and NPL sites. They explained that a key part of their function at all sites is working with communities to understand and make use of the process.
- Community representatives and PRPs also noted that reaction to an SAA designation can differ within a community, with community and business leaders favor the SA approach designation, because they are often worried about long-term development, property values, and stigma. In contrast, residents in or near contaminated areas worry more about the pace and extent of cleanup, and are concerned that the approach chosen will ensure the most effective remediation. All respondents said that as the remediation process progresses, community members tend to become more informed confident about the process.

Respondents also considered the following specific process-based questions:

***Do community groups more typically ask for NPL listing or prefer the SA approach?*** Respondents reiterated that reaction varies across and within communities. As noted above, community residents tend to vary in preference while politicians, PRPs, and land developers tend to prefer the SA approach primarily due to a stated perception that the SA approach preserves an increased potential for redevelopment. Ultimately, however, one RPM noted that because “Superfund” shows up on documents in both types of sites, perceptions about sites are similar.



2b) Ultimately, what do available data reveal about the satisfaction of community members with the SA process and structure compared to the NPL process and structure?

To address this question, IEC collected information from interviews, and conducted data collection and analyses exercises to explore whether available information could provide additional insights.

In general, interview responses to this question stressed that a range of reactions among communities emerges as sites are examined, and noted that the actions and role of the PRP are critical.

CICs and community representatives noted that it is difficult to satisfy everyone, but generally feel that people are more satisfied with both NPL and SA approach sites as they learn about the process. For example, one CIC noted that the Escambia site is producing “satisfied customers.” The CIC explained that some community members were initially concerned about the SA approach, but most are now satisfied with the approach. Another RPM noted that he has not come across any sense of dissatisfaction from communities on sites using the SA approach, and attributed this in part to the emphasis that Region 4 places on identical community involvement processes for NPL and SA approach sites.

When RPMs noted community dissatisfaction, it typically involved site features unrelated to NPL or SA approach status. For example, some residents are unhappy about the rate of progress at the Jacksonville Ash sites, but this is primarily a function of residential contamination, which requires extensive coordination (e.g., to access and test each affected property). A community representative from Jacksonville also noted the slow pace of remediation, but stressed that EPA’s presence was important in a contentious setting.

***Does community satisfaction vary throughout the process or is it consistent?***

CICs indicated that community support tends to increase over time at all sites as EPA builds trust and credibility. For example, Anniston’s relationship with EPA and PRP has improved over time and the fact that it was not listed on the NPL does not currently appear to be a point of discussion for community members.

Community representative responses were generally consistent with CICs, with fewer questions and complaints as progress on the site becomes evident.

***Does community involvement tend to be different at sites using the SA approach than at NPL sites?***

All four CICs explained that they use the same community involvement guidance and strategy for SA approach and NPL sites. As a result, they believe that opportunities for involvement are comparable. Different sites/communities require and request varying levels of community involvement. EPA staff noted that resident concerns appear to be similar across all sites – ensuring the elimination of residential contamination and exposure, ensuring the health of community members and their children, and then a

secondary concern about development and property value. One CIC noted that community involvement appears to be more muted at sites where the PRP is still a local employer and concerns about continued employment may exist.

RPMs noted that Community Involvement should be equal regardless of the approach because EPA does the same mailings and announcements for both approaches, with the exception of the Federal Register comment period for the NPL listing that is not done for sites using the SA approach. One RPM noted that in his experience, only PRPs typically submit comments, and therefore the Federal Register comment period does not reflect a significant difference in community involvement. Other RPMs and CICs also emphasized that the outreach process is identical for both types of sites.

Community representatives in Anniston and Jacksonville stated that their outreach and coordination work was generally the same for both NPL and SA approach sites in those communities, though they noted that residential contamination of soil presented a specific challenge. One community representative noted that the PRPs had a strong influence. The NPL PRP (the U.S. Army) and one of the Anniston PRPs were very proactive and cooperative, but another PRP had created bad feeling in the community by refusing to involve residents. The representative was clear that EPA's role was the same across all instances.

**Environmental Justice Analysis: are SA approach sites located in different demographic areas than NPL sites?**

To consider the potential impact of demographics, IEC interviewed EPA staff and reviewed demographic data for SA approach and NPL sites to examine whether any differences exist in the approaches used at sites in disadvantaged communities. CICs noted the following Environmental Justice communities: Anniston, Picayune, Jacksonville Ash and Kerr McGee in Jacksonville, and IMC Spartanburg, Cabot Koppers may or may not be an EJ community, Coronet Industries has a portion that is disadvantaged, but the rest is not.

All four CICs explained that EPA identifies Environmental Justice communities so that staff can be aware and adjust their approach, if necessary, to effectively communicate with communities that often have difficult working relationships with government officials. While EPA often faces additional communication and coordination issues in EJ communities, the overall process for community involvement is the same. CICs reiterated that their goal is to meet community needs regardless of the site status.

- One CIC explained that for a couple of sites (both SA approach and NPL) it was necessary to develop relationships with non-governmental community organizations to ensure that community members were informed about the remediation process by trusted sources.

- One CIC indicated that EJ communities often use more TAG and TAP grants, at both NPL and SA approach sites. The CIC explained that non-EJ sites seem to leverage resources more easily while EJ sites are just learning about leveraging and sustainability.
  - The CIC also noted that EPA often has to go out and seek leaders in EJ communities, while other communities may already have associations. However, that is not always the case. For example, Jacksonville was a very organized EJ community with existing associations.
- One CIC also noted that EJ communities are an emerging Agency priority and they are responding to the increased focus for SA approach and NPL sites. For example, Community Involvement Director Freda Lockhart met with the NAACP on July 7, 2010 because the NAACP would like to have increased involvement and more of a voice during disasters than was available in recent administrations.
- An interview with a Jacksonville community representative confirmed that the CIC is considered a critical liaison in the remediation process at that site, which is in an EJ community. The representative further noted that the relationship between EPA, the community, and the PRP in Jacksonville has required a significant effort to overcome initial community distrust and a poor relationship with the City of Jacksonville (the PRP).

In addition to interview responses, IEC examined whether any pattern exists in the proximity of NPL and SA approach sites to potential EJ communities with high concentrations of residents in poverty or in minority groups. Such a pattern would not by itself indicate differences in site approaches. However, a pattern in the location of facilities relative to EJ populations might suggest the need for EPA to further examine community input from these sites to ensure that disadvantaged populations near sites have effective opportunities to participate in the remediation process.

This screening analysis does not specifically identify “EJ communities,” in that it does not identify communities whose minority or low-income populations are significantly higher than county or state averages. Instead, we simply identify the proportion of minority and low income residents within one and three miles of each site, and compare average populations at NPL and SA approach sites. The purpose is to determine whether populations around sites using the SA approach are significantly different than those around NPL sites. Exhibit 3-2 summarizes each of these measures.

The averages for each measure reveal that the populations surrounding SA approach and NPL sites are generally comparable. While sites using the SA approach appear to have slightly higher minority and low-income populations, a t-test performed on each measure reveals no significance.<sup>23</sup>

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<sup>23</sup> A t-test assesses whether the means of two groups are statistically different from each other by comparing the likelihood that these means came from differing sets of observations drawn from the same sample. A t-test that yields statistical

EXHIBIT 3-2: SUMMARY OF DEMOGRAPHICS AT PAIRED SA APPROACH AND NPL SITES

SITE	PERCENT OF MINORITY POPULATION		PERCENT OF POPULATION BELOW POVERTY LINE	
	WITHIN ONE MILE	WITHIN THREE MILES	WITHIN ONE MILE	WITHIN THREE MILES
<b>SA Approach Sites</b>				
Admiral Home Appliances	52.4	48.2	23.1	21.3
Ecusta Mill	14.2	7.1	8.0	8.2
Gurley Pesticide Burial	68.6	45.9	32.1	23.6
ITT-Thompson Industries, Inc.	56.3	60.9	35.5	30.7
Lyman Dyeing and Finishing	16.6	26.1	8.9	11.9
Nocatee Hull Creosote	45.1	42.3	24.0	27.4
Sanford Gasification Plant	58.2	48.2	27.1	18.3
Sixty-One Industrial Park	73.9	88.8	40.4	41.4
Solitron Devices Inc.	17.9	18.8	10.1	9.9
Weyerhaeuser Co. Plymouth Wood Treating Plant	13.3	16.4	10.0	10.4
<b>Average SA Approach Site Values</b>	<b>41.7</b>	<b>40.3</b>	<b>21.9</b>	<b>20.3</b>
<i>Brown's Dump*</i>	<i>98.0</i>	<i>86.1</i>	<i>28.1</i>	<i>29.1</i>
<i>Jacksonville Ash Site*</i>	<i>94.9</i>	<i>80.2</i>	<i>39.0</i>	<i>31.1</i>
<b>NPL Sites</b>				
Agrico Chemical Co.	63.3	46.4	32.3	22.6
Cabot/Koppers	39.0	39.2	23.2	30.0
Diamond Shamrock Corp. Landfill	18.6	33.9	16.3	19.9
Harris Corp. (Palm Bay Plant)	22.2	28.7	18.3	16.1
Martin-Marietta Sodyeco Inc. **	26.1	18.3	11.2	8.4
Olin Corp. (McIntosh Plant)	83.8	80.9	24.4	23.6
Shuron Inc.	47.5	43.9	21.2	18.3
Stauffer Chemical Co. (Cold Creek Plant)	25.1	23.7	13.1	12.6
<b>Average NPL Site Values</b>	<b>40.7</b>	<b>39.4</b>	<b>20.0</b>	<b>18.9</b>
<i>Hipps Road Landfill*</i>	<i>28.3</i>	<i>34.1</i>	<i>7.2</i>	<i>10.1</i>
<b>Average of All Sites</b>	<b>41.2</b>	<b>39.9</b>	<b>21.1</b>	<b>19.7</b>

\* These sites were not included in the averages shown in this exhibit. While they are well-known EJ sites and the discussion is relevant here, Brown's Dump and the Jacksonville Ash Site have site features unrelated to this analysis that prevent a reasonable comparison of these sites with other sites in Region 4 (e.g., a public sector PRP, extensive residential contamination in multiple locations). Similarly, We excluded the match for these sites, Hipps Road Landfill.

\*\* Martin Marietta Sodyeco was originally included in the matched pairs, but was later replaced by Leonard due to lack of cost data for actions in the 1980s. This analysis, however, was conducted prior to the replacement, so we include Martin Marietta Sodyeco as a match for Lyman Dyeing and Finishing.

significance indicates a high probability that the two sets of data did not come from the same sample; a t-test yielding no statistical significance indicates a very low probability that the data did not come from the same sample.

Note that we exclude from the analysis the combined Jacksonville Ash and Brown’s Dump sites, which have a nearby population that is over 90 percent minority and includes roughly 30 percent of residents under the poverty line. While these sites are in an identified EJ community, other site features – residential contamination and a public sector PRP – prevent a reliable match (Higgs Road, the closest match, is a private site with limited residential contamination). If the Jacksonville sites are included in the analysis, the apparent percentage of minority communities associated with sites using the SA approach increases considerably, but the t-test results still indicate a finding of no significance.

2c) To what extent do communities use technical assistance funding at SA approach and NPL sites? Is there a difference in funding availability and/or expenditures for SA approach or NPL sites?

To evaluate whether communities employ technical assistance funding similarly across SA approach and NPL sites, IEC collected data through interviews and from RODs and IFMS to determine whether there exists a difference in funding availability and/or expenditures for technical assistance and general community involvement. IEC also reviewed Community Involvement Plans, but these provided only a general overview of technical assistance.

Interview respondents noted that the SAA and NPL community assistance funding processes are designed to be equivalent. Thus, any differences in technical assistance should result from unique site situations (e.g., residential contamination), and not the SA or NPL approach. However, one CIC did note that technical assistance can be available sooner for NPL sites because the assistance is available upon site proposal for the NPL, while technical assistance at sites using the SA approach is not available until the SAA Agreement is signed.

Responses did reflect one area where additional clarity may be useful in applying the SA approach: additional requests for funding. One CIC noted that Technical Assistance Plans (TAPs) at sites using the SA approach tend to require more negotiation, and that unlike Technical Assistance Grant (TAG) provisions at NPL sites, the standard language for TAPs does not provide for additional requests.<sup>24</sup> However, another respondent noted that communities can request additional TAP funding, and EPA guidance appears to confirm this.<sup>25</sup> This difference in response suggests, however, that clearer information about funding provisions may be helpful.

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<sup>24</sup> According to EPA’s “Interim Guidance: Providing Communities with Opportunities for Independent Technical Assistance in Superfund Settlements,” a TAP provision within an SA agreement “obligates a potentially responsible party (PRP), at EPA’s request, to arrange at its own expense for a qualified community group to obtain the services of an independent technical advisor and to share information with others in the community. A TAG, meanwhile, provides funding for activities that help communities participate in decision-making at eligible Superfund sites.

<sup>25</sup> IEC reviewed EPA’s “Interim Guidance: Providing Communities with Opportunities for Independent Technical Assistance in Superfund Settlements” and found that TAP provisions shall state that “Settling Defendants will provide and arrange for any additional assistance needed if the selected community group demonstrates such a need as provided in the SOW.” U.S. EPA, “Interim Guidance: Providing Communities with Opportunities for Independent Technical Assistance in Superfund

Regardless of the approach, one CIC explained that PRPs that are still operating in communities have more incentive to provide more community outreach and funding.

To determine whether NPL and SA approach site communities differ in the funding they receive for technical assistance, we examined RODs and EPA IFMS data for information on funding and expenditures related to community assistance. Exhibit 3-3 provides a summary of this information.

**EXHIBIT 3-3: SUMMARY OF TECHNICAL ASSISTANCE FUNDING AND EXPENDITURES BY SITE**

SITE	SAA/ NPL SITE	TECHNICAL ASSISTANCE INFORMATION PROVIDED IN ROD	TECHNICAL ASSISTANCE AND COMMUNITY INVOLVEMENT EXPENDITURES PROVIDED IN IFMS DATA*
Admiral Home Appliances	SAA	Technical assistance grant offered, no applications received	<ul style="list-style-type: none"> <li>• CI (Community involvement 1999-2007): <b>\$32,631</b></li> <li>• Technical assistance 1993-2001: "Old TAG," <b>\$64,000.</b></li> </ul>
Ecusta Mill	SAA	None	• CI: 2008-2009: <b>\$5,650</b>
Gurley Pesticide Burial	SAA	None	• CI: 1998-2008: <b>\$12,586</b>
ITT-Thompson Industries, Inc.	SAA	None	• CI: 1999-2008: <b>\$14,001</b>
Lyman Dyeing and Finishing	SAA	None	• CI: 2001-2010: <b>\$24,256</b>
Nocatee Hull Creosote	SAA	None	• CI: 1999-2009: <b>\$8,831</b>
Sanford Gasification Plant	SAA	None	• CI: 1996-2009: <b>\$40,142</b>
Sixty-One Industrial Park	SAA	None	• CI: 2002-2008: <b>\$9,324</b>
Solitron Devices Inc.	SAA	None	• CI: 1997-2005: <b>\$9,415</b>
Weyerhaeuser Co. Plymouth Wood Treating Plant	SAA	ROD notes citizens were informed of existence of TAG, no data on award	<ul style="list-style-type: none"> <li>• CI: 1998-2009: <b>\$15,330</b></li> <li>• Technical assistance 2009: "Technical Assistance," <b>\$9,000</b></li> </ul>
<i>Brown's Dump</i>	SAA	None	• CI: 1999-2010: <b>\$60,181</b>
<i>Jacksonville Ash Site</i>	SAA	North Riverside Community Association chosen as TAP community group in January 2000	• CI: 2000-2010: <b>\$47,663</b>
Agrico Chemical Co.	NPL	TAG to Citizens Against Toxic Exposure in May 1993	None
Cabot/Koppers	NPL	None	• CI: 2001-2003: <b>\$12,082</b>
Diamond Shamrock Corp. Landfill	NPL	None	None
Harris Corp. (Palm Bay Plant)	NPL	None	• CI: 1996-2009: <b>\$2,962</b>
Leonard Chemical Co. Inc.	NPL	None	• CI: 2000-2003: <b>\$10,741</b>
Olin Corp. (McIntosh Plant)	NPL	None	<ul style="list-style-type: none"> <li>• CI: 1997-2007: <b>\$10,054</b></li> <li>• Technical assistance 1996-2008: "TAG," <b>\$135,000</b></li> <li>• Technical assistance 1993-2006: "Old TAG," <b>\$50,000</b></li> </ul>
Shuron Inc.	NPL	Existence of opportunity to apply for a TAG mentioned; no data on award	• CI: 1996-2006: <b>\$3,002</b>

Settlements," 2009. Available at: <http://www.epa.gov/compliance/resources/policies/cleanup/superfund/interim-tap-sf-settle-mem.pdf>

SITE	SAA/ NPL SITE	TECHNICAL ASSISTANCE INFORMATION PROVIDED IN ROD	TECHNICAL ASSISTANCE AND COMMUNITY INVOLVEMENT EXPENDITURES PROVIDED IN IFMS DATA*
Stauffer Chemical Co. (Cold Creek Plant)	NPL	None	<ul style="list-style-type: none"> <li>• CI: 1997-1999: <b>\$1,889</b></li> </ul>
<i>Hipps Road Landfill</i>	NPL	None	<ul style="list-style-type: none"> <li>• CI: 1996-2006: <b>\$3,208</b></li> <li>• Technical assistance 1993-1998: “Old TAG,” obligations but no expenditures.</li> </ul>

As Exhibit 3-3 illustrates, specific data on funds awarded to communities in the RODs and IFMS data are sparse. Of the 21 sites in our pairings, only seven had data on specific technical assistance expenditures either in their ROD, the IFMS data, or both. General “community involvement” expenditures provide an indication of community involvement, but likely include costs that are not distributed directly to communities. Furthermore, no actions with the “community involvement” code appear in the IFMS data for years prior to 1996. We are therefore unable to fully examine differences between funding for technical assistance and other activities between SA approach and NPL sites.

The available data do provide several insights, however. First, of the five sites with ROD data on technical assistance, only two note that grants were distributed; in one case, the ROD (for Admiral Home Appliances) notes that EPA received no applications for an available grant. Thus, the limited ROD data suggest that communities do not consistently request or use technical assistance funding at neither SA approach nor NPL sites.

We also attempted to examine the data on community involvement expenditures in the context of the environmental justice locations analysis illustrated in Exhibit 3-2. We find that when Brown’s Dump, Jacksonville Ash Site, and Hipps Road Landfill are excluded from the analysis due to their high percentages of nearby minority populations or nearby populations below the poverty line, there is very little correlation between a site’s community involvement expenditures and the percentage of its population within one or three miles that is either below the poverty line or is made up of minorities. However, while not statistically significant, sites with high percentages of nearby minority populations or nearby populations below the poverty line have higher expenditures on community involvement.

Note that this screening assessment is limited to readily available summary data, and is limited in its conclusions. However, EPA has conducted a separate and more detailed internal analysis using more complete information on TAGs and a review of specific PRP commitments on TAPs. This analysis also concludes that the percentage of communities receiving grants at both SA approach and NPL sites is similar (roughly 10 to 20 percent) and that the median grant amount for both types of site is roughly \$50,000. While the more detailed analysis is also preliminary and internal, it’s results generally confirm the



finding that community involvement expenditures do not differ significantly between SA approach and NPL sites.<sup>26</sup>

## **EVALUATION PURPOSE #2: ASSESS THE EFFECTIVENESS OF THE SA APPROACH IN ACHIEVING THE GOALS OF THE SUPERFUND PROGRAM**

The Superfund program aims to protect human health and the environment as well as ensure long-term protectiveness of the remedies selected in the remediation process. If the SA approach is equally effective as the NPL at achieving this goal, then sites with SAA agreements should use remedies equivalent to those used at NPL sites. While both the NPL and SA approaches are protective of human health, this evaluation examines whether unrestricted use and redevelopment patterns appear to differ among NPL and SA approach sites. The following evaluation questions attempt to characterize effectiveness in this context:

- Evaluation Question #3 uses a screening level indicator analysis to explore whether a pattern of difference exists in remedies selected for sites using the SA approach as compared to their NPL counterparts. The indicators include
  - Examining whether remedies that remove all contamination and those that leave contamination in place differ at paired sites;
  - Examining whether sites using the SA approach appear to result in unrestricted use at the same frequency as NPL sites.
- Evaluation Question #4: Investigates whether the reuse/redevelopment potential for sites using the SA approach differs from that of counterpart NPL sites.

Taken together, the indicators examined in Evaluation Questions #3 and #4 consider the SA approach effectiveness across each of the near-term (remedy selection, Evaluation Question #3), the medium-term (potential for unrestricted use as a result of the remedy, Evaluation Question #3), and the long-term (future reuse and redevelopment, Evaluation Question #4). To address these questions, IEc examined CERCLIS data and Superfund records and ROD data on remedies selected, institutional controls, current site use, and projected future use. IEc also used interviews to gather perspectives on the differences in potential reuse or redevelopment at SA approach and NPL sites.

The effectiveness discussion here is screening-level and based on summary data. As such, only a clear pattern of differences across all three indicators would likely suggest a systematic difference in approach between SA approach and NPL sites.

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<sup>26</sup> Michael Northridge, internal memo to Nancy Browne, October 4, 2010.



### EVALUATION QUESTION #3: DOES A PATTERN OF DIFFERENCE EXIST IN THE SPECIFIC REMEDIES SELECTED FOR SITES USING THE SAA?

This evaluation question discusses the overall effectiveness of the SA approach in achieving the goals of the Superfund program by examining two indicators:

- Whether sites with SAA agreements employ remedies that differ from those at paired NPL sites in the extent to which contamination is removed;
- Whether remedies used at sites with SAA agreements result in unrestricted use with a frequency different from that of similar sites listed on the NPL.

To evaluate these differences, IEC examined summary information describing selected remedies in RODs and CERCLIS. Removal of contamination and unrestricted use designations are not, in isolation, indicators of “better” remediation. Rather, a strong pattern of differences among remedies and use designations at NPL and SA approach sites could indicate that the approaches are not equivalent.

3a) Do sites with SAA agreements use capping remedies, institutional controls, or other remedies that mitigate risk but do not remove all contamination more frequently or less frequently than similar sites listed on the NPL?

To determine whether remedies that do not remove all contamination are implemented with varying frequency between SA approach and NPL sites, IEC reviewed RODs and site summary data for paired sites. The ROD provides the public documentation of the remedy selected for site cleanup and provides a consistent source of information on site remedies. In addition, because the sites using the SA approach have not yet completed remedial actions, CERCLIS data on remedies for these sites may be incomplete, and the ROD presents the best description of the remedy that will be implemented at each site.

Site RODs contain information on remedies for addressing contamination. To interpret the data systematically across site pairings, we considered remedy information in two categories: soil remedies and groundwater remedies. Although specific remedies identified vary widely, we sorted information in the RODs into two screening-level categories as follows:

- Remedies that suggest that contamination remains in place, such as caps slurry walls natural attenuation, and
- Remedies that indicate contamination removal.

IEC’s initial comparison of the sites revealed that in five of 11 pairs, both sites have similar remedies or data are not complete.<sup>27</sup> In five of the six remaining sites, ROD data suggest that NPL sites appear to involve contaminant removal to a greater extent than remedies identified for the sites using the SA approach, though in some cases both sites note continued monitoring. Exhibit 3-4 summarizes the results of this analysis, and

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<sup>27</sup> Ecusta Mill had a significant time-critical removal action that did physically remove contamination, but that action is not described in the ROD and is not included here.

Appendix E provides more detailed summary information from the ROD that is used in Exhibit 3-4.

**EXHIBIT 3-4. INITIAL COMPARISON OF REMEDIES IDENTIFIED IN RODS FOR EACH PAIR OF SITES**

PAIR	SITE	SAA/NPL	TYPE OF REMEDY RELATED TO SOIL	TYPE OF REMEDY RELATED TO GROUNDWATER	SITE WITH REMEDY WITH GREATER FOCUS ON CONTAMINATION REMOVAL
A	Admiral Home Appliances	SAA	Contamination removal	Contamination left in place	Unclear - NPL
	Shuron Inc.	NPL	Unclear	Possible contamination left in place	
B	Gurley Pesticide Burial	SAA	Unclear	Contamination removal	SAA
	Agrico Chemical Co.	NPL	Contamination left in place	Contamination left in place	
C	Nocatee Hull Creosote	SAA	Contamination left in place	Contamination left in place	NPL
	Cabot/Koppers	NPL	Contamination removal	Contamination removal	
D	Sanford Gasification Plant	SAA	Contamination removal	Contamination left in place	NPL
	Cabot/Koppers	NPL	Contamination removal	Contamination removal	
E	Sixty-One Industrial Park	SAA	No information provided	Contamination left in place	Neither - both leave contamination in place
	Diamond Shamrock Corp. Landfill	NPL	No information provided	Contamination left in place	
F	Ecusta Mill	SAA	No information provided - no action necessary		Unclear
	Olin Corp. (McIntosh Plant)	NPL	Contamination left in place	Contamination left in place	
G	ITT-Thompson Industries, Inc.	SAA	Contamination removal	Contamination left in place	Unclear - NPL
	Harris Corp. (Palm Bay Plant)	NPL	No information provided	Contamination removal	
H	Solitron Devices Inc.	SAA	Contamination removal	Contamination removal	Neither - both remove contamination
	Harris Corp. (Palm Bay Plant)	NPL	No information provided	Contamination removal	
I	Lyman Dyeing and Finishing	SAA	Contamination left in place	Contamination left in place	NPL
	Leonard Chemical Co. Inc.	NPL	Contamination removal	Contamination left in place	
J	Weyerhaeuser Co. Plymouth Wood Treating Plant	SAA	Contamination left in place	Contamination left in place	Neither - both leave contamination in place
	Stauffer Chemical Co. (Cold Creek Plant)	NPL	Contamination left in place	Contamination left in place	
K	Brown's Dump	SAA	Contamination removal	Contamination left in place	Neither - both leave contamination in place
	Jacksonville Ash Site	SAA	Contamination removal	Contamination left in place	

PAIR	SITE	SAA/NPL	TYPE OF REMEDY RELATED TO SOIL	TYPE OF REMEDY RELATED TO GROUNDWATER	SITE WITH REMEDY WITH GREATER FOCUS ON CONTAMINATION REMOVAL
	Hipps Road Landfill	NPL	Contamination left in place	Contamination left in place	

As an additional step, IEC and EPA reviewed the screening methodology and site data to attempt to provide more insight into possible reasons for the difference in emphasis on removal of contamination. The review of the methodology concluded the following:

- While the screening approach and examination of remedies was appropriate, the actual data available are not complete enough to provide any conclusive comparative analysis of remedies. A complete analysis would require consideration of:
  - Timing of remedy selection and advances in the effectiveness of *in situ* treatment. Paired sites may reflect remedies selected at different times; newer *in situ* technologies may not have been available at some sites and may be superior to off-site treatment.
  - Contaminant concentrations. Without information about the concentration of contaminants the effectiveness of on-site and off-site remedies is difficult to compare.
  - Site features (e.g., hydrology or geology) that may limit selection of remedies.
- Finally, the review noted that the most appropriate point for comparison is after completion of remedial actions. Data available for sites with SAA agreements, in particular, are preliminary and may not reflect final remedies.

The review concluded that due to data limitations, IEC's initial screen did not provide a meaningful comparison of site remedies, though a more detailed comparative analysis of remedies may be useful. Also, the results of the remedy screening assessment do not, in isolation, suggest that NPL and SA approach sites differ in effectiveness. Given the limited conclusions that can be drawn from this screening assessment, it is important to consider whether the comparison of paired sites reveals differences in the unrestricted use and redevelopment of sites.<sup>28</sup>

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<sup>28</sup>. A detailed assessment of remedies (including target concentrations, extent of contamination, and other technical details) would be necessary to fully assess the differences in selected remedies, but is beyond the scope of this assessment. This screening analysis makes no distinction, for example, between natural attenuation of a small area with limited contamination and a large cap over extensive soil contamination.

3b) Do data suggest that SAA remedies are comparable to remedies used for similar sites listed on the NPL (e.g. Do sites using the SA approach involve greater or fewer remedies resulting in unrestricted use?)

IEc's assessment of the effectiveness of remedies selected at similar SA approach and NPL sites at meeting Superfund program goals also examines institutional controls implemented at sites.<sup>29</sup> Specifically, we identify two types of institutional controls:

- Short-term institutional controls, such as fencing or temporary relocation, which may be necessary during site remediation but do not indicate whether some contaminants will remain after cleanup is complete;
- Indefinite institutional controls, such as restrictive covenants and land/groundwater use restrictions, which provide some indication that the site may have restricted use for a period of time even after most or all active cleanup is complete. In some cases these institutional controls involve only use of groundwater and may not affect land use or redevelopment options if, for example, the site has access to other water supplies. In other cases, the use restrictions are not fully specified (e.g, "restrictive covenants").

By reviewing indefinite institutional controls at paired sites we can summarize whether remedies at sites using the SA approach may result in unrestricted use at a different frequency than remedies at similar NPL sites. Exhibit 3-5 summarizes all reuse data for the paired sites, including a summary of institutional controls data from RODs.

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<sup>29</sup> In addition to examining remedy data in RODs, we also examined Superfund site progress profiles to identify whether sites have achieved "human exposures under control" However, this measure is provided only for NPL sites. All NPL sites in our same except Cabot/Koppers, have achieved "Human Exposures Under Control."

EXHIBIT 3-5: SUMMARY OF REUSE AND/OR REDEVELOPMENT INFORMATION

PAIR	SITE	SAA/ NPL	CURRENTLY OPERATING?	POTENTIAL FUTURE USE	LONG-TERM INSTITUTIONAL CONTROLS
A	Admiral Home Appliances	SAA	Yes - Industrial use	No additional information provided	No: No institutional controls
	Shuron Inc.	NPL	No	Potential for commercial/light industrial future use	No: No institutional controls
B	Gurley Pesticide Burial	SAA	No	Potential for commercial/ industrial future use	Yes: Controls limiting future use of site and groundwater
	Agrico Chemical Co.	NPL	No	Zoned for industrial use/ potential recreational use	Yes: For OU #01, security fencing, access & deed restrictions; for OU #02, restrictions on access to new wells.
C	Nocatee Hull Creosote	SAA	No	Future use varies depending on area, each of residential, commercial, industrial allowed in one or more areas	Yes: Prohibition of residential use and extraction of soil or water
	Cabot/ Koppers	NPL	Yes - Industrial use	Commercial re-use	Yes: Restrictions on land use
D	Sanford Gasification Plant	SAA	No	Restricted industrial and commercial zoning	Possible: For OU #02, creation of Groundwater Use Advisory Zone; for OU #03, controls may include use of various zoning and/or land use restrictions and permit requirements
	Cabot/ Koppers	NPL	Yes - Industrial use	Commercial re-use	Yes: Restrictions on land use
E	Sixty-One Industrial Park	SAA	Yes	<b>CERCLIS Online Site Profile:</b> Potential for commercial/ light industrial future use <b>ROD:</b> Zoned for heavy industrial use only	Yes: Groundwater use restrictions, restrictive covenants
	Diamond Shamrock Corp. Landfill	NPL	No	Achieved site-wide ready for anticipated use in 2006	Yes: Fencing, deed restrictions/restrictive covenants to prevent drilling and usage of groundwater
F	Ecusta Mill	SAA	No	Planned mixed-use commercial/residential development for future use	No: No institutional controls
	Olin Corp. (McIntosh Plant)	NPL	Yes - Industrial use	No additional information provided	Yes: Restrictions on land and groundwater use
G	ITT-Thompson Industries, Inc.	SAA	No	<b>CERCLIS Online Site Profile:</b> Potential for commercial/ light industrial future use <b>ROD:</b> Possible restriction to light industrial or commercial use; if not possible, residential use assumed	Possible: Controls to ensure that future site use is appropriate given site conditions
	Harris Corp. (Palm Bay Plant)	NPL	Yes - Industrial use	Achieved site-wide ready for anticipated use in 2009	No: No institutional controls
H	Solitron Devices Inc.	SAA	Yes - Commercial/light industrial use	Zoned for commercial/industrial use, "no pull towards residential use of the site"	No: No institutional controls
	Harris Corp. (Palm Bay Plant)	NPL	Yes - Industrial use	Achieved site-wide ready for anticipated use in 2009	No: No institutional controls

PAIR	SITE	SAA/ NPL	CURRENTLY OPERATING?	POTENTIAL FUTURE USE	LONG-TERM INSTITUTIONAL CONTROLS
I	Lyman Dyeing and Finishing	SAA	No	<b>CERCLIS Online Site Profile:</b> Potential for commercial/ light industrial future use <b>ROD:</b> Site is part of larger industrial complex, currently vacant land, expected to remain undeveloped	Yes: Restrictive covenants implemented as a result of previous removal action
	Leonard Chemical Co. Inc.	NPL	No	<b>CERCLIS Online Site Profile:</b> Potential for industrial/ residential reuse <b>ROD:</b> Zoned as a rural development district, which prohibits industrial/ commercial use, future residential development will likely be limited	No: Temporary restrictions on well installations and residential development, fencing
J	Weyerhaeuser Co. Plymouth Wood Treating Plant	SAA	Yes - Industrial use	No additional information provided	Yes: For OU #01, restrictions on groundwater use; for OU #02, Fish Consumption Advisory; for OU #03, restrictions on land and groundwater use; for OU #04, efforts to limit fish consumption, maintenance of fencing and sand cap, deed restrictions limiting land development
	Stauffer Chemical Co. (Cold Creek Plant)	NPL	Yes - Industrial use	No additional information provided	No additional information provided
K	Brown's Dump	SAA	No	Future residential, commercial, or industrial use possible, site is in residential area	No: Temporary relocation of eligible residents, other controls to limit exposure
	Jacksonville Ash Site	SAA	No	Current residential, recreational, and commercial use, future light industrial/commercial use to buffer residential area.	No: Temporary relocation of eligible residents, other controls to limit exposure, such as fencing
	Hipps Road Landfill	NPL	No information provided	No information provided	Possible: May include fencing, prohibition of well drilling, land use restrictions, grouting private wells, public/PRP land acquisition, or other

Exhibit 3-5 illustrates that seven of the 21 sites have no institutional controls. This includes three SA approach sites and four NPL sites, although one SA approach site is Ecusta Mill, which has only a no-action ROD completed. An additional six sites have ROD data that suggest only temporary institutional controls, or it is not clear which institutional controls will be implemented, if any. Exhibit 3-6 summarizes differences across site pairs.

EXHIBIT 3-6: SITES WITH POTENTIAL FOR UNRESTRICTED USE

PAIR	SITE(S) WITHOUT LONG-TERM INSTITUTIONAL CONTROLS	SITE IN PAIRING LIKELY TO RESULT IN UNRESTRICTED USE
A	<ul style="list-style-type: none"> <li>Admiral Home Appliances (SA approach site): No institutional controls</li> <li>Shuron Inc. (NPL site): No institutional controls</li> </ul>	Both
B	<ul style="list-style-type: none"> <li>Gurley Pesticide Burial (SA approach site): Long-term institutional controls</li> <li>Agrico Chemical Co. (NPL site): Long-term institutional controls</li> </ul>	Neither
C	<ul style="list-style-type: none"> <li>Nocatee Hull Creosote (SA approach site): Long-term institutional controls</li> <li>Cabot/Koppers (NPL site): Long-term institutional controls</li> </ul>	Neither
D	<ul style="list-style-type: none"> <li>Sanford Gasification Plant (SA approach site): May or may not include long-term institutional controls</li> <li>Cabot/Koppers (NPL site): Long-term institutional controls</li> </ul>	SA approach site (Only if Sanford Gasification Plant does not implement long-term institutional controls)
E	<ul style="list-style-type: none"> <li>Sixty-One Industrial Park (SA approach site): Long-term institutional controls</li> <li>Diamond Shamrock Corp. Landfill (NPL site): Long-term institutional controls</li> </ul>	Neither
F	<ul style="list-style-type: none"> <li>Ecusta Mill (SA approach site): No institutional controls (no action ROD)</li> <li>Olin Corp. (McIntosh Plant) (NPL site): Long-term institutional controls</li> </ul>	SA approach site (only if other RODs do not implement institutional controls)
G	<ul style="list-style-type: none"> <li>ITT-Thompson Industries Inc. (SA approach site): May or may not include long-term institutional controls</li> <li>Harris Corp. (Palm Bay Plant) (NPL site): No institutional controls</li> </ul>	Both (NPL site only if ITT-Thompson Industries Inc. implements long-term institutional controls)
H	<ul style="list-style-type: none"> <li>Solitron Devices Inc. (SA approach site): No institutional controls</li> <li>Harris Corp. (Palm Bay Plant) (NPL site): No institutional controls</li> </ul>	Both
I	<ul style="list-style-type: none"> <li>Lyman Dyeing and Finishing (SA approach site): Long-term institutional controls</li> <li>Leonard Chemical Co. Inc. (NPL site): Temporary institutional controls only</li> </ul>	NPL site
J	<ul style="list-style-type: none"> <li>Weyerhaeuser Co. Plymouth Wood Treating Plant (SA approach site): Long-term institutional controls</li> <li>Stauffer Chemical Co. (Cold Creek Plant) (NPL site): No institutional controls</li> </ul>	NPL site
K	<ul style="list-style-type: none"> <li>Brown's Dump (SA approach site): Temporary institutional controls only</li> <li>Jacksonville Ash Site (SA approach site): Temporary institutional controls only</li> <li>Hipps Road Landfill (NPL site): May or may not include long-term institutional controls</li> </ul>	Both (possibly SA approach site only if Hipps Road Landfill implements long-term institutional controls)

As Exhibit 3-6 illustrates, five site pairs have similar options for future use, including three (B, C, and E) in which both sites have long-term institutional controls and two (A and H) where both sites have no long-term institutional controls.

Of the remaining six site pairs, results are evenly distributed. In two pairs (I and J) only the NPL site has no long-term institutional controls. In two others (D and F), only the SA approach site has no long term institutional controls. At the final two sites, (G and K) it

is possible that neither site has long-term institutional controls, though it is also possible that one NPL and one SA approach site will implement long-term institutional controls. These data suggest that sites using the SA approach do not differ from NPL sites in use of long-term institutional controls.

Overall, data on the effectiveness of remedies at SA approach and NPL sites are mixed; NPL sites in the sample appear to employ more contaminant removal technologies than paired sites using the SA approach, but long-term restrictions on use indicated by institutional controls appear to be similar across sites. We emphasize that both the remedy and institutional control analyses are screening-level efforts using available summary data. To fully examine the effectiveness of remedies it would be necessary to collect specific data such as target contaminant levels, project timeframes, and specific institutional controls.

#### **EVALUATION QUESTION #4: ARE SITES WITH SAA AGREEMENTS REUSED OR REDEVELOPED MORE QUICKLY THAN SITES LISTED ON THE NPL? IF SO, DOES THE EVIDENCE SUGGEST WHY?**

As stated in the introduction, this evaluation question investigates whether sites using the SA approach and NPL sites differ in their potential for reuse and/or redevelopment. We examine this question using interview responses and reuse and redevelopment data contained in RODs and in the NPL site summary section of EPA Region 4's website.<sup>30</sup> This section first describes the kinds of qualitative information available via these data sources, and then summarizes site reuse and/or redevelopment data for each site.

Information on reuse and/or redevelopment is not available within all site RODs: ten sites using the SA approach have RODs with information on potential future use or redevelopment, but no NPL RODs include this information. We therefore supplemented ROD data with data from online site summary profiles. Ultimately, one SA approach and one NPL site have no data available from either source. The Higgs Road Landfill NPL site has no redevelopment information available from either source. Exhibit 3-5 above summarizes the available reuse and/or redevelopment information provided by these two data sources.

We considered two metrics for evaluating the potential for reuse.<sup>31</sup> One approach is to examine whether residential use is a potential option. Of the paired sites, four sites using the SA approach identify residential use as a current or future option; in contrast, no NPL sites identify residential use as a future use. However, as Exhibit 3-5 shows, two of the sites using the SA approach anticipating residential future use, Ecusta Mill and Nocatee

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<sup>30</sup> See the listing of Region 4 Superfund sites at <http://www.epa.gov/region4/waste/npl/index.htm>. Information on reuse/redevelopment for each specific site is available by clicking on the name of any site and looking at the "reuse/redevelopment" line of the "Site Summary Profile" display.

<sup>31</sup> Future recreational use was also considered as a benchmark. However, only one site, Agrico Chemical Co., may have exclusively recreational future use, and our research indicates that the site is currently vacant and fenced to prevent exposure to the contamination under a capping system.



Hull Creosote, are paired with NPL sites that are currently operating as industrial facilities, and therefore no change in use is considered. The other two sites with future residential use are Brown's Dump and the Jacksonville Ash Site, which are unique in that they involve residential contamination and must remediate for residential use. We therefore conclude that no clear pattern of future residential use options differentiates the SA approach sites from the NPL sites in our sample.

A second method for comparing site reuse/redevelopment potential is to compare the breadth of potential future uses and residual contamination across pairs. As Exhibit 3-5 shows, three of 11 site pairs (A, H, J) feature sites that have virtually no difference in their current and potential future uses, and another (B) differs only to the extent that the NPL site, Agrico Chemical Co., has a potential recreational use in addition to potential industrial use of the premises. By examining whether contamination was removed at the site, as described in Exhibit 3-4, we can further conclude that the sites in pairs E and I do not widely differ in terms of future potential uses because the remedies both will continue to have on-site contamination. For six of 11 total site pairs, then, we do not identify any substantial difference in future use potential between paired sites.

Of the remaining pairs, four (C, D, F, and G) have NPL sites with remedies that emphasize contaminant removal, while the remedies at the counterpart SA approach sites do not. While the NPL sites in these four pairs may theoretically have broader reuse potential, in reality all of these sites are currently in active industrial use and unlikely to change. Finally, the sites in pair K are located in a residential area and will have to undergo a cleanup appropriate to residential standards, but we have no data on their NPL pair, the Hipps Road Landfill.

When we consider future use potential as a function of whether all contamination was removed from the site, we find that in over a third of our pairings, NPL sites may have a broader potential for future use due to their remedies removing all contamination more often than their SA approach counterparts.<sup>32</sup> This is consistent with our findings under Evaluation Question #3. However, because all of those sites are active industrial facilities this distinction is unlikely to result in any practical difference in redevelopment potential.

We conclude from ROD and site summary data that the differences between NPL and SA approach sites are limited, with a weak indication that NPL sites may have slightly higher potential for reuse due to their remedy emphasis on contaminant removal. Interview data, however, provide a different perspective.

Generally, interview respondents noted that while no sites using the SA approach have achieved reuse or redevelopment at this stage, it is generally believed that sites using the SA approach may be easier to redevelop because they do not suffer from stigma

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<sup>32</sup> However, there are only two NPL sites, Cabot/Koppers and Harris Corp. (Palm Bay Plant) across these four pairings. Both of these sites are continuing to operate in an industrial capacity while their remedies remove all contamination from the site. The pattern we identify is evident solely because of the future use potential and remedies of two of 10 NPL sites within our pairs.

associated with the NPL. For example, the soil work is complete at Gurley Pesticide and a prospective purchaser agreement has been signed to allow owners to use the property and protect themselves since they are not the PRP. An RPM noted that this third-party arrangement may be more attractive if the site is not an NPL site. Finally, one RPM explained that redevelopment does not come into play for remedy selection, but EPA tries to keep any known potential uses in mind regardless of SA or NPL approach.

Overall, our comparison of the potential effectiveness of remedies at SA approach and NPL sites suggests that while remedies selected at sample sites differ to a degree, the overall projected pattern of use and development on the sample sites is fairly similar. Overall, we do not see clear patterns of difference between SA approach and NPL sites across all indicators, suggesting that the two approaches are roughly similar in their effectiveness as defined here.

### **EVALUATION PURPOSE #3: ASSESS THE EFFICIENCY OF THE SA APPROACH IN TERMS OF POTENTIAL TIME AND COST SAVINGS**

This section examines the relative efficiency of the SA approach in two ways:

- The potential for the SA approach to reduce the time necessary for sites to progress through certain steps of the remediation process; and
- The potential for the SA approach to reduce expenditures incurred by EPA (for example, sites using the SA approach may reduce costs associated with NPL listing process).

### **EVALUATION QUESTION #5: WHAT ARE THE COST AND TIME DIFFERENCES OF THE SA AND NPL APPROACHES FOR BOTH EPA AND PRPS**

IEc analyzed CERCLIS and IFMS data to review the time and costs associated with action completed through the ROD:

- To examine the time differences between paired sites, IEc calculated average times reported to complete key pre-ROD actions and compared them across pairings. IEc also examined the overall average times to complete actions across all paired sites.
- To examine the cost differences between paired sites, IEc calculated expenditures, adjusted for inflation, through the ROD for each site and compared these expenditures across pairings.
- IEc also conducted interviews with EPA staff to support and expand upon results from analyzing CERCLIS and IFMS data to answer Evaluation Question 5.

In the initial methodology, IEc outlined an assessment of costs and time to complete three specific stages of site operation, including initial site discovery and assessment, remedial investigation, and remedial design and action. However, because the sites using the SA approach we examine have not yet completed their remedial action stages (i.e., have not

achieved construction complete), our analysis focuses primarily on the time and costs associated with the planning stages (site discovery through ROD publication) for paired sites.

Because this evaluation relies on available data in CERCLIS and IFMS, the evaluation of these two aspects of SA approach site operations is limited to data and metrics that are collected by EPA. Therefore, the cost and time assessments focus on EPA resources and records, and do not address cost and time savings that may accrue to PRPs.

#### Analysis of Time Differences

The analysis of time differences between NPL and SA approach sites examines the time required to complete several specific activities that occur between site discovery and ROD publication. In addition, at sites that have complete remedial design (RD) and remedial action (RA) activities, we examine the time required to complete related actions.

We note that the most obvious measure of time – from “beginning of site activity” to ROD publication, remains elusive due to historical site activity patterns and CERCLIS data limitations. First, the date of site discovery is not a meaningful estimate for the beginning of site remediation activities, because many SA approach and NPL sites were discovered in the late 1970s and then experienced long periods of “dormancy” before any action was taken. IEC examined alternative actions, such as publication of notice letters that could reasonably indicate the start of site assessment activities, but CERCLIS fields did not provide consistent data for NPL and SA approach sites, and tracking of site assessment activities has changed over time.<sup>33</sup>

In the absence of a reliable “start date” for actions at sites, IEC’s analysis is limited to examining the time required to complete specific pipeline actions. Exhibit 3-7 notes key actions in the early part of site remediation, and identifies the actions that we examined. Actions examined include:

- Remedial Investigation/Feasibility Study (RI/FS) Negotiations: these negotiations frame the scope and method for assessing site contamination and developing remedy options to support the ROD. RI/FS negotiations may address a single OU or multiple OUs.
- Remedial Investigation/Feasibility Study: the RI/FS includes a detailed assessment of site contamination and development of technology options for addressing the contamination.
- Consent Decrees: consent decrees are negotiated agreements that govern the implementation of remedial actions and also site management activities such as

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<sup>33</sup> Based on input from Region 4, IEC also examined using the AOC start date or the date of the Notice Letter(s) Issued as a starting point. However, the AOC data in CERCLIS includes only the end publication date, and the Notice Letter field is not filled in for sites with SAA agreements.

cost recovery. Consent decrees can address site-wide activities, OU-related activities, or specific actions.<sup>34</sup>

- Remedial Design/Remedial Action (RD/RA) Negotiations: these negotiations develop implementation agreements for specific remediation actions as outlined in the RODs. RD/RA negotiations may address a single OU or multiple OUs.
- Remedial Design/Remedial Actions: these actions implement the remediation process, and are typically performed at the OU level. In some cases multiple RAs can happen at one OU.

To evaluate the potential difference in timing of the actions identified above, IEC reviewed the amount of time to complete actions at each site and then compared the performance of paired sites, as well as the mean and median time estimates for all sites in the sample (Exhibit 3-7).

**EXHIBIT 3-7: AVERAGE NUMBER OF DAYS TO COMPLETE ACTIONS AT PAIRED SITES**

	CONSENT DECREE <sup>A</sup>	RI/FS NEGOTIATION <sup>A</sup>	RI/FS <sup>A</sup>	RD/RA NEGOTIATION <sup>A</sup>	RD <sup>A</sup>	RA <sup>A</sup>
Total Pairs <sup>B</sup>	2	8	9	6	3	1
Faster SAA Pairs	<u>2</u>	<u>5</u>	3	3	1	<u>1</u>
Faster NPL Pairs	0	3	<u>6</u>	3	<u>2</u>	0
Average SAA Days (mean) <sup>C</sup>	<u>129</u>	<u>285</u>	2,432	<u>198</u>	<u>720</u>	<u>463</u>
Average NPL Days (mean) <sup>D</sup>	443	341	<u>1,796</u>	539	841	827
Average SAA Days (median)	<u>133</u>	217	2,194	211	762	<u>463</u>
Average NPL days (median)	175	<u>175</u>	<u>1,509</u>	<u>207</u>	<u>719</u>	992

A. All of these actions may occur at sitewide or OU level. Results in this table are averaged across OUs where appropriate to calculate site-wide average estimates.

B. This row reflects the number of pairs that had start and end dates for both the SA approach and NPL paired sites.

C. Average SAA days reflects the average number of days to complete actions across all SA approach sites that reported start and end dates for actions (sum of actions divided by the number of actions). Note: data in this column are not limited to sites that also had a paired site with data.

D. Average NPL days reflects the average number of days to complete actions across all NPL sites that reported start and end dates for actions (sum of actions divided by the number of actions). Note: data in this column are not limited to sites that also had a paired site with data.

As Exhibit 3-7 illustrates, timing of different actions varies significantly across sites, and the small number of sites examined limits the strength of conclusions that can be drawn. In general, however, it appears that sites using the SA approach have a mixed performance compared with NPL sites for the five actions examined. NPL sites clearly

<sup>34</sup> We could not examine Administrative Orders on Consent using CERCLIS because the database fields include only an end-date for this action.

appear to complete the RI/FS stage faster than SA approach sites in the sample, with six of nine pairs having better NPL performance, and both median and mean RI/FS values favoring the NPL sites. See Appendix F for a detailed summary of site specific data and the assumptions and calculations used to derive site-wide average values for each action.

In contrast, sites using the SA approach appear to be associated with shorter consent decree negotiations, and appear to be comparable with NPL sites in completing RI/FS and RD/RA negotiations. For both of these actions, the difference between mean and median illustrates the variability of the underlying data. Among the very small number of RDs and RAs completed at sites using the SA approach, these sites appear to complete actions more quickly, but it is not possible to draw any clear conclusion from the limited data.

The results of this analysis suggest that it would be useful to revisit SA approach site performance when more sites have completed remedial actions. Preliminary indications, consistent with input from interviews, are that the process for both types of sites is similar, and large differences in timing more likely reflect specific site conditions than SAA or NPL status. Results also loosely support interview respondent input that the SA approach may encourage more rapid negotiations, though results are not conclusive. Finally, it is also possible that sites using the SA approach could involve *fewer* negotiations, which could save time and resources. A more detailed assessment of the course of negotiations at specific sites would be necessary to provide insights on this potential dynamic.

In addition to the actions above, IEC examined the average time between NPL proposal and NPL listing. The listing process ranges from 189 to 1,316 days at the NPL sites we examined. While this information is only available for NPL sites, it suggests that overall site progress may be speeded significantly if the listing process requires significant effort. However, because it wasn't possible to examine "overall site progress" in a meaningful way, it is not possible to measure the impact of avoiding the NPL listing process.

#### Analysis of Cost Differences

To compare SA and NPL approach costs, we use a combination of CERCLIS and IFMS data. Because the sites using the SA approach we examine have not yet completed remedial actions, our analysis attempts to exclude all costs that would normally be incurred after the ROD for a given OU (e.g., remedial design or remedial action costs). A detailed walkthrough of the steps taken to obtain accurate cost estimates for both SA approach and NPL sites is in Chapter 2.

After obtaining cost estimates for each set of paired sites using the methodology described in Chapter 2, we adjusted for site size first by dividing the total estimated costs for each site by the number of OUs at the site, and then by dividing the total estimated costs by the number of OUs with completed RODs at the site. These supplementary analyses are meant to identify any spurious correlation associated with the presence of consistently large NPL sites compared to their SA approach counterparts, or vice versa. In addition, by controlling only for the number of OUs with completed RODs at a site, we avoid "crediting" a site for an OU that has not yet been remediated. Exhibit 3-8 summarizes the

results of our cost analyses. Exhibit 3-9 graphs the cost estimates within each pairing, with SA approach sites and NPL sites represented by pink and yellow bars, respectively.

**EXHIBIT 3-8: SUMMARY OF COSTS BY SITE**

PAIR	SITE	SAA/NPL	TOTAL COST	NUMBER OF OUS	COST PER OU	NUMBER OF COMPLETED RODS	COST PER COMPLETED ROD
A	Admiral Home Appliances	SAA	\$661,603.65	1	\$661,603.65	1	\$661,603.65
	Shuron Inc.	NPL	\$456,641.79	1	\$456,641.79	1	\$456,641.79
B	Gurley Pesticide Burial	SAA	\$286,229.32	1	\$286,229.32	1	\$286,229.32
	Agrico Chemical Co.	NPL	\$553,903.75	2	\$276,951.88	2	\$276,951.88
C	Nocatee Hull Creosote	SAA	\$397,062.38	1	\$397,062.38	1	\$397,062.38
	Cabot/Koppers	NPL	\$1,397,190.34	2	\$698,595.17	1	\$1,397,190.34
D	Sanford Gasification Plant	SAA	\$1,334,824.20	3	\$444,491.40	3	\$444,491.40
	Cabot/Koppers	NPL	\$1,397,190.34	2	\$698,595.17	1	\$1,397,190.34
E	Sixty-One Industrial Park	SAA	\$637,023.84	1	\$637,023.84	1	\$637,023.84
	Diamond Shamrock Corp. Landfill	NPL	\$490,797.84	1	\$490,797.84	1	\$490,797.84
F	Ecusta Mill	SAA	\$357,312.04	2	\$178,656.02	1	\$357,312.04
	Olin Corp. (McIntosh Plant)	NPL	\$792,736.36	3	\$264,254.45	3	\$264,254.45
G	ITT-Thompson Industries, Inc.	SAA	\$489,028.24	1	\$489,028.24	1	\$489,028.24
	Harris Corp. (Palm Bay Plant)	NPL	\$796,474.09	2	\$398,237.04	2	\$398,237.04
H	Solitron Devices Inc.	SAA	\$456,625.27	1	\$456,625.27	1	\$456,625.27
	Harris Corp. (Palm Bay Plant)	NPL	\$796,474.09	2	\$398,237.04	2	\$398,237.04
I	Lyman Dyeing and Finishing	SAA	\$726,525.51	1	\$726,525.51	1	\$726,525.51
	Leonard Chemical Co. Inc.	NPL	\$728,324.82	2	\$364,162.41	1	\$728,324.82
J	Weyerhaeuser Co. Plymouth Wood Treating Plant <sup>1</sup>	SAA	\$3,579,074.37	4	\$894,768.59	4	\$894,768.59
	Stauffer Chemical Co. (Cold Creek Plant)	NPL	\$856,165.72	3	\$285,388.87	3	\$285,388.87
K <sup>2</sup>	Brown's Dump <sup>1</sup> & Jacksonville Ash Site	SAA	\$1,896,479.76	2	\$948,239.88	2	\$948,239.88
	Hipps Road Landfill <sup>3</sup>	NPL	\$1,842,293.28	1	\$1,842,293.28	1	\$1,842,293.28

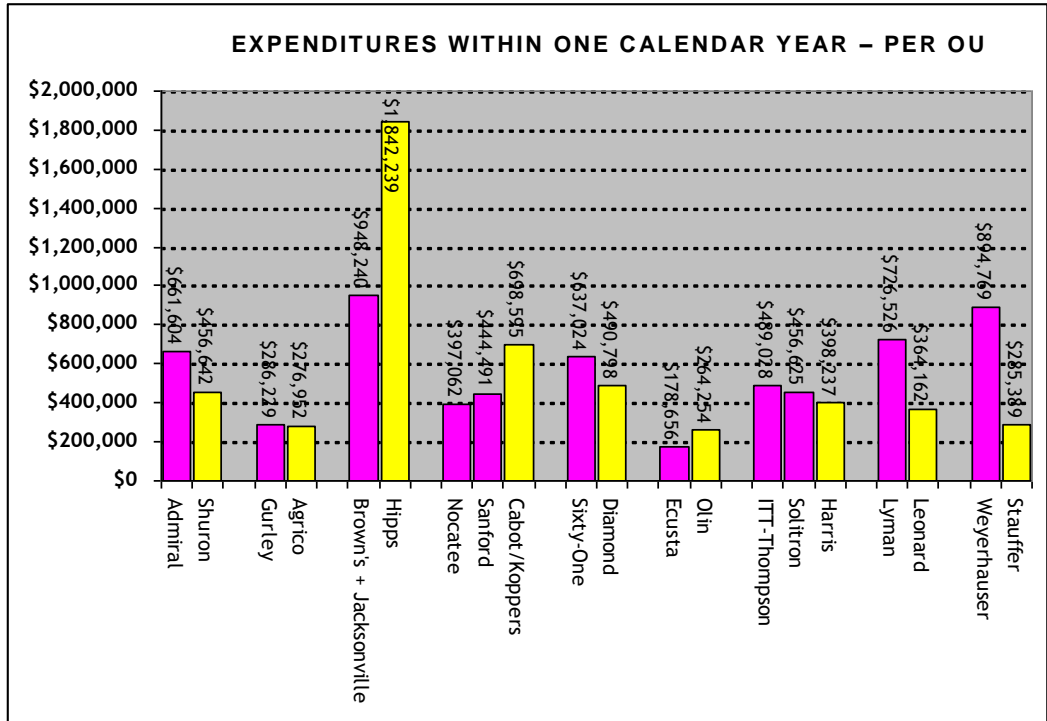
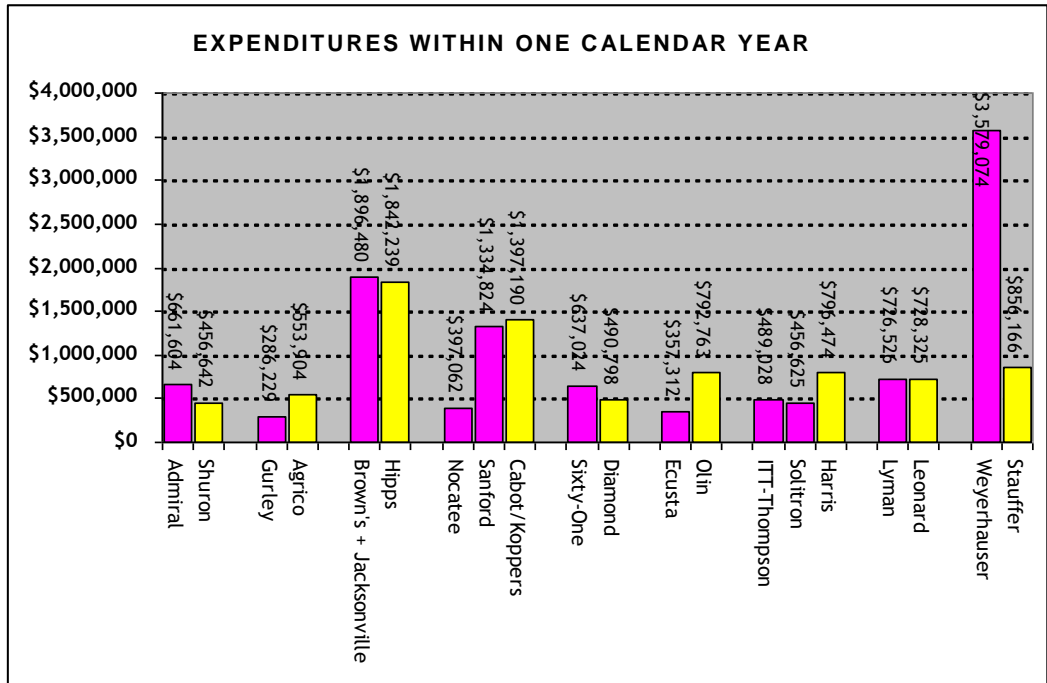
<sup>1</sup> - The Weyerhaeuser Co. Plymouth Wood Treating Plant is considered a "megasite," With expected cleanup costs of over \$50 million. The megasite status explains the large cost difference from nearly every other site. The Brown's Dump site is a potential megasite.

<sup>2</sup> - For the purposes of this analysis, Brown's Dump and the Jacksonville Ash Site are considered to be one site with two OUs .

<sup>3</sup> - The ROD for Hipps Road Landfill occurred prior to 1989, but the site has a ROD amendment that occurred in 1990. Correspondingly, 1991 is being used as the cutoff year, as it is one year after the ROD amendment.

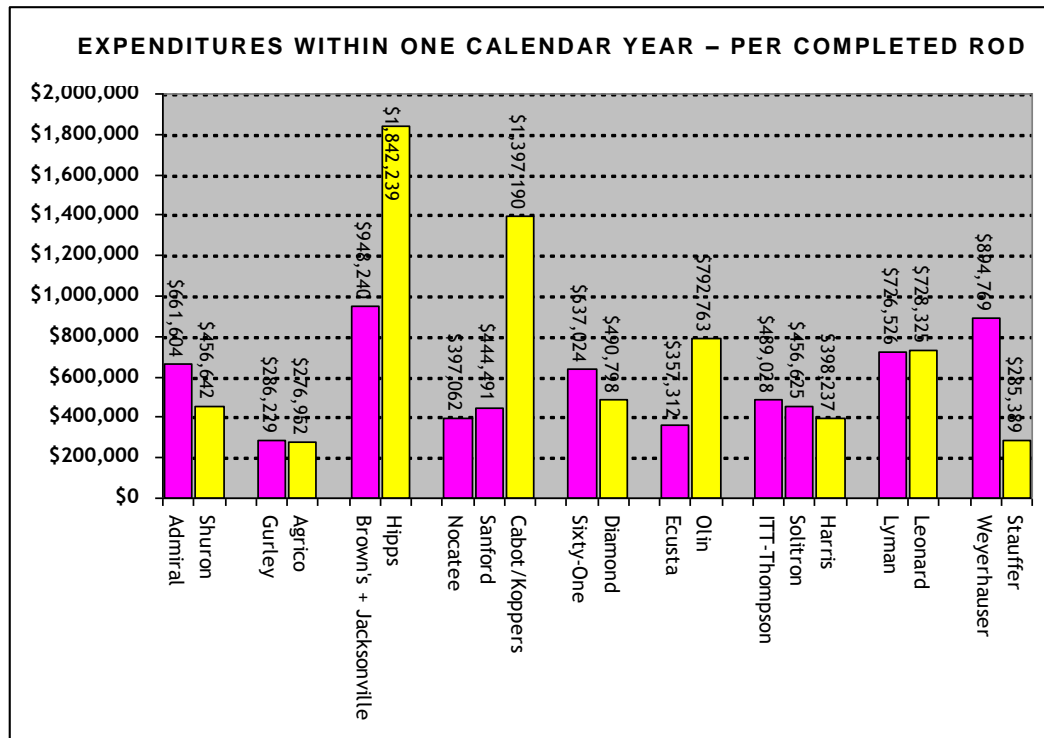
**EXHIBIT 3-9: COMPARATIVE COSTS AT NPL AND SA APPROACH SITES**

Pink (dark) bars indicate SA approach sites; Yellow (light) bars indicate NPL sites



**EXHIBIT 3-9: COMPARATIVE COSTS AT NPL AND SA APPROACH SITES (CONT'D)**

Pink (dark) bars indicate SA approach sites; Yellow (light) bars indicate NPL sites



Exhibits 3-8 and 3-9 reveal that neither SA approach nor NPL sites appear to have consistently higher expenditures than their matched counterparts. Sites using the SA approach were more expensive in four of 11 pairings when no adjustment is made for the number of OUs at a site, in seven of 11 pairings when expenditures consider the number of OUs at a site, and in six of 11 pairings when expenditures consider only OUs with a completed ROD.

In addition, the exhibits show that some cost differences are small relative to total site costs. For example, in the first and third analyses, Lyman Dyeing and Finishing and its matched NPL site, Leonard Chemical Co. Inc. have expenditures that differ by fewer than \$2,000, or less than 0.003 percent of total expenditures incurred (\$725,000). The difference in expenditures between Gurley Pesticide Burial and Agrico Chemical Co. are similarly small in the second and third analyses, less than \$10,000 for site expenditures of roughly \$280,000.

Adjusting site expenditures on a per-completed ROD basis may be preferable, because it considers site size without improperly discounting larger sites that have not yet incurred expenses at some OUs. In all approaches, however, no clear pattern in cost differences between SA approach and NPL sites is evident.



Total site expenditures are generally driven by remedial costs (RI/FS through the ROD, RD/RA after the ROD), though at some sites enforcement costs also contribute significantly to overall expenditures, usually after the ROD has occurred.<sup>35</sup> In contrast, site assessment and response support costs do not make up a significant portion of overall site expenses for most sites, though site assessment costs do constitute the majority of overall expenditures in one year prior to the ROD for two sites using the SA approach, Solitron Devices Inc., and Sixty-One Industrial Park.

#### Caveats in the Analysis of Cost Differences

**Pre-1990 data:** IFMS data does not provide year-by-year expenditures for years prior to 1990. Instead, it provides an aggregated total of all expenditures for that site under a particular action code for all years prior to 1990. Because we do not know the years in which these expenditures occurred, we cannot inflate pre-1990 expenditures to 2009 year-dollars with the proper year's deflator; pre-1990 expenditures are currently inflated to 2009 year-dollars using the deflator for 1989. This issue raises large problems for Hipps Road Landfill which had its RODs occurring prior to 1990. Correspondingly, our cost estimate for Hipps Road Landfill may be strongly understated. In addition, costs for other NPL sites, each of which likely incurred at least some expenditures prior to 1990, may also be somewhat understated. To the extent that this is the case, the data may exhibit a consistent cost savings associated with the SA approach in terms of expenditures occurring through the ROD at a given site.

**Missing and incomparable data:** Interview respondents confirmed that over time EPA has changed the way that it tracks and recovers costs, and that some data was likely lost during the move to the IFMS system in 1989. Thus, cost recovery data from the early years of Superfund is not comparable to current cost recovery data.

### EVALUATION PURPOSE #4: IDENTIFY STRATEGIES TO IMPROVE THE IMPLEMENTATION, EFFICIENCY AND EFFECTIVENESS OF THE SA APPROACH

To address this evaluation purpose, IEC used interviews to update and expand upon a review of findings from previous evaluations, and to provide input on potential changes to the SA approach.

It is noteworthy that in all interviews with EPA staff, including CICs, RPMs, and Managers, respondents expressed general satisfaction with and support for the Superfund Alternative Approach. Respondents consistently noted that the SA approach appears to provide an option that has value to PRPs and therefore facilitates site remediation. All respondents stated that the SA approach status has no impact on the way enforcement, remediation, oversight, or community coordination activities are conducted.

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<sup>35</sup> Note that while SA approach sites reflect generally cooperative and active PRPs, these sites still require enforcement costs related to negotiations, development of consent decrees and administrative orders, and initial investigation of PRP viability. Enforcement costs do not appear to differ substantially across different types of sites, though significant changes in cost recovery accounting in the 1990s may limit the comparability of enforcement cost data available for older sites.

## EVALUATION QUESTION 6: WHAT HAS EPA DONE TO IMPROVE THE CONSISTENCY OF IMPLEMENTING THE SA APPROACH SINCE AN INTERNAL EVALUATION AND AN IG REPORT ON THE APPROACH WAS PUBLISHED IN 2007?

IEc reviewed the findings and recommendations from the OECA/OSWER and OIG evaluations of the SA approach. The results of these evaluations provided information that shaped our evaluation questions. IEC also conducted interviews with EPA staff to identify changes that have been implemented since these evaluations were conducted.

IEc received the questions that were asked of stakeholders and EPA attorneys for the OECA/OSWER Evaluation; however, IEC did not receive response data. Similarly, no additional information was provided for the OIG Evaluation.

### OECA/OSWER Evaluation

The OECA/OSWER evaluation of the SA approach focused on Regional procedures for implementing the SA approach, examined whether the approach was likely to lead to successful site cleanups, and considered concerns expressed by stakeholders. The evaluation consulted with nine external stakeholders, including state representatives, attorneys, PRPs, RPMs, and community groups. A summary of the results from the evaluation were published in September 2007, *Results of the Superfund Alternative Approach Evaluation*.

The evaluation found that the SA approach yielded about 20 agreements, primarily in Regions 4 and 5 and that the SAA agreements generally used language that was consistent with the Response Selection and Enforcement Approach for Superfund Alternative Sites guidance. The evaluation recommended retaining the SA approach as an available option in appropriate circumstances and identified several specific next steps that typically focused on improving the consistency of tracking and implementation procedures for the SA approach. Key recommendations included ensuring a consistent definition of an SA approach site in CERCLIS, and developing training and case study materials to ensure that EPA staff understood how the SA approach works with other enforcement tools. One specific recommendation regarded the name of the approach:

- Continue to evaluate how EPA refers to the approach (e.g., consider using the term NPL-Equivalent or NPL-Alternative to more accurately reflect the intent of the approach to be an alternative to listing on the NPL, not an alternative to the Superfund process).

### OIG Evaluation

OIG's June 2007 summary report on their audit of SA approach was entitled EPA Needs to Take More Action in Implementing Alternative Approaches to Superfund Cleanups, Report No. 2007-P-00026. OIG conducted interviews with Superfund program managers and staff, PRPs, and representatives of National Association of Manufacturers (NAM) and the Superfund Settlements Project (SSP) to review their experiences with the SA approach. The report recommended that EPA track and report cleanup progress at sites using the SA approach and improve communications, information, and transparency associated with the SA approach. Most recommendations focused on ensuring that

methods such as HRS scoring and site designation are well-documented and consistent across all Regions, and that tracking of goals for GPRA and other purposes be expanded.

OIG has since closed the audit and their October 2009 *Compendium of Unimplemented Recommendations As of September 30<sup>th</sup> 2009* indicates that the last unimplemented recommendation was completed and removed prior to 9/30/2009.<sup>36</sup>

#### Changes to the Approach Since the Evaluations

EPA's 2004 guidance – “Revised Response Selection and Settlement Approach for Superfund Alternative Sites” – preceded the evaluations but speaks to many of the concerns raised.<sup>37</sup> The revised guidance outlines criteria for designation, key community, financial assurance, and settlement requirements, and outlines a protocol for involvement of states. Interview respondents noted that this guidance is still current for many practices.

In addition, interview respondents offered other information on recent changes to the approach. Specifically, respondents noted:

- SA approach guidance has been updated to contain very specific language.
  - However, the provisions are very clear that site agreements that were developed prior to the guidance were not grandfathered.
- The review process is now more thorough and structured to ensure that sites meet criteria.
- EPA has an official SA approach code. No different lead code because it is still PRP lead. It mirrors NPL PRP lead site for CERCLIS, except for the flag. GPRA still does not count sites using the SA approach as part of meeting goals, but EPA tracks them.

Finally, respondents noted that Region 4 has worked to refine its list of official sites using the SA approach to reflect the outcome of evaluations and updates to guidance, and also identified specific changes to CERCLIS, such as tracking more community involvement data and revising CERCLIS to include pop-up boxes to confirm SA approach site status.

Respondents were unable to identify any areas of inconsistent implementation between NPL and SA approach sites, though one manager noted that the revision of site status has left more than one site without a designation.

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<sup>36</sup> U.S. EPA. Available at <https://www.epa.gov/oig/reports/2010/20091028-10-N-0018>

<sup>37</sup> U.S. EPA. Available at <http://www.epa.gov/compliance/resources/policies/cleanup/superfund/rev-sas-04.pdf>

**EVALUATION QUESTION 7: WHAT ADDITIONAL FACTORS OR VARIABLES SHOULD EPA TAKE INTO ACCOUNT WHEN DECIDING IF AND WHEN TO USE THE SA APPROACH IN THE FUTURE?**

EPA staff supported continuing the SA approach, and did not express any concerns about the approach. However, one respondent reiterated the OECA/OSWER recommendation to consider a name more similar to the prior “NPL equivalent,” to emphasize that the SA approach is not different from the NPL. Respondents also suggested the following:

- More specific language outlining community involvement requirements at both NPL and SA approach sites; PRPs sometimes attempt to negotiate notification and involvement actions that are actually requirements.
- Incorporation of SA approach site achievements into GPRA goals to increase use of the approach. One respondent noted that omitting SA approach site progress is a disincentive for Regions to use the approach.
- Improvement of outreach methods to address pre-remedial sites and introduce the HRS method, to better explain to residents how HRS scoring and site remediation options are linked.

Also, respondents provided the following answers to specific questions:

***Do you have any concerns about the SA approach?*** Generally EPA staff reported satisfaction with the approach and did not express any concerns.

***Should EPA consider any additional requirements for sites to become SAA?*** One respondent noted a need for strong financial assurance for both NPL and the SA approach in the current economy. He noted that the Kerr McGee SA approach site went bankrupt and is now on the NPL.

***Are there advantages or disadvantages to the SA approach that are not reflected in cost data or CERCLIS data?*** Respondents noted that the stigma and improved cooperation are likely not reflected in time and cost data. One Manager explained that greater cooperation at sites using the SA approach has led to fewer negotiations than NPL PRP-lead sites.

***Do you know of barriers to implementing the SA approach in other Regions?*** Respondents reiterated that the failure to count SA approach site actions toward GPRA is the key deterrent.

***Do you have any suggestions, recommendations, or comments to improve the SA approach?*** Respondents provided the following suggestions:

- Earlier community involvement for SA approach and PRP-lead NPL sites, including the development of procedures to involve communities earlier in the process.
- More coordination between EPA and public health agencies to inform the public about risks at both NPL and SA approach sites.

- The structure of the SA approach could potentially provide a useful model or States or other authorities to use in addressing sites with HRS scores below 28.5.

## **SYNTHESIS OF KEY EVALUATION FINDINGS**

This section provides a synthesis of the key findings of this evaluation organized by evaluation purpose and question.

Consistent with the general objective of the evaluation, we have explored the extent to which the SA approach is achieving the same outcomes as the traditional NPL pipeline, and the extent to which the SA approach is reducing site costs and speeding remediation.

Overall, interview respondents were uniformly positive in their opinions of the SA approach. EPA respondents noted that all PRPs who are given the opportunity to pursue the SA approach have agreed to do so, suggesting broadly that PRPs find value in the approach. PRPs confirmed that the SA approach is preferable to an NPL listing due to avoided negative publicity and a perception that the approach is more collaborative. Overall, while communities differ in initial reactions to both SA approach designation and NPL listing, the use of the SA approach does not appear to have a significant impact on community participation in or impressions of the site remediation process. A demographic review revealed no difference in the concentration of minority and low-income populations at SA approach or NPL sites, and community representatives interviewed confirmed that EPA's outreach to EJ and other communities is consistent across sites.

EPA, PRP, and community interviewees stressed that the SA approach generally mirrors the NPL process for most EPA activities. Consistent with this input, CERCLIS and IFMS data reveal that the SA approach does not appear to result in significant cost or time savings for EPA, though some preliminary data suggest that certain negotiations proceed more quickly at some sites using the SA approach, and cost data are incomplete. While identified remedies suggest that NPL sites employ more contaminant removal remedies, anticipated future use patterns for NPL and SA approach sites are similar. Interviews with EPA staff suggest that sites using the SA approach may have a higher potential for redevelopment than comparable NPL sites if avoided "stigma" increases financing options and willingness to redevelop.

These findings suggest that the SA approach has value to participants, particularly related to avoiding "stigma" associated with NPL listings. PRP interviews have confirmed that PRPs typically regard avoiding the NPL listing process as an advantage, in spite of limited direct cost savings, because the SA approach eliminates the "adversarial" structure of the NPL process. PRP respondents noted that community concerns about stigma from NPL sites are often, but not always, a key factor; investors and lenders, however, do not appear to differentiate NPL and SA approach sites. The issue of stigma remains an elusive but potentially significant factor in assessing SA approach impacts.

## EVALUATION PURPOSE 1: EXAMINE THE FACTORS INFLUENCING THE USE OF THIS APPROACH

### RESPONSE OF PRPS TO THE SA APPROACH

General agreement by PRPs to pursue the SA approach when it is proposed by EPA provides a strong indication that PRPs see value in this approach, though not all PRPs reach SAA agreements with EPA. PRP interviews confirm a willingness to participate, in spite of the fact that the SA approach involves additional financial liquidity requirements and typically results in only modest cost savings. Interview data focus on two key incentives for PRPs to participate:

- **Avoiding NPL stigma:** Specifically, interview information collected suggests that most PRPs, and many community leaders, are concerned about the perceived reduction in property values and redevelopment opportunities associated with an NPL listing. The SA approach provides an option for avoiding this without altering the technical cleanup options. PRP respondents also noted that customers and even prospective employees often are aware of NPL sites and view them as a drawback, though one PRP respondent felt that the differences between NPL and SA approach site stigma are no longer significant.
- **Cost savings associated with multiple sites:** EPA and PRP interview responses indicate that a key potential benefit of the SA approach is the possibility of developing multi-site protocols for PRPs with sites across states or Regions. PRP respondents also noted that the more collaborative “tone” of the SA approach typically simplifies the negotiation process for them, though cost savings are limited by the overall similarity of the approaches.

A literature review confirmed that while stigma is a well-established phenomenon at contaminated sites, economists have not yet considered whether stigma specific to NPL sites is a greater impediment to site reuse than stigma at SA approach or other non-NPL (e.g., Brownfields) sites.

Interview responses suggest that SA approach site PRPs have additional incentive to be cooperative to avoid NPL listing, but respondents also noted that level of cooperation varies widely among individual PRPs and sites.

### COMMUNITY PERCEPTIONS OF THE SA APPROACH

Interviews with EPA and community representatives suggest that initial responses to the SA approach can be mixed. The SA approach is often considered advantageous by community members and leaders concerned about property values and stigma. Other community members, however, require confirmation that the process will not result in more limited resources or reduced remediation. EPA CICs conclude that most concerns about both NPL and SA processes peak initially and abate as communities become familiar with the sites and see progress.

Data on community expenditures and on the demographics of communities surrounding sites using the SA approach reveal no pattern of difference between SA approach sites and NPL sites, but analysis of expenditures at sites with higher concentrations of minority and low-income populations reveals a weak positive relationship (i.e., slightly higher expenditures overall at sites with higher concentrations of minority and low income populations).

#### **EVALUATION PURPOSE 2: ASSESS THE EFFECTIVENESS OF THE SA APPROACH IN ACHIEVING THE GOALS OF THE SUPERFUND PROGRAM**

In general, comparison of NPL and SA approach sites reveals that they are similar in current and anticipated future use, and the majority of both NPL and SA approach sites examined are industrial facilities and likely to remain industrial or commercial in nature.

#### **SPECIFIC REMEDIES SELECTED**

Available ROD data suggests that among the sites examined, NPL sites appear to employ remedies that remove and treat contamination more often than paired SA approach sites, while sites using the SA approach include more remedies related to long-term monitoring and natural attenuation. Note that this pattern is inconclusive because it reflects limited summary data, and does not consider site features (e.g., extent of contamination) or the relative effectiveness of newer *in situ* treatment technologies.

#### **INSTITUTIONAL CONTROLS AND FUTURE USE**

A screening assessment of “long-term” institutional controls reveals that use of institutional controls such as restrictive covenants or “use restrictions” is comparable among paired sites, suggesting that future site use is not affected by SA approach or NPL status. Sites in the sample are generally not yet available for reuse, but examination of potential future use options confirmed that sites in both groups have similar use options. Interviews with EPA staff suggest that sites using the SA approach may have a higher potential for redevelopment than comparable NPL sites if avoided “stigma” increases financing options and willingness to redevelop.

#### **EVALUATION PURPOSE 3: ASSESS THE EFFICIENCY OF THE SA APPROACH IN TERMS OF POTENTIAL TIME AND COST SAVINGS**

Generally, findings from the analysis of CERCLIS and IFMS data on the efficiency of the SA approach concur with information provided in interviews: the similarity of the SA approach to the NPL approach within EPA limits the opportunities to save significant resources, with the exception of NPL listing effort. However, responses emphasize the potential for the SA approach to improve the speed and tone of PRP negotiations.

#### **TIME DIFFERENCES**

A review of time to complete several specific actions reveals that sites using the SA approach are not significantly different from NPL sites, though data also suggest that negotiations at different stages of the process (e.g., RI/FS and RD/RA negotiations) may in some cases be quicker at sites using the SA approach; this observation is consistent



with PRP and EPA interviews noting that the tone of SA negotiations is more productive. However, large variability across sites and small sample size prevent any clear conclusions. In addition, data tracking limitations for both SA approach and NPL sites prevent a comprehensive assessment of site progress.

#### **COST DIFFERENCES**

A review of available cost data similarly concludes that the SA approach has modest, if any, cost savings for EPA. PRP costs are not reflected in available data, but PRP representatives also noted that the costs do not differ significantly across approaches). In addition to wide variability across sites, a key limitation of cost data is the change in cost recovery practices after 1995; several sites with significant expenditures prior to 1995 may have incomplete cost data. Because NPL sites in this evaluation are typically older, this analysis may understate NPL site costs and obscure differences between NPL and SA approach costs. It is not possible, however, to quantify this impact.

#### **EVALUATION PURPOSE 4: IDENTIFY STRATEGIES TO IMPROVE THE IMPLEMENTATION, EFFICIENCY AND EFFECTIVENESS OF THE SA APPROACH**

A review of EPA practices and interview responses suggests that EPA has effectively implemented the recommendations of prior evaluations. EPA's OIG also indicated that all recommendations from its 2007 audit were implemented by September 30, 2009.

A compelling outcome of this evaluation is that the interviewed EPA staff from Region 4 and PRPs are unanimously positive about the use of the SA approach. Respondents did not identify any significant difficulties in implementing the SA approach, due in part to its similarity to the NPL process.

A few respondents expressed frustration that EPA does not count SA approach and NPL sites in the same manner for planning purposes (while in 2010 EPA began allocating resources similarly across both SAA and NPL sites, SA accomplishments are not reflected in GPRA scoring), and respondents offered a few suggestions to improve the implementation of both NPL and SA approaches. Overall, however, the consistent, positive tone and clear input from respondents presents a strong indication that the Region 4 SA approach is well-integrated into general site management operations.



## CHAPTER 4 | RECOMMENDATIONS

Based on our analysis of the data collected from CERCLIS, IFMS, Superfund documents, and conversations with stakeholders, including EPA, PRPs and community representatives, we offer the following recommendations for consideration. We believe that implementing these recommendations could help EPA examine further the extent to which the SA approach is providing a valuable remediation pathway.

We note that overall feedback from interviews about the SA approach was consistently positive, and data generally support the perceptions of interview respondents that the SA approach represents an equivalent approach to the NPL. The SA approach also appears attractive to PRPs and some communities, though community responses vary. Thus, IEC primarily provides recommendations designed to focus further on the aspects of the approach that may be most effective.

### EVALUATION PURPOSE 1: EXAMINE THE FACTORS INFLUENCING THE USE OF THIS APPROACH

**Recommendation: EPA should further investigate the role that “stigma” may play in the effectiveness of site remediation programs.**

This program evaluation was designed in large part to examine whether empirical information about cost and time savings aligned with perceived advantages of the SA approach. A striking outcome of the interview process, however, was the focus on “stigma” related to NPL sites.

Specifically, the most often cited advantage of the SA approach, in several contexts, is the ability of PRPs and communities to avoid perceived “stigma” associated with NPL sites. EPA, PRP, and community respondents noted that property value declines and difficulty ensuring redevelopment might be more severe at NPL sites. However, stigma is difficult to quantify, and empirical studies to date have not compared NPL sites with other contaminated sites to determine whether a real “NPL stigma” exists.

IEC recommends that EPA further review the role of stigma to determine whether a true “NPL-specific stigma” exists. The results of this exploration could have implications for a range of cleanup programs managed by the Agency and could inform discussions with other stakeholders such as states and communities. Ultimately, it may be important to consider stigma in program design to ensure that site cleanup approaches best serve local communities.

**Recommendation: Continue to improve tracking of community involvement activities to document successes and challenges in remediation programs.**

Overall community reaction to the SA approach appears to be similar to reaction to the NPL approach. That is, over time, as community members are more informed about the remediation process for both NPL and SA approach sites, communities tend to become more satisfied with the process. However, community representatives stressed in interviews that early and extensive community involvement is critical to the successful remediation of both NPL and SA approach sites, particularly those with direct impacts on residential areas.

Therefore, IEc also recommends that EPA continue to improve data on community participation to ensure that outreach activities to communities at both NPL sites and SA approach sites are effective.

**EVALUATION PURPOSE 2: ASSESS THE EFFECTIVENESS OF THE SA APPROACH IN ACHIEVING THE GOALS OF THE SUPERFUND PROGRAM**

**Recommendation: EPA should update and expand the analysis of SA approach effectiveness as sites using the SA approach achieve construction completion and reuse.**

A key limitation of this evaluation is the fact that few sites using the SA approach have completed remedial actions and none have achieved construction complete. It is therefore difficult to make conclusive assessments of overall site performance, because it is not possible to assess the costs and time required for the remediation action phase of SA approach sites compared with NPL sites. As sites using the SA approach reach construction complete, EPA should consider revisiting this analysis to determine whether clear differences exist in the way that sites are remediated and reused.

**EVALUATION PURPOSE 3: ASSESS THE EFFICIENCY OF THE SA APPROACH IN TERMS OF POTENTIAL TIME AND COST SAVINGS**

**Recommendation: EPA should update and expand the analysis of SA approach efficiency as sites using the SA approach achieve construction completion.**

The screening-level analyses performed for this evaluation, combined with input from interviews, suggest that in some cases the SA approach may have some potential to save time and resources by encouraging a more cooperative process for EPA, PRP, and community negotiations. However, the results of this evaluation are limited due in part to the limited number of sites that have completed remedial actions and construction completion. IEc therefore recommends that EPA revisit and update this analysis to

examine potential cost and time savings after some sites using the SA approach have completed the process.

**IEc recommends that EPA examine the potential of the SA approach to be used as a method to efficiently address multiple sites.**

The SA approach has been used by several manufactured gas plants in Regions 4 and 5, and input from interviews suggests that the approach may provide a model for negotiation of multiple sites for PRPs or industrial sectors with several contaminated sites. Thus, EPA may want to further review the progress and features of these sites to identify whether specific features of the SA approach can be used to encourage PRPs with multiple sites to enter agreements for site remediation.

In addition, EPA may also want to consider developing a model based on the SA approach to work with willing PRPs in multiple states or Regions to address contaminated sites that are not severely contaminated enough to become NPL or SA approach sites.

#### **EVALUATION PURPOSE 4: IDENTIFY STRATEGIES TO IMPROVE THE IMPLEMENTATION, EFFICIENCY AND EFFECTIVENESS OF THE SA APPROACH**

**Recommendation: investigate opportunities to integrate SA approach where appropriate in other Regions, using Region 4 management approach as a template.**

It is notable that interviews did not identify any significant difficulties related to SA approach implementation. This suggests that Region 4 management has been successful at integrating the approach into other remediation activities. IEC has no significant recommendations for improvement of the SA approach, other than to consider whether expansion of the approach to other Regions would be useful, and whether Region 4 experiences could facilitate integration of the approach in other Regions.

**Recommendation: normalize accounting for SA approach site progress to reflect similarity with NPL site activities.**

Currently, achievements at sites using the SA approach are not considered in GPRA goals, though allocation of resources for site management among regions has as of 2010 counted sites using the SA approach as “equal” to NPL sites. In response to comments received in interviews, IEC also recommends that EPA examine options for measuring progress on sites using the SA approach as part of regional performance, and incorporating progress at these sites into estimates of workload and resource allocation.

## APPENDIX A

## **APPENDIX A: FINAL METHODOLOGY**

[Note: this appendix provides a copy of the methodology as of June 11, 2010. Chapter 2 of the evaluation report is a revised version of this methodology which identifies additional caveats with the data and steps taken by IEC to address these issues.]

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#### **PROPOSED EVALUATION SCHEDULE**

## INTRODUCTION AND PURPOSE

Under the Comprehensive Environmental Response, Compensation, and Liability Act (*CERCLA*), commonly known as Superfund, EPA has, since 1980, evaluated contaminated sites, and undertaken enforcement and remediation activities to ensure protection of human health and the environment. The process of identifying, investigating, and “listing” a site on the National Priorities List (NPL) requires a number of detailed assessments and process requirements, including identification of and negotiation with potentially responsible parties (PRPs), coordination with state and Tribal jurisdictions, and assessment of the level of risk at the site. Sites that require a long-term remedial response action, and have a hazard ranking system (HRS) score above a threshold value of 28.5, are eligible for listing as an NPL site, though other authorities (i.e., state or Tribal governments) may negotiate with EPA to remediate sites under their authority. NPL sites are typically remediated by PRPs (PRP-lead sites), or, in the absence of viable PRPs, by EPA (Fund-lead sites).

The NPL listing process is a significant undertaking involving a formal rulemaking, and requiring a number of detailed steps to establish lead cleanup authority. Over the past decade, EPA has developed the Superfund Alternative Approach (SA approach or SAA) as an option for negotiating cleanups with PRPs without formally listing the sites on the NPL. Sites using the SA approach are identified and investigated using the same processes and standards that are used for sites listed on the NPL, and sites using the SA approach undergo the same “pipeline” steps of remedial investigation, development of records of decision (RODs) and remedial design and action. EPA’s Superfund Alternative Approach website indicates that the “Superfund alternative (SA) approach uses the same investigation and cleanup process and standards that are used for sites listed on the NPL. The SA approach is really an alternative to listing a site on the NPL; it is not an alternative Superfund process.”<sup>38</sup>

This evaluation will examine whether the SA approach is having the expected outcome of reducing site costs and speeding remediation. In addition, this evaluation will examine whether the remedies selected under sites using the SA approach are equivalent to those at comparable NPL sites. Finally, the evaluation will revisit key questions of prior evaluations, to update information about community and PRP experiences with the approach.

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<sup>38</sup> <http://www.epa.gov/oecaerth/cleanup/superfund/saa.html>

The purpose of this evaluation is to:

- Examine the factors influencing the use of the SA approach
- Assess the effectiveness of the SA approach in achieving the goals of the Superfund program
- Assess the efficiency of the SA approach in terms of potential time and cost savings
- Identify strategies to improve the implementation, efficiency and effectiveness of the SA approach

This evaluation will use a range of data sources and analytic techniques. An initial step in the evaluation is a review of existing published reports and site data from CERCLIS and RODs to identify comparable SA approach and NPL sites in Region 4. The evaluation will also include a quantitative comparative analysis focusing on site data from CERCLIS and Office of the Chief Financial Officer's Integrated Financial Management System (IFMS), and a qualitative assessment of information collected in targeted interviews.

This report presents IEC's proposed methodology for conducting an evaluation of the effectiveness of the Region 4 Superfund Alternative Approach. We begin by providing background information and then describe the components of the program, as illustrated through presentation of a program pipeline logic model. We then propose an overarching evaluation design and a series of tasks to gather and analyze data, interpret findings, and report results. The evaluation questions to be addressed guide this methodology. Following this discussion, we propose a schedule for completing the evaluation.

#### **OVERVIEW OF THE SUPERFUND ALTERNATIVE APPROACH**

In 2002, EPA issued its first formal policy guidance on the SA approach. In June 2004, EPA revised and reissued the guidance, and announced an 18-month pilot of the SA approach. Findings from the pilot are discussed below in the "Evaluations of the Superfund Alternative Process" section.

EPA developed the SA approach to achieve potential cost and time savings associated with avoiding the complex (and often contentious) NPL listing process, and to provide an alternative approach for cooperative PRPs and communities that wanted to avoid the perceived stigma associated with NPL sites. As of May 31, 2010, EPA's web site lists 63 sites with Superfund alternative approach agreements in place (Exhibit A-1).<sup>39</sup> Currently, sites with SA approach agreements are a small subset of all Superfund cleanup agreements. Regions 4 and 5 collectively represent the largest number of sites using the

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<sup>39</sup> Some sites have more than one Superfund alternative approach agreement. Other sites share a single Superfund alternative approach agreement (for example, six of the Wisconsin Public Service sites in Region 5 share a single Superfund alternative approach agreement to perform a remedial investigation and feasibility study at each of the six sites and all eleven of the Peoples Gas sites share one agreement for RI/FS). It is also possible for a site to have a Superfund alternative approach agreement and another non-Superfund alternative approach agreement in place at the same time.

SA approach, with 54 (or 86 percent) of the total sites listed. The web site reports that Region 4 has 21 sites with SA agreements and Region 5 has 33 sites.<sup>40</sup>

**EXHIBIT A-1: SITES WITH SAA AGREEMENTS BY REGION**

REGION	PERCENT OF ALL SITES WITH SAA AGREEMENTS	SUPERFUND ALTERNATIVE SITE
3	3.17%	68th Street Dump, Rosedale, MD
		Foster-Wheeler Energy Corp/Church Rd TCE, Mountain Top, PA
4	33.33%	Admiral Home Appliances, Williston, SC
		Anniston PCB Site, Anniston, AL
		Browns Dump, Jacksonville, FL*
		Copper Basin Mining District, Copper Hill, TN
		Coronet Industries, Plant City, FL
		Ecusta Mill, NC
		Gurley Pesticide Burial, Selma, NC
		Henry's Knob, Clover, SC
		Holtra Chem, Riegelwood, NC
		Illinois Central Railroad/Johnston Yard, Memphis, TN
		ITT- Thompson, Madison, FL
		Jacksonville Ash, Jacksonville, FL*
		Kerr-McGee Chemical Corporation, Navassa, NC**
		Lyman Dyeing and Finishing, Lyman, SC
		National Fireworks, Cordova, TN
		Orlando Gasification Plant, Orlando, FL
		Sanford Gasification Plant, Sanford, FL
		Sixty One Industrial Park, Memphis, TN
		Solitron Devices, West Palm Beach, FL
Sprague Electric Company, Longwood, FL		
Weyerhaeuser Plymouth Wood Treat. Plant, Plymouth, NC		
5	52.38%	ALCOA Properties, East St. Louis, IL
		Cedar Creek, Cedarburg, WI
		Dow- Tittabawassee River/ Saginaw River/Saginaw Bay
		Ellsworth Industrial Park, Downers Grove, IL
		Evergreen Manor Groundwater Contamination, Winnebago, IL
		Ford Road Landfill, Elyria, OH
		Miller Compressing Co/Burnham Canal, Milwaukee, WI
		North Shore Gas - North Plant, Waukegan, IL
		North Shore Gas - South Plant, Waukegan, IL
		Old American Zinc Plant, Fairmont City, IL
Peoples Gas Former Manufactured Gas Plant, Crawford Station, Chicago, IL		

<sup>40</sup> <http://www.epa.gov/oecaerth/cleanup/superfund/saa-sites.html>. Note that for Region 4, a more accurate estimate is 19 SA sites, reflecting the fact that the Kerr-McGee site North Carolina site has since been listed on the NPL, and two sites (Brown's Dump and Jacksonville Ash) are now managed as one site.



REGION	PERCENT OF ALL SITES WITH SAA AGREEMENTS	SUPERFUND ALTERNATIVE SITE
		Peoples Gas Former Manufactured Gas Plant, Hawthorne Ave, Chicago, IL Peoples Gas Former Manufactured Gas Plant, Hough Place Station, Chicago, IL Peoples Gas Former Manufactured Gas Plant, North Shore Ave Station, Chicago, IL Peoples Gas Former Manufactured Gas Plant, Pitney Court, Chicago, IL Peoples Gas Former Manufactured Gas Plant, South Station, Chicago, IL Peoples Gas Former Manufactured Gas Plant, Throop St, Chicago, IL Peoples Gas Light & Coke, 22nd St, Chicago, IL Peoples Gas Light & Coke, Division St, Chicago, IL Peoples Gas Light & Coke, North Station, Chicago, IL Peoples Gas Light & Coke, Willow St Station, Chicago, IL Peters Cartridge Factory, Kings Mills, OH Solvay Coke and Gas Company, Milwaukee, WI South Dayton Dump, OH Town of Pines Groundwater Plume, Town of Pines, IN Tremont City Barrel Fill Site, Tremont City, OH Wisconsin Public Service Company Manufactured Gas Plant, Green Bay, WI Wisconsin Public Service Company Manufactured Gas Plant, Manitowoc, WI Wisconsin Public Service Company Manufactured Gas Plant, Marinette, WI Wisconsin Public Service Company Manufactured Gas Plant, Oshkosh, WI Wisconsin Public Service Company Manufactured Gas Plant, Stevens Point, WI Wisconsin Public Service Company Manufactured Gas Plant, Two Rivers, WI Wisconsin Public Service Company Manufactured Gas Plant/Camp Marina, Sheboygan, WI
6	3.17%	Falcon Refinery, Ingleside, TX (PDF) (5pp, 260KB, About PDF) Highway 71/72 Refinery, Bossier City, LA (PDF) (4pp, 361KB)
7	1.59%	Iowa City Former Manufactured Gas Plant (FMGP), Iowa City, IA
8	1.59%	Kennecott - South Zone, Copperton, UT
9	3.17%	Asarco - Hayden Plant, AZ Cyprus Tohono Mine, AZ
10	1.59%	Alaska Railroad Anchorage Yard , Anchorage, AK
* Brown's Dump and Jacksonville Ash sites are being managed as a single site. ** Kerr-McGee has been listed on the NPL.		

IEc considered including Regions 4 and 5 in this evaluation. However, over half of the SA agreements in Region 5 were negotiated primarily with two potentially responsible parties (Peoples Gas and Wisconsin Public Service Corporation), and reflect an ownership pattern for sites not likely to be broadly relevant. In addition, very few sites outside Region 4 have completed RODs; this limits the use of these sites in comparison with NPL sites. This evaluation therefore addresses sites in Region 4, as these sites

represent a broad range of site types within a single region, and provide a sound basis for comparing sites using the SA approach to NPL sites with similar characteristics.<sup>41</sup> While this evaluation focuses on Region 4 sites, the sites using the SA approach in this region reflect a range of contaminants and media, and therefore, the evaluation results will be generally relevant to other Regions that utilize the SA approach.

#### **PROCESS FOR SELECTING SUPERFUND ALTERNATIVE SITES**

Under the SA approach, a PRP enters into an SA consent agreement with EPA and stays in compliance with that agreement, which requires a remediation process designed to be equivalent to that under the NPL. EPA does not list the site on the NPL unless a PRP fails to meet the obligations of the agreement.

Eligibility for the SA approach is based on the following three criteria:

1. Site contamination is significant enough that the site would be eligible for listing on the NPL (i.e., the site's HRS score is 28.5 or greater);
2. A long-term response (i.e., a remedial action) is anticipated at the site; and
3. There is at least one willing, capable party (e.g., a company or person) that has responsibility under Superfund, who will negotiate and sign an agreement with EPA to perform the investigation and cleanup.

EPA has discretion to determine whether the SA approach is appropriate at a particular site. If a site meets criteria 1 and 2 above, EPA may approach a PRP, or a PRP may approach EPA, to negotiate an SA agreement. The SA agreement is equivalent to an agreement negotiated at an NPL site, with the additional clause that EPA may unilaterally list the site on the NPL if the PRP fails to meet the terms of the SA agreement. If EPA or the PRP decides not to negotiate an SA agreement, the site remediation will proceed either as a NPL listing or as a remediation under another authority (e.g., a state cleanup program).

#### **SUPERFUND ALTERNATIVE APPROACH REMEDIATION PROCESS**

EPA negotiates agreements with PRPs for site investigation and site cleanup. For sites using the SA approach, the agreement for investigation is usually in the form of an Administrative Order on Consent (AOC). The agreement for remedial action is always in the form of a judicial Consent Decree (CD). Both the AOC and the CD should include language specific to the SA approach that keeps sites using the SA approach in an equivalent position to sites listed on the NPL. EPA has model language for SA provisions that address technical assistance for communities, financial assurance and natural resource damage claims, and potential NPL listing for partial cleanups.

After site studies are completed and the hazards identified, the SA approach anticipates that EPA will undertake remedy selection in the same manner as NPL remedy selection.

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<sup>41</sup> Only one SA site each in Regions 6, 7, and 8, have achieved RODs, and it is therefore difficult to identify patterns among these sites, because differences in performance could reflect regional or site-specific conditions that cannot be isolated.

At sites listed on, or proposed to be listed on the NPL, a qualified community group may apply for a technical assistance grant (TAG) to hire an independent technical advisor. In SA agreements, EPA negotiates a technical assistance provision for the PRP to provide funds should a qualified community group apply for such an advisor.

Under the SA approach, EPA's oversight role is the same as its role on PRP-lead NPL sites. When the cleanup is complete, EPA maintains an oversight role in monitoring and reviews.

The benefits of the SA approach can vary depending on the site circumstances. EPA staff in Region 4 have implemented the SA approach with the expectation that resources and time are saved by avoiding the NPL listing process. In addition, in some cases community and PRP support for the SA process may facilitate other parts of the pipeline process. In addition, the remedies at sites using the SA approach should be equivalent to those at comparable NPL sites, resulting in improved cost-effectiveness.

#### **EVALUATIONS OF THE SUPERFUND ALTERNATIVE PROCESS**

Since EPA issued its first formal policy guidance on the SA approach in 2002, EPA has conducted assessments of the SA approach, both focusing on the process of program implementation. EPA's Office of Enforcement and Compliance Assurance (OECA) and Office of Solid Waste and Emergency Response (OSWER) conducted a joint internal evaluation of the SA approach and EPA's Office of the Inspector General conducted an audit of the approach. Both of these evaluations were completed in 2007.

OECA's Office of Site Remediation Enforcement (OSRE) and the OSWER's Office of Superfund Remediation and Technology Innovation (OSRTI) conducted an evaluation of the SA pilot to better understand how EPA Regions are implementing the SA approach, whether it leads to successful site cleanups, and the concerns expressed by stakeholders. Nine external stakeholders were consulted for the evaluation, including state representatives, attorneys, PRPs, RPMs, and community groups. A summary of the results from the evaluation were published in September 2007, *Results of the Superfund Alternative Approach Evaluation*.

The evaluation found that the SA approach yielded about 20 agreements, primarily in Regions 4 and 5 and that the SA agreements generally used language that was consistent with the Response Selection and Enforcement Approach for Superfund Alternative Sites guidance. The evaluation recommended retaining the SA approach as an available option in appropriate circumstances and recommends several specific next steps:

- Track SA agreements rather than sites using the SA approach by flagging only agreements consistent with the guidance at sites satisfying the SA approach eligibility criteria.
  - Revise the SPIM language for national consistency.
- Improve consistency of SA approach implementation.
  - Offer training to regional staff on the SA approach, including the SA criteria, setting the CERCLIS flag, negotiating model language, improving transparency, approaching the PRP and community, and

understanding how the SA approach fits with other CERCLA enforcement tools.

- Consider developing case studies of successful agreements at sites using the SA approach and best practices summaries as additional guidance.
- Modify Superfund model settlement documents to include the approach's provisions.
- Continue to improve the transparency of the SA approach.
  - Use CERCLIS to provide an accurate picture of how the SA approach is used (e.g., develop standardized national reports).
- Continue to evaluate how EPA refers to the approach (e.g., consider using the term NPL-Equivalent or NPL-Alternative to more accurately reflect the intent of the approach to be an alternative to listing on the NPL, not an alternative to the Superfund process).

In June of 2007, EPA's Inspector General issued a summary report on their audit of SA approach entitled EPA Needs to Take More Action in Implementing Alternative Approaches to Superfund Cleanups, Report No. 2007-P-00026. OIG conducted interviews with Superfund program managers and staff, PRPs, and representatives of National Association of Manufacturers (NAM) and the Superfund Settlements Project (SSP) to review their experiences with the SA approach. The report recommended that EPA track and report cleanup progress at sites using the SA approach, and improve communications, information, and transparency associated with the SA approach. Specific recommendations included:

- Publish a universe of sites using the SA approach that meet the Superfund Alternative site eligibility criteria and are designated as officially "Superfund Alternative" and regularly update the list as the universe changes.
  - Develop specific instructions on when to use the SA designation (e.g., for sites or agreements) and update the Superfund Program Implementation Manual (SPIM) accordingly.
    - The instructions should include provisions that state the Superfund Alternative site flag should not be removed even if the site is deleted, cleaned up, or proposed for the NPL, so that controls over documentation of sites using the SA approach are maintained.
  - Establish and direct Regions to use a consistent HRS scoring method that is acceptable and reliable for designating a Superfund Alternative site.
  - Track and report all Superfund GPRA measures at sites using the SA approach.
    - This includes construction completions, final remedy selection, human exposure under control, migration of contaminated groundwater under control, and sitewide ready-for-reuse.
    - Report GPRA measures at sites using the SA approach separately from GPRA measures at NPL sites.
-

- Revise applicable guidance, manuals, or directives to reflect that these performance measures will be tracked and reported for sites using the SA approach.

IEc reviewed the findings and recommendations from these previous evaluations to shape our evaluation questions. IEC also requested access to the underlying data to review those questions that have been previously asked of stakeholders. This evaluation builds upon those previous evaluations and expands the scope to consider the costs and level of effort associated with activities at SA and NPL sites.

#### **PROGRAM PIPELINE LOGIC MODEL**

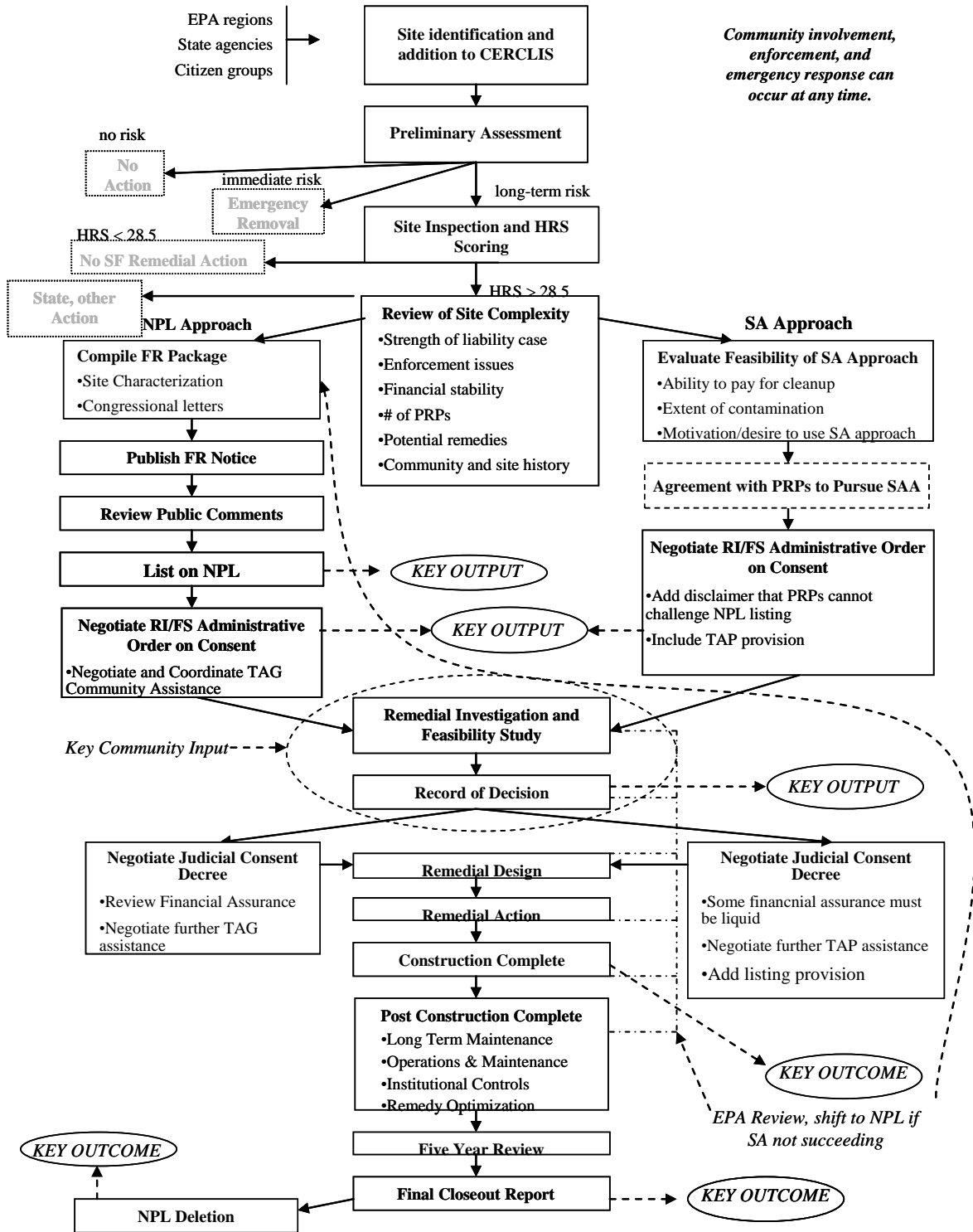
To illustrate the various components of the Superfund NPL and SA approach and to inform development of specific evaluation questions, EPA has developed an alternate logic model (i.e., a graphical representation of the relationships between program inputs, outputs, and intended outcomes). As shown in Exhibit A-2, the key components of the model include:

- **Activities** — the specific procedures or processes used to achieve program goals.
- **Outputs** — the immediate products that result from activities and are often used to measure short-term progress. For example, EPA outputs include listing on the NPL, negotiating RI/FS<sup>7</sup>, preparing administrative orders of consent, and achieving records of decision (RODs).
- **Outcomes** — the overarching goals of the program, which include achieving construction complete, preparing final closeout reports, and deleting sites from the NPL.

As authorized by CERCLA, the Superfund program has a primary goal of identifying and remediating the most serious contaminated sites in the country. The program's structured "pipeline" summarizes the key activities needed to assess and remediate each site that is discovered.

For this evaluation, the pipeline is used as the central structure of an alternative design for a logic model. The pipeline represents the program activities, which are typically conducted in a structured, linear fashion. While a typical site remediation has many outputs in the form of legal agreements, public information, and in some cases, enforcement actions, this logic model focuses on the outputs that are most relevant to the SA approach and the ability to measure its progress.

EXHIBIT A-2: SUPERFUND PROGRAM PIPELINE LOGIC MODEL



While the evaluation will not be specifically organized around measuring the development of key outputs, to the extent data allow, the comparisons between the SAA and NPL sites will focus on the effort needed to reach key milestone outputs such as NPL listing, RODs, and SA agreements. NPL sites are generally further along in the “pipeline” and have completed more actions such as remedial design, remediation actions, and in some cases, construction complete designations. For these sites, comparisons with sites using the SA approach will be limited to the most recently completed phase for the paired site.

#### **EVALUATION QUESTIONS**

To develop and refine evaluation questions, IEC conducted an initial data and document review, and engaged in several discussions with EPA regarding the implications of our findings for the scope of this evaluation. Subsequently, IEC and EPA finalized the following evaluation questions:

1. What is the response of potentially responsible parties (PRPs) to the Superfund Alternative Approach (SA approach)?
  - a. What aspects of the SA approach are appealing or unappealing to PRPs, and why?
  - b. Do PRPs generally prefer the SA approach over NPL listing, or vice-versa? Why or why not?
2. What do available data reveal about community member involvement in and perceptions of the NPL and SAA processes?
  - a. What is the initial response of community members to NPL listing compared to EPA’s decision to use the SA approach?
  - b. Ultimately, what do available data reveal about the satisfaction of community members with the SAA process and structure compared to the NPL process and structure?
  - c. To what extent do communities use technical assistance funding at SA approach and NPL sites? Is there a difference in funding availability and/or expenditures for SA approach or NPL sites?
3. Does a pattern of difference exist in the specific remedies selected for sites using the SA approach?
  - a. Do sites with SAA agreements use capping remedies, institutional controls, or other remedies that mitigate risk but do not remove all contamination, more frequently or less frequently than similar sites listed on the NPL?
  - b. Do data suggest that SA remedies are comparable to remedies used for similar sites listed on the NPL (e.g., Do sites using the SA approach involve greater or fewer remedies resulting in unrestricted use)?

4. Is there a difference in the potential for reuse/redevelopment at sites using the SA approach compared with more sites listed on the NPL? If there is a difference, does the evidence suggest why this difference exists?
5. What are the total cost, cost net of cost recovery, and time differences of the SA and NPL approaches, for both EPA and PRPs?
  - a. What are differences in the early part of the process (from discovery through RIFS)?
  - b. What are differences in the middle part of the process (from RIFS through ROD)?
  - c. What are differences in the later part of the process (from ROD through RD/RA, or through construction complete where applicable)?
6. What has EPA done to improve the consistency of implementing the SA approach since an internal evaluation and an IG report on the approach was published in 2007?
  - e. Do areas of inconsistent implementation remain? If yes, how should EPA address them?
  - f. Have other questions related to implementation of guidance and consistent tracking of site data been addressed?
7. What additional factors or variables should EPA take into account when deciding if and when to use the SA approach in the future?

Exhibit A-3 on the next page provides a summary of the evaluation questions as they link to the key objectives (purpose) of the evaluation. Exhibit A-3 also includes a brief map of the key data sources expected to be employed in answering each of the questions. Note that preliminary data collection suggests that no sites with SAA agreements have achieved construction complete status yet, and thus evaluation questions 4 and 5 may not be able to be systematically addressed. We include it, however, in case our final data collection effort reveals information that may provide quantitative or qualitative insights.



**EXHIBIT A-3: RELATIONSHIP BETWEEN QUESTIONS AND EVALUATION PURPOSE**

EVALUATION QUESTION	DATA SOURCES					NOTES ON DATA SOURCE(S):
	PREVIOUS EVALUATIONS	CERCLIS	WORKLOAD ALLOCATION MODEL/IFMS	SUPERFUND RECORDS (E.G., RODS)	INTERVIEWS (UP TO 12 TOTAL)	
<b>EVALUATION PURPOSE: EXAMINE THE FACTORS INFLUENCING THE USE OF THE SUPERFUND ALTERNATIVE APPROACH</b>						
<b>1. What is the response of potentially responsible parties (PRPs) to the Superfund Alternative Approach (SA approach)?</b>						
1a) What aspects of the SA approach are appealing or unappealing to PRPs, and why?	x				x	Interviews with all community involvement coordinators in Region 4, other EPA staff, PRPs Review existing evaluation data
1b) Do PRPs generally prefer the SA approach over NPL listing, or vice-versa? Why or why not?	x				x	Interviews with all community involvement coordinators in Region 4, Interviews with other EPA staff, Interviews with PRPs Review existing evaluation data
<b>2. What do available data reveal about community member involvement in and perceptions of the NPL and SA processes?</b>						
2a) What is the initial response of community members to NPL listing compared to EPA’s decision to use the SA approach?	x				x	Interviews with all community involvement coordinators in Region 4, other EPA staff, PRPs Review existing evaluation data
2b) Ultimately, what do available data reveal about the satisfaction of community members with the SA process and structure compared to the NPL process and structure?	x				x	Interviews with all community involvement coordinators in Region 4, other EPA staff, PRPs Review existing evaluation data
2c) To what extent do communities use technical assistance funding at SA and NPL sites? Is there a difference in funding availability and/or expenditures for SA or NPL sites?	x			x	x	Interviews with all community involvement coordinators in Region 4, other EPA staff, PRPs Workload Allocation Model Consent Decree Document Community involvement plans Review existing evaluation data

EVALUATION QUESTION	DATA SOURCES					NOTES ON DATA SOURCE(S):
	PREVIOUS EVALUATIONS	CERCLIS	WORKLOAD ALLOCATION MODEL/IFMS	SUPERFUND RECORDS (E.G., RODS)	INTERVIEWS (UP TO 12 TOTAL)	
EVALUATION PURPOSE: ASSESS THE EFFECTIVENESS OF THE SA APPROACH IN ACHIEVING THE GOALS OF THE SUPERFUND PROGRAM						
<b>3. Does a pattern of difference exist in the specific remedies selected for sites using the SA approach? If yes:</b>						
3a) Do sites with SAA agreements use capping remedies, institutional controls, or other remedies that mitigate risk but do not remove all contamination, more frequently or less frequently than similar sites listed on the NPL?		x		x		CERCLIS fields: Remedies, Unrestricted Use Designations, Institutional Controls Superfund Records: Institutional Controls listed in RODs
3b) Do data suggest that SA remedies are comparable to remedies used for similar sites listed on the NPL (e.g., Do sites with SAA agreements involve greater or fewer remedies resulting in unrestricted use)?		x		x		CERCLIS fields: Remedies, Unrestricted Use Designations, Institutional Controls Superfund Records: Institutional Controls listed in RODs
<b>4. Is there a difference in the potential for reuse/redevelopment at sites with SAA agreements compared with more sites listed on the NPL? If there is a difference, does the evidence suggest why this difference exists?</b>						
What plans exist for reuse/redevelopment of sites?		x			x	CERCLIS fields: date of discovery, date of Sitewide Anticipated for Reuse Interviews with all community involvement coordinators in Region 4, other EPA staff CERCLIS website: Online Reuse/Redevelopment information from CERCLIS profiles
EVALUATION PURPOSE: ASSESS THE EFFICIENCY OF THE SA APPROACH IN TERMS OF POTENTIAL TIME AND COST SAVINGS						
<b>5. What are the total cost, cost net of cost recovery, and time differences of the SA and NPL approaches, for both EPA and PRPs?</b>						

EVALUATION QUESTION	DATA SOURCES					NOTES ON DATA SOURCE(S):
	PREVIOUS EVALUATIONS	CERCLIS	WORKLOAD ALLOCATION MODEL/IFMS	SUPERFUND RECORDS (E.G., RODS)	INTERVIEWS (UP TO 12 TOTAL)	
5a) What are differences in the early part of the process (from discovery through RIFS)?		x	x	x		CERCLIS fields: date of discovery, date of RI/FS Workload Allocation Model: effort involved in reviewing site complexity, evaluating feasibility of SA approach, negotiating administrative order of consent, negotiating and oversight of TAG/TAP assistance. Interviews with EPA staff Superfund Documents: AOCs, CDs IFMS: FTE data
5b) What are differences in the middle part of the process (from RIFS through ROD)?		x	x	x	x	CERCLIS fields: ROD date(s) IFMS data on FTEs Workload Allocation Model: effort involved in preparing ROD(s). Superfund Documents: ROD Documents Interviews with EPA Staff
5c) What are differences in the later part of the process (from ROD through RD/RA, or through construction complete where applicable)?		x				CERCLIS fields: dates for: RD/RA, Construction Complete, and Sitewide Anticipated for Reuse
<b>EVALUATION PURPOSE: IDENTIFY STRATEGIES TO IMPROVE THE IMPLEMENTATION, EFFICIENCY AND EFFECTIVENESS OF THE SA APPROACH</b>						
<b>6. What has EPA done to improve the consistency of implementing the SA approach since an internal evaluation and an IG report on the approach was published in 2007?</b>						
6a) Do areas of inconsistent implementation remain? If yes, how should EPA address them?	x				x	Interviews with community involvement coordinators in Region 4. other EPA staff Review existing evaluations Review of current documentation and procedures

EVALUATION QUESTION	DATA SOURCES					NOTES ON DATA SOURCE(S):
	PREVIOUS EVALUATIONS	CERCLIS	WORKLOAD ALLOCATION MODEL/IFMS	SUPERFUND RECORDS (E.G., RODS)	INTERVIEWS (UP TO 12 TOTAL)	
6b) Have other questions related to implementation of guidance and consistent tracking of site data been addressed?	x				x	Interviews with community involvement coordinators in Region 4, other EPA staff Review existing evaluations Review of current documentation and procedures
<b>7. What considerations should EPA take into account when deciding if and when to use the SA approach in the future?</b>						
What considerations should EPA take into account?	x				x	Interviews with community involvement coordinators in Region 4; other EPA staff; PRPs Review of existing evaluation data

## METHODOLOGY

### EVALUATION DESIGN

This evaluation seeks to synthesize available information on the effectiveness of the Region 4 Superfund Alternative approach.

The information needed to support the evaluation will come from a variety of sources, including data from:

- EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
- EPA's Workload Allocation Model (an internal EPA model which integrates CERCLIS schedule and action data with cost data from the Integrated Financial Management System (IFMS) data system)
- Superfund records, including Records of Decision (RODs) and Community Involvement Plans
- Findings from EPA's Office of Enforcement and Compliance Assurance (OECA) and Office of Solid Waste and Emergency Response (OSWER) evaluation of the SA Pilot
- Recommendations from EPA's Office of the Inspector General audit
- Interviews

This evaluation uses a mixed methods approach involving both qualitative and quantitative methods to collect data that will enable the comparison of NPL sites and sites using the SA approach. The design for this evaluation assumes that most data will come from existing sources. In addition, IEc will conduct interviews to collect supplemental data and/or resolve issues raised by the analysis of quantitative data.

To quantitatively assess the cost-effectiveness of sites using the SA approach relative to NPL sites, IEc plans to use a matched pairs approach. This approach will compare data for a limited number of paired SA approach and NPL sites in Region 4 with viable and willing potentially responsible parties (PRPs) that have at least one Record of Decision (ROD). We estimate that roughly six to nine pairs of sites will be examined; we currently are assessing eleven sites with SAA agreements and RODs to determine how many of these sites can be effectively matched. The limited number of sites using the SA approach precludes a robust statistical analysis of differences between sites, but the matched pairs assessment can provide quantitative information about specific sites, as well as descriptive information about patterns among different site types. Sites will be

paired as closely as possible to allow us to conduct a review of our matched pairs and to identify patterns that may exist among paired sites.

The matched pairs approach examines differences in costs and time required for paired sites to achieve key outputs, with a specific focus on publications of RODs. IEC will review existing quantitative data from CERCLIS and the Workload Allocation Model to determine if a pattern of difference exists in the cost or time associated with actions completed at paired sites. If differences exist, IEC will review conditions that may contribute to differences. However, this evaluation will not attempt to determine causality.

To supplement the quantitative assessment and provide insights into factors that influence the use of the SA program, IEC will review findings and data from prior OECA/OSWER and OIG evaluations. This information will also be used to identify and verify strategies to improve the SA approach and identify potential reasons why differences may exist between SA approach and NPL sites.

After analyzing and reviewing the existing data and evaluations, IEC will conduct interviews to expand on results and issues identified with existing data, and to gather perspectives on key aspects of the SA approach. This effort will involve a limited number of interviews with individuals experienced with both the SA and NPL approach. Interviewees may include EPA Superfund and OECA staff, PRPs, community groups, and state or local government officials.

#### **PROPOSED STEPS IN CONDUCTING THE EVALUATION**

The four broad steps anticipated for this evaluation involve: (1) developing and implementing a selection process for identifying paired sites; (2) collecting and analyzing data from *existing* evaluations, files, and databases to assess paired sites and other key aspects of the program; (3) collecting and analyzing information and data from interviews to expand on existing data; and (4) reporting results and conclusions. Exhibit A-4 summarizes our approach to each of these steps.

#### EXHIBIT A-4: PROPOSED STEPS IN THE EVALUATION

1. Develop list of variables to align for comparison of sites using the Superfund Alternative approach and NPL sites.
  - Collect site-level CERCLIS data for SA and NPL sites in Region 4
  - Match sites using the SA approach with similar NPL sites
2. Collect and Analyze Data from Existing Databases and Files
  - Analyze quantitative data from CERCLIS
  - Analyze quantitative data from the Workload Allocation Model/IFMS
  - Review findings from previous evaluations
3. Collect New Data through Interviews
  - Identify EPA Community Coordinators to interview
  - Identify other EPA staff, PRPs, state officials, or other stakeholders to interview
  - Schedule and conduct interviews
  - Analyze trends and patterns in data from interviews
4. Prepare Final Evaluation Report, in Accordance with EPA Guidelines:
  - Introduce SA approach and the purpose of the evaluation
  - Describe methods for data collection and analysis
  - Summarize key findings from quantitative and qualitative data analyses, and consider relationship between quantitative and qualitative finding
  - Develop conclusions and identify recommendations

#### SITE SELECTION FOR MATCHED PAIRS ANALYSIS

To evaluate the cost-effectiveness and other key aspects of the SA approach, IEC has identified nine NPL sites to pair with the 12 sites using the SA approach in Region 4 that have obtained at least one Record of Decision (ROD). IEC identified paired sites that are similar enough in key site descriptors to provide a reasonable basis for comparison of the two approaches to remediation. As previously noted, IEC initially considered including paired sites from Regions 4 and 5 in order to capture the majority of sites in the SA universe. However, IEC limited the evaluation to sites in Region 4, because Region 5 sites reflected unique, multi-site agreements and were generally in the early stages of the pipeline. Region 4 sites represent a large percentage of all sites using the SA approach in the U.S. that have achieved RODs.

The SA approach is an option only when there is at least one willing and capable PRP who will negotiate and sign an agreement with EPA to perform the investigation and site remediation. Thus, this evaluation will examine only sites using the SA approach and

“PRP-lead” NPL sites in Region 4 that have agreements with one or more private parties. Federal facility and fund-lead sites will not be included in this analysis as they are not eligible for the SA approach.

In 2005, IEC conducted research on site variables that appear to have a causal relationship with cost at Fund-lead NPL sites. While this research did not focus on the site management costs that are specific to PRP-lead NPL sites and sites using the SA approach, it did examine the factors that drove overall costs at sites where EPA undertook every aspect of the remediation. Results of this research and an accompanying review of the literature assessing Superfund cost drivers suggested that the following variables are potentially important indicators of site complexity and cost:

- Number of PRPs
- Type and number of media contaminated
- Number of operable units (OUs) and extent of contamination
- Type of contamination.

To the extent possible, paired sites should be similar with regard to these variables.

To identify additional variables that might affect pairing of PRP-lead sites and sites in Region 4, IEC also consulted with subject matter experts from EPA staff in Region 4 and Headquarters. In addition, IEC collected qualitative insights about potential thresholds for pairing (e.g., the extent to which variations were acceptable). Based on this input, IEC used the following variables to develop an initial list of paired sites:

- **Industry:** To the extent possible, paired sites should be related to similar types of industrial activity, to ensure similarity in likely contaminants and facility configurations. For example, to the extent possible, a wood-treatment plant should be paired with a wood-treatment plant, or a landfill with a landfill).
- **Number and type of media contaminated:** To the extent possible, paired sites should have the same types of contaminated media (e.g., soil and groundwater contamination). In addition, IEC will focus on matching the media type as closely as possible (e.g., a NPL site with groundwater and sediment contamination would be best matched with an site using the SA approach with the same media contamination).
- **Type of contaminant:** To the extent possible, paired sites should have the same general types of contamination (e.g., metals, organics, etc.) IEC plans to match sites using the following assumptions:
  - PCBs, PAHs, POPs, and pesticides likely involve similar amounts of effort for planning and investigative phases.
  - Inorganics and base neutral acids likely require similar amounts of effort for the planning and investigative phase



- Dioxins/Dibenzofurans, Metal, and VOCs are each unique substances that likely require different efforts, even in the early stages of the pipeline. Therefore, these contaminants should be paired accordingly.
- Other specific contaminant profiles (e.g., mercury, creosote) may also be used to describe and match specific facilities, based on CERCLIS and Region 4 staff input.
- **Proximity to residential or densely populated areas:** Paired sites should be similar in the type of location (e.g., industrial zoned areas, residential areas).
  - Population density may be a factor driving differences in time and cost. Thus, when analyzing data IEC may utilize the CERCLIS Population Within One Mile field in conjunction with estimates of population density to review possible explanations for differences.
    - Population within one mile of the site was available only for NPL sites. IEC reviewed the site address, Google maps, Wikipedia, and the site description section in the sites' RODs to estimate population density for sites with SAA agreements. IEC developed estimates for population within one mile at sites with SAA agreements using three categories: fewer than 1,000 people, 1,000 – 10,000 people, and over 10,000 people.
- **State governments:** To the extent that state government involvement affects remediation processes, IEC matched sites in similar states.
  - Region 4 staff indicated that Florida NPL sites and Florida sites using the SA approach should be paired. All other states in Region 4 were comparable.
- **Number of PRPs:** To the extent possible, paired sites should have similar numbers of viable PRPs. In most cases these will be sites with six or fewer PRPs.
- **Number of Records of Decision (RODs):** To the extent possible, paired sites should have a similar number of RODs.
- **Number of Operable Units (OUs):** To the extent possible, paired sites should have similar numbers of OUs.

In addition, IEC considered the following variables to ensure that specific sites do not differ significantly in complexity as a result of one or more of the following variables:

- **Specific contaminants:** Presence or absence of specific contaminants that require very specific remediation technologies. For example, sites with radiological contamination may merit specific consideration.
  - To the extent possible, paired sites should have similar specific contaminants of concern when differences in contaminants may drive cost and time.

- **Specific contaminant age/source:** It may be important or useful to compare sites with similar contaminant history (e.g., manufacturing facilities or waste facilities of similar ages).
  - To the extent possible, paired sites should have published at least one ROD since 1995. Actions completed prior to 1995 have limited financial information, and actions completed prior to 1989 have only single estimates of cost data for general categories of costs.
- **Extent of infrastructure near site:** It may be important to ensure that sites have comparable infrastructure to support remediation (e.g., roads, utilities).
  - To the extent possible, sites with limited infrastructure should be paired with sites with similar issues.
    - At this time, no sites appear to have issues with limited infrastructure.
- **Environmental justice (EJ) or disadvantaged communities:** Sites in communities with inequitable environmental burdens should be matched with sites in communities with similar issues.
  - Sites located in areas with inequitable environmental burdens may have differences in time and cost.
    - At this time, no sites have been noted as being in EJ or disadvantaged communities.

IEc adopted a ranked but qualitative decision tree format for selecting sites to ensure that variables above are documented for each pair of selected sites, and that the selection process is transparent. However, because the number of sites in Region 4 is limited and sites have a range of unique features, and because management of sites (e.g., definition of OUs) often varies, it is unlikely that paired facilities will be “perfect matches” across all variables. IEC will work with Region 4 staff to ensure that the selection process for each paired site is carefully documented to explain any circumstances necessitating divergence from the selection process. See Exhibit A-5 for site pairs and Exhibit A-6 for the decision logic for site selection. Appendix B contains details of the paired sites, including contamination, number of PRPs, number of OUs, and other data.

EXHIBIT A-5: SAA AND NPL PAIRED SITES

SA APPROACH SITE	NPL SITE	LOGIC FOR PAIRING
Weyerhaeuser Co Plymouth Wood Trtng Pt NCD991278540	Stauffer Chemical Co. (Cold Creek Plant) ALD095688875	Chlorine manufacturing  Mercury contamination of fish and sediment
Gurley Pesticide Burial NCD986172526	Agrico Chemical Co. FLD980221857	Phosphate fertilizer manufacturer  Arsenic and Lead in soil
Brown's Dump FLD980847016	Hipps Road Landfill FLD980709802	Sites are all in Jacksonville
Jacksonville Ash Site FL0002264810		Residential contamination
Admiral Home Appliances SCD047563614	Shuron Inc. SCD003357589	Manufacturing plant  Drinking water contamination  VOC and metal contaminants
Sixty One Industrial Park TND987790300	Diamond Shamrock Corp. Landfill GAD990741092	Metals and VOCs in groundwater
Ecusta Mill NCD003166675	Olin Corp. (Mcintosh Plant) ALD008188708	Chlorine production  Mercury contamination
Solitron Devices Inc FLD032845778	Harris Corp. (Palm Bay Plant) FLD000602334	Electronics manufacturing
Itt-Thompson Industries, Inc FLD043047653		Solvents in groundwater and drinking water Metal industry Solvent groundwater plume
Lyman Dyeing And Finishing SCD987584653	Martin-Marietta, Sodyeco, Inc. NCD001810365	Dye operation  Landfill component
Nocatee Hull Creosote FLD980709398	Cabot/ Koppers FLD980709356	Wood treater  Creosote  Arsenic contamination
Sanford Gasification Plant FLD984169193		Waste from coal tar  PAH contaminants

**EXHIBIT A-6: LOGIC FOR PAIRING OF SUPERFUND ALTERNATIVE APPROACH AND NPL SITES**

1. Site Characteristics
  - EPA ID
  - Site Name
  - State
  - Zip Code
  - County
  - Region: 4
  - Federal Facility: N
  - Non-NPL Status: SA
  - NPL Status: Currently on the Final NPL
  - Responsibility: Potentially Responsible Party (limited to sites that are PRP-lead)
  
2. Site Selection Criteria (in order of importance for selecting sites)
  - Site Characterization (as provided by Region 4 staff)
  - Major Contaminants/Contaminants of Concern (If Applicable, also provided by Region 4 staff)
  - Contaminated Media
  - Types of Contaminants
  - Site Description (Region 4 NPL caliber sites website)
  
3. Additional Fields for Consideration in Pairing Sites
  - Number of PRPs
  - Number of OUs
  - Most Recent ROD (limited to sites that have obtained at least one ROD since 1995)
  - Number of RODs

**COLLECT AND ANALYZE DATA FROM EXISTING FILES AND DATABASES**

This evaluation relies primarily on existing data sources, including EPA’s CERCLIS database, Workload Allocation Model, RODs, and prior evaluations. Data from CERCLIS and EPA’s Workload Allocation Model will support assessment of time and cost for differences between paired sites. Findings from prior evaluations support review of key program perception issues. They also identify how these have evolved, and how EPA has updated the program implementation since the internal evaluation and OIG report. Ultimately, these data and findings may be used to frame questions for interviewees on the factors influencing the use of SA and NPL approaches.

#### Analysis of Existing Superfund Data

IEc will analyze CERCLIS data provided by Randy Hippen at EPA Headquarters and CERCLIS data downloaded from the public CERCLIS website

(<http://www.epa.gov/superfund/sites/phonefax/products.htm>). A-7 lists the key CERCLIS fields that will support the comparison of SA approach and NPL sites for Evaluation Questions 3, 4, and 5.

#### EXHIBIT A-7: CERCLIS FIELDS FOR COMPARISON OF SITES WITH SAA AGREEMENTS AND NPL SITES

Site Activities
<ul style="list-style-type: none"><li>• Action</li><li>• Action ID</li><li>• Actual Start Date</li><li>• Actual End Date/Completion</li><li>• Planned Outcome</li><li>• Urgency</li><li>• Initial Remedial Measure</li><li>• Institutional Controls</li><li>• Long Term Response Action</li><li>• Site-Wide Ready for Anticipated Use (if any paired sites achieve SWRAU)</li><li>• Cleanup Technologies Used</li><li>• Cleanup Status (at OU)</li><li>• Human Exposure Environmental Indicator Measure</li></ul>

IEc plans to review and analyze available CERCLIS data on site actions and designations for the paired sites to answer the following evaluation questions using the CERCLIS fields noted below each question:

Evaluation Question 3a): Do sites using the SA approach use capping remedies, institutional controls, or other remedies that mitigate risk but do not remove all contamination, more frequently or less frequently than similar sites listed on the NPL? Key CERCLIS fields include:

- Remedies
- Unrestricted Use Designations
- Institutional Controls

Evaluation Question 3b): Do data suggest that SAA remedies are comparable to remedies used for similar sites listed on the NPL (e.g., Do sites using the SA approach involve greater or fewer remedies resulting in unrestricted use)? Key CERCLIS fields include:

- Remedies
- Human Exposure Environmental Indicator Measure
- Contaminated Ground Water Migration Environmental Indicator Measure

Evaluation Question 5a): What are differences in the time needed to complete the early part of the site remediation process (from discovery through RIFS)? Key CERCLIS fields include:

- Date of discovery
- Date of RI/FS

Evaluation Question 5b): What are differences in the time needed to complete the “middle part” of the site remediation process (from RIFS through ROD)? Key CERCLIS fields include:

- ROD date(s)

Evaluation Question 5c): What are differences in the time needed to complete the later part of the process (from ROD through RD/RA, or through construction complete where applicable)? Key CERCLIS fields include:

- ROD date(s)
- RD start and completion dates
- RA start and completion dates

*Note that available data may not support analysis of Evaluation Question 5c because most sites using the SA approach have not yet completed remedial actions.*

IEc plans to review the above findings and to identify any patterns of difference in the time to complete actions, or any differences in the outcomes at SA approach and NPL sites. Due to the limited number of sites that will be compared, an evaluation of statistical significances will not be possible, but we plan to review differences and patterns amongst and across paired sites.

In addition, it may be possible to review some descriptive statistics for PRP-lead sites and evaluate if there are any differences between SA approach and NPL sites. Example measures could include the average number of days from date of discovery to date of RI/FS and average number of days from RI/FS to ROD.

A preliminary review of sites using the SA approach and available data has indicated that few sites with SAA agreements have completed the remedial design and remedial action stages. In addition, many sites have a lengthy time lag between discovery and Superfund action. Thus, IEC will work with EPA to identify how this lag should be addressed, and analytic emphasis will be placed on the RI/FS and ROD dates, rather than on question 4c. Findings will be used in conjunction with cost data from the Workload Allocation Model to review the efficiency and effectiveness of the SA approach.

#### Analysis of Workload Allocation Model Data

Alan Youkeles from EPA Headquarters provided IEC with detailed data on Superfund obligations and expenditures from his workload allocation model for all sites in Region 4, except for those sites in Florida. While the workload allocation data is limited to activities conducted by EPA (and therefore does not include PRP costs for remediation), this limitation does not affect our analysis because no sites using the SA approach have completed remedial actions (i.e., achieved construction complete). We are therefore focusing on EPA actions prior to and including development of RODs.

To the extent possible, IEC plans to review expenditure data to determine whether data support review of specific costs associated with the following actions that EPA undertakes in the process of negotiating SA agreements:

- Review of site complexity (including PRP identification)
- Evaluation of feasibility of SA approach (including evaluation of PRP viability)
- Negotiation of administrative order of consent with PRP
- Negotiation and oversight of TAG/TAP assistance
- Development of ROD(s)

IEC plans to review expenditure data for individual actions as well as general categories of expenditures by different EPA staff, such as site management, enforcement, and extramural expenditures. We note that the grouping of actions may affect IEC's ability to break out specific stages, but we expect to be able to compare total EPA costs from discovery through development of ROD; and to identify the distribution of those costs across actions, and across EPA enforcement, site management, and extramural expenditures.

To reduce the potential for double counting, IEC will review only expenditure data, and not obligation data. IEC's analysis of expenditure data in conjunction with CERCLIS data will answer the following evaluation questions:

Evaluation Question 5a): What are differences in the early part of the process (from discovery through RIFS)?

- Amount of effort involved in reviewing site complexity;
- Evaluating feasibility of SA approach;
- Negotiating administrative order of consent; and
- Negotiating and oversight of TAG/TAP assistance.

Evaluation Question 5b): What are differences in the middle part of the process (from RIFS through ROD)?

- Effort involved in preparing ROD(s).

Analyses of expenditure data is only possible through the ROD stages of the pipeline because EPA does not track PRP spending for remedial actions. In addition, few sites

with SAA agreements have completed remedial actions. As a result, data on the time and resources required to achieve the Remedial Action or Construction Complete stages are limited. Thus, IEc plans to review expenditure data and the amount of time involved to complete actions only through the ROD stage. This limitation applies to both the matched pairs approach and reviews of average time and expenditures for actions at paired sites.

#### Contextual Assessment of Results

IEc will focus analysis of CERCLIS and Workload Allocation Model data on identifying both important differences between individual sites, and broader patterns or trends that emerge when comparing SA and NPL sites “across pairs.” In addition, IEc will work with EPA to identify documentation of “average” site cost and time data for sites in Region 4 and nationally, to determine how cost and time differences compare with the broader program performance.

Our priorities in identifying these contextual data will be to ensure that they are relevant to the sites (e.g., that they do not focus on Fund-lead sites or remedial action costs) and that they reflect existing methods, analyses, and data recognized by the Agency.

#### REVIEW OF PREVIOUS EVALUATIONS AND DATA COLLECTION EFFORTS

EPA’s Office of Enforcement and Compliance Assurance (OECA) and Office of Solid Waste and Emergency Response (OSWER) conducted a joint internal evaluation of the SA approach and EPA’s Office of the Inspector General also conducted an audit of the approach. Both of these evaluations were completed in 2007.

IEc requested access to the methodology and data collection efforts used to collection information on opinions and perceptions via surveys, questionnaires, and interviews.

#### OECA/OSWER Evaluation

OECA’s Office of Site Remediation Enforcement (OSRE) and the OSWER’s Office of Superfund Remediation and Technology Innovation (OSRTI) conducted an evaluation of the SA pilot to better understand how EPA Regions are implementing the SA approach, whether it leads to successful site cleanups, and the concerns expressed by stakeholders. The results of that evaluation were published in September 2007, *Results of the Superfund Alternative Approach Evaluation*.

In addition to RPMs, nine external stakeholders were consulted for this evaluation, including state representatives, attorneys, PRPs, and community groups. IEc requested access to examine the survey questions, responses, and a list of survey recipients. If these materials are received, IEc will review the surveys to identify questions that may have already been asked and to identify stakeholders that may have already been consulted.

For example, the evaluation indicated that attorneys reported that negotiating the TAP provision was difficult and that some regional community involvement coordinators reported that local community groups preferred SA’s TAP assistance compared to NPL’s TAG. IEc plans to interview community involvement coordinators and inquire about the extent that communities use technical assistance funding at SA approach and NPL sites.



IEc will first carefully review all available data related to the OECA/OSWER evaluation to avoid duplicating efforts.

IEc reviewed the findings and requested access to the underlying data from the OECA/OSWER Evaluation to inform the answers to Evaluation Questions 1, 2, 6 and 7, specifically:

Evaluation Question 1a): What aspects of the SA approach are appealing or unappealing to PRPs, and why?

Evaluation Question 1b): Do PRPs generally prefer the SA approach over NPL listing, or vice-versa? Why or why not?

Evaluation Question 2a): What is the initial response of community members to NPL listing compared to EPA's decision to use the SA approach?

Evaluation Question 2b): Ultimately, what do available data reveal about the satisfaction of community members with the SA process and structure compared to the NPL process and structure?

Evaluation Question 2c): To what extent do communities use technical assistance funding at SA approach and NPL sites? Is there a difference in funding availability and/or expenditures for SA approach or NPL sites?

Evaluation Question: 6a) Do areas of inconsistent implementation remain? If yes, how should EPA address them?

Evaluation Question 6b): Have other questions related to implementation of guidance and consistent tracking of site data been addressed?

Evaluation Question: 7): What considerations should EPA take into account when deciding if and when to use the SA approach in the future?

We anticipate that this prior evaluation will provide contextual information for framing interviews to address these questions.

#### OIG Evaluation

In June of 2007, EPA's Inspector General issued a report on the SA approach entitled EPA Needs to Take More Action in Implementing Alternative Approaches to Superfund Cleanups, Report No. 2007-P-00026. OIG conducted interviews with Superfund program managers and staff, PRPs, and representatives of NAM and the Superfund Settlements Project (SSP) to review their experiences with the SA approach. IEC requested access to the interview questions, responses, and list of interviewees. However, OIG did not release any of the requested data.

In addition, OIG administered six short questionnaires on PRP general views and experiences with the SA approach. Detailed information about the specific interviews conducted is not available from the OIG; IEC will therefore rely on publicly available report data to inform additional data collection through interviews to address Evaluation Questions 1, 2, 6, and 7.

The collected data from both prior evaluations will support the following actions:

- Inform Evaluation Questions 1, 2, 6, and 7
- Identify and/or exclude potential interviewees
- Provide meta data about issues previously identified and addressed
- Ascertain potential interview questions or additional data sources

**Additional Data Resources: RODs, Community Involvement Plans**

IEc reviewed EPA Superfund Alternative Approach website to review SA criteria and requirements (<http://www.epa.gov/compliance/cleanup/superfund/saa.html>) and Region 4's NPL Caliber website (<http://www.epa.gov/region4/waste/npl/index.htm#FL>) to fill in missing data items and provide supplemental information (e.g., location/population density, technical assistance funding). Individual profiles on the Region 4 website also contain links to:

- Site fact sheets
  - Site background
  - Site reuse/redevelopment
  - Community Involvement
- RODs
  - Institutional controls
- Consent decrees
  - Provisions for technical assistance funding
- Community involvement plans
  - Plans for community involvement and engagement of community groups

IEc will contact Superfund staff in Region 4 or Headquarters to request additional information or documents if the above websites do not provide the necessary resources to conduct this evaluation.

**NEW DATA COLLECTION EFFORTS**

In addition to using existing files and data sources, IEC will conduct a limited number of in-person or telephone interviews to support this evaluation. IEC plans to use interviews in three ways: 1) to provide central information on specific evaluation questions that have not been well-documented using available data (e.g., Questions 1 and 2); 2) to supplement information available in existing data sources (e.g., follow-up on EPA activities to address prior evaluation recommendations); and 3) to investigate specific data questions that may arise as a result of the quantitative analyses of existing data. Because the optimal number and type of interviews will be driven in part by the analysis of existing data, it is premature to develop the specific content or target of the interviews. However, we anticipate that the interviews will be focused roughly as follows:

## **EPA Staff**

- Community Involvement Coordinators (CICs)
  - All four community involvement coordinators from Region 4
  - Interviews with CICs will address many facets of the SA and NPL approaches, but the primary focus will be on Evaluation Question 2:
    - 2a) What is the initial response of community members to NPL listing compared to EPA's decision to use the SA approach?
    - 2b) Ultimately, what do available data reveal about the satisfaction of community members with the SA approach process and structure compared to the NPL process and structure?
    - 2c) To what extent do communities use technical assistance funding at SA approach and NPL sites? Is there a difference in funding availability and/or expenditures for paired sites?
- Remedial Project Managers (RPMs) and other EPA staff
  - Interviews may be used to fill-in data gaps and to collect experiences with the SA and NPL approaches to inform and provide supplemental information, particularly for Evaluation Questions 4, 6, and 7:
    - 4. Is there a difference in the potential for reuse/redevelopment at sites with SAA agreements compared with more sites listed on the NPL? If there is a difference, does the evidence suggest why this difference exists?
    - 6a) Do areas of inconsistent implementation remain? If yes, how should EPA address them?
    - 6b) Have other questions related to implementation of guidance and consistent tracking of site data been addressed?
    - 7) What considerations should EPA take into account when deciding if and when to use the SA approach in the future?

## **State Or Local Officials**

- Officials may be interviewed to supplement data collection efforts for the following evaluation questions:
  - 1. What is the response of potentially responsible parties (PRPs) to the SA approach?
  - 2. What do available data reveal about community member involvement in and perceptions of the NPL and SA processes?

- 6. What has EPA done to improve the consistency of implementing the SA approach since an internal evaluation and an IG report on the approach was published in 2007?
- 7. What considerations should EPA take into account when deciding if and when to use the SA approach in the future?

### **Community Groups**

- Community groups with experience with SA approach and NPL sites may be interviewed to provide supplemental information for Evaluation Question 2
  - 2a) What is the initial response of community members to NPL listing compared to EPA’s decision to use the SA approach?
  - 2b) Ultimately, what do available data reveal about the satisfaction of community members with the SA approach process and structure compared to the NPL process and structure?
  - 2c) To what extent do communities use technical assistance funding at SA approach and NPL sites? Is there a difference in funding availability and/or expenditures for SA approach or NPL sites?

### **Potentially Responsible Parties (PRPs) (if applicable)**

- PRPs may be interviewed to solicit responses for the following evaluation questions:
  - 1a) What aspects of the SA approach are appealing or unappealing to PRPs, and why?
  - 1b) Do PRPs generally prefer the SA approach over NPL listing, or vice-versa? Why or why not?
  - 7) What considerations should EPA take into account when deciding if and when to use the SA approach in the future?

IEc plans to conduct up to 12 interviews with individuals to fill in data gaps, particularly on perceptions of the SA process and the perceived stigma of sites with SAA agreements compared to NPL sites. Interviews may include individuals with differing perspectives on the SA approach including EPA Superfund and OECA staff, PRPs, community groups, and state or local government officials. IEC plans to seek interviewees that have experience with both the sites with SAA agreements and NPL sites. Thus, for example, IEC plans to interview all four community involvement coordinators for EPA Region 4.

Because we propose to use the interviews as a follow up to the review of previous data collection efforts, we plan to wait until we have results available to develop the list of interviewees and an interview guide. After the results are compiled, IEC will draft the

interview guide and produce a final guide based on EPA comments. IEC will schedule and conduct phone interviews with identified participants.

### **REPORT RESULTS AND CONCLUSIONS**

IEC will produce interim deliverables including: an analysis of existing data and preliminary results. IEC expects that EPA will provide feedback on interim deliverables as we submit them. Upon completion of interim deliverables, IEC will develop a draft evaluation report that incorporates EPA comments on interim deliverables, synthesizes findings across deliverables, and provides recommendations for improving the Superfund Alternative Approach.

The following outline of the report is preliminary; the details of the final report structure will likely evolve based on evaluation findings. The final report will be prepared and delivered in accordance with the Evaluation Support Division's report formatting and presentation guidelines.

### **PRELIMINARY OUTLINE OF THE FINAL REPORT**

- 1) Executive Summary
- 2) Introduction
  - a) Background on Superfund and the Superfund Alternative Approach
  - b) Program Pipeline Logic Model
  - c) Purpose/Objectives of the Evaluation
  - d) Evaluation questions and rationale for the questions
  - e) Structure of the Report
- 3) Methods

For each method, we will discuss the rationale for the method, the evaluation question(s) that the method is designed to support, data collection technique(s) and instruments employed.

- a) CERCLIS Data
  - b) Workload Allocation Model
  - c) Existing Evaluations/Data
  - d) Interviews
  - e) Strengths and Weaknesses of Methodology
- 4) Findings

We expect to have several findings for each evaluation question. For each finding, we will discuss the method(s) that produced the data, analytical techniques employed, and any limitations to our analyses. We will use tables and graphs to communicate findings as appropriate.

- a) Findings on Evaluation Question 1
  - b) Findings on Evaluation Question 2
  - c) Findings on Evaluation Question 3
  - d) Findings on Evaluation Question 4
  - e) Findings on Evaluation Question 5
  - f) Findings on Evaluation Question 6
  - g) Findings on Evaluation Question 7
- 5) Recommendations

## Proposed Evaluation Schedule

IEc proposes the following schedule for completing the evaluation, as outlined below:

### PROPOSED EVALUATION SCHEDULE

TASK	DELIVERABLE	ESTIMATED COMPLETION SCHEDULE	TARGET DATE
2	Document review		Complete
	Finalize logic model		Complete
	Finalize evaluation questions	2 weeks after updating evaluation questions	Complete
	Draft evaluation methodology	Submitted on April 2, 2010	
	Final Evaluation Methodology	2 weeks after receiving comments	May 10, 2010
	Draft Quality Assurance Plan	Within 7 days of final methodology approval	May 12, 2010
	Final Quality Assurance Plan	If applicable, within 3 working days of receiving EPA comments	May 26, 2010
3	<b>Review Existing Data:</b> Review and analyze CERCLIS data, pair sites, analyze paired sites	Within 5 weeks of finishing methodology	May 28, 2010
	<b>Interviews:</b> Identify EPA interview participants (among HQ and area staff), community representatives (if applicable), and PRPs (if applicable), schedule interviews, develop draft interview guide	Within 4 weeks after completing review of existing data	June 11, 2010
	Finalize interview guide and conduct interviews	Within 3 weeks of scheduling and/or receiving comments on interview guide	June 30, 2010
	Interview summaries	Within 2 weeks of interviews	July 12, 2010
4	Draft final report	Within 4 weeks of receiving comments on all interim deliverables	August 9, 2010
	Oral presentation, if desired	2 weeks after draft report	August 23, 2010
	Final report	3 weeks after receipt of comments on draft report	September 13, 2010

## APPENDIX B





APPENDIX B: SA APPROACH AND NPL PAIRED SITES

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
<b>Site with SAA Agreement</b>									
ADMIRAL HOME APPLIANCES SCD04756361 4	Miscellaneous manufacturing plant	Chromium, Zinc, Nickel, Lead  Mercury in local wells	Groundwater, Sediment, Sludge, Soil, Surface Water	Metals, PAH, VOC,	Site of a former wastewater treatment plant, initially used for the treatment of domestic wastewater for a trailer park. After the trailer park ceased operation, a variety of manufacturing operations started up at the site. These manufacturing operations continued to use the wastewater plant to inadequately treat industrial wastewater until 1982, when the adjacent manufacturing plant began to pre-treat their wastewater and discharge to Williston's Sewage Treatment Plant  Site investigations detected heavy metals, polycyclic aromatic hydrocarbons, and volatile organic compounds (VOCs) in ground water, soil, sediments, surface water, and sludge at the site. Metals including chromium, zinc, nickel, and lead were found in the wetland discharge area, as well as in sediments of Spur Branch. In addition to VOCs, mercury was found in six residential wells in a neighborhood adjacent to the plant	N/A	2	9/28/2006	1
<b>NPL Match</b>									
SHURON INC. SCD00335758 9	VOCs and metals in soil and GW	Groundwater, Soil, Surface Water	Metals, PAH, VOC		The Shuron Inc. site is located adjacent to the city of Barnwell in Barnwell County, South Carolina. A former manufacturing facility occupies about 34 acres of the 85-acre property, with wetlands comprising the remaining acreage. From 1958 to 1992, the facility was used for manufacturing single-vision and multi-vision glass ocular lenses. Waste byproducts of plant operations included grinding compounds, glass, polishing compounds, asbestos, hydraulic oils, motor oils, and perchloroethylene sludge.  Improper disposal practices at the former manufacturing facility have led to contamination of soils, sediments, ground water, and surface water. The primary contaminants of concern were volatile organic compounds (VOCs) in ground water and metals, including lead, arsenic, zinc, and copper, in soils and wetland sediments. Approximately 5,600 people within 4 miles of the site use ground water as a drinking water source.	1	2	09-Sep-98	1
<b>Site with SAA Agreement</b>									

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
GURLEY PESTICIDE BURIAL NCD98617252 6	Phosphate fertilizer manufacturer. Arsenic and Lead in soil.	Heavy metals	Groundwater, Sediment, Soil, Surface Water	Inorganics, Metals, POPs, Pesticides, VOC,	103-acre Gurley Pesticide Burial site is the location of both a former phosphate fertilizer production facility and an agricultural chemical distribution facility. There are two major areas of interest at the site, designated as the pesticide burial area	2	2	9/28/2006	1
NPL Match									
AGRICO CHEMICAL CO. FLD98022185 7	Arsenic and lead in soil and gw from phosphate fertilizer manufacturing		Groundwater, Sludge, Soil,	Halogenated SVOCs, Inorganics, Metals, Nitroaromatics, PAH, Persistent Organic Pollutants, Pesticides, Radioactive, VOC	Operations at the site began in 1889 with Agrico Chemical producing sulfuric acid from pyrite (iron sulfide). Several companies produced fertilizer on site between 1920 and 1975, including Conoco, Inc. (now ConocoPhillips, Inc.) and Agrico Chemical Company.	6	3	18-Aug-94	2
Site with SAA Agreement									
NOCATEE HULL CREOSOTE FLD98070939 8	Wood treater	creosote-related pahs and BTEX (benzene, toluene, ethylbenzene, and xylene). Arsenic, benzene, boron, carbazole, dibenzofurans, naphthalene, PAHs, and pentachlorophenol, arsenic and benzene	Groundwater, Sediment, Soil	Soil, ground water, and drainage-system sediments at the site are contaminated with creosote-related polycyclic aromatic hydrocarbons and BTEX (benzene, toluene, ethylbenzene, and xylene).	Nocatee Hull Creosote is listed as an SAA on <a href="http://www.epa.gov/region4/waste/npl/index.htm#NC">www.epa.gov/region4/waste/npl/index.htm#NC</a> , but not on <a href="http://www.epa.gov/compliance/cleanup/superfund/saa-sites.html#4">www.epa.gov/compliance/cleanup/superfund/saa-sites.html#4</a> The Nocatee-Hull Creosote site is comprised of three parcels - a former treatment plant area (approximately 38 acres), the Peace River flood plain area to the west (approximately 35.5 acres), and the Oak Creek area to the east - a rural residential area (approximately 63 acres). The site is the former location of a creosote plant constructed in 1913 to treat railroad ties. Site operations consisted of treating railroad timbers using a pressurized treatment cylinder.	1	2	6/15/2009	1

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
NPL Match									
CABOT/ KOPPERS FLD98070935 6	Manufacturer (charcoal) / wood treating with a residential component	Arsenic, PAH, creosote, and dioxin in soil, sediment (freshwater stream), and groundwater	Groundwater, Soil	Dioxins/Dibenzofurans, Metals, Nitroaromatics, Organics, PAH, Pesticides, VOC, Base Neutral Acids	A wood-treating operation on the Koppers portion of the site, currently operated by Koppers Industries, has been active since 1916. Cabot Carbon formerly operated a charcoal production operation on the Cabot Carbon portion. This portion has been redeveloped and currently contains a commercial shopping mall, car dealership and a series of smaller stores and businesses. Poor waste handling practices in the past have resulted in contaminated ground water, soil and possibly off-site surface water. Contaminants include arsenic, pah, and creosote.	4	3	27-Sep-90	1
Site with SAA Agreement									
SANFORD GASIFICATION PLANT FLD98416919 3	Coal and coke gasification	VOCs, PAH, Dioxin, Metals	Groundwater, Sediment, Soil, Subsurface Soil, Surface Soil, Surface Water	Dioxins/ Dibenzofurans, Metals, PAH, VOC,	The site includes the former SGP facility, an unnamed tributary and Cloud Branch Creek from the unnamed tributary to where it discharges into Lake Monroe. From the 1880s until 1951, water gas and carbureted water gas were manufactured at the SGP by carbonization or destructive distillation of bituminous coal and coke. At the end of the manufacturing process, gas holder tanks, frequently used to store waste tars and condensates, frequently leaked resulting in contamination. The site has been contaminated with metals, volatile organic compounds, polycyclic aromatic hydrocarbons, and Dioxins/ Dibenzofurans.	5	4	9/21/2006	3

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
NPL Match									
CABOT / KOPPERS FLD98070935 6	Manufacturer (charcoal) / wood treating with a residential component	Arsenic, PAH, creosote, and dioxin in soil, sediment (freshwater stream), and groundwater	Groundwater, Soil,	Dioxins/Dibenzofurans, Metals, Nitroaromatics, Organics, PAH, Pesticides, VOC, Base Neutral Acids	A wood-treating operation on the Koppers portion of the site, currently operated by Koppers Industries, has been active since 1916. Cabot Carbon formerly operated a charcoal production operation on the Cabot Carbon portion. This portion has been redeveloped and currently contains a commercial shopping mall, car dealership and a series of smaller stores and businesses. Poor waste handling practices in the past have resulted in contaminated ground water, soil and possibly off-site surface water. Contaminants include arsenic, polycyclic aromatic hydrocarbons and creosote.	4	3	27-Sep-90	1
Site with SAA Agreement									
SIXTY ONE INDUSTRIAL PARK TND98779030 0	Miscellaneous manufacturing plant	VOCs - Vinyl chloride, trichloroethene, tetrachloroethene  Metals - antimony, arsenic, barium, iron, manganese, and thallium	Groundwater	Metals, VOC,	The 78-acre site was previously developed for industrial use as a pyrotechnic and ordnance production facility. Metal plating was also part of site operations. Production waste was treated in unlined lagoons on site, and later site operations included storage and salvage of industrial equipment and components. Former site activities resulted in contamination of ground water with volatile organic compounds (VOCs) and metals. The primary contaminants of concern (COCs) for the site included the VOCs vinyl chloride, trichloroethene, and tetrachloroethene and the metals antimony, arsenic, barium, iron, manganese, and thallium.	5	2	9/26/2008	1
NPL Match									

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
DIAMOND SHAMROCK CORP. LANDFILL GAD99074109 2	Uncontrolled Industrial Landfill		Groundwater	Metals, VOC	Prior to 1968, property was agricultural. In 1972, 1,500 gallons of oil pitch and 600 - 800 drums containing reportedly obsolete, off-specification products and raw materials from operations were buried in unlined disposal trenches at the site. In 1980, the current site owner/operator, Diamond Shamrock Corporation, reported the burials to Georgia Environmental Protection Division. COCs include 1,2-dichloroethane, manganese, toluene, trichloroethylene. Manganese and TCE are the onl respective groundwater standards.	3	2	03-May-94	1
Site with SAA Agreement									

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
ECUSTA MILL NCD00316667 5	Chlorine production	Mercury	Ground water, Soil, Sediment	Metals	<p>The Ecusta Mill is a former pulping and paper manufacturing facility located in Pisgah Forest. The facility is approximately 527 acres situated in a mixed-use commercial/residential setting near the confluence of the Davidson and French Broad Rivers. The site consists of the former manufacturing facility, as well as industrial solid waste landfills and an Aerated Stabilization Basin.</p> <p>In addition to the pulping and paper-making operations, the following activities have occurred at the site: chlorine production operations using Sorenson mercury cells; caustic storage; water and wastewater treatment; and printing.</p> <p>Mercury contamination associated with the chlorine production operations has been documented in the soils and ground water beneath and adjacent to the mercury cell building. Mercury contamination has also been documented in sediment in the Davidson River.</p>	3	3	29-Sep-09	1

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
NPL Match									
OLIN CORP. (MCINTOSH PLANT) ALD00818870 8	Mercury in sediment		Groundwater, Soil	Inorganics, Metals, Pesticides, VOC, Base Neutral Acids	<p>The Olin Corporation McIntosh Plant site is located approximately one mile east-southeast of the Town of McIntosh in Washington County, Alabama. The Olin main plant and associated properties cover approximately 1,500 acres. From 1952 until 1982 Olin produced chlorinated organic pesticides, chlorine, caustic soda and sodium hypochlorite at the site. Presently, Olin produces chlorine, caustic soda, sodium hypochlorite and blends and stores hydrazide compounds at the site.</p> <p>Releases of mercury and organic chemicals have contaminated the shallow ground water beneath the site. Discharges of wastewater containing mercury have contaminated wetlands adjacent to the Tombigbee River. Approximately 500 people live within the area of the site. Everyone in the area utilizes ground water as a source of drinking water. Investigations have also indicated contamination in a 65-acre natural basin, which is located on the Olin property east of the active plant facilities. Mercury and chloroform are the principal contaminants identified at the site.</p>	1	4	16-Dec-94	1
Site with SAA Agreement									
ITT-THOMPSON INDUSTRIES, INC FLD04304765 3	Solvent groundwater plume	TCE, cis-1,2,-dichloroethylene (DCE), and vinyl chloride in ground water and private wells. Lead, zinc, and chromium in sediments of unnamed natural pond adjacent to the site.	Groundwater, Soil	Metals, VOCs	<p>ITT-Thompson Industries site is located in the northeastern section of the City of Madison, Madison County, Florida. The site consists of a former manufacturing plant, an office trailer, a small storage shed, and a parking area.</p> <p>ITT Thompson Industries operated an automobile stamping business at this site from 1970 to 1991, manufacturing wheel ornamentation for cars, including wheel covers and wire wheel products.</p> <p>Residential neighborhoods surround the site and several ponds are near the site, including an adjacent unnamed natural pond and nearby man-made drainage ponds.</p>		2	9/25/2008	1

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
NPL Match									
HARRIS CORP. (PALM BAY PLANT)FLD00 0602334	Electronics Manufacture - solvents in GW		Groundwater, Soil	Inorganics, Metals, PAH, VOC	<p>An electronics firm supporting the aerospace industry operated at the site in the 1950s and 1960s. Harris Corporation purchased the firm and has been operating in Palm Bay since 1967. Harris Corporations expanded from the original facilities onto undeveloped property, with the exception of the former Building 100 area. Two previous manufacturing firms operated at the former Building 100 area and used the site for painting operations, a chromium plating operation, a machine shop, and drum storage area.</p> <p>Plumes of contaminated ground water were identified beneath the Harris Corporation facility and the adjacent well field owned by Palm Bay Utilities Corporation (PBUC) in the early 1980s. PBUC provides potable water supply, sewage treatment and disposal for residents of Palm Bay. Numerous contaminants were eventually identified in on-site ground water, including vinyl chloride, trichloroethylene, and chromium. EPA determined that concentrations of some of these contaminants in ground water could cause unacceptable human health risks.\</p>	1	3	08-Oct-08	2
Site with SAA Agreement									
SOLITRON DEVICES INC FLD03284577 8	Solvent groundwater plume	Metals, municipal water supply contaminated by solvents	, Groundwater, Soil,	Metals, PAH, Persistant Organic Pollutants, Pesticides, VOC, Base Neutral Acids	In 1959 Honeywell, Inc. constructed a facility at the site and began manufacturing electronic components. Solitron Devices, Inc. assumed ownership in 1965, continuing similar operations until 1992 when operations ended. Heavy metals and organic solvents were commonly used and industrial wastewater from the plant was discharged to the Riviera Beach sewer system. Solvents from the site contaminated some of the municipal supply wells in the City of Riviera Beach. Investigations also indicated on-site soil and ground water contamination at the site.	2	2	12/17/2004	1



EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
NPL Match									
HARRIS CORP. (PALM BAY PLANT) FLD00060233 4	Electronics Manufacture - solvents in GW		Groundwater, Soil,	Inorganics, Metals, PAH, VOC	An electronics firm supporting the aerospace industry operated at the site in the 1950s and 1960s. Harris Corporation purchased the firm in 1967. Two previous firms used the site for painting operations, a chromium plating operation, a machine shop, drum storage. Contaminated groundwater was identified at the facility and the adjacent PUBC well field. PUBC provides potable water supply for residents of Palm Bay. Contaminants identified included vinyl chloride, trichloroethylene, and chromium. EPA determined that some concentrations in ground water could cause unacceptable human health risks.	1	3	08-Oct-08	2
Site with SAA Agreement									
LYMAN DYEING AND FINISHING SCD98758465 3	Industrial waste landfill	Solvents	Groundwater, Sediment, Soil, Surface Water	VOC, PAH, metals	The Lyman Dyeing and Finishing site is located on a 12-acre. From 1924 to 1965, Lyman Dyeing and Finishing operated a landfill, which was used for disposal of various solid wastes from the facility mill operations. Potential chemicals associated with the solid wastes from the facility include residues of dyes, hydraulic liquids, waste solvents, adhesive materials and office supplies. CoCs: Arsenic and benzo		2	9/29/2009	1

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
NPL Match									
LEONARD CHEMICAL CO., INC. SCD99127932 4	Industrial waste disposal. VOCs in GW		Groundwater, Liquid Waste, Soil, Subsurface Soil, Surface Soil,	Metals, PAH, VOC	<p>The 7-acre Leonard Chemical Company site, located in Rock Hill, York County, South Carolina, began operating as a hazardous waste treatment facility in the late 1960s. The primary treatment method used by the facility was distillation, and the resulting recovery residues were placed in various locations on the site. When plant operations ceased in 1982, approximately 3,400 drums and 11,500 gallons of various chemicals were left on the site. Materials included solvents, volatile organic compounds (VOCs), printing inks, polyester solids, still bottom residues, and filters for paint, water, and fiberglass.</p> <p>Numerous spills and leaks from former site activities and abandoned waste materials occurred at the site, resulting in soil and ground water contamination with metals, polycyclic aromatic hydrocarbons, and VOCs. Abandoned equipment and machines remained at the site, numerous sludges lay on the ground, and vegetation was spotty where chemical wastes and still bottom residues had been used as fill material.</p>	16	2	20-Aug-01	1

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
<b>Site with SAA Agreement</b>									
WEYERHAEUSER CO PLYMOUTH WOOD TRTNG PT NCD 991278540		Mercury in soil and GW, dioxin, metals, VOCs	Fish Tissue, Groundwater, Sediment, Soil, Surface Water	Dioxins/ Dibenzofurans, Metals, PAH, Persistent Organic Pollutants, Pesticides, VOC,	The 2,400-acre Weyerhaeuser Company Plymouth Wood Treating Plant site is an active wood and paper products manufacturing facility located near the confluence of Welch Creek and the Roanoke River in Plymouth, Martin County, North Carolina.  Site operations have resulted in the contamination of soil, sediments, and ground water with dioxins, dibenzofurans, metals, and volatile organic compounds (VOCs). Site-related compounds have also been found in tissue of fish and other biota that inhabit surface waters near the site. The areas of the plant that are being investigated include: 1) the Former Chlorine Production Plant, which has contributed to mercury contamination in soil and ground water; 2) the Former Landfill No.1, the former disposal areas for mercury cells from the Chlorine Production Plant; and 3) Welch Creek, which has received pre-permitted discharge of wastewater.	1	5	9/24/2008	4

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
NPL Match									
STAUFFER CHEMICAL CO. (COLD CREEK PLANT) ALD09568887 5	Mercury in sediment; misc manufacturer		Groundwater, Sediment, Soil, Surface Water	Inorganics, Metals, Organics, Pesticides, VOC	<p>The Cold Creek Plant began operations in 1966, manufacturing a variety of agricultural chemicals. Wastewaters from the Stauffer processes were held in clay-lined lagoons and discharged to the nearby 650-acre Cold Creek Swamp until approximately 1975. The plant is currently owned by Zeneca, Inc. and continues to operate.</p> <p>Manufacturing processes at both Superfund sites involved numerous contaminants including carbon disulfide, sulfuric acid, carbon tetrachloride, caustic/chlorine, Crystex (a sulfur compound), thiocarbamates and various metals including mercury. Across both sites, several ponds containing contaminated soils and/or sludges were identified.</p> <p>Thiocarbamates were detected in the ground water at the Cold Creek site. Carbon tetrachloride, carbon disulfide and thiocarbamates were found in wells in nearby off-site property. Assessments conducted during the late 1980s did not detect any contaminants in nearby drinking water wells. Therefore, it was concluded that no risk appeared to exist from exposure to contaminated ground water at the sites. However, humans could be exposed primarily to mercury contamination by consuming sediments and fish in Cold Creek Swamp.</p>	3	4	16-Aug-95	3

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
Site with SAA Agreement									

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
BROWNS DUMP FLD98084701 6	Residential yard soil	Arsenic Pesticides PCBs Dioxin	Groundwater, Soil,	Dioxins/ Dibenzofurans, Metals, PAH, PCBs, Persistent Organic Pollutants, Pesticides, VOC,	<p>Located in the City of Jacksonville. Approximately 80 acres in size, the site consists of the former Mary McLeod Bethune Elementary School, an electrical substation of the Jacksonville Electric Authority (JEA), surrounding single family homes and multiple family complexes (e.g., apartments)</p> <p>From the late 1940s until the mid-1950s, the site was an operating landfill used to deposit ash from the City of Jacksonville's municipal incinerators. Investigations have indicated that ash is present within the site at depths varying from the surface to, in some locations, greater than 20 feet below land surface.</p> <p>Elevated levels of lead, arsenic, other inorganics, organics, pesticides/PCBs and dioxin/furans were found in soils. During the early investigations, soil exposure to students of the elementary school and residents living on and near the site was the primary concern. Exposure to ground water and surface water were also of concern.</p>	1	2	8/24/2006	1

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
<b>Site with SAA Agreement</b>									
JACKSONVILLE ASH SITE FL000226481 0	Residential yard soil	Arsenic Metals Pesticides PCBs Dioxin	Groundwater, Sediment, Soil, Surface Water	Dioxins/ Dibenzofurans, Metals, PAH, PCBs, Persistent Organic Pollutants, Pesticides, VOC,	<p>The Jacksonville Ash site is comprised of three facilities in Jacksonville, Duval County, Florida: the Forest Street Incinerator, the 5th &amp; Cleveland Incinerator, and the Lonnie C. Miller, Sr. Park. The Forest Street Incinerator occupies approximately 460 acres of land and, together with the 5th &amp; Cleveland Incinerator, operated as the City of Jacksonville's municipal solid waste incinerator from the 1940s until the 1960s. Combustion ash, clinker, and ash residues were disposed of on each of the incinerator properties and also on the land that was later redeveloped into the Lonnie C. Miller, Sr. Park.</p> <p>The City of Jacksonville conducted a Preliminary Contamination Assessment at the site and found significantly elevated lead levels in the soil and ground water due to the presence of incinerator ash on the site. Elevated levels of arsenic, metals, and pesticides, including polychlorinated biphenyls and dioxins, were also found in soils, surface water, sediments, and ground water at each of the three facilities.</p>	1	2	8/24/2006	1

EPA ID AND SITE NAME	CHARACTERIZATION	MAJOR CONTAMINANTS (IF APPLICABLE)	MEDIA CONTAMINATED	CONTAMINANT CATEGORIES	ADDITIONAL INFORMATION	# OF PRPS	# OF OUS	MOST RECENT ROD	# OF RODS
NPL Match									
HIPPS ROAD LANDFILL FLD98070980 2	Uncontrolled landfill with residential component	Waste in soil, VOCs in groundwater	Air, Groundwater, Soil, Surface Water	Metals, PAH, VOC, Base Neutral Acids	<p>The Hipps Road Landfill Superfund site is a 12-acre site located on the southeastern corner of Hipps Road and Exline Road in Jacksonville Heights, Florida. Landfill operations were conducted on approximately six acres of the site. The landfill area was initially a cypress swamp, and in the mid 1960's, the site owner at the time contracted with Waste Control of Florida (WCF) to use the low lying areas of the property as a landfill. One source of the landfill materials was nearby U.S. Navy Facilities. Landfill operations ceased in 1970 and were covered by a thin layer of soil. The site owner then subdivided the property into residential lots. In the early 1980's, resident complaints about unusual tastes and odors in private well water led to investigations that identified contamination in the ground water. The City of Jacksonville completed installation of city water lines to the affected area in October 1983 and connected area residents to the city water supply.</p> <p>The primary contaminants of concern at the site are vinyl chloride, benzene, and other volatile organic compounds in the ground water.</p>	13	2	03-Sep-86	1



## APPENDIX C



## APPENDIX C: INTERVIEW APPROACH

IEc is conducting an evaluation of Region 4's Superfund Alternate Approach to examine whether the SA approach is having the expected outcome of reducing site costs and speeding remediation, and whether the remedies selected at sites with SAA agreements are equivalent to those at comparable NPL sites. In addition, the evaluation revisits key questions of prior evaluations to gather and update information about community and PRP experiences with the approach.

The purpose of the SA evaluation is to:

- 1) Examine the factors influencing the use of the SA approach
- 2) Assess the effectiveness of the SA approach in achieving the goals of the Superfund program
- 3) Assess the efficiency of the SA approach in terms of potential time and cost savings
- 4) Identify strategies to improve the implementation, efficiency and effectiveness of the SA approach

After analyzing and reviewing the existing data and evaluations, IEC plans to conduct interviews to expand on results and issues identified with existing data, and to gather perspectives on key aspects of the SA approach, including perceptions of the SA process and perceived stigma of sites using the SA approach compared to NPL sites. This effort will involve conducting up to 12 in-person or telephone interviews, primarily with individuals experienced with both the SA and NPL approach. Interviewees may include EPA Superfund and OECA staff, PRPs, community groups, and state or local government officials.

IEc plans to use interviews in three ways:

- To provide central information on specific evaluation questions that have not been well-documented using available data (e.g., Questions 1 and 2);
- To supplement information available in existing data sources (e.g., follow-up on EPA activities to address prior evaluation recommendations); and
- To investigate specific data questions that may arise as a result of the quantitative analyses of existing data.

## IDENTIFYING INTERVIEWEES

IEc proposes the following list of potential interviewees as well as the target questions for the interviews. IEC is seeking insight and recommendations on this list from subject matter experts in Region 4 that are familiar with the individuals and sites mentioned below. Once EPA has provided feedback on the proposed interviewees, IEC will begin scheduling interviews. IEC has identified the following groups and individuals as potential interviewees:

- IEC seeks to interview four EPA Community Involvement Coordinators (CICs) with extensive experience working with SA and NPL sites
    - IEC identified four Community Involvement Coordinators from Region 4:
      - Stephanie Brown (currently at TVA location full-time)
      - Angela Miller
      - LaTonya Spencer
      - Linda Starks
  - IEC seeks to interview three EPA Remedial Project Managers (RPMs) with extensive experience working with SA and NPL sites
    - IEC identified three RPMs:
      - Joe Alfano (Jacksonville ash sites)
      - Randy Bryant (Weyerhaeuser and other sites)
      - Ken Mallery
  - IEC seeks to interview two EPA Managers with experience with both SA and NPL sites
    - IEC consulted with EPA Region 4 staff and identified two Managers to interview
      - David Clay (Legal)
      - Anita Davis (Enforcement)
  - IEC seeks to interview one EPA staff member with extensive experience working with CERCLIS
    - Region 4 suggested one CERCLIS staff member
      - Charlotte Whitley
  - IEC seeks to interview two Potentially Responsible Parties (PRPs) that may have insight as to the factors that influence the use of the SA approach and the perceived stigma associated with each approach
-

- IEC identified two PRPs in Region 4 that appear to have used the NPL and SA Approach.
  - Solitron
  - Monsanto
- IEC may consider interviewing one or more individuals from community organizations if the representatives have experience with both SA and NPL sites. IEC has drafted questions under Evaluation Question 2 designed to identify any groups.
  - In an initial review, IEC identified ten communities that appear to contain both SA and NPL sites; it is not clear whether any of these communities has a group with multi-site experience.
    - ANNISTON, CALHOUN, AL
    - BRUNSWICK, GLYNN, GA
    - CORDOVA, RICHMOND, NC
    - JACKSONVILLE, DUVAL, FL
    - LONGWOOD, SEMINOLE, FL
    - MADISON, MADISON, FL
    - MEMPHIS, SHELBY, TN
    - ORLANDO, ORANGE, FL
    - PLANT CITY, HILLSBOROUGH, FL
    - WASHINGTON, BEAUFORT, NC

The questions included in this interview guide are organized by evaluation question. Responses to the interview questions will ultimately inform the overarching evaluation/study questions. IEC anticipates that interviews with different stakeholders (e.g., with RPMs or PRPs) will focus on subsets of the following interview questions. However, we anticipate that in some cases targeted interviewees have broad knowledge of the SA approach and will provide information to address several evaluation questions.

For each interviewee, IEC plans to collect the following information:

- Name:
- Title/Position:
- Identify the number of NPL sites you have worked on and your role in addressing these sites:
- Identify the number of NPL sites you have worked on and your role in addressing these sites:

The following questions represent a “master list” of questions that will be used to develop interview-specific question lists. When possible, interviewees from different

backgrounds will be asked the same questions to allow comparison, though it is expected that different respondents (e.g., PRPs and RPMs) will provide different viewpoints and reflect different levels of experience.

#### EVALUATION QUESTION 1

IEc proposes to interview CICs, Managers, PRPs, and RPMs to address Evaluation Question 1. The key focus of this evaluation question is the role of PRPs. Each set of stakeholders will be asked to provide their impressions of PRP interactions as these affect their work. This includes the extent to which ease or complexity of PRP interactions affects overall cost/time required for site actions.

Evaluation Question 1. What is the response of potentially responsible parties (PRPs) to the Superfund Alternative Approach (SA)?

- 1a) What aspects of the SA are appealing or unappealing to PRPs?
  - What is the perceived speed in cleaning up sites with SAA agreements compared to NPL sites?
  - Does the amount of time or effort required to complete any of the following actions differ for SA or NPL sites?
    - Site Inspection
    - HRS Scoring and NPL listing versus the process for determining if PRP is willing and viable for the SA approach
    - AOC
    - RI/FS
    - RD
    - RA
  - Do sites with SAA agreements tend to have more or less PRP-EPA cooperation than NPL sites?
  - Do sites with SAA agreements tend to get more/less publicity than NPL sites?
  
- 1b) Do PRPs generally prefer the SA over NPL listing, or vice-versa? Why or why not?
  - Who typically suggests the SA Approach?
  - How many times has a PRP refused if EPA suggested using SA approach?
    - Why did PRP prefer the NPL approach?
  - How many times have PRPs suggested the SA approach and EPA refused?
    - Why was the SA Approach not selected?

## EVALUATION QUESTION 2

IEc proposes to interview CICs, Communities, Managers, PRPs, and RPMs to address Evaluation Question 2. Similar to question 1, each set of stakeholders will be asked to answer these questions based on the stakeholder's perspective. In addition, some questions may not be appropriate for all stakeholders (e.g., PRPs or community groups may not have considered environmental justice unless it has been raised as an issue at a specific site).

Evaluation Question 2. What do available data reveal about community member involvement in and perceptions of the NPL and SA processes?

- Does community involvement tend to be different at sites with SAA agreements than at NPL sites?
    - More or fewer meetings?
    - More or fewer comments on actions/RODs?
    - Other?
  - Can you name any community groups who have been very actively involved with both SA approach and NPL sites, and would be good to talk with about both approaches?
  - Are any sites with SAA agreements located in Environmental Justice communities?
    - How is Environmental Justice considered at SA approach and NPL sites?
- 2a) What is the initial response of community members to NPL listing compared to EPA's decision to use the SA?
- Do community groups more typically ask for NPL listing or prefer the SA approach?
- 2b) Ultimately, how satisfied are community members with the SA process and structure compared to the NPL process and structure?
- Does community satisfaction vary throughout the process or is it consistent?
  - How do community groups express satisfaction with a process or event?
- 2c) To what extent do communities use technical assistance funding at SA and NPL sites? Is there a difference in funding availability and/or expenditures for SA or NPL sites?
- Do SA and NPL groups spend similar amounts of TAG and TAP funding?
  - Is community participation generally equal at SA and NPL sites?

### EVALUATION QUESTION 3

IEc does not propose to collect any specific interview data on this question, which is driven by review of RODs. It is possible that site-specific follow-up questions regarding specific remedies will be included in RPM interview. IEC proposes to interview Managers, and RPMs to address Evaluation Purpose 2.

Evaluation Question 3. Does a pattern of difference exist in the specific remedies selected for sites using the SAA? (no interview questions)

### EVALUATION QUESTION 4

IEc proposes to interview CICs and RPMs to address Evaluation Question 4.

Evaluation Question 4. Is there a difference in the potential for reuse/redevelopment at sites with SAA agreements compared with more sites listed on the NPL? If there is a difference, does the evidence suggest why this difference exists?

- Do SA or NPL sites typically have greater potential for reuse?
- How does the potential reuse of the site get considered in the SA and NPL processes?
  - At what point in each process is it considered?
  - What sort of action is taken to identify reuse?
- Are you familiar with any plans for SA or NPL sites to be reused or redeveloped?
  - Which sites?
- Does one type of site (SA or NPL) typically have a greater potential for reuse?
  - What drives a potential difference for reuse?
  - How is re-use addressed in development of site remedies?
  - Is the emphasis on re-use different for NPL sites v. sites with SAA agreements?
  - If “yes” – what causes this difference?

## EVALUATION QUESTION 5

IEc proposes to interview Managers and RPMs to address Evaluation Question 5

In addition, IEC plans to target Managers and RPMs with experience with NPL sites and sites with SAA agreements to participate in interviews to provide site-specific supplemental information for Evaluation Question 5, but those questions will be driven by results of CERCLIS data analysis.

Evaluation Question 5. What are the total cost, cost net of cost recovery, and time differences of the SA and NPL approaches, for both EPA and PRPs?

- Has the process for tracking expenditures at SA approach and NPL sites changed over time?
- Specifically, has the policy for submission and recovery of expenses changed since the 1980s?

5a) What are the differences in the early part of the process (from discovery through RIFS)?

- If EPA LOE is different, what costs vary between SA and NPL sites (e.g., enforcement)?
  - HRS Scoring
  - The process for determining if PRP is willing and viable for the SA approach
  - Enforcement
  - Legal
- What actions tend to drive differences in cost/time at SA approach and NPL sites?
  - AOC
  - Enforcement
  - Legal?

5b) What are the differences in the middle part of the process (from RIFS through ROD)?

- Do costs/process of RI/FS differ for NPL sites and sites with SAA agreements?
- Does ROD publication process differ for SA approach and NPL sites??



5c) What are the differences in the later part of the process (from ROD through RD/RA, or through construction complete where applicable)?

- What actions tend to drive differences?
  - RD
  - RA
  - Enforcement
  - Legal?

#### EVALUATION QUESTION 6

IEc proposes to interview Managers and RPMs to address Evaluation Question 6 and Evaluation Purpose 4.

Evaluation Question 6. What has EPA done to improve the consistency of implementing the SA since an internal evaluation and an IG report on the approach was published in 2007?

- Are you aware of the general recommendations from the Office of the Inspector General Evaluation of the SA approach?
  - Have steps been taken in Region 4 to address the recommendations:
    - Publish a universe of sites with SAA agreements that meets the Superfund Alternative site eligibility criteria and are designated sites with SAA agreements and regularly update the list as the universe changes.
    - Develop specific instructions on when to use the SA designation (e.g., for sites or agreements) and update the Superfund Program Implementation Manual (SPIM) accordingly.
    - Establish and direct Regions to use a consistent HRS scoring method that is acceptable and reliable for designating a site with an SAA agreement.
    - Track and report all Superfund GPRA measures at sites with SAA agreements.
    - This includes construction completions, final remedy selection, human exposure under control, migration of contaminated groundwater under control, and sitewide ready-for-reuse.
    - Report GPRA measures at sites with SAA agreements separately from GPRA measures at NPL sites.
    - Revise applicable guidance, manuals, or directives to reflect that these performance measures will be tracked and reported for sites with SAA agreements.
    - If no (to any of the above recommendations), why not?

- Have SA processes become more transparent (e.g., listing the universe of sites)?
  - If no, why not?
- What else could or has been done to address the issues raised by OIG?
- Are you aware of the prior recommendations from the joint evaluation by Office of Enforcement and Compliance Assistance (OECA) and Office of Solid Waste and Emergency Response (OSWER)?
  - Have steps been taken in Region 4 to address the recommendations:
    - Track SA agreements by flagging only agreements consistent with the guidance at sites satisfying the SA eligibility criteria.
      - Revise the SPIM language for national consistency.
    - Improve consistency of SA approach implementation.
      - Offer training to regional staff on the SA approach, including the SA criteria, setting the CERCLIS flag, negotiating model language, improving transparency, approaching the PRP and community, and understanding how the SA approach fits with other CERCLA enforcement tools.
      - Consider developing case studies of successful SAA agreements and best practices summaries as additional guidance.
      - Modify Superfund model settlement documents to include the approach's provisions.
    - Continue to improve the transparency of the SA approach.
      - Use CERCLIS to provide an accurate picture of how the SA approach is used (e.g., develop standardized national reports).
    - Continue to evaluate how EPA refers to the approach (e.g., consider using the term NPL-Equivalent or NPL-Alternative to more accurately reflect the intent of the approach to be an alternative to listing on the NPL, not an alternative to the Superfund process).
    - If no (to any of the above recommendations), why not?
  - What else could or has been done to address the issues raised by OECA/OSWER?

6a) Do areas of inconsistent implementation remain? If yes, how should EPA address them?

- Should EPA do anything else to improve the consistency of implementing the SA approach?
- Have other inconsistencies been identified by Region 4?
  - How are these being addressed?
- What else do you think should be done?

6b) Have other questions related to implementation of guidance and consistent tracking of site data been addressed?

- Should EPA do anything else to improve the consistency of implementing the SA approach?

#### EVALUATION QUESTION 7

IEc proposes to interview CICs, Communities, Managers, PRPs, and RPMs, to address Evaluation Question 7 and Evaluation Purpose 4.

Evaluation Question 7. What additional factors or variables should EPA take into account when deciding if and when to use the SA approach in the future?

- Do you have any concerns about the SA approach?
  - Should EPA consider any additional requirements for sites to become SA?
  - Are there advantages or disadvantages to the SA approach that are not reflected in cost data or CERCLIS data?
- Do you know of barriers to implementing the SA approach in other regions?
  - Is there anything unique about Region 4 that makes the SA approach more or less viable for R4?
- Do you have any suggestions, recommendations, or comments to improve the SA approach?

## APPENDIX D



## APPENDIX D: SUMMARY OF INTERVIEWS

IEc is conducting an evaluation of Region 4's Superfund Alternate Approach to examine whether the SA approach is having the expected outcome of reducing site costs and speeding remediation, and whether the remedies selected under sites with SAA agreements are equivalent to those at comparable NPL sites. In addition, the evaluation revisits key questions of prior evaluations to gather and update information about community and PRP experiences with the approach.

The purpose of the SA evaluation is to:

- 1) Examine the factors influencing the use of the SA approach
- 2) Assess the effectiveness of the SA approach in achieving the goals of the Superfund program
- 3) Assess the efficiency of the SA approach in terms of potential time and cost savings
- 4) Identify strategies to improve the implementation, efficiency and effectiveness of the SA approach

After analyzing and reviewing the existing data and evaluations, IEC conducted in-person interviews with thirteen EPA staff members to expand on the results and issues identified with existing data, and to gather perspectives on the key aspects of the SA approach, including perceptions of the SA process and perceived stigma of sites with SAA agreements compared to NPL sites.

IEc interviewed six managers who are responsible for different aspects of site remediation for both SA approach and NPL sites; this set of interviews included a group interview with three managers. In addition, IEC interviewed four Community Involvement Coordinators (CICs), and three remedial project managers (RPMs) who have experience with both the SA and NPL approaches. In addition, IEC plans to interview representatives from one or two Potentially Responsible Parties (PRPs) and one or two community organizations; we plan to contact PRPs and community organizations that have experience with both NPL SA approach sites.

## INTERVIEWS CONDUCTED

IEc interviewed Community Involvement Coordinators and Remedial Project Managers who have experience with both SA and NPL sites, and Managers who are familiar with both approaches. IEC conducted the following in-person interviews on July 6 and July 7, 2010:

- IEC interviewed four EPA Community Involvement Coordinators (CICs):
  - Stephanie Brown
  - Angela Miller
  - LaTonya Spencer
  - Linda Starks
  - Pamela Scully (Anniston site)
- IEC interviewed three EPA Remedial Project Managers (RPMs):
  - Joe Alfano (Jacksonville ash sites)
  - Randy Bryant (Weyerhaeuser and other sites)
  - Ken Mallery
  - Bill Denman (CSX and Solitron Devices)
- IEC interviewed two EPA Managers with experience with both SA and NPL sites and expertise in issues related to development of SA agreements and cost recovery
  - David Clay (Legal)
  - Anita Davis (Enforcement)
- IEC interviewed one EPA staff member with extensive experience working with CERCLIS
  - Charlotte Whitley
- IEC conducted a group interview with three EPA evaluation team members to address issues raised in interviews and provide clarification
  - Sean Flynn
  - Don Rigger
  - Dawn Taylor

IEc interviewed representatives of three Potentially Responsible Parties (PRPs) that have experience with both the use of the SA approach and the NPL process:

- Solitron Devices: John Alonso, Prashant Gupta, and James Linton
- CSX: Jeff Styron, Raghu Chatrathi, Keith Brinker, and Don Anderson

- Solutia: Gayle McColly

In addition, IEC conducted two interviews with individuals from community organizations that have experience with both SA and NPL sites. Specifically, IEC interviewed representatives from:

- Anniston, Alabama: Shirley Carter and David Baker
- Jacksonville, Florida: Diane Kerr

Finally, IEC conducted a brief interview with Oliver Pau, a representative from Cherokee Group, an investment company that focuses on remediation and reuse of contaminated sites. The focus of this interview was on the impact of “stigma” in valuing properties that are on the NPL.

See Appendix C for the “master list” of interview questions. When possible, respondents from different backgrounds were asked the same questions to allow comparison.

## GENERAL INTERVIEW INSIGHTS

This section provides an overview of the key themes that emerged from the interviews to inform the four main purposes of the evaluation. Responses are grouped by each evaluation purpose.

### Evaluation Purpose #1: Examine the factors influencing the use of the SA approach

A key theme that emerged in discussions was the potential importance of “stigma” related to NPL sites. Respondents cited stigma of the NPL as a key reason that PRPs and communities prefer the SA approach. Respondents did not define stigma, but mentioned that residents, PRPs, and communities are often concerned with maintaining property values and maximizing potential reuse and redevelopment or continued use of property. This appears to be particularly important when there is an active site that employs local residents.

Respondents noted that PRPs and local officials tend to prefer the SA approach while community preference tends to vary among individuals and communities. Respondents explained that some communities do not express a preference for an approach while others are initially apprehensive about using the SA approach due to concerns that they may receive fewer resources or that the site will not be cleaned up as well as an NPL site. However, concerns tend to disappear as the site progresses so that ultimately communities are satisfied with the SA approach.

Another possible motivation for use of the SA approach is the potential for PRPs with multiple sites to develop a more “standardized” approach. One RPM noted that some PRPs or industries with multiple contaminated sites across the Region or Regions may be interested in using the SA approach to ensure consistency across remediation at different sites in different states. The RPM noted that manufactured gas sites have frequently used the SA approach, including one gasification plant that approached EPA to negotiate a cleanup agreement.

This RPM also suggested that the SA approach could provide a model for cleanup of “non-NPL-caliber sites” among PRPs with multiple sites. For example, Region 4 negotiated multiple cleanups at numerous Exxon Mobile sites in different states using a model similar to the SA approach. These sites received an HRS score below 28.5, but the PRP was interested in working with EPA on a voluntary cleanup process for sites in multiple states in Region 4.

While the evaluation has not consulted state and local government representatives, one EPA Manager indicated that state directors in Region 4 endorsed the SA approach when polled by Headquarters staff two years ago.

Note that IEc interviews with PRPs may provide additional insights on this subject.



Evaluation Purpose #2: Assess the effectiveness of the SA Approach in achieving the goals of the Superfund program

No sites with SAA agreements are to the point of reuse or redevelopment. Thus, evaluation purpose #3 will be primarily informed from existing data (e.g., data from CERCLIS and Records of Decision (RODs) on expected outcomes and current conditions at sites.

Interviews did not focus on the effectiveness of the SA approach; however, respondents noted that sites with SAA agreements may afford more opportunities for redevelopment by avoiding the NPL stigma.

Evaluation Purpose #3: Assess the efficiency of the SA approach in terms of potential time and cost savings

Respondents frequently cited that avoiding the NPL listing process and facilitating negotiations represent the best chances that the SA approach will save time and resources. One CIC noted that having more willing PRPs can produce an easier process. However, respondents also note that SA PRPs vary in their level of cooperation with EPA – and in some cases their level of cooperation changes over time. For example, negotiations at Weyerhaeuser have become more complex as more RODs and actions have been negotiated.

Note that IEc is also analyzing CERCLIS and IFMS data to review the time and costs associated with the early stages (through ROD) for remediating Superfund Alternate Approach and NPL sites. However, respondents explained that over time EPA changed the way that it tracks and recovers costs and that some data was likely lost during the move to the Integrated Financial Management System (IFMS) system in 1989. Thus, cost recovery data from the early years of Superfund is not comparable to current cost recovery data.

Evaluation Purpose #4: Identify strategies to improve the implementation, efficiency and effectiveness of the SA Approach

CICs, RPMs, and Managers all expressed support for the Superfund Alternative Approach, and generally state that it provides an option that appears to have value to PRPs and therefore facilitates site remediation. All respondents stated that the approach has no impact on the way enforcement, remediation, oversight, or community coordination activities are conducted.

However, one CIC would like to see more specific language to outline community involvement requirements; PRPs at both SA approach and NPL sites often try to negotiate about notification and involvement actions that are actually requirements.

Two RPMs and one Manager suggested that EPA include SA achievements in GPRA goals to increase the use of the approach. One RPM explained that not counting sites with SAA agreements is a disincentive to use the approach if Regions will not receive same credit.

One Manager noted that the SA approach is an effective tool that has been used frequently in Region 4. However, the approach was received better when it was called “NPL equivalent.” The previous name provided a better and more self explanatory term for the use of the SA approach. Returning to the term “NPL Equivalent” may decrease questions and concerns from communities and PRPs about whether the approaches are designed to be similar.

Note that IEC plans to review public documentation of the SA approach to supplement interview findings and to review the status of recommendations from previous evaluations.

#### **DETAILED INTERVIEW RESPONSES**

This section documents the detailed responses provided by respondents to all questions. Interview responses are organized by the evaluation purpose and evaluation questions. Under each evaluation question we include direct responses to the specific evaluation question and any sub-parts (labeled as 1.a, etc.). We also include answers to several specific interview questions (not numbered) about key aspects of each evaluation question. While some of the information provided by respondents may overlap, each set of answers is unique (e.g., the answers under “Evaluation Question 1” represent direct answers to that question and are not a summary of answers to more detailed question).

This interview summary presents responses in the following order: CICs, RPMs, and Managers. Responses are grouped to preserve confidentiality.

Whenever possible, respondents were asked the same questions. However, due to the diversity of roles and experiences, the focus of each interview varied and every respondent did not respond to all questions. Thus, some questions received numerous responses while others were only answered by one or two respondents.

For example, CICs and RPMs tend to be familiar with many sites, but these are often specific sites and each group has a diverse perspective as a result of their different types of work and interactions. Managers understand trends of different types across all sites, but their understanding is dependent on their function and focus (e.g., legal, enforcement).

Thus, we have broken down responses into the 3 categories (CICs, RPMs, and Managers) to identify the perspective associated with the comment. We also specify how many respondents provided answers to indicate whether the response is universal or only applicable to specific respondents.

#### **Evaluation Purpose #1: Examine the factors influencing the use of the SA approach**

IEC is using interview responses as the primary data sources for Evaluation Questions 1 and 2.

**Evaluation Question #1: What is the response of potentially responsible parties (PRPs) to the Superfund Alternative Approach (SAA)?**

- Three CICs noted that PRPs generally appear to prefer the SA approach, in that they typically enter negotiations for this approach when given the opportunity. Two CICs emphasized that PRPs are aware that they will have to pay for remediation regardless of the approach. The CICs all noted that the SA approach appears to offer an opportunity to avoid the potential “stigma” associated with being listed on the NPL.
  - While the CICs did not specifically define stigma, two CICs mentioned that PRPs are concerned about the impact on property values for their own site and within the community, particularly if the PRP still owns the property.
  - One CIC noted that PRPs “tend to jump at” the opportunity to use the SA approach to avoid stigma for community and PRP.
- One Manager explained that PRP attorneys like the SA approach in many instances because their clients want to avoid being “stigmatized” by being on the NPL. PRP representatives (including attorneys) agreed that “all things equal” it is better not to be on the NPL, and noted that in some cases communities also were interested in avoiding NPL listings.
- All respondents specifically noted the similarity between the two approaches, and understood the reason for maintaining consistency. Respondents also noted, however, that this consistency reduced the ability of the SA approach to demonstrate significant cost or time savings.
- PRPs all agreed that the SA approach has potential advantages due to its more cooperative tone that could result in cost savings related to quicker negotiations.
  - However, one PRP expressed disappointment that the actual SA approach process had not ultimately been different at the site with the SAA agreement, and had involved delays related to negotiations and also external litigation. However, this PRP also stated that the SA approach had potential advantages related to the cooperative tone. The PRP also noted that their site was a “pilot” site and the real drivers of delay were related to changes in personnel at both EPA and the PRP.
  - Though the PRPs interviewed are not in the position to have multiple sites using the SA approach, one PRP noted that the company has a site using the SA approach in Region 5 and feels that the process has worked well in both regions. Another PRP noted that while its Region 4 site using the SA approach has taken longer than anticipated, the company has entered another SAA agreement in a different Region.

- Community representatives stated that community priorities for site remediation differ, and therefore interest in the SA approach differs.
  - Two community representatives stressed that working with EPA is the critical factor in all remediation: most community members do not recognize that an SAA agreement is different from an NPL site process if EPA is there and it's a "Superfund" site.
- All community representatives noted that it is critical to get PRPs and EPA involved and coordinating with community members, and felt that the SA approach sometimes did this.
  - Community members also all stated that priorities in favoring the SA approach resulted from concerns about stigma by business and property owners.
  - However, community representatives also noted that property value impacts vary, with parcels near the sites, particularly in poor areas, often unable to be sold regardless of whether the site is an NPL or an SA approach site.

*While in all cases, respondents did not define "stigma" with quantitative specific examples, they generally referred to lasting impacts on property values near the site and limitations on redevelopment.*

**Evaluation Question #1a: What aspects of the SAA are appealing or unappealing to PRPs, and why?**

- Several CICs and RPMs noted that communities and PRPs are often concerned about avoiding the NPL to maintain property values and potential for redevelopment
- All four RPMs noted that PRPs want to avoid the stigma or "gravitas" associated with the NPL.
  - One RPM noted that even though SA falls under Superfund, the biggest benefit is avoiding the stigma of being on the NPL or the "list of worst sites in country."
- Representatives of all three PRPs interviewed concurred with EPA interviewees that avoiding "stigma" is a motivation for using the SA approach, and concurred with EPA respondents that some local officials are concerned about redevelopment, though representatives of one PRP note that stigma is less of an issue than it used to be, and does not differ between NPL and SA approach sites. PRP respondents also noted that NPL sites historically have had more publicity and can require more coordination in response. One PRP representative noted that high-profile sites can affect company reputation and even hiring, if

candidates have a negative perception of the company's record due to contaminated sites. Finally, representatives from all PRPs noted that participation in the SA approach supports company reputations as proactive and cooperative, which can have value among company stakeholders.

- The investor representative stated that the differences between SA approach and NPL sites are less important than they may have been, and noted that changes in banking since 2008 have resulted in processes that treat sites very consistently regardless of jurisdiction or status. He noted that while "Superfund" stigma may exist, investors and bankers do not typically see a difference between SA approach and NPL sites. More important to investors and developers is the intended use of the property. While redevelopment of an industrial site may be relatively straightforward, it requires additional outreach effort to ensure that a mixed-use or residential redevelopment is financially successful.

*Again, while specific examples of stigma were not provided, the general suggestion is that to PRPs, stigma may extend beyond the local community and represent an issue for a firm's national reputation.*

- In addition, one RPM and two PRP representatives mentioned that the SA approach is particularly attractive for PRPs with multiple NPL-caliber sites in different states, who would generally prefer the universal SA approach to coordinating with multiple state lead agencies or multiple NPL sites.
  - Multiple sites with similar contamination could allow for the development of a conceptual model with a "presumptive remedy." This could reduce negotiation costs, particularly if all sites fall under a single authority (e.g., EPA's SA approach rather than agencies in different states).
  - Several RPMs noted manufactured gas plants as examples of entities where similarity of contamination, facility function, and ownership patterns appeared to encourage use of a multi-site strategy that in many cases involves the SA approach.
- Managers noted that the entire process for SAA and NPL approaches is similar, including negotiations to become an SA or NPL site, and conducting the remedial investigation and remediation. The differences that emerge reflect the willingness on the part of the PRP to ensure smooth and rapid negotiations.
  - For example, SA and NPL PRPs generally do not like either the TAG (i.e., NPL) and TAP (i.e., SA approach) provisions for community involvement because there is a provision that communities can request additional requests under both.
  - PRPs agreed that approaches are similar, and stated that cost savings to them during the process were therefore limited, though one PRP noted

that the potential for cost savings during the remedial action phase might remain as a result of the cooperative approach in developing the RODs.

- EPA and PRP respondents noted that avoiding the listing process could save up to a year, and would save EPA resources but not significantly affect PRP costs.
- One Manager noted that one specific aspect of the SA approach that PRPs do NOT appear to like is the more stringent liquid financial assurance requirement for the SA approach.
  - One CIC also noted that financial assurance appeared to be an issue for some PRPs, though as a CIC she did not deal directly with that issue.
  - PRPs concurred with this finding, though two PRPs who mentioned it said that it was generally considered to be outweighed by potential for cooperative approach.

***Do sites with SAA agreements tend to have more or less PRP-EPA cooperation than NPL sites?***

- Most EPA respondents believe that PRPs at sites with SAA agreements tend to be more cooperative.
  - Several respondents mentioned that one possible incentive to cooperate is that PRPs know that EPA can list the site on the NPL. Thus, the “threat” of becoming an NPL site may provide some incentive to cooperate. They noted, however, that the level of cooperation varies by PRP at both SA approach and NPL sites.
- CICs noted that PRPs tend to be more cooperative because they want to make sure that cleanups get completed, and their agreements usually have stipulated penalties.
  - The respondents did not specify stipulated penalties in detail, but the ability to list the site on the NPL appears to be the most significant penalty.
- One CIC noted that for both SA and NPL sites, agreements usually do not clearly outline the community involvement requirements that EPA employs through policy, such as notification procedures, announcement requirements, and public meeting requirements. The result is that PRPs try to interpret guidance to limit community involvement requirements for both NPL and SA approach sites. More substantial language in SA and NPL PRP-lead agreements to spell out requirements would be helpful.
- One RPM noted that the SA approach may encourage cooperation, but that the experience for both SA and NPL sites is similar because AOCs and Consent Decrees direct the process. RPMs generally do not threaten to list

on the NPL unless absolutely necessary, though this possibility is clear. Thus, this RPM has not experienced a difference between PRP-lead NPL sites and sites with SAA agreements.

- One Manager noted that SA approach negotiations tend to proceed more quickly and another Manager noted that working with cooperative PRPs under the SA approach can reduce enforcement costs in some instances.
- PRP respondents stressed the cooperative nature of the SA approach as the most significant difference, and as the main advantage to the approach.

***What is the perceived speed in cleaning up sites with SAA agreements compared to NPL sites?***

- Among all respondents, one CIC noted that sites with SAA agreements still take a long time to cleanup, and PRP respondents also noted that site remediation time frames were not different for NPL sites and sites with SAA agreements.
  - One PRP noted that the original hope had been that the process would be much more rapid than the NPL approach, and the similarity of the approach was initially a source of disappointment. However, the same PRP also noted that requirements under CERCLA limit EPA's ability to speed the process. This PRP also stressed that it was involved at one of the "first" sites with an SAA agreement, and that the process may have evolved. Finally, representatives of this PRP stated that they would pursue the SA approach again if given the option.
- One RPM noted that at least one site with an SAA agreement had a very motivated party that wanted to cleanup as quickly as possible.
- Other EPA respondents indicated that negotiations may be easier at sites with SAA agreements and some SA PRPs are more motivated than others, but they did not indicate that there are differences in speed for remedial actions, and overall they felt that the similarity of the two processes resulted in similar time frames.
  - In discussing differences among specific sites, all respondents typically identified the issues driving costs as ones not related to SA or NPL status (e.g., the complexity of contacting residences in the Jacksonville Ash sites).
  - One RPM and two PRP respondents also noted that changes in staff at both EPA and PRP organizations was often a driving factor in adding delays and complexity to the management of the site remediation process for both SA approach and NPL sites.
- PRP and community respondents generally provided similar responses to EPA regarding the length of time needed to address both SA approach and NPL sites,

and noted that the processes were designed to be equivalent. PRPs noted that avoiding the listing process appeared to save some time and effort for EPA, but did not alter their actions.

- Most respondents noted that site specific issues and costs not related to NPL or SA approach were most likely to have the biggest impacts on schedule and costs; several respondents (including community members and the PRP) specifically noted that the process for contacting and remediating residential contamination at the Jacksonville Ash sites is the most significant driver of schedule and cost at that site.

**Evaluation Question #1b: Do PRPs generally prefer the SAA over NPL listing, or vice-versa? Why or why not?**

- EPA CICs, RPMs, and Managers all noted that PRPs and communities may prefer the SA approach because it avoids any potential stigma from being listed on the National Priorities List (NPL). The avoidance of perceived stigma of becoming an NPL community or PRP was the most often cited advantage of the SA approach, though respondents were not able to document a specific “value” for this (e.g., preserving the value of properties or stocks).
  - All respondents stressed the similarity of the activities that they undertake in dealing with PRPs in their respective roles. As a result, while PRP willingness to participate in the SA approach suggests an advantage, the respondents did not identify significant advantages associated with the process for PRPs.
- All three RPMs indicated that PRPs at sites that they manage seem to prefer the SA approach, and the RPMs believe that the key reason is to avoid NPL stigma.
  - RPMs did not specifically define stigma, but noted in response to other questions that PRPs noted the impact of NPL status on property values and future opportunities to reuse and redevelop properties.
- One Manager indicated that most PRPs who start the SA process prefer to continue with the approach, unless the PRP thinks that they may be able to establish that they are not liable and collect reimbursement under CERCLA Section 106b; that process is linked to the NPL.
- One Manager noted that he had not heard of any PRP requests to use the NPL approach over the SA approach, indicating that PRPs prefer the SA approach when it is available. However, PRPs in some cases prove to be unwilling to cooperate during SA negotiations – this can result in NPL listings.
- As outlined above, all PRP respondents agreed that in general, the cooperative model presented by the SA approach is preferable to the NPL approach.



- One PRP representative (an attorney) did note that given the more extensive financial assurance requirements, PRPs should consider whether the opportunities presented by the SA approach had enough benefit to outweigh the costs associated with these requirements. In most cases, he noted that the costs were not significant enough to outweigh the opportunities to save time and money in negotiations.

***Who typically suggests the SA approach?***

- One RPM noted that typically EPA approaches PRPs to negotiate the remediation process, but Orlando Gasification stepped forward and approached EPA.
  - Most PRPs do not begin negotiations at all until after EPA has begun to review the site. However, Orlando Gas may have requested the approach after seeing other gasification plants (e.g., Sanford Gasification Plant) utilize the SA approach.
- No other respondents commented on who suggests the approach. However, previous discussions with EPA revealed that typically EPA approaches PRPs and proposes the approach that will be used. PRP respondents generally concurred with this, though most representatives on the interviews were not involved in initial discussions.

***How many times have PRPs suggested the SA approach and EPA refused? Why was the SA approach not selected?***

- No EPA staff members cited specific examples when EPA refused to negotiate an SA Agreement, though some negotiations did not end in agreements. However, EPA staff provided insight on situations when EPA prefers the NPL approach.
- One RPM explained that EPA will not negotiate with non-viable PRPs to undertake the SA approach. Thus, EPA requests financial assurance early in the SA approach negotiation process.
- In addition, one Manager also emphasized that over the past year Region 4 has become more reluctant to use the SA approach when there are many unorganized PRPs. EPA prefers to work with a limited number of PRPs or have numerous PRPs form a steering committee or organization for one point of contact.
- Several respondents stressed that if SA negotiations or even site remediation do not progress well, EPA will use the NPL.

**Evaluation Question #2: What are community member perceptions of the NPL and SAA processes?**

- Two CICs noted that some community members are initially concerned that the SA approach may not be comparable to listing on the NPL, and may offer fewer resources to the community as part of the remediation. However, these concerns tend to be addressed as the sites progress.
- Two CICs noted that sometimes communities are not aware and/or do not understand the difference between the two approaches. Sometimes communities lump together the SA and NPL approaches because they are both under Superfund.
- Two CICs noted that communities tend to be less concerned about the stigma for sites with SAA agreements, while in contrast, another CIC noted that some communities still consider the SA approach to be associated with the Superfund stigma.
- One RPM explained that the SA approach may not completely eliminate negative stigma, but “local banks and lending institutions would be less likely to devalue properties around a site with an SAA agreement.
- Community representatives, as noted in Question 1 above, generally noted two characteristics of initial response to the SA approach:
  - Many communities do not express a preference for either the NPL or SA approach, and many community members are concerned only that EPA be involved and that the site be a “Superfund” site rather than a site run by a state or another agency.
  - Among community members who express a preferences, some prefer the SA approach to avoid the stigma of the NPL, and others are concerned that the SA approach will produce fewer resources and/or a less effective cleanup.
  - Interviews with community leaders at the Jacksonville Ash sites and the Anniston site confirmed that the key concern of most residents is that the EPA remains active in the cleanup. One of the interviewees – a community leader – was not able to identify whether the sites were NPL or Superfund Alternative approach.

***Does community involvement tend to be different at sites with SAA agreements than at NPL sites?***

- All four CICs explained that they use the same community involvement guidance and strategy for SA and NPL sites. As a result, they believe that opportunities for involvement are comparable. Different sites/communities require and request

varying levels of community involvement and CICs strive to meet those needs regardless of the type of agreement.

- One CIC also noted that communities may be more involved at sites with SAA agreements in some cases because they see more potential for funding from viable PRPs.
- One CIC noted that community involvement appears to depend greatly on whether or not the PRP is still a local employer. At those sites, whether SA or NPL, community opposition to proposed remedies appears to be more muted, probably in part due to concerns about ensuring that the company continues as an employer.
- RPMs noted that Community Involvement should be equal regardless of the approach because EPA does the same mailings and announcements for both approaches because the outreach is “expected to be equivalent.”
  - One RPM explained that the SA approach lacks an ability to comment via the Federal Register, but in the RPM’s experience, this option tends to only be utilized by PRPs, and is not a real source of community involvement. In addition, the RPM said that in practice, communities have several opportunities for communities to comment.
- Managers noted that EPA has the same relations and meetings, and communities tend to be interested regardless of the approach.
  - Concerns in communities appear to be similar – ensuring the elimination of residential contamination and exposure, ensuring the health of community members and their children, and then a secondary concern about development and property value.
- Community representatives all agreed that the SAA agreement did not have any impact on their ability to participate in the sites, and two representatives confirmed that the outreach process for both NPL sites and sites with SAA agreements in their communities were the same. Representatives also did not provide any responses that indicated that responding to comments on the listing Federal Register notice at an NPL site was important. In two cases, community representatives did not appear to be aware of the comment period for listings, even though they were involved in NPL site coordination.

***Are any sites with SAA agreements located in Environmental Justice communities?***

- CICs noted the following Environmental Justice communities: Anniston, Picky Union, Jacksonville Ash and Kerr McGee in Jacksonville, IMC Spartanburg, Cabot Koppers may or may not be an EJ community, Coronet Industries has a portion that is disadvantaged, but the rest is not.

- All four CICs explained that EPA identifies Environmental Justice communities so that staff can be aware and adjust their approach, if necessary, to effectively communicate with communities that often have difficult working relationships with government officials. While EPA tries to be more sensitive and informative for EJ communities, the overall community involvement process is still the same. CICs reiterated that their goal is to meet community needs regardless of the site status.
  - One CIC explained that for a couple of sites (both SA and NPL) it was necessary to develop relationships with non-governmental community organizations to ensure that community members were informed about the remediation process by trusted sources.
- One CIC indicated that EJ communities often use more TAG and TAP grants, at both SA approach and NPL sites. The CIC explained that non-EJ sites seem to leverage resources more easily while EJ sites are just learning about leveraging and sustainability.
  - The CIC also noted that EPA often has to go out and seek leaders in EJ communities, while other communities may already have associations. However, that is not always the case. For example, Jacksonville was a very organized EJ community with existing associations.
- One CIC also noted that EJ communities are an emerging Agency priority and they are responding to the increased focus. For example, though not a Superfund Alternative Approach issue, Community Involvement Director Freda Lockhart left for the Gulf Coast on July 7 to meet with the NAACP because the NAACP wants to have more of a voice during disasters. NAACP is requesting more involvement in Agency activities than has been the case in recent administrations.
- One RPM also explained that EPA tries to do the same things for all communities and that EPA may also go above and beyond required outreach for EJ communities and hold additional meetings and provide additional guidance or information.

**Evaluation Question 2a: What is the initial response of community members to NPL listing compared to EPA’s decision to use the SAA?**

- Two CICs noted that some community members are initially concerned that sites with SAA agreements will not get the same attention, care, or cleanup because they believe it has to be placed on the NPL in order to be “given priority” and remediated.
  - For example, one CIC noted that the communities near the TVA ash spill and landfill for ash disposal are upset that these sites are not EPA-lead NPL sites (note: these are also not designated as SAA agreement sites;

the TVA spill involves an emergency removal action and a community that is unhappy about receiving the ash that was spilled). The community is concerned that the pace of the TVA cleanup will be too slow if left to the PRP to remediate and the other community is concerned about receiving the materials from the site. This example was cited because sometimes similar concerns are raised about sites with SAA agreements.

- Two CICs noted that typically community members are generally not concerned about NPL v. SA approaches, but local community and political leaders are sometimes interested in avoiding the NPL, due to concerns about property values, tax revenues, and development opportunities.
- Two CICs noted that communities tend to have similar concerns regardless of the approach (e.g., is my health in danger?, are my children in danger?, will I have to move?). Thus, in many instances the communities just want sites cleaned up regardless of the approach.
- Two RPMs also noted that “most” people at the sites they are familiar with “do not know the difference” between NPL and SA approach sites; both are “Superfund.” One RPM explained that responses vary across sites, but when concerns about the SA approach are raised, they generally come from the strong activists.
  - One RPM indicated that communities tend to be focused on concerns related to property values and relocation. The RPM indicated that responses sometime conflict among residents, with some residents expressing concerns that EPA wants to “take” their properties, while others want EPA to purchase their properties and relocate them.
- Community representatives and PRP responses were similar to EPA responses, and representatives also noted that reaction to an SAA designation can differ within a community, with community and business leaders favor the SA approach designation, because they are often worried about long-term development, property values, and stigma. In contrast, residents in or near contaminated areas worry more about the pace and extent of cleanup, and are concerned that the approach chosen will ensure the most effective remediation. All respondents said that as the remediation process progresses, community members tend to become more informed confident about the process.

***Do community groups more typically ask for NPL listing or prefer the SA approach?***

- Two CICs and two community representatives mentioned that sometimes communities worry that there is a disadvantage if “their” site is not an NPL site and that their site may not receive the same attention and resources as an NPL site. To address concerns, EPA explains that SA uses the same process, just a different approach to encourage PRPs to be more cooperative.

- Generally politicians, PRPs, and local land developers prefer the SA approach primarily due to a stated perception that the SA approach preserves an increased potential for redevelopment.
- Two RPMs explained that responses vary amongst communities and individual community members. EPA Superfund still shows up on the documents, so it looks the same to many communities.

**Evaluation Question 2b: Ultimately, how satisfied are community members with the SAA process and structure compared to the NPL process and structure?**

- Three CICs and all community representatives noted that it is difficult to satisfy everyone, but most times people are satisfied that EPA is using the SA approach once they understand process. Community representatives, in particular, noted that they received “fewer complaints and questions” as the projects progressed.
  - For example, one CIC noted that the Escambia site is producing “satisfied customers.” The CIC explained that some community members were initially concerned about the SA approach, but most are now satisfied with the approach.
  - Community representatives all stressed that active EPA leadership and early and extensive community involvement in the process was the really critical need in gaining community approval for any approach. The respondents all stressed that this was not an “SAA” issue, and all noted that the organization of the PRP was a critical factor as well.
- One RPM and two community representatives explained that residents are sometimes unhappy about the length of time to do sampling and evaluation for Jacksonville, but that is true of both SA and NPL sites. Residential contamination, in particular, requires extensive coordination (e.g., to gain access and test each affected property).
- One RPM noted that he has not come across any sense of dissatisfaction from communities on sites with SAA agreements. The RPM noted that there has been a big push in Region 4 to ensure that RPMs do everything needed for community involvement, at both SA approach and NPL sites.

***Does community satisfaction vary throughout the process or is it consistent?***

- Three CICs and all community representatives indicated that support tends to increase over time as EPA builds trust and credibility and the process progresses. “Not many people trust the government initially,” but that improves once they start seeing the process being implemented.

- For example, Anniston’s relationship with EPA and PRP has improved over time and the fact that it was not listed on the NPL no longer appears to be a point of discussion for community members. One CIC noted that once the work starts and communities see progress, the NPL issue “goes out the window.”

***To what extent do communities use technical assistance funding at SA and NPL sites?  
Is there a difference in funding availability and/or expenditures for SA or NPL sites?***

- Two CICs indicated that there is no difference between the funding approaches at SA approach and NPL sites, although funding may be used more heavily at EJ sites.
  - One CIC expressed concern that NPL communities may have more funding opportunities for community involvement at the beginning of the process because NPL communities may be able to receive grants once a site is proposed for the NPL, whereas SA communities must wait until the SA agreement is signed.
  - One CIC noted that TAPs tend to require more negotiation and that unlike TAG provisions, the standard language for TAPs does not provide for additional requests leading to a potential for insufficient funding down the road. However, another respondent noted that communities can request additional TAP funding. *We are examining this contradiction.*
  - Regardless of the approach, one CIC explained that PRPs that are still operating in communities have more of an incentive to provide more community outreach and funding.
- One RPM also indicated that the opportunities are equal, although Jacksonville has four TAP grants because of the extensive residential contamination across multiple areas and the fact that the PRP is the City of Jacksonville, which has a governmental responsibility to ensure that its residents are informed.
  - Respondents explained that the Jacksonville Ash sites are unique in that they are located in an EJ community, have a public sector PRP, and include contamination that is spread across multiple residential neighborhoods.
- Community representatives and PRPs did not have specific input on cross-site comparisons for this question but the community representatives interviewed noted that their funding for sites has been adequate to date.
  - One community representative did note that the PRP at the site was not emphasizing local hiring enough, and was focusing on contractors from

outside the region. However, this representative also noted that this was not an “SAA” issue.

**Evaluation Purpose 2: Assess the effectiveness of the SA approach in achieving the goals of the Superfund program**

This Evaluation Purpose includes Evaluation Questions 3 and 4. Evaluation Question 3 will be informed primarily from existing data (e.g., data from CERCLIS and Records of Decision (RODs)). IEC is using interviews to support and expand upon results from analyzing CERCLIS data and RODs to inform Evaluation Question 4.

**Evaluation Question 4: Are SAA sites reused or redeveloped more quickly than sites listed on the NPL? If so, does the evidence suggest why?**

- Overall, respondents noted that no sites with SAA agreements have achieved reuse or redevelopment at this stage. Some will likely continue in their current (usually industrial) use. And again, respondents posited that the SA approach may afford more opportunities for redevelopment by avoiding the NPL stigma at sites.
- One CIC noted that potential for reuse and redevelopment appears to be equal at NPL sites and sites with SAA agreements.
  - The CIC noted that many sites consisting of residential contamination are already in use and will continue to be used.
- Two RPMs noted that no sites with SAA agreements have currently reached the reuse stage. However, anecdotal information based on community and PRP reactions suggests that avoiding the NPL list could be useful for later redevelopment.
  - For example, the soil work is complete at Gurley Pesticide and a prospective purchaser agreement has been signed to allow owners to use property and protect themselves since they are not the PRP.
    - The RPM noted that a 3rd party coming in to buy or use a site may prefer a site using the SA approach over an NPL site.
- One RPM explained that redevelopment does not come into play for remedy selection, but EPA tries to keep any known potential uses in mind regardless of SA or NPL approach.



**Evaluation Purpose 3: Assess the efficiency of the SA approach in terms of potential time and cost savings**

IEc is using interviews to support and expand upon results from analyzing CERCLIS and IFMS data on the time and costs associated with actions through the ROD to answer Evaluation Question 5.

**Evaluation Question #5: What are the cost and time differences of the SAA and NPL approaches, for both EPA and PRPs?**

- One CIC indicated that the SA approach should save time and money by avoiding the “red tape” and effort required for the listing process. The CIC also indicated that sites with SAA agreements seem to move faster at certain times. However, this was an overall impression – the CIC was unable to identify specific actions that differed among types of sites, and noted that both types of sites vary considerably in difficulty.
- One CIC pointed out that PRPs often hire public relations staff to promote and try to “spin” activities at sites with SAA agreements and PRP-lead NPL sites, leading to increased cost for PRPs and greater coordination efforts for CICs to get PRPs to follow EPA Community Involvement Guidelines. However, these issues arise at both SA approach and NPL sites.
- One RPM indicated that speed depends on the openness and flexibility of EPA, the RPM, and the PRP. Good relationships with all participants can likely lead to savings at most sites.
- One RPM noted that AOCs require the same investigation and risk assessments regardless of the approach, although there could be additional benefits if the SA approach developed a streamlined model to address multiple sites with the same PRP and similar contamination.
- One Manager explained that EPA does not need to go to prioritization panel and list sites with SAA agreements. Thus, logically sites with SAA agreements would move more quickly by avoiding the listing process.
- One Manager indicated that cooperative PRPs can sometimes, but not always, reduce enforcement costs associated with researching and coordinating with PRPs. However, the same person noted that SA PRPs sometimes argue over the same things as NPL PRPs, with “orphan share” of sites being one general issue.
- In addition, one Manager indicated that SAA negotiations tend to progress more quickly, although there are some exceptions.
  - For example, EPA has had more difficulty negotiating the fourth AOC with Weyerhaeuser than was the case with the first three negotiations at the site (which has four OUs).

***Has the process for tracking expenditures at NPL sites and sites with SAA agreements changed over time?***

- One RPM noted that CERCLIS now includes subcategories to break down tasks and expenditures more clearly than was done in the past. For example, RI/FS now includes RI/FS negotiations and RI/FS.
- One RPM has not observed any changes to the tracking process for expenditures. However, it is likely that changes were implemented prior to the RPM becoming involved in Superfund work.
- Two Managers explained that since the mid-1990s, EPA conducts and recovers more enforcement costs upfront (“Enforcement First”). Now, thorough enforcement and PRP searches are completed before doing a fund-lead cleanup.
  - Superfund has grown substantially since the 1980’s and cost recovery increased in the late 1980’s and again in the early 1990’s.
    - The result is that there have been changes to the cost recovery process, as well as tracking. Thus, sites that were listed before 1987 or 1988 likely have fewer enforcement actions and less cost recovery.
    - It appears that some early data have also been lost, leading to potential underestimates of early EPA costs for managing sites.

***Specifically, has the policy for submission and recovery of expenses changed since the 1980s?***

- One RPM indicated that the policy has not changed; one RPM noted that EPA has changed the process for estimating and tracking estimated costs because early estimates for RODs and early stages were inaccurate.
- One Manager explained that the changes to enforcement meant that EPA had to spend more time upfront developing a better case and negotiating with PRPs.
- Site assessment costs are a specific issue; RPMs and Managers confirmed that prior to the 1990s, site assessment costs were not typically tracked for cost recovery. Currently, many site assessment costs are not recovered because they are conducted through cooperative agreements with states.
- One Manager also noted that EPA moved to IFMS in 1989 and some financial data may have been lost due during that process. Anecdotally, this Manager noted that analysts in the mid-1990s had difficulty retrieving pre-1989 data on several occasions when attempting to document costs for cost recovery.

- One Manager also noted that some RPMs do their own oversight, eliminating oversight charges in CERCLIS and IFMS. Thus, these RPMs would have travel expenditures, but no oversight costs.

***Does the SA approach have the potential to be more efficient or effective for negotiating and cleaning up sites? If so, how?***

- CICs, RPMs, and Managers indicated that avoiding the listing process and having cooperative PRPs should save some time and money. However, the savings are small compared to the overall cost at the sites because the rest of the process is designed to be identical.
- One CIC noted that it seems that the SA approach would save time and money by avoiding the “red tape” associated with the listing process. In addition, the CIC noted that sites with SAA agreements seem to move faster at times. These impressions were general, however, and not supported with specific examples.
- Two RPMs indicated that the SA approach has the potential to be more efficient.
  - One RPM explained that PRPs are motivated to stay off NPL and work with EPA to try to find solutions. In addition, EPA realizes savings by not going through the listing and deletion process.
    - In addition, RPMs can threaten to list a site on the NPL if the PRP will not cooperate. Once a site is on the NPL, that card is no longer available.
  - Another RPM felt that it is a “reasonable hypothesis” that the approach has the potential to be more effective or efficient due to the savings from not going through the listing and deletion process.
    - No respondents stated that additional requirements or effort are needed for specific portions of the SA approach.
- One RPM was not sure if the SA approach saved time.
- One Manager noted that avoiding the listing and prioritization panel should move sites with SAA agreements along faster, but data would be needed to confirm that is indeed the case.

**Evaluation Question 5a: What are differences in the early part of the process (from discovery through RIFS)?**

- Two RPMs explained that the SA approach avoids the listing process, which saves time (approximately one-year) and cost for oversight. While fund-lead sites can begin spending money before the listing, PRP-lead NPL sites are

delayed until listing. Thus, cleanups at sites with SAA agreements that would otherwise be PRP-lead sites likely get underway sooner.

- One RPM also noted that it may actually be cheaper when PRPs provides money directly to communities using the TAP approach instead of adding overhead by going through EPA.
- One RPM mentioned that the financial assurance requirements for SA approach may be more costly and involve additional cost recovery.
- Two Managers also noted that the SA approach requires a listing package, but avoids the actual listing process. One Manager noted that the listing process for NPL sites tends to be more than \$50,000. However, it is unclear if this cost includes steps that are also completed at sites with SAA agreements (e.g., HRS scoring) or if this figure reflects those costs only incurred at NPL sites (e.g., Federal Register listing).

**Evaluation Question 5b: What are differences in the middle part of the process (from RIFS through ROD)?**

- One RPM noted that the ROD publication is same for SA and NPL approaches.
- No other respondents noted any specific differences for the middle part of the process, although respondents generally noted that SA PRPs tend to be more cooperative and move faster.

**Evaluation Question 5c: What are differences in the later part of the process (from ROD through RD/RA, or through construction complete where applicable)?**

- One RPM explained that the process is the same, but the willingness of PRPs makes a difference.
  - The RPM also acknowledged that knowing that EPA can list sites with SAA agreements on the NPL could help things speed along and could help with negotiations with SA PRPs.

**Evaluation Purpose 4: Identify strategies to improve the implementation, efficiency and effectiveness of the SA approach**

This evaluation purpose includes Evaluation Questions 6 and 7. IEC is using interviews to support and expand upon results from reviewing findings from previous evaluations and existing materials to identify changes to the SA approach, as well as recommendations for future implementation.

**Evaluation Question 6: What has EPA done to improve the consistency of implementing the SAA since an internal evaluation and an IG report on the approach was published in 2007?**

- One CIC explained that community involvement has remained the same.
- One RPM indicated that they have been encouraged to enter more community involvement data over past few years.
- One RPM noted that pop-up boxes have been added to CERCLIS for SA actions to confirm the status of the site.
- One RPM also expressed frustration that sites with SAA agreements that are cleaned up in a manner that is consistent with NCP and EPA guidelines are not “counted the same” as NPL sites in considering achievements.
- Managers explained that the following changes have been implemented:
  - SAA guidance now contains very specific language.
    - However, the provisions are very clear that site agreements that were developed prior to the guidance were not grandfathered.
  - The review process is now more thorough and structured to ensure that sites meet criteria.
  - Added an official OECA SA code. No different lead code because it is still PRP lead. It mirrors NPL PRP lead site for CERCLIS, except for the flag. GPRA still does not count for SA, but they are tracked.
  - Region works with Dawn Taylor to flag official sites using the SA approach.

**Evaluation Question 6b: a) Do areas of inconsistent implementation remain? If yes, how should EPA address them?**

- One Manager noted that the implementation seems sufficient. However, the Region would have liked to have counted sites that were being worked on and had Agreements in place prior to the revised guidance.
  - The result is that sites have switched on and off the SA approach list.

**Evaluation Question 7: What additional factors or variables should EPA take into account when deciding if and when to use the SA approach in the future?**

- One CIC explained that the Obama administration wants EPA to become involved and have a presence at sites as early as possible. Thus, EPA is trying to come up with standard operating procedures or something to address pre-remedial sites without providing false hope that a site will score high enough to

be remediated. CICs would like EPA to come up with a way to introduce the HRS scoring process and cleanup options to communities.

- One RPM noted that listing on the NPL can have detrimental effects on communities (e.g., property values have dropped) that can be avoided with the SA approach. Thus, EPA should count SA cleanups and encourage Regions to use the SA approach whenever there is a willing and viable PRP.

***Do you have any concerns about the SA approach?***

- One CIC would like to see specific language to outline community involvement requirements.
- One CIC is pleased that TAP is synonymous to TAG.
  - sites with SAA agreements generate same results with less paperwork
- No RPMs had any concerns about the approach.
  - One RPM noted that EPA has had good experiences with the SA approach and PRPs seem to like the approach.
  - Another RPM noted that there are no concerns because it is an equivalent process and it is a good approach if it makes PRPs happy.
- One Manager noted that the guidance and financial assurance pieces have improved, so there are no concerns.

***Should EPA consider any additional requirements for sites to become SA?***

- One CIC indicated that EPA should not consider any additional requirements.
- One Manager would like to see stronger financial assurance in this economy for NPL and SA. EPA's hands are tied once a PRP files for bankruptcy unless EPA can prove danger.
  - Kerr McGee site with an SAA agreement went bankrupt.

***Are there advantages or disadvantages to the SA approach that are not reflected in cost data or CERCLIS data?***

- One RPM noted that CERCLIS data may not reflect the avoided stigma or willingness of PRPs in costs for oversight and negotiations.
- One Manager explained that the sites require the same amount of enforcement effort. However, it seems that sites move quicker when there is an interested party.

- More cooperation at sites with SAA agreements has led to fewer negotiations than regular PRP lead sites.

***Do you know of barriers to implementing the SA approach in other regions?***

- One CIC was not aware of any barriers, but received the impression that Region 4 is wavering on the best approach and is somewhat moving away from the SA approach.
- Respondents noted that there is a disincentive to use the approach if actions at sites with SAA agreement are not counted at Headquarters.

***Do you have any suggestions, recommendations, or comments to improve the SA approach?***

- One CIC noted that the process is the same, aside from variations for communities. When CICs go to approach an SA or NPL site, there are no initial thoughts or concerns because the process will be same for them.
- One CIC would like to see earlier community involvement for SA and PRP-lead sites. Come up with procedures to involve communities earlier in the process.
- One CIC would like for EPA to work closer with public health agencies to get communities to understand public health
- One RPM noted that the SA approach is OK, but there is room for changes to the CERCLA approach.
- Another RPM thought it was “ridiculous that sites with SAA agreements do not count for GPRA”
- One RPM noted that sometimes PRPs want to cleanup sites with the SA approach that do not qualify for NPL. A program for sites that did not score 28.5 could also be helpful.
- One RPM could not think of anything noting that “it has been a breath of fresh air.”
- One Manager requested that the program change the name back.
- One Manager noted that ATDSR only does assessments on sites with SAA agreements if requested. Region is working on fixing the process so that ATDSR is automatically responsible for sites with SAA agreements as well.
- One PRP representative suggested that the cooperative model of the SA approach might be something that could be coordinated with the use of the Triad approach, though he pointed out that the need to be consistent with NPL process

requirements may limit the incorporation of Triad into site remediation at sites with SAA agreements.



## APPENDIX E



**APPENDIX E: SUMMARY OF REMEDIES AND INSTITUTIONAL CONTROLS BY SITE PAIRING**

This appendix provides the summary information used to examine remedies at paired sites. Exhibit E-1 provides detailed information about remedies from RODs and site summary data; Exhibit E-2 provides a screening analysis of potential differences between the remedies at paired sites.

**EXHIBIT E-1 SUMMARY ROD DATA DESCRIBING REMEDIES AT PAIRED SITES**

PAIR	SITE	SAA/NPL SITE	REMEDY RELATED TO SOIL	REMEDY RELATED TO GROUNDWATER
A	Admiral Home Appliances	SAA	Soil excavation with off-site disposal	Monitored natural attenuation
	Shuron Inc.	NPL	Soil excavation	Temporary extraction followed by Active Groundwater Treatment, possible monitored natural attenuation
B	Gurley Pesticide Burial	SAA	Soil excavation, addition of lime, backfilling	Installation of permeable reactive barrier (PRB), monitoring
	Agrico Chemical Co.	NPL	Soil excavation, consolidation into sludge pond, RCRA cap, construction of slurry wall	Monitored natural attenuation, permission to plug and abandon impacted wells
C	Nocatee Hull Creosote	SAA	Installation of slurry wall and capping system, soil excavation	In-situ bioremediation via biosparging, monitored natural attenuation
	Cabot/Koppers	NPL	Soil washing, solidification/stabilization and bioremediation of soil	Extraction and disposal, requires installation of groundwater recovery system
D	Sanford Gasification Plant	SAA	For OU #01: soil excavation with off-site disposal. For OU #03: soil excavation with off-site disposal, installation of culvert, monitoring	For OU #01: monitoring. For OU #02: monitored natural attenuation
	Cabot/Koppers	NPL	Soil washing, solidification/stabilization and bioremediation of soil	Extraction and disposal, requires installation of groundwater recovery system
E	Sixty-One Industrial Park	SAA		Enhanced Reductive Dechlorination, monitored natural attenuation
	Diamond Shamrock Corp. Landfill	NPL		Groundwater and surface water monitoring
F	Ecusta Mill	SAA	No action necessary	
	Olin Corp. (McIntosh Plant)	NPL	Cap upgrade and extension, monitoring	Extraction from wells, monitoring
G	ITT-Thompson Industries, Inc.	SAA	Soil excavation with off-site disposal	In-situ bioremediation via Enhanced Reductive Dechlorination, followed by monitored natural attenuation
	Harris Corp. (Palm Bay)	NPL		Continued operation of extraction,

PAIR	SITE	SAA/NPL SITE	REMEDY RELATED TO SOIL	REMEDY RELATED TO GROUNDWATER
	Plant)			treatment, and disposal system, continued sampling and monitoring
H	Solitron Devices Inc.	SAA	Removal of chromium/arsenic	Extraction and air-stripping treatment, re-injection with oxygen infusion for enhanced biodegradation
	Harris Corp. (Palm Bay Plant)	NPL		Continued operation of extraction, treatment, and disposal system, continued sampling and monitoring
I	Lyman Dyeing and Finishing	SAA	No further action; soil excavation and installation of an engineered cap took place as part of a removal action	No further action; monitoring is taking place as part of a removal action
	Leonard Chemical Co. Inc.	NPL	Soil excavation with off-site disposal, in-situ source area vacuum extraction for subsurface soils	In-situ sparging or in-well stripping, installation of treatment fence, monitoring
J	Weyerhaeuser Co. Plymouth Wood Treating Plant	SAA	For OU #01: cover system. For OU #03: Barrier Wall Containment System, soil excavation, surface cap containment	For OU #03: monitoring
	Stauffer Chemical Co. (Cold Creek Plant)	NPL	For OU #02: bioremediation, pond capping and cap maintenance; no further action	For OU #01: continued operation of intercept and treatment system, installation of additional treatment wells. For OU #02: monitoring; no further action
K	Brown's Dump	SAA	Soil removal, use of two-foot-thick soil cover	Monitoring, no other action
	Jacksonville Ash Site	SAA	Soil removal, use of two-foot-thick soil cover	Monitoring, no other action
	Hipps Road Landfill	NPL	Construction of landfill cap	Construction of recovery well network, monitoring

To determine whether remedies that do not remove all contamination are implemented with varying frequency between SA approach and NPL sites, IEC reviewed RODs and site summary data for paired sites. The ROD provides the public documentation of the remedy selected for site cleanup and provides a consistent source of information on site remedies. In addition, because the sites using the SA approach have not yet completed remedial actions, CERCLIS data on remedies for these sites may be incomplete, and the ROD presents the best description of the remedy that will be implemented at each site.

Site RODs contain information on remedies for addressing contamination. To interpret the data systematically across site pairings, we considered remedy information in two categories: soil remedies and groundwater remedies. Although specific remedies identified vary widely, we sorted information in the RODs into two screening-level categories as follows:

- Remedies that suggest that contamination remains in place, such as caps slurry walls natural attenuation, and
- Remedies that indicate contamination removal.

**EXHIBIT E-2 INITIAL COMPARISON OF REMEDIES IDENTIFIED IN RODS FOR EACH PAIR OF SITES**

PAIR	SITE	SAA/NPL	TYPE OF REMEDY RELATED TO SOIL	TYPE OF REMEDY RELATED TO GROUNDWATER	SITE WITH REMEDY WITH GREATER FOCUS ON CONTAMINATION REMOVAL
A	Admiral Home Appliances	SAA	Contamination removal	Contamination left in place	Unclear - NPL
	Shuron Inc.	NPL	Unclear	Possible contamination left in place	
B	Gurley Pesticide Burial	SAA	Unclear	Contamination removal	SAA
	Agrico Chemical Co.	NPL	Contamination left in place	Contamination left in place	
C	Nocatee Hull Creosote	SAA	Contamination left in place	Contamination left in place	NPL
	Cabot/Koppers	NPL	Contamination removal	Contamination removal	
D	Sanford Gasification Plant	SAA	Contamination removal	Contamination left in place	NPL
	Cabot/Koppers	NPL	Contamination removal	Contamination removal	
E	Sixty-One Industrial Park	SAA	No information provided	Contamination left in place	Neither - both leave contamination in place
	Diamond Shamrock Corp. Landfill	NPL	No information provided	Contamination left in place	
F	Ecusta Mill	SAA	No information provided - no action necessary		Unclear
	Olin Corp. (McIntosh Plant)	NPL	Contamination left in place	Contamination left in place	
G	ITT-Thompson Industries, Inc.	SAA	Contamination removal	Contamination left in place	Unclear - NPL
	Harris Corp. (Palm Bay Plant)	NPL	No information provided	Contamination removal	
H	Solitron Devices Inc.	SAA	Contamination removal	Contamination removal	Neither - both remove contamination
	Harris Corp. (Palm Bay Plant)	NPL	No information provided	Contamination removal	
I	Lyman Dyeing and Finishing	SAA	Contamination left in place	Contamination left in place	NPL
	Leonard Chemical Co. Inc.	NPL	Contamination removal	Contamination left in place	
J	Weyerhaeuser Co. Plymouth Wood Treating Plant	SAA	Contamination left in place	Contamination left in place	Neither - both leave contamination in place
	Stauffer Chemical Co. (Cold Creek Plant)	NPL	Contamination left in place	Contamination left in place	

PAIR	SITE	SAA/NPL	TYPE OF REMEDY RELATED TO SOIL	TYPE OF REMEDY RELATED TO GROUNDWATER	SITE WITH REMEDY WITH GREATER FOCUS ON CONTAMINATION REMOVAL
K	Brown's Dump	SAA	Contamination removal	Contamination left in place	Neither - both leave contamination in place
	Jacksonville Ash Site	SAA	Contamination removal	Contamination left in place	
	Hipps Road Landfill	NPL	Contamination left in place	Contamination left in place	

IEC's initial comparison of the sites revealed that in five of 11 pairs, both sites have similar remedies or data are not complete (the Ecusta Mill site has completed only one no-action ROD, and it is not clear what remedies will be selected for the remaining OU).<sup>42</sup> In two other cases – Admiral Home Appliances and Shuron (Pair A) and ITT-Thompson and Harris Corp. (Pair G) – the NPL sites appear to involve contaminant removal to a greater extent than remedies identified for the sites using the SA approach, but both also specify continued monitoring, and it is unclear whether all contamination is likely to be removed in the near term.

The data in Exhibit E-2 show that in three pairs (C, D, and I) the NPL site remedies appear more clearly focused on contaminant removal and treatment. In site pair B, the SA approach site's remedy removes soil and groundwater contamination, but the NPL site's remedy involves capping and monitored natural attenuation, leaving contamination in place.

Although the RODs for the examined SA approach and NPL sites provide only general and sometimes preliminary information about the extent to which the remedies selected at each site are designed to remove all contamination, the results indicate that at all but one of six pairs of sites where differences exist in remedies, remedies at NPL sites appear to be more focused on contaminant removal and treatment, while sites using the SA approach emphasize remedies that leave contamination in place.

As noted in Chapter 3 of the report, however, a review of these data suggests that they are not complete enough to fully identify specific differences in site remedies. A complete analysis would require consideration of the extent and concentration of contamination, the most effective remediation technologies available at the time of publication of each ROD, and detailed data about any residual contamination levels anticipated at the completion of remedial actions.

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<sup>42</sup> Ecusta Mill had a significant time-critical removal action that did physically remove contamination, but that action is not described in the ROD and is not included here.

## APPENDIX F



**APPENDIX F: AVERAGE NUMBER OF DAYS REPORTED TO COMPLETE ACTIONS AT PAIRED SITES<sup>43</sup>**

PAIR	TYPE	SITE NAME	CONSENT DECREE	RI/FS NEGOTIATIONS	PRP RI/FS	RD/RA NEGOTIATIONS	PRP RD	PRP RA
A	SA	Admiral Home Appliances	86	132	2,194	<u>269</u>	N/A	N/A
	NPL	Shuron, Inc.	N/A	<u>109</u>	<u>1,388</u>	2,400	719	403
B	SA	Gurley Pesticide Burial	<u>133</u>	<u>70</u>	2,923	281	<u>21</u>	<u>463</u>
	NPL	Agrico Chemical	175	175	<u>1,013</u>	<u>207</u>	555	1,140
C	SA	Nocatee-Hull Creosote	N/A	<u>193</u>	3,601	<u>84</u>	N/A	N/A
	NPL	Cabot-Koppers	1,104	300	<u>2,263</u>	182	939	1,099
D	SA	Sanford Gasification Plant	N/A	317	<u>1,644</u>	212	1,378	N/A
	NPL	Cabot-Koppers	1,104	<u>300</u>	2,263	<u>182</u>	<u>939</u>	1,099
E	SA	Sixty One Industrial	N/A	911	1,703	210	N/A	N/A
	NPL	Diamond Shamrock	167	<u>119</u>	<u>960</u>	<u>140</u>	77	68
F	SA	Ecusta Mill	N/A	N/A	<u>615</u>	N/A	N/A	N/A
	NPL	Olin Corporation (Macintosh Plant)	N/A	116	1,683	169	795	1,969
G	SA	Solitron Devices	<u>167</u>	<u>138</u>	2,117	<u>134</u>	<u>762</u>	N/A
	NPL	Harris Corp. (Palm Bay)	172	303	<u>1,509</u>	331	820	885
H	SA	ITT Thompson Industries	N/A	<u>241</u>	3,604	N/A	N/A	N/A

<sup>43</sup> For sites with multiple OUs or several unique actions (e.g., 2 RA periods) the average number of days per action reflects the sum of the actions divided by the number of the actions. For example, OU1 at Harris Corp completed RI/FS in 819 days and OU2 reported two RI/FS periods totaling 2,199 days (1,080 and 1,119 days). Thus, the sum of OU1 (819 days) and OU2 (2,199 days) is 3,018. That quantity is then divided by two to reflect the two OUs with completed RI/FS' for a site average of 1,509 days.

PAIR	TYPE	SITE NAME	CONSENT DECREE	RI/FS NEGOTIATIONS	PRP RI/FS	RD/RA NEGOTIATIONS	PRP RD	PRP RA
	NPL	Harris Corp. (Palm Bay)	172	303	<u>1,509</u>	331	820	885
I	SA	Lyman Dyeing & Finishing	N/A	<u>280</u>	<u>3,484</u>	N/A	N/A	N/A
	NPL	Leonard Chemical	599	1,262	3,759	347	2,185	N/A
<b>Summary of Pairs</b>	<b>SA</b>		<b>2</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>
	<b>NPL</b>		<b>0</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>0</b>
J	SA	Weyerhaeuser Company Plymouth Wood Treating Plant ( <b>Mega Site</b> )	107	N/A	2,592	221	<u>493</u>	<u>525</u>
	NPL	Stauffer- Cold Creek	<u>54</u>	457	<u>1,595</u>	<u>202</u>	565	1,222
K	SA	Brown's Dump ( <b>Potential Mega Site</b> )	<u>209</u>	<u>97</u>	2,549	<u>451</u>	648	N/A
	NPL	Hipps Road Landfill	238	546	<u>709</u>	1,082	<u>361</u>	613
	SA	Jacksonville Ash ( <b>Potential Mega Site</b> )	<u>209</u>	<u>97</u>	2,549	<u>451</u>	648	N/A
	NPL	Hipps Road Landfill	238	546	<u>709</u>	1,082	<u>361</u>	613



**APPENDIX G:       QUALITY ASSURANCE PLAN**

**Quality Assurance Plan**

Effectiveness Evaluation of the Region 4 Superfund Alternative Approach

EPA Contract No. EP-W-07-028, Work Assignment No. 1-23

*Prepared by*

Industrial Economics, Incorporated

Draft: June 1, 2010, Version 1.2

## QUALITY ASSURANCE PLAN

This Quality Assurance Plan documents the planning, implementation, and assessment procedures that Industrial Economics, Incorporated (IEc) will undertake for the evaluation of EPA's Superfund Alternative Approach within EPA Region 4. This plan is written based on the requirements under EPA Contract No. EP-W-07-028, Work Assignment No. 1-23 and "EPA Requirements for Quality Assurance Project Plans," March 2001.

Title: Effectiveness Evaluation of the Region 4 Superfund Alternative Approach

Contractor: Industrial Economics, Incorporated (IEc)

Plan Summary: Industrial Economics, Incorporated (IEc) is currently conducting an evaluation of EPA's Superfund Alternative Approach. EPA developed the Superfund Alternative Approach (SA approach or SAA) as an option for negotiating cleanups with Potentially Responsible Parties (PRPs) without listing sites on the National Priorities List (NPL). SAA sites use the same investigative and cleanup processes and standards that are used for sites listed on the NPL. The impetus for developing the SAA was potential cost savings from avoiding the NPL listing process. Currently, sites with SA approach agreements are a small subset of all Superfund cleanup agreements, with Regions 4 and 5 being the largest users of the SA approach. Region 4 has 19 sites with SA agreements and Region 5 has 32 sites.

The purpose of this evaluation is to:

- Examine the factors influencing the use of the SA approach
- Assess the effectiveness of the SA approach in achieving the goals of the Superfund program
- Assess the efficiency of the SA approach in terms of potential time and cost savings
- Identify strategies to improve the implementation, efficiency and effectiveness of the SA approach

This evaluation will use a range of quantitative and qualitative data sources. An initial step in the evaluation is a review of existing published reports and site data from the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) and Records of Decision (RODs) to identify comparable SA and NPL sites in Region 4. The evaluation will also include a quantitative comparative analysis focusing on site data from CERCLIS and the Office of the Chief Financial Officer's Integrated Financial Management System (IFMS), and a qualitative assessment of information collected in targeted interviews.

Sources of Data: In designing the evaluation methodology, IEc received input from EPA Region 4 staff and stakeholders from OECA and OSWER. Key sources of data include:

- Existing Superfund data, including Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) data provided by Randy Hippen at EPA Headquarters and CERCLIS data downloaded from the public CERCLIS website (<http://www.epa.gov/superfund/sites/phonefax/products.htm>). IEc plans to review the following CERCLIS fields to support the comparison of SA approach and NPL sites for site selection and for Evaluation Questions 3, 4, and 5. To identify sites for comparison, IEc reviewed the following site characteristic fields: EPA ID, Site Name, Address, City, State, Zip Code, County, Region: 4, Federal

Facility: N, Non-NPL Status: SA, Non-NPL Date, NPL Status, SITE\_SMSA\_NMBR (standard metropolitan statistical area), Population Within One Mile, Number of OUs, Number of PRPs, Contaminated Media, Types of Contaminants, Contaminants of Concern, and Potentially Responsible Party (PRP)/Leading Organization. To conduct paired analyses, IEC will analyze data from the following fields: Discovery Date, Construction Complete Date, Action, Action ID, Actual Start Date, Actual End Date/Completion, Responsibility, Planned Outcome, Urgency, Initial Remedial Measure, Institutional Controls, Long Term Response Action, Site-Wide Ready for Anticipated Use, Cleanup Technologies Used, Cleanup Status (at OU), Human Exposure Environmental Indicator Measure, and Contaminated Ground Water Migration Environmental Indicator Measure.

- Analysis of Workload Allocation Model Data provided by Alan Youkeles at EPA Headquarters. The Workload Allocation Model incorporates financial data from the Integrated Financial Management System (IFMS) that have been categorized by CERCLIS Action code to reflect broad categories describing the type of effort undertaken by EPA (e.g., enforcement, remedial). IEC plans to generally use the broad categories already defined for the model, to ensure consistency with other EPA analyses, though specific actions in each category that are not within the scope of the analysis (e.g., five year reviews) will not be considered. IEC will review expenditure data for relevant activities up to the publication of RODs for all sites, including relevant expenditures occurring one fiscal year beyond the ROD dates to ensure that lagging costs are captured. To the extent that sites with SAA agreements have completed remedial design and remedial action, IEC may also examine financial data for these actions.
- Existing evaluations of the Superfund Alternative Approach process. EPA's Office of Enforcement and Compliance Assurance (OECA) and Office of Solid Waste and Emergency Response (OSWER) conducted a joint internal evaluation of the SA approach and EPA's Office of the Inspector General conducted an audit of the approach. Both of these evaluations were completed in 2007.
- Additional Data Resources: RODs, Community Involvement Plans, Site Fact Sheets, and Consent Decrees

Rationale for the Selection of Sources of Data: These sources and methods were chosen because they were feasible for the project scope and schedule and are also available and/or accessible. The data will provide a comprehensive answer to the evaluation questions (see methodology). IEC plans to primarily use CERCLIS data and supplement the information and findings with qualitative interviews. By using a variety of data sources and collection methods, IEC will be able to assess the implementation of the SA approach in Region 4.

Analytical Rigor: IEC designed the methodology in the context of the project's overarching evaluation questions and the Superfund program pipeline logic model. IEC will use and apply the collected information relative to the goals of the evaluation. IEC will use and apply qualitative and quantitative data in a manner that is appropriate for its scope and for the purposes of the evaluation report. This will include identifying the source of the data, any assumptions related to its use, and possible limitations. We will also consider if any of the preliminary analyses indicate that additional data need to be collected.

Throughout the process, IEC will work with EPA staff from Region 4 and Headquarters to ensure that data obtained from CERCLIS and the IFMS are the most comprehensive and reliable sources available. To ensure high quality data, IEC will perform standard quality assurance and quality control (QA/QC) checks

on secondary data (CERCLIS and IFMS data) to ensure consistent data analysis, including review and comparison of data received with external documents (e.g., ROD text), and review of all calculations involving the data. Other examples of QA/QC procedures that will be used include consulting with Alan Youkeles of the Office of Superfund Remediation and Technology Innovation (OSTRI) Budget, Planning and Evaluation Branch to ensure that IEC interpretation of data categories is correct, sharing the methodology with stakeholders, including staff from OECA and OSWER, and discussing the methodology and specific data sources and analyses with staff from Region 4 and others at EPA as needed to verify the soundness of methodology and data sources. Alan Youkeles, stakeholders, and staff from Region 4 will review the final evaluation report to ensure the data have been interpreted correctly.

Additional steps we are taking to ensure a high degree of analytical rigor are discussed by method below:

*Interviews:* IEC plans to use interviews in three ways: 1) to provide central information on specific evaluation questions that have not been well-documented using available data (e.g., Questions 1 and 2); 2) to supplement information available in existing data sources (e.g., follow-up on EPA activities to address prior evaluation recommendations); and 3) to investigate specific data questions that may arise as a result of the quantitative analyses of existing data.

IEC will take notes during interviews, and produce a summary of findings from the interviews. As interviews are qualitative, and their purpose is to further explain survey results as opposed to compare findings across interviews, we will analyze and interpret information from interviews using a qualitative approach. Depending on the number of interviews, IEC will develop an approach to code or summarize responses, and will verify with interviewees that responses have been accurately captured. It is possible that interview questions will be targeted at specific site conditions or data anomalies, and will provide explanatory information rather than results that can be broadly coded or interpreted. The specific verification and coding procedure will build on the type and focus of interviews.

*CERCLIS Data:* IEC plans to analyze CERCLIS data to support assessment of time and cost for differences between SA and NPL sites. IEC worked with EPA staff from Region 4 and Headquarters to identify and obtain the most comprehensive and reliable CERCLIS data for analyses.

To minimize the potential for double-counting, our review of cost data will be limited to expenditures. In addition, IEC plans to review all data for anomalous results.

Due to the limited number of sites with SAA agreements and RODs, IEC plans to limit the analysis to correlation and explanatory data; a larger number of sites would be required to support a robust statistical analysis.

Data Validation: IEC continues to work with EPA staff from Region 4 and Headquarters that are familiar with the data to ensure that data obtained from CERCLIS are the most comprehensive and reliable sources available. IEC plans to ask EPA staff from Region 4 and/or Headquarters to verify that all data obtained from CERCLIS and/or other sources are being interpreted and utilized in a manner consistent with the goals of the evaluation. This applies both to site-level data used in selecting sites to make appropriate comparisons, as well as more targeted information concerning site, action, and expenditure characteristics used to compare paired sites.

IEc's internal data validation and quality control procedures include QA/QC of all data; for this project we will ensure review of all data by at least one project team member (in addition to the lead analyst), and by one person not part of the project team. This may be a staff member with CERCLIS and/or Access experience, and also may be IEC's internal quality assurance manager. The external reviewer will consider the overall consistency of the data and information presented. If the quality assurance reviewer identifies data that are inconsistent with expectations or other information, the questionable data will be referred back to project staff to confirm that information is accurate.

Finally, as IEC will be using data for site comparisons on a case-by-case basis, any suspected anomalies or apparent inconsistencies in the data will be illuminated and investigated further with EPA staff from Region 4 and/or Headquarters. The case-by-case nature of the analysis ensures that no suspected anomalies or apparent inconsistencies in the data will go uninvestigated over the course of the analysis. This consultation with EPA staff may obviate the need for an IEC reviewer external to the project; IEC will consult with the WAM and Region 4 staff in making this determination.

Consistency: IEC will ensure consistent data collection in a number of ways. Interview guides will be developed for each set of interviewees (e.g., EPA Community Involvement Coordinators, Remedial Project Managers) so that each group of individuals will be asked the same set of questions. Finally, when developing the final evaluation report, we will consider the findings from each analysis within the context of results from the other methods employed for this evaluation.

Data Limitations: IEC cannot solicit the same information from more than nine non-federal entities because of Information Collection Request (ICR) restrictions. Accordingly, IEC plans to conduct a limited number of in-person or telephone interviews to support this evaluation.

Expected Products: The final products derived from this evaluation will include the initial findings from reviewing and analyzing CERCLIS and IFMS data, summary of interviews, final report, oral presentation, and a fact sheet on the Superfund Alternative Approach evaluation.

Audience: EPA Region 4 will be the primary audience for this evaluation. Other interested parties include the EPA's Office of Policy, Economics, and Innovation (OPEI), Office of Enforcement and Compliance Assurance (OECA), and Office of Solid Waste and Emergency Response (OSWER). EPA may use the findings to improve the Superfund Alternative Approach and to inform Superfund staff if the SA approach is having the expected outcome of reducing site costs and speeding remediation.

Organization: EPA Region 4

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