UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE
OSWER 9283.1-13

Signed October 31, 2000

MEMORANDUM

SUBJECT: Superfund Reform Strategy, Implementation Memorandum: Optimization of Fund-lead Ground Water Pump and Treat (P&T) Systems

FROM: Elaine F. Davies, Acting Director ***s/Elaine F. Davies***
Office of Emergency and Remedial Response

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Technology Innovation Office

TO: Superfund National Policy Managers, Regions 1-10

PURPOSE

In the OSWER Directive No. 9200.0-33, Transmittal of Final FY'00 - FY'01 Superfund Reforms Strategy, dated July 7, 2000, the Office of Solid Waste and Emergency Response outlined a commitment to optimize our Fund-lead pump and treat (P&T) systems. This memorandum provides an overview of the purpose and goals of P&T optimization, and outlines expectations of the Regions and Headquarters to jointly implement this Reform Initiative. More detailed information on this Reform Initiative including a schedule and Headquarters and Regional points of contact can be found in the attachment documents.

The Optimization Initiative is intended to encourage systematic review and modification to existing P&T systems to enhance overall remedy effectiveness and cost effectiveness, without compromising protectiveness or other objectives of the Superfund program. It provides EPA an opportunity to demonstrate our commitment to effective management of our long-term remedies. This effort recognizes that remedial approaches should not remain static, that site conditions change over time, and that better tools and strategies have evolved which allow us to continuously improve the performance of the remedy. This reform initiative does not signal any change in EPA's decision-making framework for selecting remedies that are protective of human health and the environment. Any remedy modifications should be carried out in accordance with existing guidance and policy regarding ROD modifications and the Administrative Record.

BACKGROUND

Over the last year, the Office of Emergency and Remedial Response and the Technology Innovation Office worked together to develop, pilot and implement a process to optimize ground water P&T systems. Working in cooperation with the U.S. Army Corps of Engineers, Headquarters implemented a year-long pilot in Regions IV and V to determine if EPA would benefit from a systematic optimization analysis of our Fund-lead P&T systems. The pilot included identification of all Fund-lead P&T sites in the Regions and subsequent optimization analysis of four sites (two per Region). Results from the pilot indicated that there is a potential to improve our operating Fund-lead P&T systems and a definitive need for continuous evaluation of system operation and maintenance. Recommendations for these sites included changes in P&T system operation and maintenance, remediation technology modification or changes, and changed or reduced monitoring data needs. Implementation of some recommendations will require additional capital expenditures, others are relatively low cost adjustments. Generally, these pilots demonstrate that optimization can reduce long-term remedial action costs, accelerate cleanup times, and enhance protectiveness of human health and the environment.

INITIATIVE GOAL

The primary goal of this Reform Initiative is to assist Regions in optimizing all operating Fund-lead P&T systems. An additional goal of this effort is to increase awareness of the benefits and the need for routine optimization analysis as a part of the ongoing management responsibilities for our long-term remedies.

In year one, Headquarters in collaboration with the Regions will identify all Fund-lead P&T systems, collect baseline cost and performance data on those systems, prioritize sites based on optimization potential, and further evaluate the optimization opportunities for up to two high priority sites in each Region. The approach to be used during this effort is called Remedial Systems Evaluation (RSE); a process by which an independent expert team works collaboratively with the RPM and site contractor to evaluate the performance of all major components of the operating system. The RSE team will consist of senior technical staff from EPA and technical experts from the US Army Corps of Engineers and selected support contractors.

Headquarters will work collaboratively with Regions to evaluate and implement optimization recommendations. The site RPMs will have the essential role of determining which optimization recommendations are appropriate and working with Headquarters to secure funding and technical assistance, if necessary, to complete the implementation process. Headquarters is committed to providing technical, administrative and monetary support for this project in FY'01. A system will be set up to document any cost savings or changes in remediation time frame associated with implementation of optimization recommendations.

Regions are asked to assist with this Reform Initiative in several ways. Each Region shall identify a Regional Project Liaison; an RPM or other technical person in the Region with experience in ground water issues. Many individuals have already volunteered to be Regional Project Liaisons - please refer to the

attached Fact Sheet for a list of Regional Project Liaisons. RPMs will be asked to provide baseline cost and performance information on their Fund-lead pump and treat systems. Using this information Headquarters will work the Regions to identify up to two sites in each Region for optimization analysis. RPMs, site contractors and Regional Project Liaisons will be asked to participate in a 2-day RSE site visit with the RSE team. The RSE team will prepare a draft RSE report for review by the RPM and Regional Project Liaison. Regions are encouraged to coordinate with the States in selection of sites and involve the States in RSE site visits, as appropriate.

Please distribute this memorandum to all Remedial Project Managers (RPMs), and other appropriate staff, and encourage them to actively participate in this effort. For more information, please contact Paul Nadeau of the Office of Emergency and Remedial Response at (703) 603-8794 or Kathleen Yager of the Technology Innovation Office at (732) 321-6738, or refer to the attached documents.

Attachments: Implementation Plan
Fact Sheet
Question and Answer
Draft Technical and Administrative Resources

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Superfund Reform Strategy
Pump and Treat Optimization
Implementation Plan

OSWER 9283.1-13

1. Purpose

In the *OSWER Directive No. 9200.0-33, Transmittal of Final FY00 - FY01 Superfund Reforms Strategy, dated July 7,2000*, the Office of Solid Waste and Emergency Response outlined a commitment to optimize our Fund-lead pump and treat (P&T) systems. To fulfill this commitment, Headquarters will assist Regions in evaluating their Fund-lead operating P&T systems. During FY 01, all Fund-lead P&T system will be identified, baseline cost and performance data will be collected and up to 2 sites in each Region will be evaluated for optimization potential.

This Reform Initiative provides EPA an opportunity to demonstrate our commitment to improve the both the effectiveness and efficiency of our remedies through the application of optimization approaches to our Fund-Lead pump and treat systems. This Implementation Plan provides the background, results of a pilot study, goals and approach, and a proposed schedule to implement this Superfund Reform Initiative.

2. Background

EPA estimates that the Superfund Program has over 700 sites with pump and treat (P&T) systems operating, under construction or selected as a remedy component in Records of Decision (RODs). Sites may also have had P&T systems installed during actions performed by Superfund's Removal program.

Approximately 30% of these systems are expected to be Fund-financed, suggesting that the Federal Government is or will be paying for the construction, operation, maintenance and monitoring of over 200 pump and treat systems nationwide. Based on an EPA study of 28 operating P&T systems*;* the average cost for operation of the systems and monitoring of system performance ranges from $200,000 to $600,000 annually. Many of these systems are anticipated to operate for as long as decades which will result in a substantial cost to Federal and State Governments. After a 10-year period, States are expected to assume financial responsibility for the Fund-Lead P&T systems.

EPA and the US Army Corps of Engineers (USACE) have identified several approaches to optimize ground water P&T systems that can markedly improve system performance and potentially offer significant reductions in Long-Term Remedial Actions (LTRA) costs. Results of these studies indicate that most sites will benefit from optimization, either through improvement of the existing remedy or cost reduction. On average, a 30% reduction in annual LTRA costs were identified in EPA/ACE studies.

These methodologies have the potential to be applied nation-wide, resulting in considerable savings and/or improvements in remedy performance. It should be noted that private industry as well as the Department of Defense have recognized the benefits of optimization and currently are working towards, or already have a adopted, systematic optimization strategies Agency- or company-wide.

Although in many cases the driving force behind optimization may be cost reduction, it should be noted that opportunities for system improvement may also be identified which impact the overall effectiveness of a remedy. Under these circumstances, additional capital investment and increased LTRA costs may be recommended as part of the optimization analysis. Furthermore, even in cases where overall cost reductions are identified, additional evaluation and capital investment (e.g. drill 2 new wells in order to shut down 4 wells) may be required in order to achieve long-term cost reductions.

3. Results of Pilot Project in Regions 4 and 5

TIO conducted a pilot project in Regions 4 and 5 to better understand the number of operating Fund-lead P&T systems and the potential for applying optimization technologies to these sites. Through this effort baseline cost and performance data were collected on all operating and to-be-designed P&T systems in each Region. Two sites in each Region were selected for optimization analysis.

A sample of the baseline system data are summarized below.

Abbreviated Baseline Fund-Lead
Pump and Treat Site Data
Regions 4 & 5

	Region 4	Region 5
# Fund-Lead P&T Systems (operating)	6	14
# Fund-Lead P&T Systems (planned)	3	4
Average Annual O&M cost	$274/yr	$319/yr
Time Horizon	3>>>30 yrs	4>>>30 yrs

Optimization of 2 sites in Region 5 has been completed. Optimization of 2 sites in Region 4 is still in draft form. Results of the optimization of the 2 Region 5 sites offered over 28 suggestions to improve the performance and/or reduce costs of the operating systems. Examples of recommendations for

system improvement which would result in additional cost to the sites included suggestions to complete a capture zone analysis, perform ground water modeling, further delineate the ground water plume, expand site monitoring well networks, and evaluate the potential for installing a permeable reactive barrier. Examples of recommendations to reduce operating costs included; elimination of an above-ground treatment component, use of an alternative metals removal technology, and elimination of a duplicate treatment system. Total potential net lifecycle cost savings were in the millions of dollars for the 2 sites evaluated in Region 5.

As summarized above, substantial cost reduction opportunities were identified at each site in Region 5. Some of these recommendations also required substantial capital investment (e.g., one recommendation requires a capital investment of over $1.5M for installation of a permeable reactive barrier (PRB). However, a PRB could potentially reduce system operating costs by $420K annually). It should be noted that it is likely that not all of the recommendations can or will be implemented. Many of the recommendations require additional evaluation before a decision can be made whether or not to proceed with implementation.

It was evident from the number of Fund-lead P&T systems in these Regions (9 in Region 4 and 18 in Region 5) and results of the optimization of 2 Region 5 sites, there is a potential for significant system improvement and/or cost reduction with optimization. The number and nature of the Fund-Lead P&T systems in other Regions will be evaluated, however some degree of improvement is likely given the results of the pilot study in Regions 4 and 5, and results of previous EPA and ACE studies.

4. Project Goals and Approach

The goal of this effort is to apply optimization methodologies at EPA Fund-lead operating P&T systems with the assistance from EPA Headquarters to improve the effectiveness and efficiency of operating P&T systems. A secondary goal of this effort is to increase the national awareness (RPMs, PRPs, contractors, etc.) of optimization approaches such that optimization becomes integrated into the overall cleanup process for all sites, regardless of program.

Optimization, as defined by this initiative, includes an overall site evaluation of system performance using the US Army Corps of Engineers (USACE) Remedial Systems Evaluation (RSE) process. The RSE process evaluates most aspects of an operating P&T system including; aboveground treatment systems, extraction well networks, sampling protocols, monitoring networks, data management, labor costs, and more.

The major components of this effort are listed below. The lead office (listed 1st) and supporting offices (listed subsequently) are indicated in parentheses.

FY 01:

- Collect baseline operation, maintenance and monitoring data on all Fund-lead P&T systems in Regions 1-10 (TIO, OERR, Regions, Regional Project Liaisons);

- Provide baseline data to EPA Headquarters and each Region (TIO, OERR);
- Optimize up to 16 Fund-lead P&T sites nationwide (up to 2 in each Region) using the USACE RSE process (TIO, OERR, Regions, Regional Project Liaisons);
- Evaluate and implement optimization recommendations, as appropriate (Regions, Regional Project Liaisons, OERR);
- Provide technical, administrative, and monetary assistance to EPA Regions in implementing all of these recommendations, as necessary, through existing program mechanisms (OERR, Regions, Regional Project Liaisons, TIO); and
- Track progress of site optimization initiative and the optimization recommendations at each of the 16 sites nationwide for reporting requirements of the Superfund Reform Strategy (OERR).

FY02

- Work with the Regions to determine if additional Fund-lead P&T sites not optimized during the first year of this project should be optimized (OERR, TIO, Regions);
- Evaluate and implement optimization recommendations, as appropriate (Regions, Regional Project Liaisons, OERR);
- Continue to provide technical, administrative, and monetary assistance to Regions to implement recommendations, as necessary, through existing program mechanisms (OERR, Regional Project Liaisons, Regions, TIO); and
- Continue to track progress of the site optimization initiative and implementation of optimization recommendations (OERR).

<u>What Types of Systems are Included in this Initiative?</u>
Baseline operation, maintenance and monitoring data on operating and to-be-designed Fund-lead P&T systems will be collected during this project. Only operating Fund-lead P&T systems will be optimized.

<u>What Types of Systems are Not Included in this Initiative?</u>
Only operating Fund-lead P&T systems will be optimized in this project. Other types of systems including soil vapor extraction systems, landfills, monitored natural attenuation, and other sites with long-term operation, maintenance or monitoring components would likely benefit from optimization, but are not included in this effort.

Furthermore, optimization can also be beneficial for the design of a new P&T system. In future initiatives, OERR may consider providing technical assistance to the Regions for the design of optimal P&T systems using the optimization techniques applied during this initiative. Future optimization of the system during LTRA would still be necessary at these sites.

5. Implementation Approach

5.1 Briefings

- Headquarters:
  - Kick-off meeting with OERR (September 13, 2000)
  - Follow-up meetings with OERR (DCM, Regional Coordinators, Budget network) to discuss project tracking and funding (September/October 00)

- Regional Management
  - Work planning meetings with Regions and OERR (October-November 00)
  - Focus Forum Meeting (October 00)
  - Division Directors Monthly Conference Call (October 00)

- RPMs & Ground Water Forums
  - TIO will organize internet based seminars with the Regions to discuss the goals, approach, and schedule of this project. RPMs and Ground Water (GW) Forum members from each Region will be asked to participate in the seminars to better understand the optimization technologies being applied through this project and the overall approach to their Fund-lead sites.

5.2 Site Identification, Data Collection & Prioritization

5.2.1 Site Identification and Data Collection

TIO will identify all Fund-lead P&T sites in each Region and collect basic information on system construction, operation, maintenance and monitoring. This information will be used to prioritize sites for optimization analysis.

TIO will start with a master list of potential Fund-lead sites (obtained from CERCLIS, Annual Status Report, and/or OERR funding information). Each Regional Project Liaison will send a request to each RPM with a listed Fund-lead site asking if their site is still Fund-financed and if a P&T system is planned or operating at the site. The RPMs will have two options for submitting basic information on their Fund-lead site:

- RPM can go to a central website and complete an 18-question information form on the system, or
- RPM can request we contact them, and/or their O&M contractor and obtain information over the phone. If this option is selected TIO's contractor will contact the RPM and complete the information form over the phone.

5.2.2 Site Prioritization

The information forms will be used to prioritize sites for optimization. The prioritization process is based on an initial assumption of 20% savings at each site, the percent savings is adjusted up or down depending on site data. For example, the percent savings is decreased for sites pumping less

than 10 gallons per minute (gpm) and increased for sites pumping greater than 500 gpm. The prioritized results will help HQs and the Regions, select the 2 sites in each Region for optimization.

HQs will prepare a report summarizing prioritization results for each Region. The report will include the following information:

- Site Name;
- Status (operating or planned);
- Estimated Time frame
- Annual O&M Cost
- Baseline Present Value
- Estimated Potential Savings (%)
- Estimated Potential Saving ($)

5.3 Site Optimization

Remedial Systems Evaluations will be performed at up to 2 sites in each Region. Collection of data and site optimization will be managed by TIO with assistance from a contractor, HSI GeoTrans. Several individuals from the USACE will be part of the RSE core technical team. The USACE will review all reports before submission to RPMs and Headquarters. The RSE team will be assembled as follows:

Core Technical Team (3 people)

- HSI GeoTrans Senior Hydrogeologist
- US ACE Senior Engineer
- One Alternate from either GeoTrans, USACE Center of Expertise, academia or consulting;

  Robert Greenwald, HSI GeoTrans MS, Stanford 14 yrs experience)
  Peter Rich, HSI GeoTrans
  Dave Becker, USACE/ MS, Nebraska (17 yrs experience)
  Lindsey Lien, USACE
  Other (option for academic or consultant with particular expertise, e.g., modeling, long-term monitoring optimization)

Regional Project Liaison/Troubleshooter/Headquarters Representative (1 person)

- One person - either the Regional Project Liaison, TIO, or OERR will participate in each RSE. Regional Project Liaisons are expected to participate in 8 RSEs, TIO in 4 RSEs, and OERR in 4 RSEs.

Region/State (3 or more people)

- EPA RPM;
- State RPM; and
- Site contractor

Within 45 days of the RSE site visit the core technical team will complete a draft RSE report for review by the EPA RPM and Regional Project Liaison. Following incorporation of, or response to Regional comments, a final report will be prepared and submitted to the RPM and EPA Headquarters.

The RSE report will contain the following items:

- Executive summary
- Introduction
- System Description
- System Objectives, Performance and Closure Criteria
- Finding from the RSE Visit
- System Problems
- Recommendations
- Cost Summary Table (the Cost Summary Table could be used as a simple way of tracking recommendations at a site)

5.4 Project Tracking and Implementation of Recommendations

OERR will be responsible for tracking the progress of this project, including the implementation of recommendations. Regional Superfund Division management, Regional Superfund Administrative Reforms contact for remedy updates, and the Information Management Coordinators (IMCs for budget) could also assist with project tracking.

It is recommended that each RPM prepare a response to prioritize the recommendations and suggest a schedule and process by which the recommendations be evaluated or implemented. If an RPM or Region disagrees with a recommendation, he/she can note that in the response with a brief explanation. This response would also include an indication of whether additional funding or contractual support is required to further evaluate or implement the recommendations (e.g., One recommendation may be to remove a component of the above ground treatment system. Before the component is removed, the RPM would need to evaluate the implications of making such a change to the aboveground treatment system and propose a method to evaluate the effectiveness of the change. The RPM may need contractual support for this evaluation).

OERR will provide assistance to RPMs that wish to make changes to their systems. This may involve guidance on understanding the regulatory process in making minor and major changes to a system (e.g., Is an Explanation of Significant differences required?**)**, technical support in evaluating

recommendations, and funding to evaluate and implement recommendations.

6. Schedule

!	Regional Briefings	10/00-12/00
!	Data Collection and Prioritization (all Regions)	11/00-2/01
!	Site Optimization (16 total)	12/00-9/01
!	Regional Review and Implementation	Ongoing
!	OERR Tracking	Ongoing

Superfund Reform Strategy
Pump and Treat Optimization
OSWER 9283.1-13
Fact Sheet

Purpose and Goals

In the *OSWER Directive No. 9200.0-33, Transmittal of Final FY00 - FY01 Superfund Reforms Strategy, dated July 7,2000*, the Office of Solid Waste and Emergency Response outlined a commitment to optimize our Fund-lead pump and treat (P&T) systems. The goals of this effort are as follows:

- Identify all Fund-lead pump and treat systems in all EPA Regions;
- Conduct optimization analyses at up to 2 Fund-lead P&T systems per Region;
- Increase the awareness of the need and benefit of optimization; and
- Provide a framework for incorporating optimization into the overall clean-up process.

Background

A pilot project was substantially completed in Regions 4 & 5 to determine if EPA would benefit from optimization of our Fund-lead P&T systems and, if so, develop a process by which it could be implemented Agency-wide. The pilot included identification of all Fund-lead P&T sites in Regions 4 & 5 and optimization of 4 sites (2 per Region).

Results of the pilot indicated a tremendous potential to improve our operating Fund-lead P&T systems and a definitive need for continuous evaluation of system operation and maintenance. Recommendations included both suggestions to improve system protectiveness (at additional cost to the site) and improve system efficiency (at reduced cost to the site) at all 4 sites. Opportunities for reducing life-cycle costs by millions of dollars were suggested for both of the sites evaluated in Region 5. Results of the remaining 2 sites have not been finalized.

Optimization Approach

The US Army Corps of Engineers (US ACE) Remedial System Evaluation (RSE) process (www.frtr.gov/optimization/general) is the optimization approach to be used for this project. An RSE is a comprehensive, independent expert evaluation of most components of a P&T system including extraction well network, ground water monitoring, data management, labor costs, aboveground treatment systems, etc. An RSE includes a review of site data, a two-day site visit, and report

preparation. An RSE team consists of the following individuals:

- Core technical team of engineers and hydrogeologists [for this project the team will consist of 3 people from HSI GeoTrans (EPA contractor) and/or US ACE]
- Site RPMs (EPA and State)
- Site contractor
- Project Liaison (GW Forum member or alternate Regional contact)

The project will occur in three phases:

Phase 1: Site identification and data collection (HQ, HQ contractors with Regions)
Phase 2: Site optimization (HQ, HQ contractors with Regions)
Phase 3: Project tracking and implementation of recommendations (OERR with Regions)

Required Actions by Regions

Regions will be asked to provide brief cost and performance information on all Fund-lead P&T systems. A 2-page questionnaire will be completed for each site, with assistance from the RPM and HSI GeoTrans (EPA project contractor). Working with the Regions, up to 2 sites in each Region will be selected and optimized. For the selected sites, RPMs will be asked to provide copies of site documents (e.g. Remedial Investigation, Remedial Design, ROD, & O&M reports). The RPM will also be asked to participate in the 2-day site visit and assist with coordinating State and site contractor participation in the visit. A draft RSE report will be prepared for review by the RPM and Project Liaison before a final report is prepared.

A brief summary of the Fund-lead site data and optimization recommendations will be provided to the Superfund Division Director, Regional Reform Strategy Contact, and the Center Directors. Implementation of optimization recommendations will be the responsibility of the Regions, with technical, administrative and monetary support from Headquarters and the Office of Research and Development.

Milestones

Task	Anticipated Schedule
• Regional Briefings (RPMs, Project Liasons, Regional Management)	10/00 - 12/00
• Site Identification and Data Collection (10 Regions - R4&5 completed)	11/00 - 2/01

- Site Optimization (up to 2 in each Region) — 1/00 - 9/01
- Project Tracking — Ongoing through FY01 & 02

Key Contacts

EPA Headquarters	Regional Project Liaison	Contractors/US Army Corps of Engineers
Kathleen Yager TIO Jeffrey Heimerman TIO Paul Nadeau OERR Charles Sands OERR	R1 - tbd* R2 - Diana Cutt R3 - Kathy Davies R4 - Kay Wischkaemper R5 - Dion Novak R6 - Vince Mallot R7 - Mary Peterson R8 - tbd* R9 - Herb Levine R10- tbd* *tbd - to-be-determined	Robert Greenwald HSI GeoTrans David Becker US ACE HTRW CX Lindsey Lien US ACE HTRW CX

Superfund Reform Strategy
Pump and Treat Optimization
OSWER-9283.1-13
??Questions and Answers??

What is this Superfund Reform Strategy? In the *OSWER Directive No. 9200.0-33, Transmittal of Final FY00 - FY01 Superfund Reforms Strategy, dated July 7, 2000*, the Office of Solid Waste and Emergency Response outlined a commitment to optimize our Fund-lead pump and treat (P&T) systems. To fulfill this commitment, Headquarters will assist Regions in evaluating their Fund-lead operating P&T systems. In year one, all Fund-lead P&T systems will be identified, baseline cost and performance data will be collected and up to 2 sites in each Region will be evaluated for optimization potential. This provides EPA an opportunity to continue to operate and maintain our P&T systems in the most efficient manner possible and to demonstrate to Congress and the States our commitment to improve the effectiveness of our remedies.

What does pump and treat (P&T) optimization include? Optimization, as defined in this project, refers to a broad range of techniques to improve the operation, maintenance and monitoring of our P&T systems. The approach used for this project is the Remedial Systems Evaluation (RSE) process described below.

What is a Remedial Systems Evaluation (RSE)? An RSE is a comprehensive, independent expert evaluation of most components of a P&T system including extraction well network, ground water monitoring, data management, labor costs, aboveground treatment systems, etc. An RSE includes a review of site data, a 2-day site visit, and report preparation. The RSE evaluates system effectiveness and explores opportunities for cost reduction and technical improvement. For more information on RSEs and other optimization technologies, refer to the following website: *www.frtr.gov/optimization.*

Why should I perform an RSE at my site? EPA estimates there are over 700 P&T systems selected in Record of Decisions, under design, or operating at Superfund sites throughout the nation. P&T systems can be extremely costly to operate and many are anticipated to operate for decades. Until recently much of our focus has been on remedy selection and construction completion; it is now appropriate we further review long-term operation, maintenance and monitoring issues at all of our sites.

The RSE approach provides a low-cost but comprehensive evaluation of most aspects of a P&T system, and is an excellent first step in continuous improvement of our operation P&T systems. The US ACE and EPA TIO have completed more than 8 RSEs over the past year. In every case, opportunities to improve system performance were identified, and in most cases the potential for cost savings is substantial. For the 2 sites evaluated in EPA Region 5, the potential net lifecycle cost savings was in the millions of dollars. Other opportunities for improvement were also identified, including improved understanding of how a current P&T system is progressing toward achieving the remedial goals, the use

of electronic databases, the use of alternative sampling methodologies, additional source area delineation, reduction of monitoring well networks, developing an P&T exit strategy, and many others. The RSE provides a very thorough overall review of an operating system and the information may be used in preparing a Five-Year Review.

What types of sites will be included in this project? Baseline cost and performance data on all Fund-lead P&T sites (operating or planned) will be collected in the first phase of this project. Only OPERATING Fund-lead sites will be optimized with the RSE process (up to 2 sites per Region).

What additional workload will be required of RPMs? RPMs with Fund-lead P&T sites will be asked to complete a 2-page questionnaire used to gather cost and performance data on their sites. The questionnaire can be completed over the phone with HSI GeoTrans (EPA project contractor) or by completing the questionnaire on a project website. For the 2 sites in each Region selected for RSEs, RPMs will be asked to provide copies of site documents (e.g. Remedial Investigation, Remedial Design, ROD, & O&M reports) and participate in the 2-day site visit. RPMs will also be asked to review a draft RSE report for their site.

The majority of work for RPMs may occur after the RSE is completed. RPMs will be responsible for determining if and how RSE recommendations will be implemented (e.g. install or remove ground water extraction or monitoring wells, perform more site characterization, eliminate or substitute an above-ground treatment component). Some of the recommendations may involve a significant level of effort (install new extraction wells) whereas some will be easy to incorporate (switch from weekly influent monitoring to monthly). RPMs will need to seek assistance with implementation from the Regional technical support personnel, ORD, and EPA Headquarters.

Who will perform RSEs? RSEs are performed by an expert technical team with assistance from the State and EPA RPM, site contractor(s), and Project Liaison (GW Forum or other Regional contact). The expert technical team for this project will consist of three individuals from HSI GeoTrans (the EPA contractor for this project) and/or the US Army Corps of Engineers.

Who will pay for RSEs? All of the RSEs for this project will be funded by EPA Headquarters (OERR and TIO). The Regions will not be required to pay for the RSEs.

What is the anticipated outcome of this project? It is anticipated that suggestions to improve the effectiveness (potential cost increases) and efficiency (potential cost savings) of Fund-lead P&T remedies will be identified. A secondary outcome of this project will be to familiarize Regions with key concepts associated with improved operation and maintenance of our P&T systems.

Who is responsible for implementing recommendations? RSE recommendations will be implemented at the discretion of the Regions. OERR is committed to providing technical and monetary support for implementation of these recommendations. It is assumed that funding for many of the recommendations will come from the On-going Remedial Action budget. Regions will be responsible

for requesting appropriate funding to implement recommendations. More substantial changes to a system requiring additional site characterization may require funding from the Pipeline Operations budget.

Who/what is the Regional Project Liaison? The Regional Project Liaison will most likely be a Ground Water Forum representative or other Regional volunteer who will be the Region's point of contact for the project. The Project Liaison will help Headquarters interface with RPMs in collecting site data and selecting up to 2 sites in each Region for optimization. Also, the Project Liaison will receive updates on baseline cost and performance data on all Fund-lead sites, and they will serve as a Regional technical contact for the RPMs if there are questions on the optimization process.

What will be required of Regional management? We encourage Regions to pay for travel costs for the Regional Project Liaison to participate in the 2-day site visit (in most cases this will mean billing travel to the site). RPMs will need administrative, technical, and monetary assistance with implementing many of the RSE recommendations. We encourage Regional management to support this effort and provide longer-term support and incentives for RPMs to implement RSE recommendations.

What can Regions do to assist with this project? In general, providing information in a timely manner, remaining open to suggestions on how to improve an operating P&T system, and applying some of the optimization concepts to other sites will be extremely helpful. Contact your Regional Project Liaison to inquire how you can assist them.

Who will get copies of RSE reports? A draft RSE report will be sent to the RPM and Project Liaison for review within 45 days of the site visit. A brief summary of the Fund-lead site data and optimization recommendations will be provided to the Superfund Division Director, Regional Administrative Reform Strategy Contact, Project Liaison, and the OERR Center Directors.

What is the year one schedule for this project? We anticipate collecting baseline cost and performance data on all Fund-lead P&T sites by February 2001. We anticipate initiating RSE site visits will begin in January 2001 and end in September 2001.

Where can I go for more information? For more information contact your Project Liaison or one of the contacts listed below.

EPA Headquarters	Regional Project Liaisons	Contractors/US Army Corps of Engineers
Kathleen Yager/TIO 732-321-6738 Jeffrey Heimerman/TIO 703-603-7191 Paul Nadeau/OERR 703-603-8794 Charles Sands/OERR 703-603-8857	R1 - tbd* R2 - Diana Cutt R3 - Kathy Davies R4 - Kay Wischkaemper R5 - Dion Novak R6 - Vince Mallot R7 - Mary Peterson R8 - tbd* R9 - Herb Levine R10- tbd* *tbd - to-be-determined	Robert Greenwald HSI GeoTrans David Becker US ACE Hazardous, Toxic, and Radioactive Waste - Center of Expertise (HTRW CX) Lindsey Lien US ACE HTRW CX

Superfund Reform Strategy
Pump and Treat Optimization
Draft
Administrative and Technical Resources
OSWER 9283.1-13

This document outlines various administrative and technical resources available to RPMs and the Regions to assist with implementation of Pump and Treat (P&T) system recommendations as a result of the Ground Water Optimization Superfund Reform Strategy. Many resources available within the Regions may not be included in this document, but should be familiar to RPMs.

Administrative Resources

Where will funding come from to implement recommendations and who can assist with funding questions? It is anticipated that any incurred costs of most recommendations will utilize On-going Remedial Action funding. Some recommendations involving the review and reconsideration of the site conceptual model or involving new or significantly revised modeling may appropriately utilize Pipeline Operations funding. Anticipated needs should be addressed through existing mechanisms, particularly annual Regional Work Planning meetings and mid-year conference calls.

Budget coordinators in OERR can assist with the formulation of routine site funding requests, and CERCLIS/WASTELAN information management issues including program targets.

OERR Budget Coordinators

Regions 1, 9	Richard Jeng	(703) 603-8749
Regions 2, 6	Karen (Tomi) Tomimatsu	(703) 603-8738
Regions 3, 8	Tom Sheckells	(703) 603-8916
Regions 4, 10	Sylvina Fonseca	(703) 603-8799
Regions 5,7	Larry Zaragoza	(703) 603-8867

Who in HQ can help with implementation of RSE recommendations?

Assistance with the evaluation and implementation of site-specific recommendations, and program requirements, can be requested by the RPM of the appropriate OERR Regional coordinator or Regional Center Director. Another potential sources of help is the OERR GW team.

Regional coordinators in OERR can provide assistance with a variety of technical, administrative, and program management issues. These include site characterization and engineering issues, support for program/process implementation questions. Examples include: remedy issues (ESDs and ROD amendments); ARARs issues, Close-Out, Monitoring and Deletion requirements. The GW team or the Regional coordinators can offer technical support for groundwater issues.

Services are of no cost, contingent upon the availability of the OERR personnel.

Technical Resources

Who can help with hydrogeologic, modeling and remedial design questions?
The Subsurface Protection and Remediation Division in Ada, Oklahoma and their contractors can provide many of these services. Services include review and comment on model issues/accuracy, suitability of hydro-logic/geologic data, adequacy of treatment trains, monitoring issues, monitored natural attenuation and completeness of available information. They are accessed by request from the RPM, Ground Water Forum member or Superfund Technical Liaison (ORD liaison) in the Region.

Services (up to $25K of contractor support) are routinely paid for by OERR/TIO through the Technical Support Project (TSP).

Who can help with site characterization, sampling and analytical questions?
The Las Vegas, Nevada, ORD laboratory and their contractors can provide many of these site characterization support services. Services include performing or review and comment of statistical analyses of environmental data for monitoring, characterization, or to determine the effectiveness of remedial actions. They are accessed by request from the RPM, Ground Water Forum member or Superfund Technical Liaison (ORD liaison) in the Region. There is also a significant amount of information on the following website: www.cluin.org

Services (up to $25K of contractor support) are routinely paid for by OERR/TIO through the Technical Support Project (TSP).

Who can help with engineering and waste treatment questions? The Cincinnati, Ohio, ORD laboratory and their contractors can provide assistance with engineering and waste treatment questions. Services include providing advice concerning treatment technologies or review and comment of treatability information and approaches to site management. Issues and questions about physical/chemical treatment, bioremediation and phytoremediation may be addressed. They are accessed by request from the RPM, Ground Water Forum member or Superfund Technical Liaison (ORD liaison) in the Region.

Services (up to $25K of contractor support) are routinely paid for by OERR/TIO through the Technical Support Project (TSP).

What additional Regional resources may be available? The Ground Water Forum representative or the Superfund Technical Liaisons (STL) may be available for assistance and familiar with this Superfund Reform project. Also a Regional Project Liaison has been identified in each Region to serve as a point of contact for this project. Their assistance can be requested by the RPM, but will be dependent on staff availability and Regional management consent.

Regional Project Liaisons

R1 - tbd*
R2 - Diana Cutt
R3 - Kathy Davies
R4 - Kay Wischkaemper
R5 - Dion Novak
R6 - Vince Mallot
R7 - Mary Peterson
R8 - tbd*
R9 - Herb Levine
R10 - tbd*

*tbd - to-be-determined