



REGION 3

PHILADELPHIA, PA 19103

DATE: October 23, 2025

SUBJECT: Request for Approval and Funding and Exemption from the \$2 Million and 12-Month Statutory Limit for a Time-Critical Removal Action at the Palmerton Zinc Superfund Site
Borough of Palmerton, Carbon County, Pennsylvania 18071

FROM: Myles Bartos, On-Scene Coordinator (OSC)
Eastern Response Section (3SD31)

THRU: Michael Towle, Chief
Preparedness and Response Branch (3SD30)

TO: Paul Leonard, Director
Superfund and Emergency Management Division (3SD00)

Site ID #: 0326

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of funding and exemption from the \$2 million and 12-month statutory limit in order to conduct and complete a Time-Critical Removal Action (Removal Action) at the Palmerton Zinc Pile Superfund Site (Site) under the consistency waiver of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA), Section 104(c)(1)(C), 42 U.S.C. § 9604(c)(1)(C). The Environmental Protection Agency (EPA) has conducted a Removal Site Evaluation (RSE) and found that surface water, groundwater, and soil samples collected from the Site contains Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) that are contributing to the contamination of three municipal water supply wells at the Site. The contaminated municipal wells have PFOS and PFOA concentrations that exceed EPA maximum contaminant levels (MCLs) of 4 nanograms per liter (ng/L) (also expressed as parts per trillion (PPT)). EPA has determined that a Removal Action is necessary to mitigate threats posed by the release of hazardous substances and to protect public health, or welfare, and/or the environment.

In accordance with CERCLA, 42 U.S.C. §§ 9601, *et seq.*, funding in the amount of \$3,630,000 is requested to mitigate threats posed by the Site, which will come from the Palmerton Zinc Pile's Special Account.



REGION 3

PHILADELPHIA, PA 19103

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

The Site is located in Palmerton, Carbon County, Pennsylvania, in the vicinity of the Lehigh Gap and is approximately 15 miles north of Allentown, Pennsylvania. The Site is located in a narrow valley bounded by Stony Ridge on the north and Blue Mountain to the south. The Site was placed on the National Priorities List (NPL) in September 1983 and has four Operable Units (OUs). The area of interest for this Action Memorandum encompasses nearly 3,000 acres of non-residential land on and around the north face of Blue Mountain. Attachment 1 (Site and OU Map) depicts the Site layout including specific OU locations. The Palmerton Municipal Authority (PMA) operates 3 public drinking water wells within the boundaries of OU1 that provide approximately 80% of the water supply needs for the Palmerton Borough. Individually, the wells are identified as Well 4, Well 6, and Well 7. Collectively, they are known as the “6th Street Wells.” The ground water from each of these wells are routed together into one pipe, chlorinated, and distributed to the public. In 2024, the PMA began detecting per- and polyfluoroalkyl substances (PFAS) including PFOS and PFOA in the groundwater extracted by the 6th Street Wells. Detections were post combining (mixing) and post chlorination. The analytical results, which exceed the EPA MCL of 4 ng/L, are provided below

Date	PFOS	PFOA
2/14/2024	48.3 ng/L	30.7 ng/L
4/24/2024	49.3 ng/L	33.9 ng/L
7/31/2024	39.7 ng/L	34.5 ng/L

The EPA Remedial Project Manager (RPM) engaged with the On-Scene Coordinator (OSC) to schedule a sampling event to determine the presence or absence of PFAS compounds within the Site that may be contributing to the contamination of the 6th Street Wells. The OSC initiated an RSE in accordance with Section 300.410 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. § 300.410. The RSE documented a threat to public health or welfare or the environment due to the presence of PFAS contaminated groundwater that is impacting municipal drinking water supply wells at the Site.



REGION 3

PHILADELPHIA, PA 19103

B. Site Background

From 1898 to 1967, the New Jersey Zinc Company (New Jersey Zinc) operated two zinc smelters within Palmerton Borough (Borough) at what were known as the East and West Plant locations. During smelting operations, lead, cadmium, zinc, and arsenic were emitted as dust and particulate fallout from stack emissions. Gulf & Western, Inc. purchased the smelting operation from New Jersey Zinc in 1967. Primary zinc smelting operations ceased at the East and West Plants around 1981.

In 1981, Horsehead Industries, Inc. (HII) purchased the smelters and began operating the facility as a hazardous waste recycling plant. BEFESA Zinc US, Inc. (f/k/a American Zinc Recycling, f/k/a HII) presently utilizes the East Plant to process Resource Conservation and Recovery Act (RCRA) hazardous waste K061, electric arc furnace (EAF) dust. This dust is a residue from the steel mill industry and contains lead, cadmium, and zinc.

A pile consisting of approximately 33 million tons of residual metals and carbonaceous metals, known as the Cinder Bank, lies adjacent to the East Plant along the base of Blue Mountain. The Cinder Bank is approximately 2.5 miles long, 200 feet high, 200 feet wide at its crest, and 1,000 feet wide at the base, which equates to 200 acres in size. Due to poor historical residue management practices (i.e., deposition of residue onto the pile before it was fully quenched), portions of the Cinder Bank continue to smolder.

Due to the Site's size and complexity, EPA divided the Site into four OUs: OU1 – Blue Mountain; OU2 – Cinder Bank; OU3 – Community Soils; and OU4 – Groundwater, Surface Water, and Site-wide Ecological Risk.

OU1 encompasses 2,515 acres of land on the north slope of Blue Mountain. The remedy selected in the Record of Decision (ROD) for OU1 included revegetating the mountainside through an application of a limestone, potash, sludge and fly ash mixture along with grass and tree seeds. Revegetation reduced direct contact, volume of runoff, contamination in runoff, and environmental damage. Approximately 131,617 tons of the mixture was applied across 763 acres between 1991 to 1996.

OU2 addresses the Cinder Bank. The ROD for OU2 also selected the application of a vegetative cover over a portion of the Cinder Bank. Between 2000 and 2002, 50,160 tons of the mixture was applied across 120 acres of OU2. No application of the mixture occurred on the 80 acres where the pile was still smoldering.



REGION 3

PHILADELPHIA, PA 19103

OU3 addresses the residential properties impacted by the Site and OU4 addresses the groundwater and sitewide ecological risk. While OU3 and OU4 are related to the Site, they are not the focus of this Action Memorandum. Attachment 1 depicts the Site layout, including specific OU locations of the Site.

The OU1 ROD stated that the selected alternative would be consistent with the applicable and relevant and appropriate requirements (ARARs) addressing sludge application, and the OU2 ROD stated that the ARARs related to sludge application would be attained. PADEP concurred with the remedies selected in the OU1 and OU2 RODs. Additional details regarding the Remedial Actions in OU1 and OU2 are included in Attachment 2 (OU1 Remedial Action Report) and Attachment 3 (OU2 Remedial Action Report).

C. Removal Site Evaluation (RSE)

On July 14, 2025, the OSC initiated a (RSE) in accordance with Section 300.410 of the NCP, 40 C.F.R. § 300.410. The RSE included review of historical reports, the current Site conditions, and an evaluation of sampling conducted by the EPA Remedial Program to determine the presence or absence of PFAS at the Site boundaries. EPA collected and analyzed samples of surface soil, groundwater, and surface water for PFAS compounds. Full analytical data, including quality assurance samples, can be found in Attachment 4 (68HE0325F0041_Palmerton_Summary Report).

EPA collected ground water samples from twelve on-Site monitoring wells. PFOA was detected in every well at concentrations ranging from 0.59 to 43 ng/L. PFOS was detected in ten of the twelve well samples at concentrations ranging from 12 to 76 ng/L.

EPA collected surface water samples were collected at four locations including a background sample. The background sample was collected from the Aquashicola Creek upstream of the Site. PFOA and PFOS were detected in the background sample at 2 ng/L and 2.6 ng/L, respectively. A sample from the Aquashicola Creek immediately across from the Site contained concentrations of PFOA and PFOS 4.6 ng/L and 6.4 ng/L respectively. On-Site surface water samples, which are essentially runoff water, contained PFOA concentrations of 37 ng/L and 41 ng/L and PFOS of 100 ng/L and 110 ng/L.

EPA collected soil samples were collected from 3 locations on the Site. PFOA was detected in one sample at a concentration of 5 nanograms per gram (ng/g). PFOS was detected in all three samples ranging from 2.5 to 13 ng/g.



REGION 3

PHILADELPHIA, PA 19103

PFAS compounds (specifically PFOS and PFOA) were detected in multiple samples across the Site and, based on information at this time, it is believed that the source of the PFAS contamination in the 6th Street Wells is related to the Site. Information on PFAS as environmental contaminants was very limited at the time of the mountain revegetation, and there are no records of PFAS-presence in the mixture when it was applied. PFAS chemicals, specifically PFOS and PFOA, were not listed hazardous substances at the time of application, and none of the components that made up the mixture were tested for PFAS chemicals prior to application. The lack of analytical data from any of the individual components inhibits EPA from determining which component in mixture is the source of PFAS at the Site.

Results from the soil, surface water, and groundwater sampling event were compared to analytical results of the 6th Street Wells. PFOA and PFOS were detected in multiple samples from across the Site. At this time, EPA believes that the Site is a contributor to the PFOS and PFOA contamination found within the 6th Street Wells.

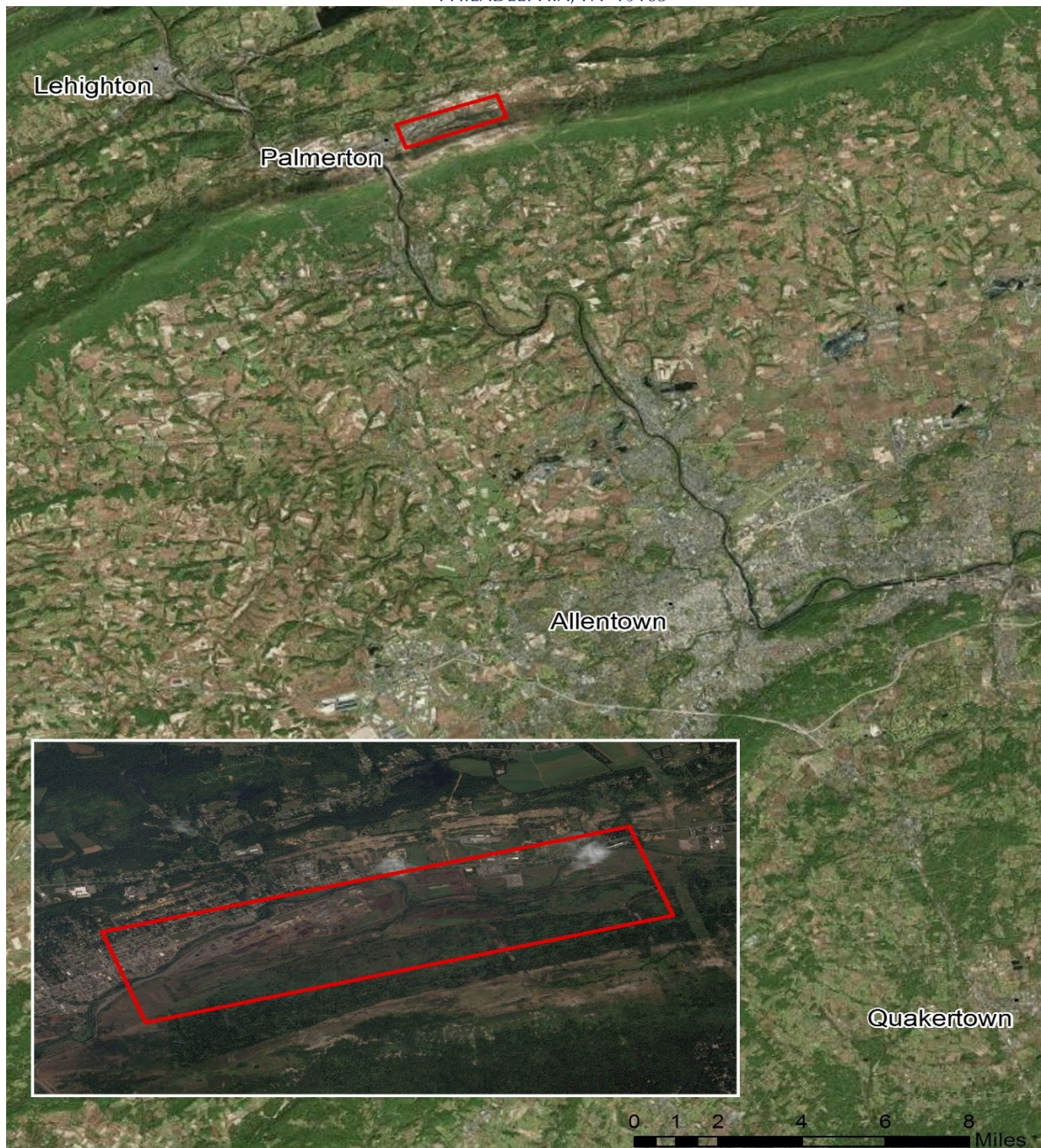
D. Physical Location and Site Characteristics

The Site is located in Palmerton Borough, Carbon County, PA. The Site encompasses nearly 3000 acres on and adjacent to Blue Mountain. Immediately adjacent to the Mountain is an industrial facility and the Palmerton Borough.



REGION 3

PHILADELPHIA, PA 19103



E. State, Tribal, and Local Authorities

No other State or local authorities have indicated the availability of resources to address the release or threat of release into the environment or have the ability to conduct a Removal Action in a timely manner.

No historic property or threatened/endangered species/habitats are thought to exist at the



REGION 3

PHILADELPHIA, PA 19103

Site but the OSC will consult with the Commonwealth, as needed, to meet EPA's obligations under the National Historic Preservation Act (NHPA) and Endangered Species Act (ESA). The OSC will verify with Commonwealth that there are no tribal interests at the Site.

F. Release or threatened release into the environment of a hazardous substance, pollutant, or contaminant.

PFOS and PFOA are hazardous substances, as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and are listed in Section 302.4 of the NCP, 40 C.F.R. § 302.4.

G. National Priorities List

The Site was added to the NPL on September 8, 1983. Proposed Removal Actions will not impede current and future Remedial Actions. The remedial program plans on additional investigations regarding the PFAS contamination.

III. THREATS TO PUBLIC HEALTH WELFARE OR THE ENVIRONMENT

Section 300.415(b)(2) of the NCP identifies factors to be considered in determining the appropriateness of a removal action. As discussed below, subparagraphs (b)(2)(i), (ii), and (vii) directly apply to the conditions as they exist at the Site:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

The Site presents a potential threat to public health or welfare or the environment due to the presence of elevated levels of PFOS and PFOA in public drinking water supply wells and the potential for human exposure through ingestion. Sampling of the combined water from the 6th Street Wells shows concentrations of up to 49.3 ng/L PFOS and 34.5 ng/L PFOA. The 6th Street wells are a source of drinking water and produce approximately 80% of the water needed to serve Palmerton Borough residents. Without proper treatment, the public will continue to ingest these contaminants when consuming water supplied by the PMA. Approximately 2000 households are connected to the PMA water distribution system.

PFOS and PFOA are two of the most widely used and studied chemicals in the PFAS group. Many studies have examined possible relationships between levels of PFAS in blood and harmful health effects in people. These different studies reported a variety of health outcomes. Research involving humans suggests that high levels of certain PFAS may lead to increased



REGION 3

PHILADELPHIA, PA 19103

cholesterol levels, changes in liver enzymes, increased risk of high blood pressure, pre-eclampsia in pregnant women, and increased risk of kidney or testicular cancer. The PFOS and PFOA concentrations identified in the 6th Street Wells at the Site are at concentrations exceeding the MCLs for those compounds, resulting in an unacceptable level of risk to public health and welfare.

(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;

PFOA and PFOS are present in the groundwater source used for distribution to the residents of Palmerton Borough. Sampling of the combined water from the 6th Street Wells showed concentrations of up to 49.3 ng/L PFOS and 34.5 ng/L PFOA.

The PFOS and PFOA concentrations identified in the public supply drinking water wells at the Site are at concentrations exceeding the MCLs for those compounds. The Federal MCLs for PFOS and PFOA are 4 ng/L; and the PADEP MCLs are 18 ng/L for PFOS and 14 ng/L for PFOA. The EPA believes the Site is contributing to the contamination of the 6th Street Wells. Based on the persistence of these chemicals and their relative mobility in the environment, it is expected that the Site may continue to impact the 6th Street Wells.

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release;

PADEP does not have the resources to address PFOS and PFOA contamination identified in the 6th Street Wells at the Site. No other federal or state response mechanisms are currently available to perform the actions necessary to mitigate the threats to public health and the environment presented by the release or threatened release of hazardous substances at the Site.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances, pollutants or contaminants from the Site, if not addressed by implementing the response actions outlined in this Action Memorandum, may present an imminent and substantial endangerment to public health or welfare or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

CERCLA Section 104(c)(1) limits a removal action to 12 months in duration and a ceiling of \$2 million, unless certain criteria are met. The Removal Action is intended to mitigate or eliminate



REGION 3

PHILADELPHIA, PA 19103

threats presented to the public who consume the water from the PMA. Hazardous substances including PFOS and PFOA remain in the groundwater used to supply the public drinking water system. Continued response actions beyond 12 months and above \$2 million will be necessary to complete the Removal Action and will be consistent with future remedial actions. The Removal Action will be closely coordinated with the Remedial Program to ensure consistency between the two programs.

The OSC believes the Site conditions meet the exemption criteria and response actions are otherwise appropriate and consistent with remedial actions that are anticipated to be taken at the Site. Therefore, a consistency exemption from the 12-month and \$2 million statutory limits set forth in CERCLA Section 104(c)(1)(C) is requested.

VI. PROPOSED ACTION AND ESTIMATED COSTS

The objective of this Removal Action is to reduce the risk of actual or potential human exposure to PFOS and PFOA by installing an onsite water treatment system before the groundwater enters the PMA treatment and distribution system. The water treatment system is intended to treat the groundwater that is contaminated with PFOS and/or PFOA. The water treatment system will be designed using performance-based criteria developed by EPA using Site specific information (e.g., water chemistry, analytical data, and flow rates) and various resources including the substantive requirements detailed in the PADEP Public Water Supply Manual – Part II: Community Water System Design Standards. EPA intends to engage PADEP personnel to leverage its expertise in water treatment system design and offer PADEP an opportunity to provide input on the project. EPA also intends to engage the PMA to identify any salient concerns regarding compatibility between the EPA water treatment system and the PMA's public water treatment and distribution system.

Upon completion of the design, EPA intends on installing the water treatment system to treat the contaminated groundwater and supply PMA with groundwater that contains PFAS compounds below federal MCL levels.

EPA will work to transfer the fully operational temporary water treatment system to the appropriate entity for operation and maintenance.

A. Proposed Action Description

The overall objective of this Removal Action is to reduce the risk of potential human exposure to public water that has PFOS and PFOA concentrations above federal MCLs and to mitigate the imminent and substantial threat posed by the uncontrolled release of hazardous substances, pollutants, or contaminants from the Site.



REGION 3

PHILADELPHIA, PA 19103

- a. Obtain access to perform work described;
- b. Mobilize personnel and equipment, including support equipment, to implement response actions;
- c. Establish an EPA Command Post including all logistical support items (e.g., electric, communications, etc);
- d. Develop and follow a Site-specific safety plan as per 29 C.F.R. § 1910.120;
- e. Take actions necessary to facilitate access to the removal areas (e.g., remove or relocate debris, minor structures, etc);
- f. Prepare Site for water treatment system installation (e.g., grade, stabilized, install access road, etc);
- g. Engineer and install a water treatment system capable of reducing PFOS and PFOA, to below Federal MCLs of 4 ng/L for both PFOS and PFOA;
- h. Perform salient start up procedures and test, calibrate, adjust, and monitor to achieve performance goals throughout the response action;
- i. Schedule and conduct sampling, as necessary, to verify the water treatment system is effectively removing PFOA and PFOS, to concentrations below applicable federal MCLs;
- j. Confirm the water treatment system is operational and functional;
- k. Properly manage and dispose any waste generated during the response action;
- l. Restore areas disturbed during the Removal Action to the conditions in which EPA found them to the extent practicable or as required by the Removal Action Design;
- m. Facilitate the transfer of the water treatment system for ongoing operation and maintenance; and
- n. Demobilize personnel and equipment once the response actions are implemented



REGION 3

PHILADELPHIA, PA 19103

B. Contribution to Remedial Performance

The Site is on the NPL. The proposed Removal Action is consistent with the requirements of Section 104(a)(2) of CERCLA, which states that a removal action should contribute to the efficient performance of any long-term remedial action with respect to the release or threatened release concerned. 42 U.S.C. § 104(a)(2).

C. Applicable or Relevant and Appropriate Requirements

Pursuant to 40 C.F.R. § 300.415(j), removal actions shall to the extent practicable considering the exigencies of the situation, attain ARARs. The proposed Removal Action will attain Federal and more stringent State ARARs to the extent practicable considering the exigencies of this matter. In accordance with the NCP, on October 21, 2025, the OSC requested that PADEP identify any potential ARARs, and EPA continues to evaluate them. Based on evaluation of proposed work at the Site, the OSC has identified the following primary ARAR for the Site: 40 CFR § 141.61, and 25 Pa. Code § 109.202(a)(2) (incorporating 40 CFR Part 141 by reference). This regulation establishes the maximum contaminant levels for organics in community and non-transient, non-community water systems.

D. Estimated Costs

The proposed distribution of funding is as follows:

	Current	Total
<u>Extramural Costs</u>		
ERRS Cleanup Contractor Costs (considers ERRS subcontractors)	\$2,750,000	\$2,750,000
START Contractor Costs	\$275,000	\$275,000
Subtotal Extramural Costs	\$3,025,000	\$3,025,000
Extramural Costs Contingency (20% of Subtotal)	\$605,000	\$605,000
TOTAL REMOVAL ACTION PROJECT CEILING	\$3,630,000	\$3,630,000

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If the actions described in this Action Memorandum are not conducted, the release or substantial threat of release of hazardous substances or pollutants or contaminants will continue to exist at the Site. Without immediate actions to mitigate the release and potential release of hazardous substances or pollutants or contaminants at the Site, potential threats posed to the public health or welfare, or the environment will be unabated and may increase.

VIII. OUTSTANDING POLICY ISSUES



REGION 3

PHILADELPHIA, PA 19103

While there are no outstanding policy issues pertaining to the Site, EPA believes that EPA's selected remedies for OU1 and OU2 likely contribute to the PFOS and PFOA contamination, found within the 6th Street Wells. EPA plans to use funds from the Palmerton Zinc Pile Special Account (Special Account) to fund the proposed Removal Action. Per the terms of the Consent Decree for the Site, *U.S v. Horsehead Industries, Inc., et al.*, Docket No. 03-cv-0654 (M.D. Pa. 2003), the Special Account can be "used to conduct or finance response actions at or in connection with the Site."

IX. ENFORCEMENT

The OSC has provided the EPA Cost Recovery Section available information available to pursue any enforcement actions pertaining to the Site. See attached Confidential Enforcement Addendum.

The total cumulative EPA costs for this removal action, based on full cost accounting practices, that will be eligible for cost recovery are estimated below as:

Direct Extramural Cost:	\$	3,630,000
Direct Intramural Cost:	\$	<u>100,000</u>
Subtotal	\$	3,730,000
Indirect Costs (68.66% X Direct Costs)	\$	2,561,018
Estimated EPA Costs for the Removal Action:	\$	6,291,018 ¹

X. RECOMMENDATION

This Action Memorandum represents the recommended Time-Critical Removal Action for the Site, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. Conditions at the Site meet the NCP Section 300.415(b)(2) factors for a removal, and I recommend your approval of the proposed Removal Action. This decision is based on the administrative record for this action.

By signing this Action Memorandum, you are also hereby establishing the documents listed below as the Administrative Record supporting the issuance of this Action Memorandum, pursuant to Section 113(k) of CERCLA and EPA Delegation No. 14-22.

1. Site OU Map
2. OU1 Remedial Action Report
3. OU2 Remedial Action Report



REGION 3

PHILADELPHIA, PA 19103

4. 68HE0325F0041_Palmerton_Summary Report
5. Pollution Report (POLREP) #1

Action by the Approving Official:

I have reviewed the above-stated facts and based upon those facts and the information compiled in the documents described above, I hereby determine that the threatened release of hazardous substances pollutants or contaminants at/from the Site presents or may present an imminent and substantial endangerment to the public health or welfare or to the environment and continues to meet the criteria for a consistency exemption to the 12-month and \$2 million statutory limits for removal actions set forth in CERCLA Section 104(c)(1)(C).

I concur with the recommended Removal Action as outlined.

APPROVED: _____ **DATE:** _____

Paul Leonard, Director
Superfund and Emergency Management
Division EPA Region III

DISAPPROVED: _____ **DATE:** _____

Paul Leonard, Director
Superfund and Emergency Management
Division EPA Region III

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1. Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

ATTACHMENT:

1. Site OU Map
2. OU1 REMEDIAL ACTION REPORT
3. OU2 REMEDIAL ACTION REPORT
4. 68HE0325F0041_Palmerton_Summary Report
5. Pollution Report (POLREP) #1
6. Enforcement Confidential Addendum