



US Army Corps of Engineers
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Proposed Record of Decision Amendment

**Shallow Land Disposal Area (SLDA)
Parks Township, Pennsylvania**

**Authorized under the
Formerly Utilized Sites Remedial Action Program
(FUSRAP)**

Prepared by:
Department of the Army
U.S. Army Corps of Engineers

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ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirement
ARCO	Atlantic Richfield Company
BWXT	BWX Technologies, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSRA	cost and schedule risk analysis
DA	Department of the Army
DCGL	Derived Concentration Guideline Level
DCGL _{emc}	Derived Concentration Guideline Level elevated measurement comparison
DCGL _w	Derived Concentration Guideline Level Wilcoxon rank-sum test
DOE	U.S. Department of Energy
FS	feasibility study
FSSP	Final Status Survey Plan
FUSRAP	Formerly Utilized Sites Remedial Action Program
LRD	USACE Great Lakes and Ohio River Division
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NRC	U.S. Nuclear Regulatory Commission
NUMEC	Nuclear Materials and Equipment Corporation
RI	remedial investigation
ROCs	radionuclides of concern
ROD	record of decision
SLDA	Shallow Land Disposal Area
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

1.1 Site Description

The Shallow Land Disposal Area (SLDA) is located in Parks Township, Armstrong County, Pennsylvania, about 23 miles (38 kilometers) east-northeast of Pittsburgh, Pennsylvania. The site is located on the east side of State Route 66 adjacent to Kiskimere Street and Mary Street. The site is currently owned by BWX Technologies, Inc. (BWXT) and is maintained under U.S. Nuclear Regulatory Commission (NRC) license SNM-2001. Section 8143 of Public Law 107-117 instructed the U.S. Army Corps of Engineers (Corps) to cleanup radioactive waste at the site under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The Corps is the lead agency for this cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and will accomplish the cleanup consistent with the Memorandum of Understanding (MOU) between the Corps and the NRC dated July 5, 2001. The NRC issued a confirmatory order suspending the license on August 5, 2011 to enable the Corps to accomplish the cleanup, and the license will be reinstated in accordance with Article III.N of that MOU.

1.2 Statement of Purpose

The Corps is issuing this proposed amendment to the Record of Decision (ROD) for the SLDA to provide notice of fundamental changes to the basic features of the selected remedy with respect to scope and cost. The Corps issued the ROD for the SLDA on September 6, 2007. At that time, the Corps' selected remedy was *Alternative 5: Excavation, Treatment and Off-site Disposal*, as discussed in the feasibility study (FS) report of September 2006 (DA, 2006a). The estimated cost of this alternative presented in the ROD was \$44,500,000.

The Corps is issuing this proposed ROD amendment in accordance with Section 117 of CERCLA and Title 40 of the Code of Federal Regulations (CFR) Section 300.435(c)(2)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300 et seq.). A public comment period follows the issuance of this proposed ROD amendment. After reviewing and considering all information provided during the comment period, the Corps may go forward with the proposed amendment to the ROD, modify it, or select another remedial alternative after an additional public comment period. The public is encouraged to review the alternatives discussed in this proposed amendment and provide comments. In accordance with 40 CFR 300.825(a)(2) of the NCP, this proposed ROD amendment and the final ROD amendment will become part of the administrative record file.

Detailed information used to prepare this proposed ROD amendment is contained in the remedial investigation (RI) report, (DA, 2005), FS report (DA, 2006a), FS addendum (DA, 2014), proposed plan (DA, 2006b), and the ROD (DA, 2007) for SLDA. These documents provide the detailed analysis of the cleanup alternatives considered, and explain the original selected remedy. The information contained herein, and the administrative record, are what the Corps relied on to propose this amendment to the ROD.

2.0 SITE HISTORY AND POST-ROD ACTIVITIES

2.1 Site History

Between 1961 and 1970, Nuclear Materials and Equipment Corporation (NUMEC), who owned both the Apollo Nuclear Fabrication Facility and the SLDA, buried process and other wastes from the Apollo plant at the SLDA. According to historical documents, these wastes were buried in accordance with Atomic Energy Commission regulation 10 CFR 20.304, *Disposal by Burial in Soil*, which was subsequently rescinded in 1981. In 1967, NUMEC stock was bought by Atlantic Richfield Company (ARCO). In 1971, the Babcock & Wilcox Company acquired NUMEC. In 1997, BWXT assumed ownership and responsibility for the SLDA. Based on reports prepared by ARCO/BWXT, and information obtained during the preparation of the Corps' RI report, the waste materials from the Apollo plant were placed into a series of aligned pits that were constructed adjacent to one another, and are now referred to as trenches, as illustrated in Figure 2 of the ROD (DA, 2007). Disposal activities at the SLDA were reportedly terminated in 1970. Additional details regarding the site history can be found in Section 2.1 of the RI report (DA, 2005).

2.2 Summary of Contamination

Results of sampling completed at the SLDA indicated that the uranium-contaminated materials placed in the trenches are present in a wide range of enrichments, from less than 0.2 percent by weight uranium-235 (U-235) to greater than 45 percent. Sampling and analysis efforts indicate that the radioactive contaminants at the site are generally confined to the immediate vicinity of the trenches. Isolated pockets of radiological surface and subsurface soil contamination that were present at the site were removed or are now covered by site infrastructure. Routine sampling of air, surface water, sediment, and groundwater show no elevated levels of radionuclides migrating from the site. Groundwater is not a radiologically impacted media and therefore, does not require remedial action.

The eight specific radionuclides of concern (ROCs) identified in the RI report and discussed in the ROD for the SLDA, and corresponding soil cleanup goals for remediation, are presented in Table 1 below. The soil cleanup goals, referred to as Derived Concentration Guideline Levels (DCGLs) in the ROD, were developed in accordance with the *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)*¹. Based on the characterization of excavated materials in 2011, and new information received subsequent to issuance of the ROD, materials other than those identified in Table 1-1 of the FS report (DA, 2006a) and Table 1 on the next page may be present at the SLDA.

¹ NRC, DOE, U.S. Department of Defense and U.S. Environmental Protection Agency jointly developed MARSSIM to provide a consistent, logical, adaptive method for investigating, surveying and demonstrating that a site meets radiological release criteria.

Table 1: ROCs and Soil Cleanup Goals for the SLDA

Radionuclides of Concern	Soil Cleanup Goals² in picocuries/gram
Americium-241 (Am-241)	28
Plutonium-239 (Pu-239)	33
Plutonium-241 (Pu-241)	890
Radium-228 (Ra-228)	1.7
Thorium-232 (Th-232)	1.4
Uranium-234 (U-234)	96
Uranium-235 (U-235)	35
Uranium-238 (U-238)	120

If nuclides other than the ROCs listed in Table 1 are discovered during remediation in significant quantities, the Corps may evaluate and establish soil-based cleanup goals in addition to the DCGLs listed above.

2.3 Selected Remedy in the Record of Decision

The selected remedy as originally described in the ROD for the SLDA is referred to as *Alternative 5: Excavation, Treatment, and Off-site Disposal*. The remedy selected involved the excavation of radiologically contaminated soil and debris, off-site transportation, and disposal at an appropriately permitted, licensed disposal facility in order to comply with the selected applicable or relevant and appropriate requirements (ARARs). The Corps determined that NRC standards for decommissioning of licensed facilities found in 10 CFR 20.1402, *Radiological Criteria for Unrestricted Use*, are relevant and appropriate for this alternative.

In compliance with these standards, the ROD specified that the Corps would take the following actions:

1. Excavate radiologically contaminated soil and waste that exceeds, excluding background, a Sum of Ratios of 1, based on the wide area average Derived Concentration Guideline Levels (DCGL_w), i.e., soil cleanup goals, presented in Table 1. In addition, an elevated measurement criteria (DCGL_{emc}) will be developed to ensure no localized areas of elevated radioactivity will remain that could potentially produce an unacceptable risk. The DCGL_{emc} values are not presented here, but will be developed as part of the remedial design process. The DCGL_w criteria will be applied as averages over a wide area, while the DCGL_{emc} values will be applied to smaller areas as not-to-exceed, “hot-spot” criteria. Verification of compliance with soil cleanup goals will be demonstrated using guidance in accordance with the MARSSIM. This confirmation methodology, including the areas over which these criteria are applied, will be developed and documented in the Final Status Survey Plan (FSSP) during the remedial design. The DCGL_{emc} values will be presented in the FSSP.

² These cleanup goals represent wide-area average activity levels above site background activity corresponding to 25 millirems per year for a Subsistence Farmer scenario.

2. Remove and dispose off-site all radiologically contaminated soil and debris excavated to achieve cleanup goals, as discussed in item 1 above, for the ROCs.

The selected remedy addressed the principal threat from ROCs at the site by removing radioactively contaminated soil and debris that may pose a future threat to the health of persons at the site. Implementation of this remedy would meet the unrestricted release criteria as defined in the ARAR. The selected remedy only addressed the radioactive contamination and did not address any other hazardous substances that may be present at the site, consistent with the authorization provided in Section 8143 of Public Law 107-117.

2.4 Post-ROD Activities

The Corps began implementation of the selected remedy in August 2011, which involved the excavation of radiologically contaminated soil and debris, sorting of contaminated material and packaging for off-site transportation and disposal at an appropriately permitted, licensed disposal facility. Between August and September 2011, the Corps excavated approximately 3,300 tons of radiologically contaminated soil and debris which was subsequently disposed off-site. Excavation activities were suspended on September 30, 2011, and remedial activities have not resumed at the site to date.

3.0 BASIS FOR THE RECORD OF DECISION AMENDMENT

From 2009 to 2011, the Corps coordinated with NRC pursuant to the requirement in the 2001 MOU for the NRC to place the license in abeyance. Through this coordination, both the Corps and NRC were satisfied with the proposed work plans for remediation and the NRC placed the license in abeyance on August 5, 2011. Some remediation methods agreed upon by the Corps and NRC were not contemplated in the FS cost estimate or the ROD. Implementation of such methods, as well as the coordination with NRC, account for some of the increase in remedy costs.

During the remediation, the Corps encountered materials that were difficult to characterize, which caused an unanticipated and immediate need for fundamental changes to site operations, project work plans, waste disposal options, and site infrastructure. The Corps coordinated with the NRC and the U.S. Department of Energy (DOE) to further characterize these materials. The resulting information refined the Corps' understanding of the nature of the contamination in the trenches and the manner in which that contamination could be safely remediated. Specifically, the information gained from remediation emphasized the uncertainty associated with the reported trench waste materials referenced in the FS report (DA, 2006a). In light of this information, the Corps, in consultation with the NRC and DOE, devoted the greater part of the last two years considering best methods and practices for the characterization, excavation, and management of trench materials associated with future on-site activities. The Corps recognized early in 2012 that these methods will differ substantially from those previously considered during the evaluation of remedial alternatives in the FS (DA, 2006a).

The Corps updates FUSRAP project cost estimates annually to reflect the most current information available from actual field experience during the prior year's activities (USACE, 2010). Information obtained during the remedial construction activities in 2011, and expected

changes in methodology and procedures for implementing the remedy, were considered in the 2013 cost estimate. The estimate indicated a substantial increase in the cost to complete the remedy, nearly ten times greater than originally considered in the ROD. As a result of the magnitude of the cost increase, and the changes to the methodology and procedures to implement the remedy, the Corps determined that an amendment to the ROD was required pursuant to 40 CFR 300.435(c)(2)(ii). The Corps' decision maker chose to reevaluate potential alternatives to provide a basis for the decision on how to amend the ROD. This analysis, substantially consistent with 40 CFR 300.430(f), was documented in the FS Addendum (DA, 2014). This analysis supports and is the basis for the proposed amendment of the ROD as expressed herein.

Beginning in 2009, (i.e., subsequent to issuance of the ROD), the Corps Great Lakes and Ohio River Division (LRD) applied the cost and schedule risk analysis (CSRA) process to FUSRAP sites within LRD (USACE, 2008). The process includes a software-based statistical analysis of project risks to identify, analyze, and account for a wide range of uncertainties that can affect a project's cost and schedule. The CSRA results in a range of estimated project costs and durations associated with varying confidence levels. LRD has selected the 80 percent confidence level estimate of cost and schedule for budget development, which means there is an 80 percent probability that the project will be accomplished within that estimated cost and schedule. This CSRA estimate is not done pursuant to the process as suggested by U.S. Environmental Protection Agency (EPA) guidance for CERCLA responses. The EPA method gives an estimate range with expected accuracy between -30 percent and +50 percent of the estimate amount for the detailed evaluation. The CSRA estimate provides an 80 percent assurance that this work will be done for less than the estimate. Both EPA's method and the CSRA estimate include the costs required by the NCP in 40 CFR 300.430(e)(9)(iii)(G).

4.0 DESCRIPTION OF FUNDAMENTAL DIFFERENCES

The selected remedy and associated soil cleanup goals specified in the ROD remain unchanged. However, implementation methodology (difficulty of characterizing and processing the materials), the resultant increase in personnel, equipment, facilities, and time, and thus the cost have changed. The current estimated present value cost of the proposed remedy, including both contingency as determined by the CSRA process, and the amount spent on implementing the selected remedy through September 30, 2014, is \$412,411,000. The original cost of the selected remedy in the ROD was \$44,500,000.

The cost estimate presented in the ROD was originally developed as part of the FS, the details of which can be found in Appendix B of the FS report (DA, 2006a). The significant differences between the ROD cost estimate of the selected remedy and the 2013 CSRA cost estimate for the proposed ROD amendment, as well as the related changes in scope, are discussed below for each of the major remediation activities.

4.1 Site Preparation

The scope of this activity as detailed in Appendix B, Attachment 2 of the FS report (DA, 2006a) included: project kick-off meeting; preparation of work plans and submittals; mobilization of equipment, materials, and labor to the project site; utility identification, connections, and relocations as necessary; earthwork related to haul road construction; site clearing as necessary;

and demobilization activities upon completion of the project. The mobilization cost was assumed to be 1 percent of the remediation activities cost in the ROD cost estimate. The estimated cost of this activity in the ROD was \$540,515.

For the proposed ROD amendment, the overall scope of this activity has remained the same with a few notable exceptions:

- All work associated with utility identification, connections, and relocations, as well as the earthwork related to construction of the haul road were completed in 2011 and are not included in the proposed ROD amendment cost estimate.
- As explained in Section 3.0 above, the new information obtained from remediation activities in 2011 requires the development of new extensive work plans and submittals for the entire work effort, some of which require coordination with NRC before they can be finalized. The level of effort and cost associated with developing the work plans has increased significantly. This effort is made more difficult and costly due to the large increase in internal and external review of these documents.
- New mobilization and demobilization costs were estimated based on the equipment and temporary facilities identified as needed for the project, rather than assuming a fixed percentage of the cost of a related activity.

Although several of the tasks associated with this activity were completed in 2011, significant effort is required to mobilize for a new remediation contract, and to develop new work plans that will guide the remedial action. The estimated cost of this activity for the proposed ROD amendment is \$1,860,673, which accounts for less than 1 percent of the total cost increase.

4.2 Site Supervision and Support Facilities

The FS described this activity for the original ROD as including labor and other items not directly associated with remedial work, including: personnel related to site supervision, quality assurance, health and safety, and administration; office and work trailers, site infrastructure; municipal and sanitary disposal services; and decontamination facilities. Support facilities constructed or installed during the initial mobilization include: the haul road; material processing building; final status survey pad; and office and work trailers. The estimated cost of this activity in the ROD was \$1,720,295.

The scope of this activity for the proposed ROD amendment includes the same categories of labor, facilities, and site infrastructure. However, the ROD cost estimate greatly underestimated both the required labor, such as project management, engineering support, survey, nuclear criticality safety support, health physics support, scheduling, and training, as well as the duration of this activity. Specific differences in the scope of this activity are as follows:

- The estimated project duration for the ROD cost estimate was 32 months, whereas the Corps estimates the project duration for this proposed ROD amendment to be 60 months from restart of remedial activities due to the changes in remediation methods and practices.

- Approximately eighteen (18) additional labor discipline teams are required under this activity for safe and effective work execution. The ROD cost estimate did not include costs for these additional labor discipline teams that must have a full-time presence at the site including: engineers, nuclear criticality safety engineer, waste manager, and scheduler. These types of specialists often exact large fees and salaries.
- Limited site infrastructure construction was completed during remediation activities in 2011 and those costs are not included in the proposed ROD amendment estimate. However, the proposed ROD amendment requires additional infrastructure associated with procurement, setup, and construction of additional office trailers, technically specific storage areas, decontamination facilities, and temporary facilities.
- Additional manpower in many disciplines may be required.
- Based upon the number of personnel that will likely be working at the site, approximately twice as many office and work trailers as were estimated in the ROD are required for administration, operations, health physics, decontamination, and storage, however the technical requirements for these facilities are more exacting and specific, and thus more costly.

The estimated cost of this activity for the proposed ROD amendment is \$21,422,206, which represents 6 percent of the total cost increase from the ROD cost estimate.

4.3 Remediation Activities

The scope of this activity for the ROD cost estimate included the following activities: installation and maintenance of erosion and sediment controls; dewatering, excavation, separation, sorting, treatment, packaging, analyzing, profiling, and loading of wastes; water treatment; transportation and disposal of treated water; backfilling; and site restoration. The ROD cost estimate also included labor costs directly associated with these activities. The estimated cost of this activity in the ROD was \$12,963,098.

The proposed ROD amendment includes the same scope of activities as the ROD cost estimate, and uses similar volume quantities of soils and wastes that will be excavated. Costs associated with the excavation and disposal of 3,300 tons of radiologically contaminated soil and debris during remediation in 2011 are not included in the proposed ROD amendment. Other significant differences between the ROD cost estimate and the cost estimate for the proposed ROD amendment for this activity are as follows:

- Remediation activities, which opened contaminated material to the weather, created a storm water discharge that was potentially radioactively contaminated. This required wastewater treatment which was provided by a subcontractor for the 2011 remediation. That contractor and their treatment facility could not be continued cost-effectively and is no longer at the site. The cost associated with design and installation of a new wastewater treatment plant is included in this part of the estimate. The purpose of the wastewater treatment plant is to treat any liquids that have been in contact with the trench

waste materials, including significant volumes of precipitation runoff, prior to the water being discharged from the site.

- Based upon experience gained from the remediation conducted in 2011, the specifications for the wastewater treatment plant have changed significantly. The ROD cost estimate assumed a package water treatment system with a 50 gallon per minute capacity. The proposed ROD amendment cost estimate includes a multi-unit process, modular water treatment plant, which includes necessary nuclear criticality safety controls, capable of treating up to 200 gallons per minute of wastewater. This change resulted in a cost increase that is nearly fifteen times greater than the ROD cost estimate for this item.
- Costs associated with health and safety training and related equipment and supplies have increased significantly in the proposed ROD amendment. The primary factors affecting this increase are: nuclear criticality safety issues and the documented presence of beryllium contaminated waste. All health and safety issues regarding beryllium must be addressed in a Chronic Beryllium Disease Prevention Program substantially consistent with the requirements found in 10 CFR 850 (USACE, 2013). The ROD cost estimate did not include any costs associated with beryllium worker health and safety requirements, or any costs associated with nuclear criticality safety.
- The ROD cost estimate assumed a duration of 26 months for this activity, whereas the estimated duration of this activity in the proposed ROD amendment is 46 months. This effectively doubles all costs associated with labor and other items whose costs are directly related to time, such as rentals, utilities, and services.
- The ROD cost estimate assumed there would be one-full time position related to health and safety. Due to the knowledge gained during the initial remediation work, an additional six key labor discipline positions have been identified associated with worker health and safety including: training coordinator, nuclear material accountability officer, and nuclear criticality safety manager.
- The proposed ROD amendment assumes that the activated carbon from the air handling system at the material processing building will be replaced at a frequency of once per 10,000 cubic yards of material processed. Each carbon replacement will require 320,000 pounds of activated carbon. Routine maintenance and repairs to the air handling system are also included in the scope of this activity. The costs associated with carbon change out and long-term maintenance of the air handling system were not included in the ROD cost estimate.

The scope of this activity for the proposed ROD amendment also reflects the variety of the types and quantities of waste materials in the trenches, the difficulty in characterizing these materials, and the additional time required to complete the work. Previous experience has resulted in an increased awareness of the level of effort required for nuclear criticality safety and non-radiological safety, such as beryllium health and safety. The associated level of effort will be increased far beyond what was originally estimated in the ROD. The estimated cost of this activity for the proposed ROD amendment is \$47,475,832, which represents 11 percent of the total cost increase from the ROD.

4.4 Environmental Sampling and Analysis

Included in the scope of this activity in the ROD is an on-site laboratory trailer, laboratory equipment, a full-time chemist to analyze samples, a full-time radiation technician to collect samples, and additional analyses at an off-site certified laboratory. Samples to be analyzed include soil and waste samples as well as environmental monitoring samples, such as groundwater, surface water, air, and wastewater treatment effluent. The ROD cost estimate assumed a total of 150 surface water and sediment samples as well as 165 total samples for characterization of waste materials would be sent for off-site analyses. The estimated cost of this activity in the ROD was \$1,541,515.

The scope of this activity in the proposed ROD amendment includes all the items specified in the ROD, plus additional environmental, safety, and health monitoring such as meteorological, radiation, and beryllium monitoring. The primary differences between the two cost estimates are as follows:

- The overall estimated duration of this activity for the proposed ROD amendment is 60 months, whereas the ROD cost estimate assumed a duration of 32 months due to the changes in remediation methods and practices.
- For the proposed ROD amendment, all radiation monitoring will be conducted by radiological control (RADCON) crews whose composition is dependent upon the specific monitoring activities. This requires additional teams of full-time personnel.
- Air monitoring consists of continued operation of the nine existing perimeter air monitors with weekly air filter collection and analysis for the duration of the project. The ROD cost estimate only included four air sampling stations.
- The proposed ROD amendment assumes that monthly groundwater samples will be collected from an estimated 14 monitoring wells for off-site chemical and radiological analyses. This sampling will begin at the start of mobilization and conclude upon completion of demobilization, which is approximately 78 months. This results in a total of approximately 1,000 sample analyses that were not included in the ROD cost estimate.
- Beryllium contamination has been confirmed in the waste trenches at the SLDA. There are significant worker health and safety requirements associated with occupational exposure monitoring for beryllium, including training, occupational health reviews and exams, specialized personal protection equipment and specialized decontamination procedures, as well as environmental monitoring and surface sampling and analysis (USACE, 2014). Activities related to beryllium monitoring, analysis, and associated costs, were not included in the ROD cost estimate.
- The proposed ROD amendment anticipates approximately three times the number of samples for characterization of all waste types as compared to the total number of samples in the ROD cost estimate.

The scope of this activity for the proposed ROD amendment reflects the uncertainty regarding the types and quantities of waste materials expected in the trenches and that were encountered during remediation activities in 2011. As a result, the level of effort related to radiological monitoring, sampling, and analysis has increased significantly, as well as activities related to beryllium monitoring. The estimated cost of this activity for the proposed ROD amendment is \$34,961,204, which represents 11 percent of the total cost increase from the ROD.

4.5 Waste Transport and Disposal

The scope of this activity includes the transportation and disposal of radiologically contaminated waste and debris that is above clean up levels. The ROD cost estimate assumed there would be a total of 21,300 cubic yards of soils, debris, and mixed waste that would be considered low level radioactive waste, which would have to be disposed of in an appropriately permitted, licensed facility. It was also assumed that 18,000 cubic yards of non-hazardous wastes would be disposed at a solid waste facility. The estimated cost of this activity in the ROD was \$23,682,200.

This activity in the proposed ROD amendment is identical in scope to the ROD. However, the disposal unit costs used in the proposed ROD amendment cost estimate were based on actual unit costs from the initial remediation contract, which are much greater than initial estimates. Variation in the radioactive material found at the site may lead to larger disposal costs as well. However, the proposed ROD amendment cost estimate assumes that none of the wastes will be suitable for disposal at a solid waste facility, based upon the materials encountered during the remediation activities in 2011. The estimated cost of this activity for the proposed ROD amendment is \$80,721,622, which accounts for 19 percent of the total cost increase over the ROD estimate.

4.6 Oversight and Physical Security

The scope of this activity includes all labor, equipment and materials associated with Corps supervision, administration, and construction management during implementation of the remedial action, as well as all physical security measures employed at the SLDA, for the duration of the project. None of these activities or costs were included in the ROD cost estimate. The overall estimated duration of this activity is 78 months. The estimated cost of this activity for the proposed ROD amendment is \$39,000,000, which represents 13 percent of the total cost increase from the ROD. Specialized training and equipment is required as well.

4.7 Post-Remedial Action Closeout

This activity includes Corps' labor and contracts for post-remedial action physical, administrative, and legal closeout activities. The overall estimated duration of this activity is 24 months. Costs associated with this activity were not included in the ROD cost estimate. The estimated cost of this activity for the proposed ROD amendment is \$2,000,000, and accounts for less than 1 percent of the total cost increase from the ROD. It includes the interactions between the Corps, the landowner, NRC, DOE, and the state of Pennsylvania.

4.8 Contingency

The ROD cost estimate was prepared prior to the adoption of the CSRA process for LRD FUSRAP sites, and did not fully identify and account for all project risks, and associated cost contingencies, related to the selected remedy. At that time, it was assumed that the contingency amount would be equal to 10 percent of the total estimated cost of the remedy, which was \$4,044,762.

Unlike the ROD, the proposed ROD amendment cost estimate includes risk-based contingencies, developed through the CSRA estimating process, that are based on experience gained from the initial remediation effort. To develop these risk-based contingencies, statistical modeling is used to quantify known and suspected risks that could potentially affect project cost and schedule. Risks include the uncertainties associated with the composition of trench material, which can only be fully characterized upon excavation. Methods for material handling, characterization, and disposal must be adjusted based on the material found. These adjustments increase the cost and duration of excavation and disposal activities. The estimated contingency cost for the proposed ROD amendment, as determined through the CSRA process at the 80 percent confidence level, is \$122,745,000. At just under 40 percent of the total increase in cost from the ROD, the CSRA contingency value accounts for the single largest increase to the overall cost estimate. A comparison of the cost estimates for the original ROD and for the proposed ROD amendment is shown in Table 2 below.

Table 2: Cost Estimate Comparison of the ROD and Proposed ROD Amendment³

Activity	Original ROD Cost Estimate	Proposed ROD Amendment Cost Estimate
Site Preparation	\$540,515	\$1,474,389
Site Supervision and Support Facilities	\$1,720,295	\$21,422,206
Remediation Activities	\$12,963,098	\$47,475,832
Environmental Sampling and Analysis	\$1,541,515	\$34,961,204
Transportation and Disposal	\$23,682,200	\$80,721,622
Oversight and Physical Security	\$0	\$39,000,000
Post-Remedial Action Closeout	\$0	\$2,000,000
Alternative Subtotal	\$40,447,623	\$227,442,000
Contingency	\$4,044,762	\$122,745,000
Alternative Total	\$44,500,000	\$350,187,000⁴

³ All costs are in 2013 dollars.

⁴ The proposed ROD amendment cost estimate does not include the \$62.2 million that was expended through September 30, 2014 to implement the selected remedy.

5.0 AMENDED REMEDY

The amended remedy to address radiologically contaminated soil and debris at the SLDA in this proposed ROD amendment is similar to the remedy specified in the 2007 ROD only to the extent that the basic remedy of removal and off-site disposal is the same. Based on the knowledge gained about the contamination at this site, the methodologies and procedures necessary to safely remediate the contamination is markedly different than the response initially planned, as are the estimated costs that are reflected in this proposed ROD amendment. The proposed ROD amendment is considered to be protective of human health and the environment in the long term, and is permanent because all radiologically contaminated waste and soil exceeding the subsistence farmer cleanup goals will be removed. The proposed ROD amendment ensures compliance with the criteria specified in 10 CFR 20.1402, since all of the materials exceeding the cleanup goals are removed from the SLDA. An FSSP will be developed consistent with MARSSIM requirements and implemented to verify that the residual concentrations of the ROCs are below the specified DCGLs and that the remedial action objectives, which remain unchanged from the ROD, have been met

6.0 COMMUNITY INVOLVEMENT

One of the Corps' goals in remediating the SLDA site has been to spend considerable time in the community to understand residents' concerns so they may be considered when making cleanup decisions. The Corps has conducted several public meetings and will continue to seek input from the affected residents of Parks Township and all other interested individuals. The Corps will conduct a public meeting to explain the contents of this proposed ROD amendment to interested stakeholders and to answer relevant questions.

Based on comments received, the Corps will proceed with the preferred alternative, modify the preferred alternative, or select another alternative before proceeding. In any case, the Corps' amended remedy will be written and published in a ROD amendment, complete with responses to all comments received, before plans are made for final implementation. Refer to the call-out box on this page for details regarding public involvement.

OPPORTUNITIES FOR PUBLIC INVOLVEMENT	
<p><u>Public Comment Period:</u> January 5, 2015 through February 4, 2015</p> <p><u>Public Meeting:</u> January 27, 2015, 7:00 p.m. Parks Township Volunteer Fire Department Hall 1119 Dalmatian Drive Vandergrift, PA 15690</p> <p><u>Send Written Comments to:</u> Michael Helbling, Project Manager U.S. Army Corps of Engineers, Pittsburgh District 2200 William S. Moorhead Federal Building 1000 Liberty Avenue Pittsburgh, PA 15222 e-mail: michael.p.helbling@usace.army.mil</p>	<p><u>Information Repositories:</u> <i>The administrative record is available at the following locations:</i></p> <p>Internet: http://tinyurl.com/pxbn6lj</p> <p>U.S. Army Corps of Engineers, Pittsburgh District 2200 William S. Moorhead Federal Building 1000 Liberty Avenue Pittsburgh, PA 15222 (412) 395-7500</p> <p>Apollo Memorial Library 219 North Pennsylvania Avenue Apollo, PA 15613 (724) 478-4214</p>

7.0 SUPPORT AGENCY COMMENTS

The USACE will consult with the support agencies and provide them the opportunity to comment on this proposed ROD amendment in accordance with 40 CFR 300.435(c)(2)(ii) and CERCLA Section 121(f). Support agency comments will be documented in the responsiveness summary of the ROD amendment following completion of the public comment period.

8.0 STATUTORY DETERMINATIONS

The USACE has determined that the preferred alternative, as modified in this proposed ROD amendment, complies with the statutory requirements of CERCLA Section 121, is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to this remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

9.0 DOCUMENTATION OF SIGNIFICANT CHANGES

If USACE determines that any significant changes to the preferred alternative are necessary based upon review of all comments submitted during the public comment period, the changes will be documented in this section of the ROD amendment prior to approval.

10.0 REFERENCES

Department of the Army (DA), 2014. *Feasibility Study Addendum, Shallow Land Disposal Area, Parks Township, Pennsylvania*, U.S. Army Corps of Engineers (USACE), May, 2014.

DA, 2007. *Record of Decision for the Shallow Land Disposal Area Site, Parks Township, Armstrong County, Pennsylvania*, USACE, August 2007.

DA, 2006b. *Proposed Plan for the Shallow Land Disposal Area Site, Parks Township, Armstrong County, Pennsylvania*, USACE, September 2006.

DA, 2006a. *Final Feasibility Study for the Shallow Land Disposal Area Site, Parks Township, Armstrong County, Pennsylvania*, USACE, September, 2006.

DA, 2005. *Shallow Land Disposal Area, Remedial Investigation Report, Final*, USACE, October 2005.

USACE, 2013. *A Chronic Beryllium Disease Prevention Program*, USACE, November 29, 2013.

USACE, 2010. *08621 LRB – Cost & Schedule Risk Analysis*, LRD Regional Business Process Manual (Doc ID: 5826), USACE, July 26, 2010.

USACE, 2008. *Engineering and Design – Civil Works Cost Engineering*, Engineer Regulation ER 1110-2-1302, USACE, September 15, 2008.