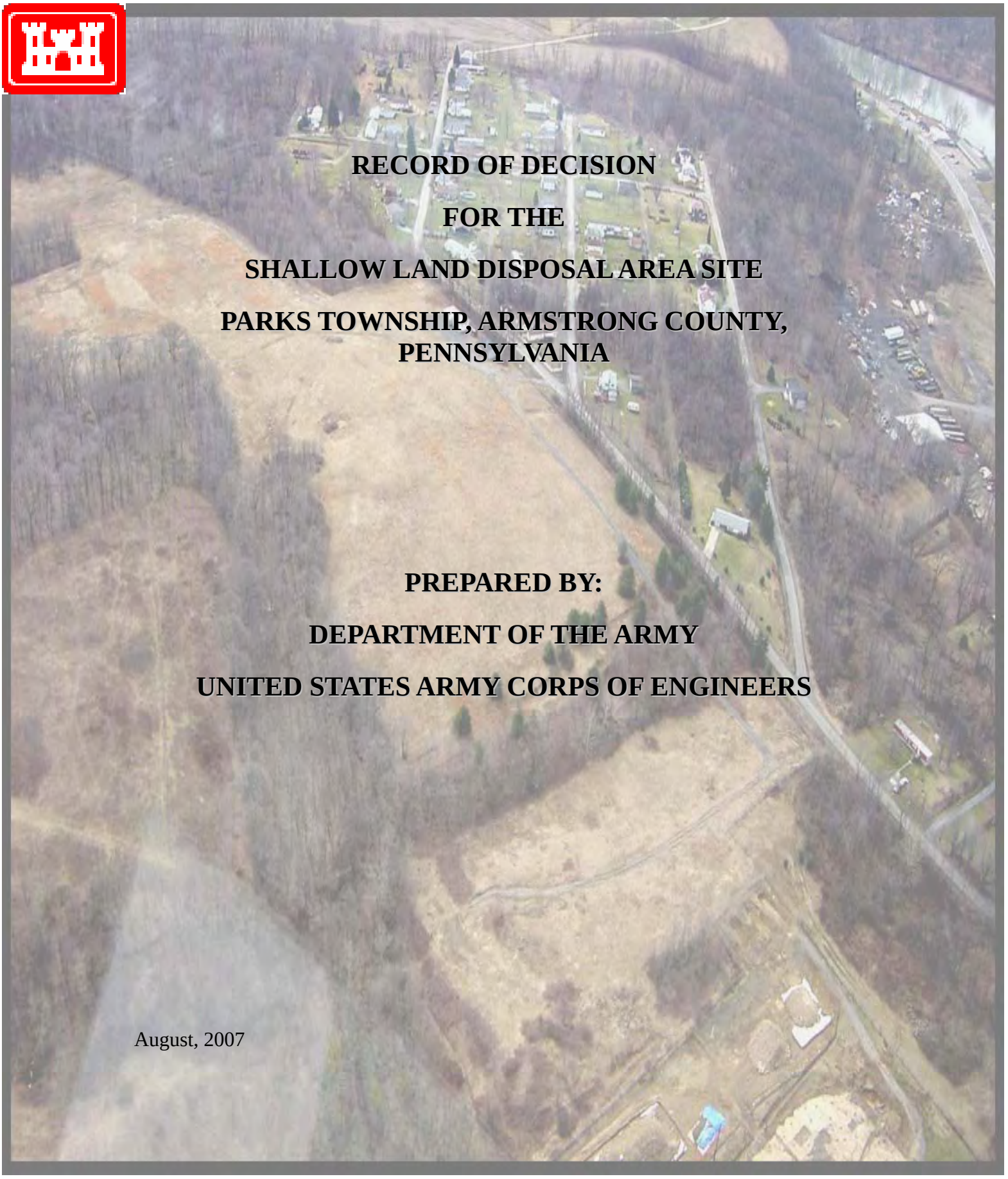

RECORD OF DECISION

FOR THE

SHALLOW LAND DISPOSAL AREA SITE

PARKS TOWNSHIP, ARMSTRONG COUNTY, PENNSYLVANIA

PREPARED BY:

DEPARTMENT OF THE ARMY

UNITED STATES ARMY CORPS OF ENGINEERS

August, 2007

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER
CORPS OF ENGINEERS
P.O. BOX 1159
CINCINNATI, OH 45201-1159

REPLY TO
ATTENTION OF

SEP 7 2007

CELRD-PDM-M

MEMORANDUM FOR COMMANDER, PITTSBURGH DISTRICT

SUBJECT: Record of Decision, Shallow Land Disposal Area (SLDA), under the Formerly Utilized Sites Remedial Action Program (FUSRAP)

1. References:

a. CECW-BA Memorandum, 19 November 2001, Revised Delegation of Approval Authorities Under the Formerly Utilized Sites Remedial Action Program.

b. CELRP-BR-P Memorandum, 20 August 2007, Subject: Shallow Land Disposal Area Record of Decision, FUSRAP.

2. I approve the Record of Decision for the Shallow Land Disposal Area, and the distribution thereof.

3. The point of contact for CELRD is Mr. Ron Church, CELRD-PDM-M, at 513-684-3077.

Encls

BRUCE A. BERWICK
Brigadier General, U.S. Army
Commander

CF:
CECW (Kelly Koontz)
CEMP-CE (Suzanne Beauchamp)
CECW-IN (Sharron DaCosta)

I. DECLARATION FOR THE RECORD OF DECISION

I. DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Shallow Land Disposal Area (SLDA)
Parks Township, Armstrong County
Pennsylvania

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the decision of the lead agency on the final Selected Remedy for the SLDA site in Armstrong County, Pennsylvania, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record file for this site, located at the following locations:

U.S. Army Corps of Engineers, Pittsburgh District
1000 Liberty Avenue
Pittsburgh, Pennsylvania 15222

Apollo Memorial Library
219 North Pennsylvania Avenue
Apollo, Pennsylvania 15613

Comments on the Proposed Plan provided by the Pennsylvania Department of Environmental Protection (PADEP), the U.S. Nuclear Regulatory Commission (NRC), the site property owner, and the general public were evaluated and considered in selecting the final remedy.

ASSESSMENT OF THE SITE

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

DESCRIPTION OF THE SELECTED REMEDY

Background on Remedy Selection

In 1957, the Apollo Nuclear Fabrication Facility began operations in Apollo, Pennsylvania, under U.S. Atomic Energy Commission (AEC) license No. SNM-145. Between 1961 and 1970, Nuclear Materials and Equipment Corporation (NUMEC), who owned both the Apollo Facility and the SLDA, buried process and other wastes from the Apollo plant at the SLDA site. According to historical documents, these wastes were buried in accordance with AEC 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) and the use of the SLDA for radioactive waste disposal was discontinued after 1970. In 1971, the Babcock & Wilcox Company (B&W) acquired NUMEC. In 1997, BWX Technologies, Inc. (BWXT) assumed ownership of the SLDA. Although BWXT is the current owner, ARCO retains environmental liability for the SLDA site.

Based on reports prepared by ARCO/B&W, and discussions with individuals familiar with disposal operations at SLDA, the waste materials were placed into a series of pits that were constructed adjacent to one another. From geophysical surveys performed at the site, these pits appear as linear trenches and are depicted on site drawings as trenches. These geophysical anomalies were labeled as "trenches 1 through 10"; this numbering scheme was based partially on the sequential construction and use of each trench (1 being the oldest trench and 9 being the most recently constructed trench in the upper trench area). Trench 10 is located in another part of the site and was used for disposal purposes throughout the 1960s and during 1970. Disposal activities at the SLDA site were reportedly terminated in 1970. Under NRC license SNM-2001, BWXT is required to properly maintain the site in order to ensure protection of workers and the public, and to eventually decommission the site in compliance with NRC regulations as part of its license termination activities.

The authority for this response action is found in Section 8143 of the Fiscal Year 2002 Defense Appropriations Act, Public Law 107-117, which, subject to subsections (b) through (e) of section 611 of Public Law 106-60 (113 Stat. 502; 10 U.S.C. 2701 note), directs the Secretary of the Army, acting through the Chief of Engineers, to clean up radioactive waste at the SLDA site under the Formerly Utilized Sites Remedial Action Program (FUSRAP). Any chemical contamination that is not co-mingled with radioactive waste cannot be addressed by the U.S. Army Corps of Engineers (USACE) under FUSRAP by the authority provided in Section 8143 of Public Law 107-117.

The results of the human health Baseline Risk Assessment (BRA) indicate that the previously disposed of wastes within the trenches contain significant concentrations of radioactive contaminants, and these materials could pose a potential risk to human health in the future. The estimated annual dose to a hypothetical Subsistence Farmer from exposures to these materials exceeds decommissioning criteria established in 10 CFR 20.1402, Radiological Criteria for Unrestricted Use. Hence it was deemed necessary to evaluate remedial action alternatives to address the contaminated materials present at the SLDA site. These alternatives were developed and evaluated in the Feasibility Study (FS) (USACE, 2006). The scope of this response action addresses americium-241 (Am-241), plutonium-239 (Pu-239), plutonium-241 (Pu-241), radium-228 (Ra-228), thorium-232 (Th-232), uranium-234 (U-234), uranium-235 (U-235), and uranium-238 (U-238) contamination in waste and soil at the SLDA site. Ground water was determined not to be impacted and, therefore, no remedial action is necessary for ground water.

Selected Remedy

The remedy selected for the SLDA site is referred to as Alternative 5, Excavation, Treatment, and Off-site Disposal in the Proposed Plan issued in November, 2006. Implementation of the Selected Remedy will involve excavation of contaminated waste and soil, off-site transportation, and disposal at an appropriate permitted/licensed disposal facility.

The USACE has 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 cleanup of radiological contamination at the SLDA site.

In compliance with these standards, USACE will:

1. Excavate radiologically contaminated soil and waste that exceed, excluding background, a Sum of Ratios (SOR) of 1, based on the wide area average Derived Concentration Guideline Levels ($DCGL_w$) 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 Multi-Agency Radiation Survey and Site Investigation Manual (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. Remove and dispose off site all impacted soil and waste excavated to achieve cleanup goals, as discussed in item 1 above, for the radionuclides of concern (ROCs).

Table 1: ROCs and Soil Cleanup Goals for the SLDA Site

Radionuclide	$DCGL_w$ (pCi/g) [a]
Americium-241	28
Plutonium-239	33
Plutonium-241	890
Radium-228	1.7
Thorium-232	1.4
Uranium-234	96
Uranium-235	35
Uranium-238	120

[a] These cleanup goals represent wide-area average activity levels above site background activity corresponding to 25 mrem/yr for a Subsistence Farmer scenario. These values were calculated using the RESRAD computer code and assume that the contamination is uniformly present over an area of 0.83 acres (3,350 m^2) to a depth of 13 feet (4 m). These values correspond to the approximate area covered by Trenches 1 through 9 in the upper trench area, and the depth is the approximate depth of the trenches in this portion of the site

If a mixture of radionuclides is present at a given location, then the SOR applies per MARSSIM. For example, using the $DCGL_w$ values for soil, the following SOR equation is obtained:

$$SOR = \frac{Ra-228}{1.7} + \frac{Am-241}{28} + \frac{Pu-241}{890} + \frac{Pu-239}{33} + \frac{Th-232}{1.4} + \frac{U-234}{96} + \frac{U-235}{35} + \frac{U-238}{120}$$

where SOR = sum of the ratios result
Ra-228 = net Ra-228 soil concentrations
Am-241 = net Am-241 soil concentrations
Pu-241 = net Pu-241 soil concentrations
Pu-239 = net Pu-239 soil concentrations
Th-232 = net Th-232 soil concentrations
U-234 = net U-234 soil concentrations
U-235 = net U-235 soil concentrations
U-238 = net U-238 soil concentrations
Net soil concentrations are above-background levels.

The Selected Remedy addresses the principal threat from ROCs at the site by removing radioactively contaminated soil and waste that may pose a future threat to the health of persons at the site. Implementation of this remedy will meet the unrestricted release criteria as defined in the ARAR. The Selected Remedy only addresses the radioactive contamination and does not address any other hazardous substances that may be present at the site, consistent with the authorization provided to USACE to conduct remedial action at this site under FUSRAP as specified in Section 8143 of Public Law 107-117. The determination of the need for and performance of response actions related to other releases of hazardous substances at this site are not within the authority of USACE under FUSRAP. It is the responsibility of other agencies and parties to undertake any other necessary response actions at the site.

The estimated present value cost of the Selected Remedy is $44,500,000.

STATUTORY DETERMINATIONS

The Selected Remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions to the maximum extent practicable. The remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The Feasibility Study evaluated currently available treatment technologies for the constituents addressed under this ROD, and found none that would be economically and technologically feasible at this time. The Selected Remedy includes physical separation, size reduction, radiological sorting, and offsite disposal, involving containment at the final disposal location, which will effectively achieve a reduction in mobility. However, no treatment is planned which will reduce the toxicity or volume of the disposed materials.

Because this remedy will effectively remove all ROCs at concentrations exceeding unrestricted use criteria, there is no requirement for a five-year review specifically addressing the ROCs listed in this document.

Bruce A. Berwick
Brigadier General, Corps of Engineers
Commander
Great Lakes and Ohio River Division

6 Sep 2007
Date

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ACRONYMS AND ABBREVIATIONS

AEC	U.S. Atomic Energy Commission
ALARA	As low as reasonably achievable
Am-241	americium-241
ANL	Argonne National Laboratory
ARAR	Applicable or relevant and appropriate requirement
ARCO	Atlantic Richfield Company
BCG	Biota Concentration Guidelines
bgs	Below ground surface
BNI	Bechtel National Incorporated
BRA	Baseline Risk Assessment
B&W	Babcock and Wilcox
BWXT	BWX Technologies, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COCs	Constituents of concern
cy	Cubic yards
DCGL	Derived Concentration Guideline Level
$DCGL_w$	Derived Concentration Guideline Level wide area average
$DCGL_{emc}$	Derived Concentration Guideline Level elevated measurement comparison
DOE	U.S. Department of Energy
ERA	Ecological risk assessment
EU	Exposure Unit
FS	Feasibility Study
FUSRAP	Formerly Utilized Sites Remedial Action Program
FSSP	Final Status Survey Plan
HHRA	Human health risk assessment
HI	Hazard Index
LLW	low-level radioactive waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MED	Manhattan Engineer District
MOU	Memorandum of Understanding
mrem/yr	millirem per year
MSL	mean sea level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NMDR	Nuclear Material Discard Report
NRC	U.S. Nuclear Regulatory Commission
NUMEC	Nuclear Materials and Equipment Corporation
ORNL	Oak Ridge National Laboratory
PADEP	Pennsylvania Department of Environmental Protection
P. L.	Public Law
PP	Proposed Plan

PRG	Preliminary Remediation Goal
Pu-239	plutonium-239
Pu-241	plutonium-241
Ra-228	radium-228
RAGS	Risk Assessment Guidance for Superfund
RAO	Remedial Action Objective
RESRAD	RESidual RADioactivity (Computer Code)
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROC	Radionuclide of Concern
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SLDA	Shallow Land Disposal Area
SLERA	Screening Level Ecological Risk Assessment
SOR	Sum of ratios
TBC	To be considered
TEDE	Total effective dose equivalent
Th-232	thorium-232
U-234	uranium-234
U-235	uranium-235
U-238	uranium-238
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UTL	upper tolerance limit

II. DECISION SUMMARY FOR THE RECORD OF DECISION

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1.0 SITE NAME, LOCATION AND DESCRIPTION

The Shallow Land Disposal Area (SLDA) is in Armstrong County, Pennsylvania, about 23 miles (38 km) east-northeast of Pittsburgh, Pennsylvania (Figure 1). The site is currently owned by BWX Technologies, Inc. (BWXT) and is maintained under U.S. Nuclear Regulatory Commission (NRC) license SNM-2001. Atlantic Richfield Company (ARCO) retains environmental liability for the site. The SLDA site occupies approximately 44 acres (17.8 hectares) and is bounded by the community of Kiskimere to the southwest and vacant undeveloped land to the southeast and northeast. The former Parks Nuclear Fabrication Facility site is located adjacent to and northwest of the SLDA site. The three buildings that comprised the Parks facility were decommissioned in 2000; the license was terminated and the property released for unrestricted use in 2004. Currently, the Parks site is vacant land owned by BWXT. Land use within the vicinity of the SLDA site is mixed, consisting of small residential communities, individual rural residences, small farms with croplands and pastures, idle farmland, forested areas, and light industrial properties.

2.0 SITE HISTORY

2.1 History

A review of site history indicates that, in the early 1900s, the Upper Freeport Coal seam was deep-mined beneath the majority of the site (southeast of the high wall). Subsurface mine voids and residual coal underlie the upper trenches at a depth of about 60 to 100 feet (18 to 31 meters) below ground surface (bgs). Later, coal was strip-mined where it outcropped at the northwestern end of the site (USACE, 2002). The eastern extent of the strip-mined area is referred to as the "high wall" and is characterized by a steep, wooded slope (Figure 4). Figure 2 illustrates the extent of the deep mine workings beneath the site.

In 1957, the Apollo Nuclear Fabrication Facility began operations in Apollo, Pennsylvania, under U.S. Atomic Energy Commission (AEC) license No. SNM-145. From 1957 to 1962, the Apollo facility was used for small-scale production of high- and low-enriched uranium and thorium fuel. By 1963, most of the Apollo facility was dedicated to continuous production of uranium fuel and, throughout its operation, the facility converted low-enriched uranium hexafluoride to uranium dioxide, which was used as fuel for commercial nuclear power plants. In 1963, a second product line was added to produce high-enriched uranium fuel for U.S. Navy propulsion reactors; other operations included analytical laboratories, scrap recovery, uranium storage, and research and development (ORNL, 1997).

Between 1961 and 1970, Nuclear Materials and Equipment Corporation (NUMEC), who owned both the Apollo facility and the SLDA, buried process and other wastes from the Apollo plant at the SLDA site. According to site records, these wastes were buried in accordance with AEC regulation 10 CFR 20.304, Disposal by Burial in Soil, which was subsequently rescinded in 1981. In 1967, NUMEC stock was bought by ARCO and the use of the SLDA for radioactive waste disposal was discontinued in 1970. In 1971, the Babcock & Wilcox Company (B&W) acquired NUMEC. In 1997, BWX Technologies, Inc. (BWXT) assumed ownership of the SLDA. Although BWXT is the current owner, ARCO retains environmental liability for the SLDA site.

Records indicate that the uranium-contaminated materials disposed of at the SLDA are present at various levels of enrichment, ranging from depleted to enriched. Analytical results from soil and leachate samples were consistent with the enriched uranium data reported in historical documents (USACE, 2005). Due to its economic value, NUMEC likely made significant efforts to limit the amount of enriched uranium wastes they disposed of at SLDA (USACE, 2002).

Based on reports prepared by ARCO/B&W, and discussions with individuals familiar with disposal operations at SLDA, the waste materials were placed into a series of pits that were constructed adjacent to one another. From geophysical surveys performed at the site, these pits appear as linear trenches and are depicted on site drawings as trenches. These geophysical anomalies were labeled as "trenches 1 through 10;" this numbering

scheme was based partially on the sequential construction and use of each trench (1 being the oldest trench and 9 being the most recently constructed trench in the upper trench area). Trench 3 was actually a backfilled settling pond used during the exhumation of trenches 2, 4, and 5 in 1965. Trench 10 was excavated in coal strip mine spoils on the northwest side of the high wall and was used for disposal purposes throughout the 1960s and during 1970. As previously stated, disposal activities at the SLDA site were reportedly terminated after 1970.

Documentation of radiological and chemical waste in the disposal trenches was not detailed and drawings of disposal areas were not located. The Nuclear Material Discard Reports (NMDRs) that comprise the bulk of the waste disposal documentation list only the materials of interest at the time of disposal (U-235, total uranium, and thorium). Any other information, such as the presence of specific metals, chemical compounds, or the waste-origin process, was qualitative. This is consistent with practices at that time.

In 1965, NUMEC exhumed the contents of trenches 2, 4, and 5 to investigate discrepancies in the quantities and activities of uranium-containing wastes at SLDA (ARCO/B&W, 1995b). The materials removed from the trenches were placed on the ground south of the upper trenches and sorted. Some of the exhumed materials were placed back in the trenches in 1966, and the remainder was shipped off site for disposal at a low-level radioactive waste (LLW) disposal facility.

In 1986 and 1989, B&W completed soil remediation projects at the SLDA site to remove surface soils found to contain uranium isotopes at activity levels above the NRC guideline of 30 picocuries per gram (pCi/g) for total uranium (NRC, 1981). There were no reports identified that describe the actual remediation work (e.g., excavation depths, volumes removed, etc.); however, confirmation sampling reports corresponding to each remediation project were reviewed (ORAU, 1987, 1990).

BWXT held an NRC license (SNM-414) for their Parks Township operations facilities, which, until 1995, included the area now defined as the SLDA. In 1995, the SLDA site was given a separate license (SNM-2001) in order to expedite decommissioning activities at the Parks facilities. Following findings of SLDA-related contamination on Parks facilities property during a confirmatory survey, BWXT was granted an amendment to SNM-2001 in March 2002. This amendment added an approximately 12-acre (4.9-hectare) area, which was formerly part of the SNM-414 license, to the southeastern edge of the SLDA. The 12-acre (4.9-hectare) parcel is shown in Figure 4. Under license SNM-2001, BWXT is required to properly maintain the site in order to ensure protection of workers and the public, and to eventually decommission the site in compliance with NRC regulations as part of its license termination activities (ORNL, 1997).

2.2 Previous Activities

In the two decades prior to the RI, numerous environmental investigations were completed at the SLDA. These activities are summarized in Table 2. The vast majority of the work was conducted by ARCO/B&W during the 1990s. These investigations

focused on radiological and chemical contamination from past site operations potentially impacting the environment, with special emphasis on the ten disposal trenches. The data generated during the site investigations and post-excavation confirmation sampling were evaluated; most of the data were used in determining the nature and extent of contamination. The details of these previous investigations and associated analytical results were presented in the RI report (USACE, 2005).

Table 2: Field Sampling Programs Completed at SLDA (Non-USACE)

PROGRAM	BY	DATE	TARGET MEDIA
Waste Exhumation Trenches 2, 4, and 5	NUMEC	1965	Waste
Health and Safety Monitoring	BWXT	1972-Present	Air, Soil, Water, Vegetation
Aerial Radiological Survey	EG&G Energy Measurements Group	1981	Soil
Radiological Survey	Oak Ridge Associated Universities	1981-1982	Air, Soil, Surface Water, Ground water, Vegetation
Site Characterization	Babcock & Wilcox/ARCO	1990-1994	Soil Gas, Soil, Surface Water, Leachate, Ground water, Sediment, Vegetation
Quarterly Monitoring Program	Babcock & Wilcox/ARCO	1991-Present	Surface Water, Ground water
1995 Field Investigation	Babcock & Wilcox/ARCO	1995	Soil, Ground water, Sediment, Leachate, Soil Gas
Fate and Transport Analysis	BWXT	1999	Ground water

3.0 COMMUNITY PARTICIPATION

Public input was encouraged to ensure that the remedy selected for the SLDA site meets the needs of the local community in addition to being an effective solution to the problem. The administrative record file contains all of the documentation used to support the preferred alternative and is available at:

U.S. Army Corps of Engineers, Pittsburgh District
1000 Liberty Avenue
Pittsburgh, Pennsylvania 15222

A copy of the administrative record file is available at:

Apollo Memorial Library
219 North Pennsylvania Avenue
Apollo, Pennsylvania 15613

On January 12, 2007, a letter announcing the release of the Proposed Plan for Remediation of the SLDA was sent to 178 individuals on the site mailing list, including elected officials. Legal advertisements announcing the availability of the Proposed Plan for public review and comment, and the January 25, 2007, public meeting, were placed in the following local newspapers: the Pittsburgh Tribune Review and the Valley News Dispatch

The public meeting was held January 25, 2007, from 7:00 to 8:00 p.m. at the Park Township Volunteer Fire Department No. 1 Social Hall near Vandergrift, Pennsylvania. Prior to the meeting, representatives of the U.S. Army Corps of Engineers (USACE) were present to discuss any comments or concerns from members of the general public, and these discussions continued after the formal public meeting ended. At the meeting, USACE explained the history of the site, studies and investigations completed, areas of contamination, CERCLA evaluation criteria, the remedial alternatives, the preferred alternative, and the schedule. A stenographer was present at the meeting to record the proceedings and comments. Three members of the public requested the opportunity to speak at the meeting, but only two made oral comments. The third person indicated that she would prefer not to speak, but would provide comments by email. Comments received at the public meeting and written comments received during the public comment period are responded to in Appendix A, the Responsiveness Summary. The meeting transcript is included as Attachment 1 in Appendix A.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

The authority for this response action is found in Section 8143 of the Fiscal Year 2002 Defense Appropriations Act, Public Law 107-117, which, subject to subsections (b) through (e) of section 611 of Public Law 106-60 (113 Stat. 502; 10 U.S.C. 2701 note), directs the Secretary of the Army, acting through the Chief of Engineers to clean up radioactive waste at the SLDA site under the Formerly Utilized Sites Remedial Action Program (FUSRAP). Any chemical contamination that is not co-mingled with radioactive waste cannot be addressed by the U.S. Army Corps of Engineers (USACE) under FUSRAP by the authority provided in Section 8143 of Public Law 107-117. The scope of this response action addresses americium-241 (Am-241), plutonium-239 (Pu-239), plutonium-241 (Am-241), radium-228 (Ra-228), thorium-232 (Th-232), uranium-234 (U-234), uranium-235 (U-235), and uranium-238 (U-238) contamination present in waste and soil.

Land use surrounding the SLDA site consists of small residential communities and individual rural residences, small farms with croplands and pastures, idle farmland, forested areas, and light industrial facilities. Because of this, it was determined that a Subsistence Farmer scenario was appropriate as a reasonable future land-use scenario for use in developing the Preliminary Remediation Goals (PRGs) for the site. Based on the site characterization activities and analyses conducted as part of the Remedial Investigation/Feasibility Process (RI/FS) process, it was determined that the PRGs were appropriate for use as the wide-area Derived Concentration Guideline Levels ($DCGL_w$) to support remedial action at the site.

The PRGs were developed in the RI/FS on the basis of limiting the annual dose to a hypothetical Subsistence Farmer to 25 mrem/year, consistent with the limit identified for an average member of the critical group as specified in NRC decommissioning requirements in 10 CFR 20.1402, Radiological Criteria for Unrestricted Use (USACE, 2005). No additional information on site characteristics was obtained during the RI/FS process that necessitated any changes to the approach used to develop the PRGs to meet this dose requirement. Since this dose requirement has been determined to be the ARAR for site remediation, these PRGs are appropriate for use as the $DCGL_w$s for the site.

5.0 SITE CHARACTERISTICS

5.1 Site Description

The SLDA site is predominately an open field with wooded vegetation along most of the northeastern boundary and in the southeastern and southern corners. As shown on Figure 2, site topography slopes from the southeast to the northwest toward the Kiskiminetas River. The elevation decreases from about 945 feet (288 meters) above mean sea level (MSL) to about 830 feet (253 meters) above MSL in the northwestern end of the site. This is an elevation change of approximately 115 feet (35 meters) over a distance of approximately 1,000 feet (305 meters). A significant portion of this elevation drop occurs at the high wall area in the northwestern end of the site where a bedrock outcrop is present (Figure 4).

Surface water drainage from the site is primarily into Dry Run, an intermittent stream located along the north side of the site. During peak rain events, surface water in Dry Run flows off site across the adjacent former Parks Facility property, and ultimately to the Kiskiminetas River (located approximately 800 feet [244 meters] northwest of SLDA). During dry or low-flow conditions, the flow in Dry Run infiltrates into the mine spoils upstream of the high wall and no surface water discharges to the Kiskiminetas River. The surface water consists of precipitation runoff and, to a much more limited degree, water from seeps along the banks of Dry Run.

The SLDA site occupies approximately 44 acres (17.8 hectares) and is bounded by Kiskimere Road and Mary Street to the southwest and vacant undeveloped land to the southeast and northeast. The former Parks Nuclear Fuel Fabrication Facility site is located adjacent to and northwest of the SLDA site. The three buildings that comprised the Parks facility were decommissioned in 2000; the license was terminated and the property released for unrestricted use in 2004. Currently, the Parks site is vacant land owned by BWXT. Land use within the vicinity of the SLDA site is mixed, consisting of small residential communities, individual rural residences, small farms with croplands and pastures, idle farmland, forested areas, and light industrial properties. Figure 4 presents a digital orthophoto illustrating the SLDA site, the former Parks facility, and nearby areas.

The limited site improvements consist of a small storage building, access roads, electric service, three underground natural gas pipelines, and a chain link fence surrounding the site. Approximately seventy percent (70%) of the site is vegetated with grasses and annuals. Wooded areas are also present along the northeastern, southeastern, and southern portions of the site. The fenced area is posted and maintained by BWXT.

The community of Kiskimere is adjacent to and southwest of the site. Drinking water for the community of Kiskimere is obtained from the Beaver Run Reservoir and is supplied by the Parks Township Municipal Authority. Beaver Run Reservoir is located approximately 11 miles south of the SLDA site and upgradient of the site, with respect to surface-water and ground-water flow. According to the Authority, there are

approximately 12 residences within 2,000 feet (610 meters) of SLDA that currently use private well water (USACE, 2003a,b). These residential wells are upgradient of the SLDA site, with respect to ground-water flow. Carnahan Run, a perennial stream feeding into the Kiskiminetas River, is located approximately 2,000 feet (610 meters) southeast of the SLDA site, is physically separated from the site by a ridge, and does not receive site runoff. However, Carnahan Run may receive discharge of ground water from the mine workings by way of outfalls located along its banks.

5.2 Geology and Hydrogeology

The geology and hydrogeology at the SLDA site is complex due to the presence of the extensive coal mines and the several hydrogeologic zones. Surface soils southeast of the high wall are described as Rainsboro silt-loam, which is classified as a deep and moderately well-drained silt loam with moderate to low permeability. Infiltration rates in the upper trench area are between 2.8×10^{-3} and 2.8×10^{-4} feet per day, (ft/day)(10^{-6} and 10^{-7} centimeters per second [cm/s])(USACE, 2002). The Rainsboro soils range in slope from less than 3 to 8 percent. When these soils are disturbed, they present a moderate erosion hazard.

The Pennsylvanian age of the near-surface geologic units in the SLDA site is typical of this region of Pennsylvania, where the units consist of sequences of sandstone, siltstone, claystone, shale, and coal. Several coal seams underlie the site, the uppermost of which, known as the Upper Freeport Coal, was strip mined and deep mined before 1950 within the boundaries of the SLDA.

The mine workings that underlie the upper trench area (Figure 2) (approximately 80 feet [24.4 meters] bgs) consist of a combination of room-and-pillar constructions and open-mine haulage ways. Potential collapse of mine structures predominantly overlain by shale has been well documented and these site conditions at the SLDA site may lead to eventual development of trough-type subsidence (ARCO/B&W, 1995a). The area northwest of the high wall was strip mined and backfilled with mine spoil, which has a high erosion hazard potential. Hydraulic conductivity values in the mine spoils range from 5.7 to 269 ft/day (2.0×10^{-3} to 9.5×10^{-2} cm/s)(USACE, 2002).

The hydrogeologic system of the upper trench area is fundamentally different from that of the lower trench area. Trenches 1 through 9 were excavated into approximately 11 to 16 feet (3.4 to 4.9 meters) of Pleistocene terrace deposits that overlie 54 to 80 feet (16.5 to 24.4 meters) of shale and sandstone, which in turn overlie the Upper Freeport Coal seam. The bottom of trenches 1 through 9 rest on weathered shale bedrock. In general, retardation of uranium migration is relatively high due to the presence of the cohesive, fine-grained soils and carbonaceous shale beneath and adjacent to the upper trenches. The soils and weathered shale contain up to 3 percent organic matter and clay minerals that promote the adsorption of uranium and reduce migration.

Trench 10, located at the base of the high wall in the lower elevations of the site, was excavated into coal mine spoils, where the Upper Freeport Coal seam was strip mined.

The base of trench 10 rests on a clay and shale layer that lies beneath the Upper Freeport Coal seam.

In the upper trench area, the distribution of hydraulic head is strongly influenced by the open-channel flow that occurs in the abandoned mine workings within the Upper Freeport Coal seam. This influence creates a strong vertical gradient in the surficial deposits. The horizontal hydraulic gradient in the shallow bedrock is in the direction of Dry Run, where several ground-water seeps were identified along the banks in the upper trench area. Ground-water flow and storage in the shallow bedrock layer, or Glenshaw Formation, occurs in two hydrostratigraphic units that are dominated by secondary porosity features such as joints and fractures. The Upper Freeport coal seam lies below the Glenshaw Formation. Beneath this coal, a sandstone formation contains the Deep Bedrock hydrogeologic unit, which is coincident with the Kiskiminetas river level. Although the community of Kiskimere is supplied with municipal water, ground water is obtained from the Glenshaw formation for domestic purposes (i.e., private wells) in the SLDA area (ARCO/B&W, 1995b). A representative stratigraphic column showing these hydrogeologic zones is presented in Figure 5.

Ground-water flow within the mine spoils near trench 10 is along the underclay present between the coal and the Deep Bedrock zone. A significant component of ground-water flow within the mine spoils follows the dip of the underclay and ultimately enters the mine workings. Ground-water flow within the open mine is to the south and ground water may exit through outfalls into Carnahan Run. Because of the hydraulic properties of the mined coal seam (open channel flow on a clay layer), it is unlikely that contaminants from the trenches would migrate below the coal mine.

5.3 Constituents of Concern

The Remedial Investigation (RI) identified site features, assessed the nature and extent of contamination, and evaluated risks to human health and the environment; the Feasibility Study (FS) evaluated remedial alternatives to address radiological contaminants at the SLDA site. The eight specific radionuclides of concern (ROCs) identified at the SLDA site are: Am-241, Pu-239, Pu-241, Ra-228, Th-232, U-234, U-235, and U-238. Hereafter, references to ROCs in this document will pertain to these eight radionuclides.

Radium: Of the 25 known isotopes of radium, only two – radium-226 and radium-228 – have half-lives greater than one year. Radium-226 is a radioactive decay product in the uranium-238 decay series and is the precursor of radon-222. Radium-228 is a radioactive decay product in the thorium-232 decay series and has much shorter half-life (5.8 years) than radium-226. Radium-228 poses a long-term hazard only if its parent (thorium-232) in present (ANL, 2007).

Thorium: Of the 26 known isotopes of thorium, the two of most concern are thorium-232 and thorium-230. Both of these isotopes have very long half-lives and are present in soil and ores in secular equilibrium with radium-228 and radium-226 respectively. The

health risks for these two radium isotopes must be added to the health risks associated with these thorium isotopes to estimate the total risk (ANL, 2007).

Uranium: Uranium is a radioactive element that occurs naturally in low concentrations in soil, rock, surface water, and ground water. In nature, uranium exists as several isotopes: primarily uranium-238, uranium-235 and a small amount of uranium-234 (by mass). In order to be used as a nuclear fuel, uranium must be enriched in the isotope uranium-235; highly enriched uranium is a primary component of certain nuclear weapons. Disposal of enriched uranium is limited to a few facilities in the U.S. and is expensive. As with the other ROCs, uranium can be ingested or inhaled. The most prevalent human health concerns of uranium exposure occur through ingestion and can lead to bone cancer and kidney damage (ANL, 2007).

Americium: Americium is an artificially produced element most commonly used in smoke detectors. Of the sixteen radioactive isotopes of americium, only three have half-lives long enough to warrant concern: americium-241, americium-242m, and americium-243. Americium-241, the most common isotope, is a decay product of plutonium-241. Most environmental americium was generated by atmospheric nuclear weapons testing and, as with other ROCs, americium is a threat only if taken into the body. Ingestion and inhalation are the primary exposure pathways of concern and the major health concern associated with americium is tumors from deposition on bone surfaces and the liver (ANL, 2007).

Plutonium: Plutonium is an artificially produced element used in nuclear weapons and nuclear power production. The main isotopes of concern are plutonium-238, plutonium-239, plutonium-240, and plutonium-241. Plutonium-241 decays by emitting a beta particle to americium-241, and the other three isotopes decay by emitting an alpha particle. As with americium, most environmental plutonium was generated by atmospheric weapons testing and is only a health threat when taken into the body. Inhalation of airborne plutonium is the exposure path of primary concern, while the health hazards associated with ingested plutonium are lower. Laboratory studies using experimental animals show target tissues in those animals to be the lungs and associated lymph nodes, liver, and bones (ANL, 2007).

5.4 Impacted Areas

Field sampling conducted during the RI shows that the primary radioactive contaminants at the site are uranium and its isotopes. The uranium isotopes of concern at the site are those associated with natural uranium, i.e., U-234, U-235, and U-238. Results of sampling completed at the SLDA site 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 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. While isolated pockets of radiological surface and subsurface soil contamination are present at the site, sampling of air, surface water, sediment, and ground water show no elevated levels of radionuclides migrating from the

site. Ground water was determined not to be impacted and, therefore, no remedial action is necessary for ground water.

While the RI found little radioactivity in soil outside the general area of the trenches, some localized areas of contaminated soil were present outside these areas, specifically in the southwestern end of trench 10 and northwest of trench 4. Localized areas of surface soil near trench 10 contained activities of plutonium (Pu-239 and Pu-241) and Am-241; these transuranic radionuclides were not found above PRGs at depths greater than 6 inches (15 centimeters) during the RI characterization program. The presence of the americium and plutonium contamination in this area was attributed to storage of contaminated equipment used at the former Parks Nuclear Fuel Fabrication Facility.

The activities of radionuclides in most soil samples were generally comparable to background. Of those that were elevated, the maximum surface soil activities measured at the SLDA site were for Am-241 (320 pCi/g), Pu-239 (325 pCi/g), and Pu-241 (628 pCi/g) near trench 10; the maximum subsurface soil activity was for U-234 (508 pCi/g) in the upper trench area. The maximum activities found within the trenches were 220 and 2200 pCi/g for U-235 and U-234 respectively. The maximum sediment activity in Dry Run was 29 pCi/g for U-234. The average activities of these radionuclides were much lower. Other than isolated areas near trench 10, which showed elevated activities of americium and plutonium in surface soil, U-234 was generally the radionuclide that had the highest activity in soil, which is indicative of enriched uranium contamination.

Surface water in Dry Run (on site) and Carnahan Run (off site) contained at or near background levels of radionuclides. Ground water at the site, outside of perched areas within the trenches, also contained below or near background levels of radionuclides. ROC-contaminated leachate does not appear to migrate beyond the trench limits.
Trench-related radionuclides detected in on-site surface and subsurface soil likely are derived from historical contamination and site operations during trench infilling.

6.0 CURRENT AND POTENTIAL FUTURE LAND USES

Currently, the SLDA site is vacant land owned by BWXT. Land use within the vicinity of the SLDA site is mixed, consisting of small residential communities, individual rural residences, small farms with croplands and pastures, idle farmland, forested areas, and light industrial properties. Because of this, it was determined that a Subsistence Farmer scenario was appropriate as a reasonable future land-use scenario for use in developing PRGs to support site characterization activities and develop and screen remedial alternatives in the RI/FS. As discussed in Section 4.0 of this Record of Decision (ROD), it was determined that these PRGs were also appropriate for use as the $DCGL_w$ values to guide and measure cleanup of the site.

7.0 SUMMARY OF SITE RISKS

The Baseline Risk Assessment (BRA) process for the SLDA site consisted of two separate evaluations based on site-specific considerations, i.e., a human health BRA and a screening-level ecological risk assessment (SLERA). The human health BRA was performed in accordance with U. S. Environmental Protection Agency (USEPA) risk assessment guidance developed for sites being addressed under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to support the determination of appropriate actions for the SLDA site (USEPA, 1989). The SLERA was performed in order to determine the potential for adverse ecological effects to occur from exposures to radionuclides at the SLDA in the absence of remedial actions. The SLERA was performed using the U.S. Department of Energy's (DOE's) graded approach for evaluating radiation doses to biota (DOE, 2002). Both the human health and ecological risk assessments are summarized below.

7.1 Summary of Human Health Risk Assessment

The results of the human health BRA were developed according to the standard four basic risk assessment steps: identification of the contaminants of concern, development of exposure scenarios and input parameters, identification of the major toxic effects for the contaminants of concern, and presentation of the health risk characterization results. The assessment was limited to the eight previously specified ROCs, consistent with the authorizing legislation for the site. The chemical toxic effects of these radioactive contaminants were considered in this assessment, specifically for uranium, which is chemically toxic to the kidney.

The SLDA was divided into three exposure units (EUs) to support the risk assessment process. The three EUs include, respectively, the general area of the upper trenches, lower trench, and a small area south of the upper trench area. These EUs were developed based on environmental conditions, historical uses of specific areas, reasonableness of size in terms of representing receptor behavior, geographical similarity, and contamination potential. A consideration in developing these EUs was the need to identify final status survey units for future site closeout activities as identified in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (DOD et al., 2000). The assessments of the three EUs did not include an evaluation of the wastes in the trenches themselves. These materials were addressed separately, largely by comparison to the site-specific PRGs, which were developed using the probabilistic version of the RESRAD computer code as described in Appendix A of the RI work plan (USACE, 2003a). In addition to evaluating exposures in the three EUs, a site-wide assessment was performed in which the receptors were assumed to access all areas of the site.

Four hypothetical scenarios were developed to reflect reasonably likely patterns of human activity that might result in exposures to the radioactive contaminants at the SLDA. The two current-use scenarios (Maintenance Worker and Adolescent Trespasser) reflect possible exposures in the near term given the land use controls at the site, and two future-use scenarios (Construction Worker and Subsistence Farmer) consider greater

exposures that could occur in the future should these land use controls be lost. These scenarios address a range of potential exposures and intakes, and provide useful information for guiding the remedial action decisions at this site. It was determined that a Subsistence Farmer scenario was appropriate as a reasonable future land-use scenario for use in developing the PRGs to support site characterization activities, as well as for use in developing and screening remedial alternatives. As noted previously, the PRGs were determined to be appropriate for use as the $DCGL_w$s for the site.

The results of the human health risk assessment were given in terms of the increased possibility that the hypothetical receptor would develop cancer over their lifetime as a result of exposures to the ROCs at the site. The human health BRA also included estimates of the radiation doses associated with potential exposures at the SLDA because this allows for comparison with the dose benchmark of 25 mrem/yr identified in NRC decommissioning requirements given in 10 CFR 20.1402, Radiological Criteria for Unrestricted Use. Also, since uranium represents a noncarcinogenic hazard to the kidney, this was addressed in the human health BRA by calculation of the hazard index (HI) consistent with EPA guidance. An HI of less than one indicates that there is little or no potential risk of noncarcinogenic health effects due to exposures to the ROCs.

The results of the human health BRA indicate that the SLDA site presents very little risk to human health under current conditions. The site is currently vacant and surrounded by a security fence that is actively maintained. The SLDA is routinely monitored and its open field is mowed about twice a year. Air at the site perimeter is monitored, and there are a number of ground-water monitoring wells in the vicinity to determine the status of potential ground-water contamination. However, these conditions cannot be guaranteed in perpetuity and, over time, the radionuclides in the trenches would be expected to gradually migrate to the nearby environment. Subsidence is also possible at the SLDA site and could create potential new migration pathways for radionuclides to move through the subsurface.

Current information indicates that there is little radioactive soil contamination outside the footprint of the ten trenches, and the radioactive contamination that is present outside the trench boundaries poses very little current and/or future risk. However, the previously disposed-of wastes contain significant concentrations of radioactive contaminants (in excess of the PRGs developed for soil), and these materials could pose a potential risk to human health in the future. The carcinogenic risk to the Subsistence Farmer was estimated to be 3×10^{-3} using the results of the samples obtained from the trenches in the RI characterization program. This risk increases to 1×10^{-2} if the results are limited to the 13 samples that had field-screening evidence of waste. The HI exceeds one for both situations, and the annual doses are approximately 300 and 900 mrem/yr, respectively, which is well in excess of the annual dose rate limit of 25 mrem/yr identified for this site. These results confirmed that the concentrations of radionuclides in the buried wastes are high enough to present a potential future risk to human health.

7.2 Summary of Ecological Risk Assessment

The SLERA utilized established biota radiation absorbed dose rate limits of 1 rad per day (1 rad/d) for aquatic animals, 1 rad/d for terrestrial plants, and 0.1 rad/d for terrestrial animals (DOE, 2002). If the doses to hypothetically exposed ecological receptors did not exceed these limits, it was concluded that populations of plants and animals were adequately protected from the potential effects of ionizing radiation.

The SLDA is covered with various species of grasses, shrubs, and trees, and the entire site (sediment in Dry Run and all site soils) was addressed as a single terrestrial EU. Since plants and animals could be exposed to soils down to a depth of about 4 feet (1.2 meters), characterization data extending to this depth were used in this assessment. Most burrowing animals and plant roots do not extend beyond this depth, so deeper soil and waste samples were not considered. Two aquatic EUs were identified to address exposures (such as to riparian receptors) at Dry Run and Carnahan Run. Because Dry Run is an ephemeral stream, its sediments are included in the terrestrial EU and it is also designated as an aquatic EU. No threatened or endangered species have been identified for the SLDA site (USACE, 2005).

Radiation doses to hypothetical terrestrial, riparian, and aquatic organisms were modeled to develop biota concentration guidelines (BCGs) for the various radionuclides at the SLDA. The BCG is the limiting concentration of a radionuclide in soil, sediment, or water that would keep the protective dose rate limits (given above) from being exceeded. The BCGs were developed using conservative assumptions and are analogous to the PRGs developed for evaluating human health risks. A Sum of Ratios (SOR) was calculated in cases where there were multiple radionuclides present in environmental media, in a manner identical to that used for the human health evaluations. That is, the concentration of each radionuclide was divided by its corresponding concentration goal (PRG for the human health risk evaluations and BCG for ecological risk evaluations), and the individual ratios summed. A value in excess of unity (1) indicated that the dose standard was exceeded.

The maximum detected concentrations of radionuclides in soil, sediment, and surface water were used to calculate the SORs for the three ecological EUs. The SORs ranged from 0.3 to 0.5 for the three EUs, meaning that the biota dose rate limits were not exceeded. It was also determined that there is little potential for unacceptable risk to ecological receptors due to the chemical toxic effects of uranium at the site. Since the results of this conservative assessment indicate that the radionuclides at the SLDA do not pose a potential risk to ecological receptors, the SLERA was completed at the first screening stage, and no further evaluation of the potential risks to ecological receptors is warranted.

7.3 Basis for Action

The response action selected in this ROD is necessary to protect the public health and welfare from actual or threatened releases of hazardous substances into the environment.

8.0 REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) specify the requirements that remedial alternatives must fulfill in order to protect human health and the environment from contaminants; they provide the basis for identifying and evaluating remedial alternatives. The RAOs for the SLDA site are intended to provide long-term protection of human health and the environment. In order to provide this protection, media-specific objectives that identify major contaminants and associated media-specific cleanup goals are developed. These objectives specify the ROCs, the exposure routes and receptors, and an acceptable maximum contaminant level for the long-term protection of receptors.

8.1 Identification of Remedial Action Objectives

The RAOs for the site were developed to specify the requirements that the remedial action alternatives must fulfill to protect human health and the environment from exposure to contaminants identified at the site. The RAOs for protecting human and ecological receptors consider both the contaminant concentrations and the exposure routes since protectiveness may be achieved by reducing exposure as well as by reducing contaminant levels. These RAOs were developed considering the requirements specified in 10 CFR 20.1402, Radiological Criteria for Unrestricted Use, consistent with the Memorandum of Understanding (MOU) between USACE and NRC for addressing FUSRAP sites with NRC-licensed facilities. The second RAO was developed considering restricted release conditions (given in 10 CFR 20.1403, Criteria for License Termination under Restricted Conditions) and was specific to Alternative 4, Excavation, Treatment, and On-site disposal. Alternative 4 is not the selected alternative and restricted release conditions do not apply to the selected alternative (Alternative 5, Excavation, Treatment, and Off-site Disposal), but this RAO is presented for completeness. Although ground-water remediation is not required at the site, the ground-water exposure pathway is included in these RAOs to ensure that the soil cleanup will eliminate potential future ground-water exposures.

The RAO for the SLDA is presented below (another RAO was used during the FS analysis of alternatives to evaluate the alternatives that would result in the ROCs remaining on the site above levels that present an unacceptable threat to humans with unlimited exposure. However, only the RAO that concerns the selected remedy is presented):

- Prevent the external exposure to, and the ingestion and inhalation of radionuclides (U-234, U-235, U-238, Th-232, Ra-228, Pu-239, Pu-241, and Am-241) present in trench waste, surface and subsurface soil at the SLDA site so that the total effective dose equivalent (TEDE) to an average member of the critical group, when combined with the potential dose due to the ingestion of radionuclides in ground water, does not exceed 25 mrem/yr and does not result in an unacceptable non-cancer risk (i.e., an HI of greater than 1) for uranium.

8.2 Applicable or Relevant and Appropriate Requirements

The identification and evaluation of ARARs is an integral part of the remedial process. Section 121 of CERCLA specifies that remedial actions for cleanup of hazardous substances must comply with requirements or standards under Federal or more stringent State environmental laws that are applicable or relevant and appropriate to a site and the hazardous substances at a site. Protection of human health and the environment is assured by complying with ARARs. The following sections discuss the ARARs for cleanup of the SLDA site.

8.2.1 Introduction to ARARs

Section 121(d)(1) of CERCLA requires that remedial actions must, upon completion, achieve a level or standard of control which at least attains legally applicable or relevant and appropriate standards, requirements, criteria, or limitations (ARARs) promulgated under Federal environmental law or any more stringent State environmental or facility siting law. Identifying ARARs involves determining whether a requirement is applicable and, if it is not applicable, then whether a requirement is relevant and appropriate. Individual ARARs for each site must be identified on a site-specific basis. Factors to assist in identifying ARARs include the physical circumstances of the site, contaminants present, and characteristics of the remedial action.

Applicable requirements are defined as those standards, requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that are legally applicable to a hazardous substance, pollutant, or contaminant at the site. A law or regulation is applicable if the jurisdictional prerequisites of the law or regulation are satisfied.

Relevant and appropriate requirements are defined as those standards, requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not applicable to a hazardous substance, pollutant, or contaminant, are relevant and appropriate under the circumstances of the release or threatened release of the hazardous substance, pollutant, or contaminant at the site.

State requirements are ARARs under CERCLA only if they are: (1) promulgated and of general applicability, (2) identified by the State in a timely manner, and (3) more stringent than Federal standards.

Determining whether a rule is relevant and appropriate is a two-step process, which involves determining whether the rule is relevant, and, if so, whether it is appropriate. A requirement is relevant if it addresses problems or situations sufficiently similar to the circumstances of the release at the site. It is appropriate if it is well suited to the site.

CERCLA Section 121(e) provides that no permit is required for the portion of any removal or remedial action conducted on site. Although no permit is required, on-site actions must comply with substantive requirements that permits enforce, but not with related administrative and procedural requirements. That is, remedial actions conducted

on site do not require a permit but must be conducted in a manner consistent with permitted conditions as if a permit were required.

A third category of standards, requirements, criteria or limitations is the To Be Considered (TBC) category, which includes proposed rules and non-promulgated advisories or guidance issued by Federal or State governments that are not legally binding and do not have the status of potential ARARs. If no other standard is available for a situation to help determine the necessary level of cleanup for protection of health or the environment, a TBC may be included as guidance or justification for a standard used in the remediation, at the discretion of the lead agency.

Section 8143(a)(2) of Public Law 107-117 directs the USACE to clean up radioactive waste at the SLDA site, subject to Public Law 106-60 Section 611 and the MOU between NRC and USACE for FUSRAP sites having NRC-licensed facilities. Response actions at FUSRAP sites are conducted following the CERCLA process and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) in accordance with Section 611 of Public Law 106-60. Accordingly, cleanup actions are selected and conducted pursuant to CERCLA and the NCP.

8.2.2 Federal ARAR - 10 CFR 20.1402

The ARAR for the site is 10 CFR20.1402, Radiological Criteria for Unrestricted Use, which establishes standards for the decommissioning of facilities licensed by the NRC to allow for license termination with unrestricted use. This ARAR requires that the annual dose to an average member of the critical group not exceed 25 mrem/yr and that the residual radioactivity be reduced to levels that are as low as reasonably achievable (ALARA). The critical group is "the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances."

As noted in Section 6.3.1.6 of the RI report, land use in this area consists of small residential communities and individual rural residences, small farms with croplands and pastures, idle farmland, forested areas, and light industrial facilities. Because of this, it was determined that a Subsistence Farmer scenario is appropriate as a reasonable future land use and for consideration as the “critical group” receptor for evaluating compliance with the ARAR.

10 CFR 20.1402 is a properly promulgated Federal requirement that provides cleanup standards or standards of control that specifically address the hazardous substances at the site. This regulation is applicable to decontamination of licensed facilities by removal of radioactive materials to levels that allow for unrestricted use. Another regulation considered in the FS during the evaluation of Alternative 4 establishes standards for sites where radioactive materials will remain at levels requiring land use controls. Since this is a licensed facility, 10 CFR 20.1402 would be applicable to the license holder, even though it is not applicable to the USACE in the conduct of this FUSRAP response action under CERCLA (USACE is neither the site owner nor a NRC licensee). Instead, it is considered a relevant and appropriate requirement under the circumstances of the release of the hazardous substances at the site. Specifically, the medium and substances, the

actions or activities, and the type of place regulated by the requirements are sufficiently similar to the circumstances at the site and the requirements are well-suited to the site. The FS evaluated restricted release alternatives and found that this location presents problems with long-term protectiveness for a containment alternative and may not be suitable for the design of a disposal cell on site. For these reasons and others specified in the FS, because the selected remedial action involves excavation and removal of soil containing the ROCs at concentrations that create an unacceptable threat to human health, this ARAR is relevant and appropriate to a remedy that will remove wastes and soil containing unacceptable concentrations of ROCs from the site. This ARAR establishes the standard for measuring how much soil must be removed in order to render the site adequately protective.

8.3 Selected Cleanup Goals

The SLDA site will be remediated in a manner consistent with guidance contained in MARSSIM. MARSSIM requires that dose or risk-based standards be converted into equivalent activity concentration values, known as Derived Concentration Guideline Levels (DCGLs). Consistent with MARSSIM guidance, two types of DCGLs will be applied to a site, a $DCGL_w$ and a $DCGL_{emc}$. The $DCGL_w$ represents a wide area average value that must be attained, and the $DCGL_{emc}$ refers to criteria for small areas of elevated activity. The $DCGL_{emc}$ requirements ensure that no localized areas will remain that potentially pose unacceptable risks. As noted previously, the $DCGL_w$s are the same as the PRGs developed in the RI/FS, and the $DCGL_{emc}$s will be developed during remedial design and provided in the FSSP. The FSSP will specify the approach to be used to verify that the surface and subsurface residual radioactive contamination remaining at the site following remedial action meet the DCGLs and the ALARA requirement specified in the ARAR.

Based on the ARAR identified in Section 8.2, a total effective dose equivalent (TEDE) goal of 25 mrem/yr was determined to be appropriate for the site with a Subsistence Farmer considered as the average member of the critical group. A site-specific RESRAD model (ANL, 2001b) was used to calculate the PRGs for the site, based on an annual dose of 25 mrem/yr above background to a Subsistence Farmer residing at the site. The PRGs were calculated using the probabilistic version of RESRAD consistent with NRC decommissioning guidance (NRC, 1999; 2000a,b; 2002), and were developed with the input and concurrence of the Pennsylvania Department of Environmental Protection (PADEP). These values are given in Table 3. The $DCGL_w$ values in Table 3 were derived assuming only one of the radionuclides is present above background levels. Since contaminated media will potentially contain a mix of residual radionuclides once remediation is complete, an SOR calculation will be used to ensure that the total dose represented by the residual radionuclides is less than the 25 mrem/yr requirement.

The $DCGL_w$ values in Table 3 were used to develop the volume estimates for contaminated materials currently at the SLDA site (USACE, 2006). An FSSP will be developed during the design phase, prior to the initiation of remediation at the SLDA site. The FSSP will contain the confirmation methodology that will be used to demonstrate

compliance with $DCGL_w$ and $DCGL_{emc}$ requirements across the site once remediation is complete.

Table 3: ROCs and Soil Cleanup Goals for the SLDA Site

Radionuclide	$DCGL_w$ (pCi/g) [a]
Americium-241	28
Plutonium-239	33
Plutonium-241	890
Radium-228	1.7
Thorium-232	1.4
Uranium-234	96
Uranium-235	35
Uranium-238	120

[a] These cleanup goals represent wide-area average activity levels above site background activity corresponding to 25 mrem/yr for a Subsistence Farmer scenario. These values were calculated using the RESRAD computer code and assume that the contamination is uniformly present over an area of 0.83 acres (3,350 m^2) to a depth of 13 feet (4 m). These values correspond to the approximate area covered by Trenches 1 through 9 in the upper trench area, and the depth is the approximate depth of the trenches in this portion of the site

If a mixture of radionuclides is present at a given location, then the SOR applies per MARSSIM. For example, using the $DCGL_w$ values for soil, the following SOR equation is obtained:

$$SOR = \frac{Ra-228}{1.7} + \frac{Am-241}{28} + \frac{Pu-241}{890} + \frac{Pu-239}{33} + \frac{Th-232}{1.4} + \frac{U-234}{96} + \frac{U-235}{35} + \frac{U-238}{120}$$

where SOR = sum of the ratios result
Ra-228 = net Ra-228 soil concentrations
Am-241 = net Am-241 soil concentrations
Pu-241 = net Pu-241 soil concentrations
Pu-239 = net Pu-239 soil concentrations
Th-232 = net Th-232 soil concentrations
U-234 = net U-234 soil concentrations
U-235 = net U-235 soil concentrations
U-238 = net U-238 soil concentrations

Net soil concentrations are above-background levels.

9.0 DESCRIPTION OF ALTERNATIVES

This section summarizes the remedial alternatives developed in the FS for the SLDA site. The remedial alternatives were constructed by combining general response actions, technology types, and process options. Remedial alternatives should assure adequate protection of human health and the environment, achieve RAOs, meet ARARs, and permanently and significantly reduce the volume, toxicity, and/or mobility of site-related contaminants.

Five preliminary remedial action alternatives were developed from the technologies and process options that passed the initial screening and evaluation. The remedial alternatives were based on NCP and CERCLA requirements and included "no action" and "limited action" alternatives. The five preliminary remedial action alternatives were:

Alternative 1: No Action
Alternative 2: Limited Action
Alternative 3: Containment
Alternative 4: Excavation, Treatment, and On-site Disposal
Alternative 5: Excavation, Treatment, and Off-site Disposal

These alternatives were evaluated considering the following criteria:

- Public Law 107-117 authorizing cleanup of the site limits USACE responsibility to radioactive waste; chemical contaminants will be addressed only to the extent that they are co-mingled with the ROCs.

- The effectiveness of treatment of radionuclides; there are no effective treatment options for reducing the toxicity of radionuclides (such as by thermal treatment). Radionuclides lose their toxicity over time by radioactive decay.

- The performance period used for remedial alternative evaluation was 1,000 years based on the provision in 10 CFR 20.1401(d) that the expected peak annual TEDE shall be determined for the first 1,000 years after decommissioning.

In four of the five alternatives listed above, the radioactive waste would be left on-site. Therefore, these alternatives would be required to achieve cleanup levels that would meet restricted use criteria. In order to compare and screen these on-site alternatives, the following site conditions and uncertainties were considered:

- The abandoned room-and-pillar mine workings that underlie the upper trench area could possibly result in the eventual development of trough-type subsidence (ARCO/B&W, 1995b). Such subsidence could seriously compromise the integrity and longevity of an on-site waste containment system if it is located in that portion of the site that is underlain by these mine workings. While various approaches for addressing this issue have been proposed (including filling the

underground voids with grout), the implementability and long-term effectiveness of such engineering approaches is highly uncertain.

- Limited characterization data on the actual trench contents make it difficult to estimate with any degree of accuracy the actual risks posed by these materials to human health and the environment. Most of the characterization activities at the site focused on the areas surrounding the disposal trenches, with the goal of defining the areal extent of on-site contamination. Sampling of the trenches themselves was purposely limited because of the uncertainty associated with the waste characteristics. This approach avoided breaching the competent and continuous soil barrier that exists and governs the containment of the radioactive and chemical contaminants in the trenches.

- High concentrations of uranium have been measured in trench leachate, which would pose unacceptable risk to an individual consuming the leachate. In addition, average leachate concentrations indicate that there could be an unacceptable risk to an individual consuming water at the site in the future should the trench contents come in contact with ground water.

- Finally, the available historical records for previous waste disposal activities do not contain detailed information on the wastes disposed of at the SLDA site. The records focused on the contaminants being regulated at the time the disposals took place (i.e., uranium and thorium), and information on chemical contaminants is sparse. It is not clear how the chemical constituents in the buried wastes could affect the long-term leaching of the radionuclides out of the trenches (ANL, 2001a).

Given these constraints, it would be difficult to ensure that any type of in-situ remedial alternative would adequately protect human health and the environment in the long term. Because Alternatives 2, Limited Action and 3, Containment, specified that the radiologically contaminated waste be left in place and did not remove the uncertainties associated with the items listed above, Alternative 4, Excavation, Treatment, and On-Site Disposal, was seen as the only viable alternative in which the wastes could be left on site. Alternative 1 was retained for detailed analysis to provide a baseline for evaluation of other alternatives in accordance with the NCP and CERCLA requirements. Alternative 5, Excavation, Treatment, and Off-Site Disposal, was seen as the most protective of human health and the environment because the wastes would be removed from the site.

Remedial action Alternatives 1, 4, and 5 were subsequently subjected to a detailed analysis to identify a likely preferred alternative. This analysis consisted of a comparison against the nine CERCLA evaluation criteria, grouped into three categories based on their level of relative importance: Threshold, Balancing, and Modifying criteria. Threshold criteria (Overall Protection of Human Health and the Environment, and Compliance with ARARs) had to be satisfied for a remedial alternative to be considered a viable remedy. The five Balancing criteria (Long-term Effectiveness and Permanence; Short-term Effectiveness; Reduction of Toxicity, Mobility, and Volume through Treatment;

Implementability; and Cost) represented the primary criteria upon which the detailed analysis was based. Modifying criteria (State Acceptance and Community Acceptance) were evaluated following comment on the RI/FS and Proposed Plan and are addressed and presented in the Responsiveness Summary given in Appendix A of this ROD.

9.1 Alternative 1: No Action

Under the No Action alternative, no additional remedial action would be taken at the SLDA site. For the purposes of remedial alternative evaluation and to adhere to the intent of CERCLA guidance, the evaluation of the No Action alternative is based on the assumption that, in the future, the site would be neither controlled nor maintained. Under this assumption, all current land-use controls would no longer be maintained and therefore would be rendered ineffective. However, at SLDA that scenario is not likely since SLDA is a currently NRC-licensed site. If no action were taken under FUSRAP, the SLDA site would continue to be regulated under the current NRC license (SNM-2001) and in the future, one of the following would happen:

- The site would continue to be maintained by the licensee, under the requirements of the license, or;
- The licensee would successfully meet agreed-to license termination criteria, the license would be terminated, and the site would be lawfully released for a specified future use.

It is not possible to reliably determine the consequences of pursuing a No Action alternative, therefore, as stated above, the No Action alternative presented here applies only to the site in a hypothetical state of abandonment.

This alternative is included to provide a baseline for evaluation of other alternatives in accordance with the NCP and CERCLA requirements. The acceptability of the No Action alternative will be determined in relation to the assessment of known site risks and by comparison to other remedial alternatives.

9.2 Alternative 4: Excavation, Treatment, and Onsite Disposal

Alternative 4 consists of the excavation, treatment, and on-site disposal of contaminated soil and waste. Treatment processes could include physical separation, size reduction, radiological sorting, and, if necessary, stabilization of excavated material with cement-like grout to reduce its leaching capabilities prior to placement in the disposal cell. Under this alternative, the gas line that currently crosses the upper trench area would be relocated to run approximately along the southeast fence line of the site. The radioactively contaminated soil and waste would be removed from the disposal trench area and placed into an on-site engineered disposal cell. Access to the completed disposal cell would be restricted through the use of engineering controls and a permanent monitoring and maintenance program would be implemented to demonstrate this alternative's effectiveness.

The new disposal cell would be constructed in the northern corner of the site, north of the deep mine workings. This location was proposed because it is anticipated that it would

be free of any potential effects of long-term mine subsidence. It was assumed for Alternative 4 that contaminated soil and waste would be managed such that only the engineered disposal cell, and an appropriately sized buffer zone immediately surrounding it, would require land-use controls. Any residual concentrations of the ROCs remaining outside this area would meet the 25 mrem/year dose rate limit. Excavated materials found to be impacted would be treated on site as necessary and disposed of in the disposal cell. If RCRA hazardous waste were encountered during remedial action, the material would be segregated from the other waste and managed in an appropriate manner consistent with USACE's authority for conducting remedial actions at the site.

Uncontaminated soil identified during handling and treatment activities would be stockpiled on site, sampled, characterized, and re-used as backfill. Under this alternative, no off-site disposal would be necessary.

9.3 Alternative 5: Excavation, Treatment, and Offsite Disposal

Alternative 5 consists of the excavation, treatment, and off-site disposal of contaminated soil and waste. Treatment processes could include physical separation, size reduction, and radiological sorting. Under this alternative, the gas line that currently crosses the upper trench area would be relocated to run approximately along the southeast fence line of the site. The radioactively contaminated soil and waste would be removed from the disposal trenches, subjected to treatment, and transported off site for disposal in a facility permitted to receive such materials. If RCRA hazardous waste is encountered during remedial action, the material will be segregated from the other waste and managed in an appropriate manner consistent with USACE's authority for conducting remedial actions at the site. After a determination has been made that the RAOs have been attained (based largely upon post-excavation sampling and analysis) and the residual concentrations of ROCs will allow for unrestricted future use of the site, there would be no need for environmental monitoring, engineered controls to limit site access, or an operations and maintenance (O&M) program.

10.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

Section 300.430 (e) of the NCP lists nine criteria by which each remedial alternative must be assessed. The acceptability and performance of each alternative against the criteria is evaluated individually so that relative strengths and weaknesses may be identified. Also, a comparative analysis among the alternatives is performed, to identify the advantages and disadvantages of each alternative relative to one another. Assessments against two of the criteria (Overall Protection of Human Health and the Environment, and Compliance with Applicable or Relevant and Appropriate Requirements) relate directly to statutory findings and therefore are categorized as threshold criteria. The threshold criteria must be satisfied in order for an alternative to be eligible for selection.

Five of the criteria (Long-term Effectiveness and Permanence; Reduction of Toxicity, Mobility, or Volume through Treatment; Short-term Effectiveness; Implementability; and Cost) represent the primary criteria upon which the analysis is based. These balancing criteria are used to weigh major tradeoffs among alternatives. In addition, CERCLA Section 121 sets forth requirements for remedial action including the preference for treatment which reduces volume, toxicity or mobility.

The remaining two criteria, State Acceptance and Community Acceptance, are categorized as modifying criteria. The modifying criteria are evaluated following comments on the Proposed Plan and are addressed in the Responsiveness Summary presented in Appendix A of this ROD. The nine criteria are briefly defined as follows (see Tables 4 and 5 for comparative summary):

Overall Protection of Human Health and the Environment: The analysis of each alternative with respect to overall protection of human health and the environment illustrates how the alternative reduces or eliminates short- and long-term unacceptable risk by controlling exposures to levels at or below the cleanup goals.

Compliance with Applicable or Relevant and Appropriate Requirements: Each alternative is evaluated with respect to compliance with the ARARs established for the SLDA site. The ARARs identified for the SLDA site were:

- 10 CFR 20.1402 - Radiological Criteria for Unrestricted Use, and;
- 10 CFR 20.1403 - Criteria for License Termination under Restricted Conditions.

However, 10 CFR 20.1402 is the only ARAR associated with the selected remedial alternative. Compliance with the criteria outlined in 10 CFR 20.1403 was only evaluated for Alternative 4, Excavation, Treatment, and On-site Disposal, which was not selected as the remedial alternative for the site.

Long-term Effectiveness and Permanence: Long-term effectiveness and permanence reflect the magnitude of residual risk and dose remaining at the site after remedial efforts

are complete, and the adequacy and reliability of controls to manage the risk and dose over the performance period, if appropriate.

Reduction of Toxicity, Mobility, or Volume through Treatment: The statutory preference is a remedial action that employs treatment or recycling on-site to reduce the toxicity, mobility, and/or volume of the ROCs. This evaluation assesses the performance of the alternative in achieving this preference. Relevant factors in this criterion include the quantity of contaminated materials to be treated, destroyed, or recycled; the degree of expected reduction in toxicity, mobility, or volume; the irreversibility of the treatment process; the type and quantity of residuals remaining after the treatment process; and the degree to which treatment is used as the principle element of the alternative.

Short-term Effectiveness: The short-term effectiveness criterion addresses the effects to human health and the environment associated with the alternative during implementation. The factors that are typically assessed include protection of the community during the remedial action, associated environmental impacts, time required until RAOs are achieved, and protection of workers during the remedial action.

Implementability: The analysis of implementability examines the technical and administrative feasibility of implementing the alternative, as well as the availability of necessary goods and services. This evaluation includes the feasibility of construction and operation; the reliability of the proposed technology; the ease of undertaking additional remedial action (if necessary); monitoring considerations; activities needed to coordinate with regulatory agencies; availability of adequate equipment, services, and materials; and, if necessary, the availability of off-site treatment, storage, and disposal services.

Cost: Cost estimates for each alternative include direct and indirect capital costs and O&M costs. Costs are based on information obtained from a variety of sources, including quotes from suppliers, published cost information for previous similar projects, generic unit costs, vendor information, conventional cost-estimating guides (i.e., RSMeans®, 2005), and prior experience at similar sites. The actual cost of the project will depend on actual labor and material charges, actual site conditions, competitive market conditions, final project scope, engineering design, the implementation schedule, and other variables. Please see the FS (USACE, 2006) for further details on cost estimates.

State Acceptance: indicates whether, based on its review of the Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.

Community Acceptance: This is assessed following a review of the public comments received on the Proposed Plan. Public comments on the Proposed Plan are formally addressed in a Responsiveness Summary, presented in Appendix A of this document.

A summary of the relative performance of each alternative against the nine criteria, noting how it compares to other options under consideration, is provided as follows. The

detailed analysis of alternatives can be found in the FS (USACE 2006); also see Tables 4 and 5 for a comparative summary.

10.1 Overall Protection of Human Health and the Environment

The No Action alternative (Alternative 1) is not considered protective of human health and the environment because this alternative would not include any remedial action to reduce exposure to contaminated soil or waste. Under this scenario, potential impacts would be the same as those identified in the BRA screening-level calculation of risks and doses. Therefore, the ARARs for unrestricted and restricted use would not be met for the site.

The Excavation, Treatment, and On-site Disposal alternative (Alternative 4) would provide a high level of protection to human health and the environment. Under this alternative, radionuclides above approved cleanup criteria would be removed from within and around the disposal trenches. However, this alternative would also carry greater short-term risk to remediation workers and the general public than the No Action alternative due to potential construction accidents and exposure to contaminants. Subsequent to remediation, however, the potential for future human contact with elevated levels of contaminants would be significantly reduced.

Excavation, Treatment, and Off-site Disposal (Alternative 5) would also provide a high level of protection to human health and the environment (similar to that of Alternative 4). Overall short-term risks to human health could be considered incrementally higher than those of Alternative 4 as a result of a higher degree of treatment activities, longer remediation duration, and waste transportation activities. However, these risks could be offset due to higher long-term level of protection to human health and the environment because of the complete removal of all radioactive contamination above cleanup levels to an established off-site disposal facility that has been sited to minimize the possibility of a release and exposure incident.

10.2 Compliance with ARARs

Since no remedial actions would be conducted and no engineering controls would be enforced, Alternative 1 was evaluated against the standards for unrestricted use. Based on that evaluation, Alternative 1 would not meet the relevant RAOs identified for the site. That is, the requirements of 10 CFR 20.1402, Radiological Criteria for Unrestricted Use, would not be met.

Alternative 4 (Excavation, Treatment, and On-site Disposal) would comply with the ARAR identified for restricted use conditions at the SLDA site (i.e., 10 CFR 20.1403), by using engineering and land use controls to limit the exposure to residual radioactivity. Impacted soil and waste present at the SLDA site would be effectively removed and disposed of in an on-site disposal cell. Following completion of this remedial action, the SLDA site would be suitable for future use under restricted conditions.

Alternative 5 (Excavation, Treatment, and Off-site Disposal) is similar to Alternative 4, however activities performed under Alternative 5 would satisfy 10 CFR 20.1402, Radiological Criteria for Unrestricted Use, because the impacted soils and wastes would be removed from the SLDA site and disposed of off site.

10.3 Long-Term Effectiveness and Permanence

Since no remedial actions or controls would be implemented under Alternative 1, this alternative would not be effective in achieving long-term effectiveness and permanence.

Alternatives 4 and 5 would achieve both long-term effectiveness and permanence. Both alternatives involve removal of soil and waste with ROC activities exceeding approved cleanup criteria and, with respect to the disposal trench areas, there would be no long-term post-remediation monitoring, maintenance, or land-use controls. Although Alternative 4 would have an on-site disposal cell that would need security, operation, monitoring, maintenance, and land use controls, this alternative would meet the dose criteria presented in 10 CFR 20.1403 (the ARAR for restricted site use). Alternative 5 would meet the dose criteria for 10 CFR 20.1402 (the ARAR for unrestricted site use).

Alternative 5 would achieve a higher degree of long-term effectiveness and permanence since the impacted soil and waste would be removed from the site to an established facility that would be suitable for LLW disposal.

10.4 Reduction of Toxicity, Mobility or Volume through Treatment

Implementation of Alternative 1 would not result in significant reduction of contaminant toxicity, mobility, or volume. This alternative would allow the contamination to remain on site and rely upon the long-term processes of radioactive decay and degradation for contaminant mass reduction.

Under Alternative 4, treatment of excavated soil and waste would be performed to reduce the mobility of ROCs. However, statutory preference for treatment cannot be satisfied because there is no effective treatment method available for the ROCs in soils at this site. The toxicity and volume would not be reduced in Alternative 4. In contrast to Alternative 1, elevated levels of contamination would be placed into the disposal cell to reduce exposure risk and Alternative 4 would not rely on the slow processes of radioactive decay and degradation to reduce toxicity, mobility, and volume. As a result, Alternative 4 is ranked significantly higher than Alternative 1.

Alternative 5 would include a higher degree of physical separation and radiological sorting than Alternative 4. By classifying some soil as containing radioactivity at levels acceptable for re-use on site, the volume of excavated material requiring off-site transport and disposal could be significantly reduced. Similarly, soil or waste found to contain radiological contaminants at levels acceptable for disposal at a solid or hazardous waste disposal facility would further reduce the volume (and associated cost) of material requiring disposal at the LLW facility. However, while contaminated material is consolidated to a greater extent for disposal in Alternative 5, it is ranked the same as Alternative 4 for this criterion.

10.5 Short-Term Effectiveness

Although Alternative 1 would not be effective in achieving the RAOs (either in the short or long term), there would be no increase in worker and public exposure to contaminants during implementation since no remedial activities would occur.

Alternatives 4 and 5 would involve excavation, loading, sorting, and transportation activities, all of which would involve significant soil disturbance. Short-term risks could be present for remediation workers responsible for the excavation of impacted materials. A remediation worker engaged in the implementation of these alternatives could potentially be exposed to radiation and chemical contamination. As calculated in the FS (USACE, 2006), the remediation dose to an individual worker for Alternative 4 over the project duration was estimated to be approximately 110 mrem. The total project dose for Alternative 4 was estimated to be 0.33 person-rem (or 0.25 person-rem/year). For Alternative 5, these risks would be approximately 150 mrem and 0.91 person-rem (or 0.42 person-rem/year) respectively, and the total transportation dose for all drivers would be 10.4 mrem. Waste transportation activities would also possess accident-related risk of 1×10^{-3} fatalities (calculation based on information from DOE, 2002 CAIRS). There would also exist risks associated with waste handling and construction activities involved with construction, filling, and closure of the disposal cell that would only be applicable to Alternative 4. The fatalities associated with these Alternative 4 risks were calculated to be slightly less at approximately 8×10^{-4} (calculation based on information from NUREG 1496, Volume 2).

In total, these added doses and risks would not be significant, and no unusual occupational or safety concerns would prevent implementation of these alternatives. These risks would be mitigated through the proper use of safety protocols and personal protective clothing and equipment, environmental monitoring, and access restrictions to contaminated areas.

These alternatives could also adversely affect soil and groundwater in the area because the large-scale excavation, waste transportation, and backfilling may potentially result in soil disturbance, leachate releases, breaching of weathered bedrock, and erosion. Therefore, precautions would be included in this alternative to prevent any migration of contamination and preserve soil and water quality. These precautions would include identification of the overburden and weathered bedrock interface, use of dewatering techniques during excavation activities and implementation of erosion, sediment, and dust controls established and approved by the appropriate regulatory agencies.

Biotic resources could be affected temporarily by the disturbance of existing habitats during excavation activities at the site. However, the total on-site area of disturbance would only be approximately six acres, and the populations of these areas would likely return to the site following remediation, which should be completed in three years or less.

Noise impacts expected under this alternative could result in annoyances to the public, but they should not affect hearing or pose occupational health hazards. Noise levels associated with this alternative would be temporary.

Some community concern would be expected due to short-term impacts during construction of the disposal cell, excavation of the contaminated material, on-site treatment activities, transportation to contaminated materials to the disposal cell, and capping of the disposal cell. However, these concerns would be effectively addressed by implementing the controls previously described and through public information sessions.

Both of these alternatives would be effective immediately following removal of the waste from the impacted areas and disposal either in the on-site disposal cell (Alternative 4) or off site in a permitted/licensed facility for such wastes (Alternative 5). Alternative 4 would require an on-site long-term O&M program, while Alternative 5 would not.

10.6 Implementability

Alternative 1 would be the most easily implemented alternative, as it would involve no remedial action. For Alternatives 4 and 5, excavation and physical treatment activities are common and proven methods for site remediation at similar FUSRAP sites and would be generally implementable. The areas to be excavated would be easily accessible, and it is anticipated that the treatment would be completed using conventional equipment. It is currently anticipated that, for Alternative 5, disposal facilities also would be readily available, although space in some LLW facilities may be unavailable or become much more expensive if remediation is delayed.

The timeframe for these alternatives would be dependent upon the volume of material to be removed, depth of excavation, method of excavation, and other factors such as the presence and control of ground water. The construction, closure, and maintenance of an on-site disposal cell for Alternative 4 would also be technically feasible. However, administrative feasibility could be problematic since all of the contamination identified would remain on site and an on-site remedial alternative could be viewed as unfavorable by the regulatory agencies. Furthermore, development of a long-term, on-site O&M program (including environmental monitoring) would only be required for Alternative 4.

Although Alternative 5 would include a higher degree of on-site physical treatment, Alternative 4 would be more difficult to implement over the long term due to the presence of the on-site disposal cell.

10.7 Cost

Alternative 1 has no cost since it involves no remedial actions. Alternative 4 has the lowest estimated cost after Alternative 1, with a present worth cost of $20,200,000. Alternative 5 has the highest estimated cost, at a present worth cost of $44,500,000. This alternative assumes disposal at an appropriate facility permitted/licensed to receive radiologically contaminated material. The cost estimate presented in the Feasibility Study and Proposed Plan has been increased by $9,000,000 based on comments received during the Proposed Plan public comment period.

10.8 State Acceptance

The Pennsylvania Department of Environmental Protection has expressed general agreement with the Selected Remedy. They have expressed concern about the possibility

of a portion of the radiologically impacted material being disposed of at a facility in Pennsylvania, as well as the lack of authority allowing USACE to address chemical contamination that is not commingled with radiological contaminants.

10.9 Community Acceptance

At the public meeting conducted on January 25, 2007, the public voiced support for the Selected Remedy over the other remedial alternatives evaluated. However, the public also expressed concern over the chemical contamination at the site, which USACE has no authority to address, except where it is mixed with radiological contamination. The details of comments at the public meeting for the project, written comments and USACE's responses to comments, are included in Appendix A of this Record of Decision.

Table 4: Detailed Evaluation of Remedial Alternatives for the Shallow Land Disposal Area

Criteria	Alternative 1	Alternative 4	Alternative 5
	No Action	**Excavation, Treatment, and On-site Disposal**	**Excavation, Treatment, and Off-site Disposal**
Overall Protection of Human Health and the Environment	Not considered protective of human health and the environment because it does nothing to reduce exposure to radionuclides.	Meets the remedial objectives for protection of human health and the environment.	Meets the remedial objectives for protection of human health and the environment.
Compliance with ARARs	This alternative would not satisfy the ARARs established for the site.	Satisfies the ARARs established for the site.	Satisfies the ARARs established for the site.
Long-term Effectiveness and Permanence	This alternative does not provide long-term effectiveness and permanence, and current and potential future risks and doses would remain.	Provides long-term effectiveness and permanence by placing contaminated soil and waste into an on-site disposal cell.	Provides long-term effectiveness and permanence by removing contaminated soil and waste from the SLDA site.
Reduction of Toxicity, Mobility, and/or Volume through Treatment	Under this alternative there would be no significant reduction in the toxicity, mobility, or volume of ROCs.	This alternative reduces the mobility of contaminants through treatment. There is no significant reduction of the toxicity and volume of contaminants.	This alternative reduces the mobility of contaminants through treatment. There is no significant reduction of the toxicity and volume of contaminants.
Short-term Effectiveness	There would be no short-term hazards to site workers and the community since no remedial actions would be implemented.	Low to moderate risk to remedial workers during implementation due to intrusive and disposal activities. The risk would be mitigated through a health and safety plan.	Low to moderate risk to remedial workers and the community during implementation. Low to moderate risk to the general public is also associated with off-site transportation of contaminated material. These risks would be mitigated through a health and safety plan, and environmental monitoring.
Implementability	This alternative is readily implementable in terms of administrative and technical feasibility since no remedial actions would be undertaken.	There are no technical implementability issues; services and materials are readily available. Administrative feasibility could be problematic.	There are no technical or implementability issues; services and materials are readily available.
Cost	$0	$20.2 Million	$35.5 Million
Volume of contaminated soil and waste material remediated	0 yd^3	24,300 bank yd^3	24,300 bank yd^3
State Acceptance			General agreement with concern about in-state disposal and lack of Corps' authority to address chemical contamination
Community Acceptance			Concern about the safety of excavating material and welfare of community during implementation.

Table 5: Comparative Evaluation of Remedial Alternatives for the SLDA

Alternative	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Short-Term Effectiveness	Reduction of Toxicity, Mobility, or Volume through Treatment	Implementability	Cost (millions)
Alternative 1 No Action	Low	Low	Low	High[1]	Low	High	$0
Alternative 4 Excavation, Treatment, and On-site Disposal	Medium/High	High	Medium/High	Medium	Low/Medium	Low	$20.2
Alternative 5 Excavation, Treatment, and Off-site Disposal	High	High	High	Low/Medium	Low/Medium	Medium	$35.5

Notes:

1 Not effective in achieving RAOs; however, no increased impact to workers or community

High - most favorable ranking

Medium - average favorable ranking

Low - least favorable ranking

11.0 SELECTED REMEDY

The USACE has selected Alternative 5, Excavation, Treatment, and Off-site Disposal, to address contaminated soil and waste at the SLDA site. On-site waste, soil, and sediments containing the ROCs at concentrations that on average exceed the concentrations above background established in Section 8.3 of this ROD will be excavated and shipped off-site for disposal at a licensed disposal facility (or facilities), and any hazardous and solid waste that is commingled with this material will be properly disposal at a facility with the required licenses or permits.. Alternative 5 is considered to be the most protective in the long term and is permanent because all contaminated waste and soil exceeding the Subsistence Farmer cleanup goals will be removed from the SLDA site. Alternative 5 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 site. An FSSP will be developed consistent with MARSSIM requirements to verify that the residual concentrations of the eight ROCs are below the specified DCGLs and that the RAOs have been met. A conceptual diagram of the site during the implementation of Alternative 5 is shown in Figure 3.

The USACE expects this alternative to satisfy the following statutory requirements of CERCLA Section 121(b): (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; and (4) utilize permanent solutions that will preclude any future environmental impact. Implementation of the preferred alternative will allow the site to meet the standards specified for license termination under an unrestricted use scenario. Release of the SLDA site would only be with respect to the radioactive contaminants present at the site in waste and soil.

The $DCGL_w$s presented in this ROD were developed based on the allowable dose rate specified in the ARAR identified for this alternative, 10 CFR 20.1402, Radiological Criteria for Unrestricted Release. The $DCGL_w$s were determined on an individual ROC basis. That is, if two or more of the ROCs are present, an SOR approach will be used to confirm compliance with the dose rate of 25 mrem/yr given in the ARAR. The process used to verify that the DCGL values have been met will be specified in the FSSP, which will be prepared during the remediation design phase.

12.0 STATUTORY DETERMINATIONS

The Selected Remedy satisfies the statutory requirements of Section 121 of CERCLA as follows:

- The remedy must be protective of human health and the environment,
- The remedy must attain ARARs or define criteria for a waiver,
- The remedy must be cost effective, and
- The remedy must use permanent solutions and alternative treatment technologies to the maximum extent practicable.

The manner in which the Selected Remedy satisfies each of these requirements is discussed in the following sections.

12.1 Protection of Human Health and the Environment

Upon completion, the Selected Remedy for the SLDA site will be protective of human health and the environment and meet cleanup criteria based on ARARs. During remedial activities, engineering controls will be put in place as required, and environmental monitoring and surveillance activities will be maintained to ensure protectiveness, so that no member of the public will receive a radiation dose from exposure to the radioactive contaminants at the site in excess of NRC regulations.

There are no short-term threats associated with the Selected Remedy that cannot be readily controlled and mitigated. In addition, no adverse cross-media impacts are expected from the remedy.

12.2 Attainment of ARARs

The Selected Remedy requires the removal of radioactively contaminated soil and waste so the standards of the ARAR are met. The ARAR identified for the SLDA site (10 CFR 20.1402, Radiological Criteria for Unrestricted Release) is discussed in Section 8.2 of this ROD. Impacted soil and waste will be excavated to achieve the cleanup goals presented in Table 3, which were developed to meet the requirement that the residual dose after cleanup not exceed 25 mrem/yr for the average member of the identified critical group, a Subsistence Farmer. Following remediation, the site will meet the criteria for unrestricted release as defined in the ARAR.

12.3 Cost Effectiveness

Cost effectiveness is an evaluation of whether the overall remedy cost is proportional to its effectiveness. The Selected Remedy must first meet the two CERCLA threshold criteria, and then should have the best balance of the five balancing criteria, including cost.

The Selected Remedy is effective for the long term because risks are reduced to acceptable levels. Increased short-term risks to workers, the public, and the environment may occur during implementation of the remedy, but these risks will be minimized by

appropriate mitigative measures. While the present worth cost of the Selected Remedy is the greatest of those considered, it is most effective in ensuring the certainty of the remedy, as all contaminated soil and waste exceeding unrestricted release criteria will be removed from the site. The Selected Remedy avoids the administrative burden of construction of an engineered disposal cell and performance of long-term maintenance and environmental monitoring that would be required for the on-site disposal alternative. The Selected Remedy also avoids the potential administrative difficulties associated with building a disposal cell for radioactive waste and establishing permanent land use controls to ensure that the cell remain uncompromised in the future. The estimated present worth cost of the Selected Remedy is $44,500,000. The Selected Remedy presents the best balance of the alternatives considered relative to its cost.

12.4 Utilization of Permanent Solutions and Alternative Treatment Technologies

The Selected Remedy for the SLDA site provides a permanent solution for the radioactive contamination present at the site. Following implementation of the remedy, the site will meet the criteria for unrestricted release as defined in the ARAR. Treatment processes associated with the Selected Remedy could include physical separation, size reduction, and radiological sorting. However, the remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The Feasibility Study evaluated currently available treatment technologies for the constituents addressed under this ROD, and found none that would be economically and technologically feasible at this time. The Selected Remedy includes offsite disposal, involving containment at the final disposal location, which will effectively achieve a reduction in mobility, however no treatment is planned which will reduce the toxicity or volume of the disposed materials.

12.5 Five-Year Review Requirements

Because this remedy will effectively remove all ROCs at concentrations exceeding unrestricted use criteria, there is no requirement for a five-year review specifically addressing the ROCs listed in this document.

13.0 REFERENCES

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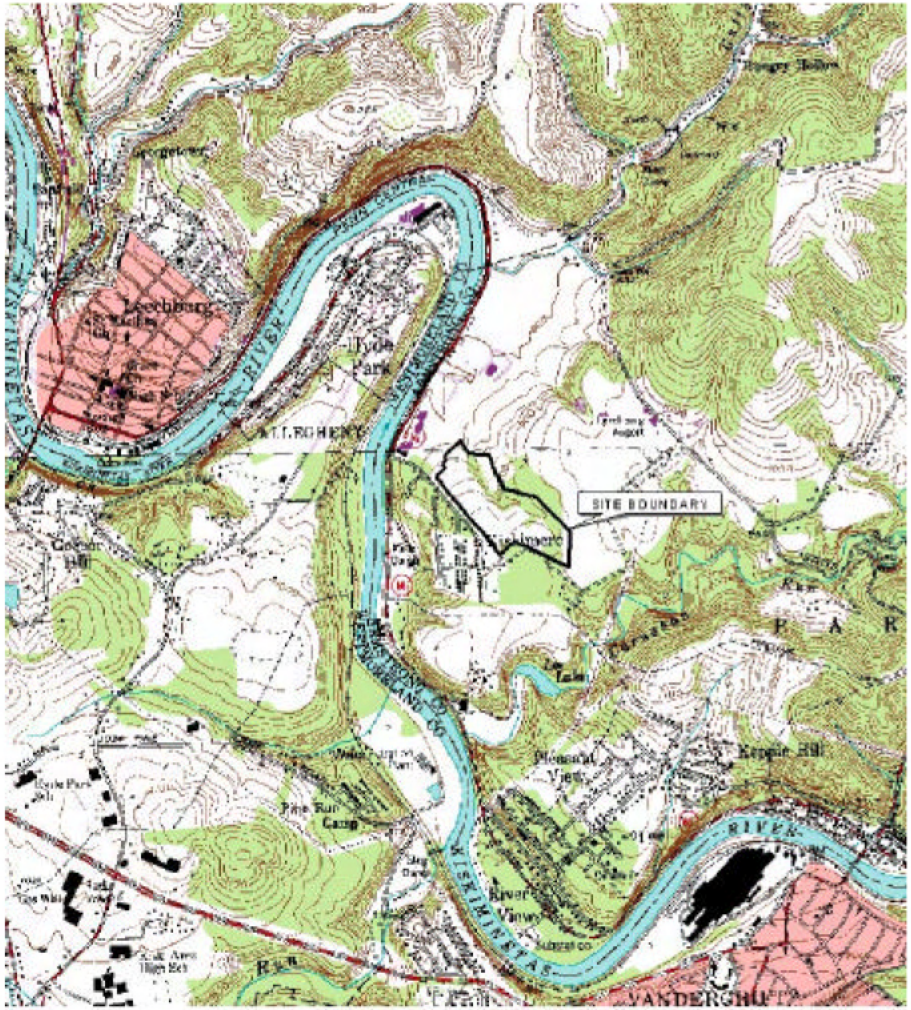


Source: USGS 7.5' Topographic Quadrangles
Vandergrift, PA, 1953 (revised 1979)
Leechburg, PA, 1954 (revised 1969)

SITE LOCATION MAP

STATE KEY MAP

SITE ADDRESS:
1105 MARY STREET
VANDERGRIFT, PA 15690

VICINITY MAP

SHALLOW LAND DISPOSAL AREA
SITE LOCATION MAP

FIGURE 1

N

TRENCH 10

TRENCH 1

TRENCH 2

TRENCH 3

TRENCH 4

TRENCH 5

TRENCH 9

TRENCH 7

TRENCH 6

TRENCH 8

Legend

- Deep Mine Workings
- Site Boundary
- Intermittent Stream - Dry Run
- SLDA Disposal Trenches
- Topographic Contours
  C.I. = 2 ft.

NOTE: Mine Workings Map Provided by ARCO.

250 0 250 Feet

SHALLOW LAND DISPOSAL AREA
TOPOGRAPHY AND DEEP MINE WORKINGS BENEATH SLDA

FIGURE 2

NOTE:

1. LAND BALANCING WILL BE REQUIRED AS NECESSARY TO ENSURE A 7 PERCENT MAXIMUM GRADE.
2. THE EXCLUSION ZONE, CONTAMINANT REDUCTION ZONE, AND SUPPORT ZONE WILL BE DELINEATED DURING FINAL DESIGN.

LEGEND

- SHALLOW LAND DISPOSAL AREA SITE LIMITS
- G — BURIED NATURAL GAS LINE
- CHAIN LINK FENCE
- DRY RUN – INTERMITTENT STREAM
- PROPERTY LINE
- VEGETATION LINE
- 920 — CONTOUR AND ELEVATION
- EXTENT OF CONTAMINATION
- EXTENT OF REMEDIAL EXCAVATION
- TRENCH 9 — APPROXIMATE LIMIT OF DISPOSAL TRENCH FROM GEOPHYSICAL SURVEY
- W — NEW UNDERGROUND WATER SERVICE
- E — NEW OVERHEAD POWERLINE
- NEW UTILITY POLE
- LIMIT OF SURFACE SOIL REMEDIATION

N TRUE NORTH AT N 77°45' W CENTRAL MERIDIAN

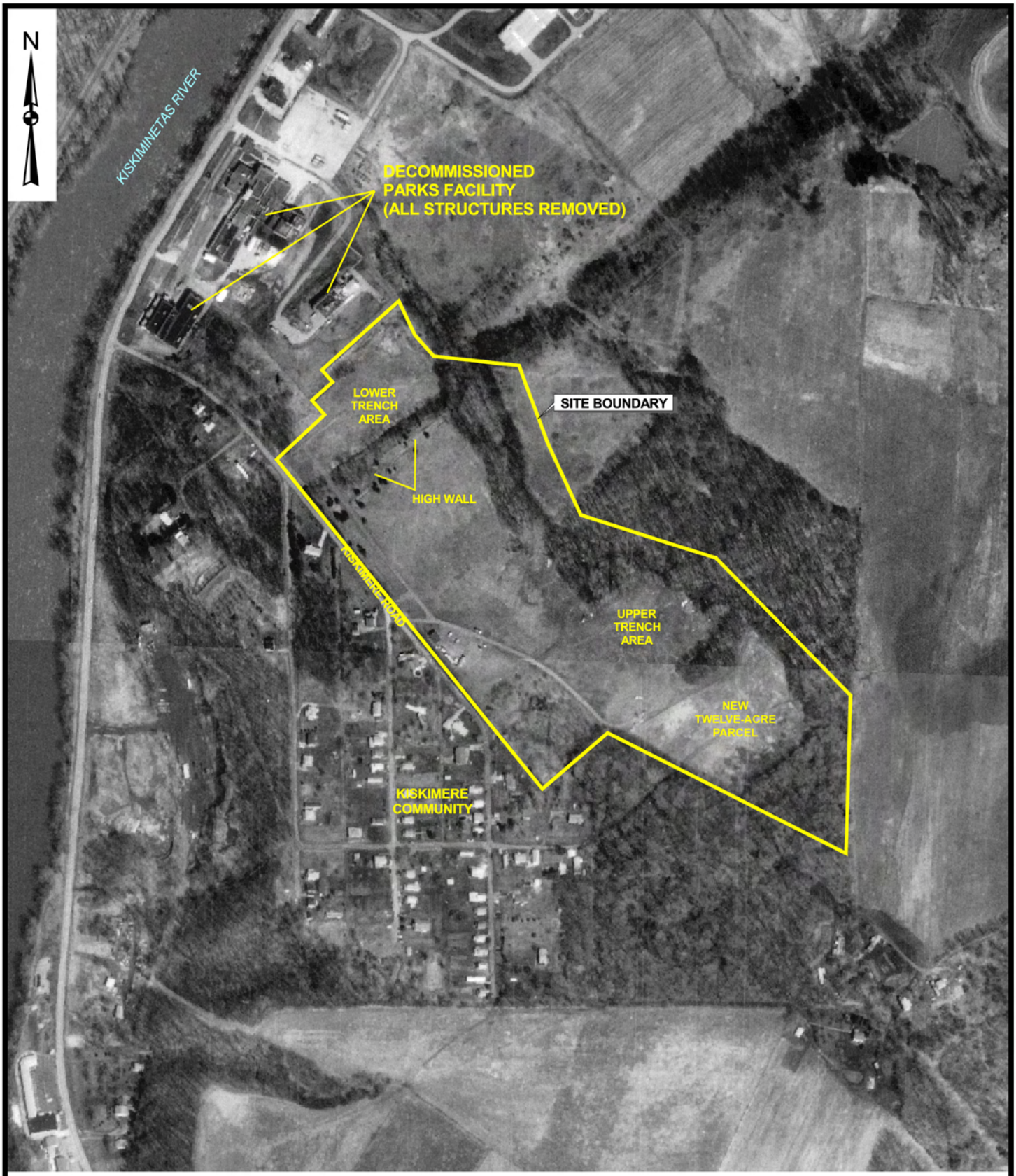
PA STATE PLANE COORDINATE SYSTEM SOUTH ZONE

SITE PERIMETER FENCE
DRY RUN
TRENCH 3
TRENCH 9
TRENCH 4
TRENCH 5
TRENCH 6
TRENCH 7
TRENCH 8
TRENCH 1
NEW SKID MOUNTED WATER TREATMENT PLANT WITH STORAGE TANKS
NEW LABORATORY TRAILER
NEW REMEDIATION TRAILER
NEW COVERED STAGING STRUCTURE
NEW ASPHALT PAD
NEW H-20 RATED PAVED HAUL ROAD
NEW SECURITY GATE
TRENCH 10
FORMER PARKS NUCLEAR FABRICATION PROPERTY
ROUTE 66
NEW WATER SHUTOFF
NEW OFFICE TRAILER
STONE PARKING AREA
EXISTING ELECTRIC SERVICE
METAL GAS PUMP HOUSE
KISKEMERE ROAD
KRUPPER (50'WIDE) ST.
JANE (50'WIDE) ST.
16' WIDE ALLEY
MAIN (50'WIDE) ST.
16' WIDE ALLEY
MARY (50'WIDE) ST.
CLYDE STREET (50'WIDE)
ALLEY

100' 0 100'
SCALE: 1"= 100'

SHALLOW LAND DISPOSAL AREA APPROXIMATE EXCAVATION LIMITS

FIGURE 3



SOURCE: Leechburg and Vandergrift, PA
Digital Orthophotos, 1993.

500 0 500 Feet

SHALLOW LAND DISPOSAL AREA
DIGITAL ORTHOPHOTO

FIGURE 4

System	Group	Member	Section	Unit Description	Approximate Unit Thickness (ft)	Water Bearing (WB) or Aquitard
Quaternary				Surface soils: generally brown, cohesive, clayey to silty loam, low permeability soils, stiff.	0 - 10	NA
				Subsoil: clay, sand with weathered bedrock fragments, generally saturated, slightly more permeable than surficial soils	5 - 10	WB
Pennsylvanian (P)	Conemaugh (Pc)	Glenshaw		Weathered Bedrock: shale bedrock weathered in-place, fractures infilled with silt and clay, stiff and generally dry	5 - 15	Aquitard
				First Shallow Bedrock - Primarily Shale with interbeds of Sandstone and Siltstone. Defined primarily by distribution of piezometric head elevations. Horizontal bedding predominates. Some minor vertical fractures may exist in sandstone layers.	5 - 20	WB
				Upper Shale - interbedded with Siltstone and Sandstone	5 - 25	Aquitard
				Second Shallow Bedrock - defined also by distribution of piezometric head elevations. Shale with interbeds of Sandstone and Siltstone. Horizontal bedding predominates. Some minor vertical fractures may exist in sandstone layers.	10 - 25	WB
				Lower Shale - generally massive shale	10 - 25	Aquitard
	Allegheny (Pa)	Freeport		Upper Freeport Coal (void where removed)	0 - 5	WB
				Claystone	2 - 3	Aquitard
				Shale/Siltstone interbeds	20 - 30	Aquitard
				Deep Bedrock: Shaly Sandstone (possible Butler and Freeport Sandstone) Shale with interbedded sandsone	20	WB

SLDA STRATIGRAPHIC COLUMN

FIGURE 5

APPENDIX A: RESPONSIVENESS SUMMARY

SLDA RESPONSIVENESS SUMMARY
TABLE OF CONTENTS

1. INTRODUCTION

On January 12, 2007, the United States Army Corps of Engineers (USACE) issued a Proposed Plan (PP) for the Shallow Land Disposal Area (SLDA) site in Armstrong County, Pennsylvania. A public meeting was held January 25, 2007, during which the USACE presented background information and its recommendation for the cleanup of radioactive waste at the site. During the meeting, the public was invited to submit comments and written comments were accepted through mid-March, 2007. This Responsiveness Summary addresses the comments received from the public during the public meeting and the comment period.

As described in the Proposed Plan, the Selected Remedy for the SLDA site is referred to as Alternative 5, Excavation, Treatment, and Off-site Disposal. Implementation of the Selected Remedy will involve excavation of contaminated waste, soil, and sediment, off-site transportation, and disposal at an appropriate permitted/licensed disposal facility.

2. OVERVIEW OF PUBLIC INVOLVEMENT

On January 12, 2007, a letter announcing the release of the Proposed Plan for Remediation of the SLDA was sent to 178 individuals on the site mailing list, including elected officials. Legal advertisements announcing the availability of the Proposed Plan for public review and comment, and the January 25, 2007, public meeting, were placed in the following local newspapers: the Pittsburgh Tribune Review and the Valley News Dispatch

The public meeting was held January 25, 2007, from 7:00 to 8:00 p.m. at the Park Township Volunteer Fire Department No. 1 Social Hall near Vandergrift, Pennsylvania. Prior to the meeting, representatives of the U.S. Army Corps of Engineers (USACE) were present to discuss any comments or concerns from members of the general public, and these discussions continued after the formal public meeting ended. At the meeting, USACE explained the history of the site, studies and investigations completed, areas of contamination, CERCLA evaluation criteria, the remedial alternatives, the preferred alternative, and the schedule. A stenographer was present at the meeting to record the proceedings and comments. Three members of the public requested the opportunity to speak at the meeting, but only two made oral comments. The third person indicated that she would prefer not to speak, but would provide comments by email. Comments received at the public meeting and written comments received during the public comment period are responded to in this Responsiveness Summary. The meeting transcript is included as Attachment 1.

3. RESPONSES TO COMMENTS

At the public meeting conducted on January 25, 2007, 2 individuals provided comments on the PP. Responses to these comments are provided below. The transcript of the public meeting is provided at the end of this Appendix, for reference.

Any written comments received are included as attachments to this Appendix. Written comments were received from the Pennsylvania Department of Environmental Protection (PADEP), Atlantic Richfield Company (ARCO), Mary Jo Knabb, and Deborah and William Secreto. USACE responses to these comments are addressed in Section 3.2, below.

3.1 Responses to Comments, Public Meeting

3.1.1 Mr. Alan Summerhill (meeting transcript, page 11)

Mr. Summerhill, a resident of Leechburgh, asked for an explanation of any off-site activities that would occur.

Response #1: The only off-site activities that are planned involve the relocation of a gas pipeline that currently crosses the site. A new pipeline will be installed around the outside of the southeastern perimeter of the site. This work will consist of installing a new underground pipeline and will be completed before or during mobilization for the on-site cleanup activities.

Comment #2: Mr. Summerhill also asked about chemical contamination on the site that is not radioactive.

Response #2: The Corps has authority only to address radiological contamination at the site and chemical contamination that is mixed with it. Chemical contamination that is not mixed with radiological contamination will not be addressed by the Corps. However, the Corps will meet with the site owner and the regulatory agencies during planning and design, to discuss how this issue might be addressed collectively.

3.1.2 Mr. Tom Haley (meeting transcript, page 11)

Comment #1: Tom Haley from, Allegheny Township, asked where the separation, size reduction, and radiological sorting of contaminated material would take place and how will the Corps protect the workers and the community, considering the chemical contaminants that are mixed with the radioactive waste.

Response #1: It is too soon to provide details of the cleanup and transport plans, as the work plans for this effort have not been developed. However, the Corps will ensure, through the Safety and Health Plans that are part of the overall Work Plans, that the utmost care to protect human health (residents and workers, alike) will be taken.

Although removal of chemical contamination is not a goal of the FUSRAP remedial effort, the Corps will take the necessary samples to ensure that we are aware of the chemicals to which the workers or residents might be exposed so that all of the necessary precautions and safety measures can be implemented. Environmental monitoring, engineering design, and protective measures and equipment will address the types of concerns that Mr. Haley and others have expressed. The Corps has gained valuable experience at other Hazardous, Toxic, and Radioactive Waste (HTRW) sites and will use only those contractors that have demonstrated excellence in safety while working at HTRW sites.

3.2 Responses to Written Comments

3.2.1 Atlantic Richfield Company (ARCO)

Atlantic Richfield Company

1 West Pennsylvania Avenue
Suite 440
Towson, MD 21204

March 15, 2007

Re: Final Feasibility Study and Proposed Plan for the Shallow Land Disposal Area Site, Parks Township, Armstrong County, Pennsylvania

Atlantic Richfield Company appreciates the opportunity to comment on the above referenced document prepared for the US Army Corps of Engineers (USACOE). Our brief comments are general in nature.

1) Established target cleanup criteria – We recognize that the USACOE is working under a Memorandum of Understanding (MOU) with the Nuclear Regulatory Commission (NRC) to address the residual radioactive materials associated with this site. While the NRC retains jurisdictional oversight of the site we point out that apparent disconnects are evident within the federal agencies with respect to the target cleanup criteria. More specifically, the United States Environmental Protection Agency has historically indicated other target cleanup criteria which are slightly different from the target criteria advanced within this document. We urge the USACOE to work with the other regulatory agencies to reach agreement that the target cleanup concentrations established for this site are protective of human health and the environment and that no further actions will be required with respect to residual radioactive materials once the actions undertaken in the Proposed Plan are completed.
2) Material Transport – We understand from the public meeting on January 25, 2007 that the USACOE intends to transport all materials "out of state" for disposal. We appreciate the local stakeholder issues associated with the final location for the disposal of this material. However, the Final Feasibility Study issued in 2006 (FS) assumed on page 4-17 that radiologically impacted waste would be shipped and disposed of at a facility located approximately 30 miles from the SLDA site. Thus, USACOE's cost estimates associated with Alternative 5 in the FS may be substantially understated, and the true costs shipment, disposal and transportation risk based upon USACOE's announcement need to be properly factored in the decision-making process. We suggest a review of this decision by the USACOE based on sound technical practices and appreciate any clarifications that can be given to describe the locations for disposal, costs impacts associated with this decision, and transportation risk management decision analysis associated with the selection process.

Thank you for the continued professionalism shown by the USACOE team. We look forward to working with you in the advancement of this site towards regulatory closure.

Sincerely,

Walt Hufford/slm

Walt Hufford, PG
Environmental Business Manager

Response to ARCO comment #1:

The Preliminary Remediation Goals (PRGs) presented in the Proposed Plan were developed on the basis of limiting the annual dose to a future hypothetical individual to 25 mrem/year, consistent with the limit identified for an average member of the critical group as specified in NRC decommissioning requirements in 10 CFR Part 20 Subpart E - Radiological Criteria for License Termination §§ 20.1402, the Applicable or Relevant and Appropriate Requirement (ARAR) associated with the Selected Remedy. As the lead agency for the remediation of the SLDA site under FUSRAP, the Corps has developed these cleanup goals in order to specify the requirements that the Selected Remedy must fulfill to protect human health and the environment from exposure to contaminants identified at the site. Using the most recent NRC guidance and in coordination with both the NRC and PADEP, the Corps has confirmed that meeting these cleanup criteria will ensure that the Selected Remedy is fully protective of human health and the environment.

Response to ARCO comment #2:

The Corps intends to transport all soil, sediment, and debris classified as either low-level radioactive waste (LLRW) or mixed LLRW to a licensed and permitted facility or facilities. USACE will consider only those disposal facilities for off-site disposal that may lawfully receive the contaminated materials from the site under their license or permit. The Feasibility Study disposal estimate for Alternative 5, Excavation, Treatment, and Off-Site Disposal assumed that excavated soil and debris would be characterized as either materials potentially suitable for re-use on site, or materials to be disposed of at hazardous or solid waste disposal facilities or a LLRW facility. It was assumed that a portion of the waste would be suitable for disposal locally and would not need to be transported out-of-state. The cost estimate for the transportation and disposal of waste associated with this alternative is accurate to a level appropriate for a comparison of alternatives. The specific disposal locations for these wastes will be identified during the detailed engineering design phase of this project.

3.2.2 Pennsylvania Department of Environmental Protection (PADEP)

Pennsylvania Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 8469
Harrisburg, PA 17105-8469
March 6, 2007

Bureau of Radiation Protection

717-787-2480
Fax: 717-783-8965

Mr. William Lenart, Project Manager
Programs and Project Management Division
Department of the Army
Pittsburgh District, Corps of Engineers
1000 Liberty Avenue
Pittsburgh, PA 15222

Re: Review of the Final Feasibility Study and Proposed Plan (FS/PP) for the Shallow Land Disposal Area Site, Parks Township, Armstrong County, Pennsylvania, Department of Army, September 2006

Dear Mr. Lenart:

The Pennsylvania Department of Environmental Protection (PADEP) has reviewed the subject report and is providing the following comments based on our review and recent meeting with you and U.S. Army Corps of Engineers (USACE) staff. PADEP comments were discussed with you during your technical presentation on the Shallow Land Disposal Area (SLDA) Proposed Plan (PP). This technical presentation and discussion was held at the PADEP Southwest Regional Office on February 21, 2007. As was agreed to at this meeting, PADEP is formally providing comments on the FS/PP in this letter.

Comments on the FS/PP are primarily focused on the PP and the chosen remedial action alternative, i.e. Excavation, Treatment, and Off-site Disposal (Alternative 5).

On a conceptual basis, the PADEP is in agreement with the chosen remedial action as being the most protective of human health and the environment. However, there are two major issues that have been identified in our review of the FS/PP and are discussed in this letter.

The first major issue involves the assumption that radiologically impacted waste from the SLDA would be transported to and disposed of at a solid waste disposal facility in Pennsylvania. The PP indicates that approximately 30,000 cubic yards of radiologically impacted waste could be sent for disposal at a Pennsylvania solid waste disposal facility located near the SLDA. As was discussed at the February 21, 2007 meeting, waste impacted from radioactive material associated with remediation at a Formerly Utilized Remedial Action Plan (FUSRAP) is prohibited from disposal in Pennsylvania solid waste facilities unless specifically exempted from disposal restrictions by an applicable Pennsylvania or Federal statute or regulation. See 25 Pa. Code, sections 273.201 and 288.201. Moreover, while there are provisions in the Pennsylvania solid waste regulations for an exemption from a Federal or State authority that could allow disposal in a Pennsylvania solid waste disposal facility of some of the

radiologically impacted waste from the SLDA, recent experience in Pennsylvania has shown it is unlikely that the waste would be accepted by Pennsylvania landfill operators. This is due to concerns about the business's reputation or their relationship with local government officials.

It is clear from Figure B-1 (Sensitivity Analysis for Soils Requiring Disposal) that sending all radiologically impacted soils for disposal at a low-level radioactive waste facility will greatly impact the estimated cost for the chosen remedial action alternative. The cost estimate for Alternative 5 needs to be revised to take into consideration this additional cost and impact on the proposed schedule.

The other major issue identified in the PADEP review of the FS/PP involves the absence of remedial actions for chemical contamination unless it is commingled with radioactive waste. It is PADEP's understanding that if chemical contamination is encountered that is not commingled with radioactive waste, it cannot be remediated under the Congressional authorization given to the USACE. This lack of authorization could lead to incomplete and inefficient remediation of the SLDA site. Efforts should be made to expand USACE's authorization to address both chemical and radioactive waste. As an alternative, potentially responsible parties should be encouraged to coordinate chemical contamination remediation during the planned USACE activities to ensure a comprehensive clean up of the SLDA site.

Other, less significant comments on the FS/PP are included on the enclosure to this letter. PADEP appreciates the opportunity to provide the USACE our views on the FS/PP and looks forward to the successful completion of this important project. If you have any questions regarding PADEP's comments, please contact me by email at rmaiers@state.pa.us or by telephone at 717-783-8979.

Sincerely,

Robert C. Maiers

Robert C. Maiers, PE
Chief
Decommissioning & Surveillance Division

Enclosure

cc: David Allard, BRP
Ken Bowman, SWRO
James Yusko, SWRO
John Matviya, SWRO
Mike Forbeck, SWRO
David Frothingham, USACE
Dwight Shearer, SWRO
Amir Kouhestani, NRC
Fred Denorscia, SWRO
Dave Eberle, SWRO

COMMENTS ON THE FINAL FEASIBILITY STUDY AND PROPOSED PLAN (FS/PP) FOR THE SHALLOW LAND DISPOSAL AREA SITE, PARKS TOWNSHIP, ARMSTRONG COUNTY, PENNSYLVANIA, DEPARTMENT OF ARMY, SEPTEMBER 2006

1. Preliminary Remediation Goals (PRGS) appear to be appropriately developed using the RESRAD computer code. However, previous remediations in the area that were related to the SLDA (i.e. Apollo and the Kiski Ash Lagoon) used much more stringent remediation criteria. Members of the public may question whether the PRGS developed for the SLDA are sufficiently low to protect human health and the environment. USACE should be prepared to explain to members of the public why the PRGS developed for the SLDA differ from the remediation criteria used at Apollo and the Kiski Ash Lagoon.

2. Since the majority of the waste is discretely located in the trenches it can be expected that remediation should result in achieving near background levels. This should be noted in the FS/PP.

3. USACE should consider the impact of eliminating treatment from Alternative 5 or considering this as an Alternative 6. Eliminating on-site treatment would reduce exposure to the workers and reduce the time required to complete remediation. While this would likely increase the volume of waste requiring off-site disposal as low-level radioactive waste (LLRW), better disposal rates may be possible through economy of scale.

4. USACE should explore being granted access to DOE disposal facilities (e.g. Nevada Test Site). Significant savings in disposal costs for LLRW could be achieved.

Response to PADEP comment #1:

The volume of excavated materials that could be disposed of at a local solid waste facility was estimated at 18,000 cubic yards in the Feasibility Study. This estimate was based on Remedial Investigation sampling results, and waste acceptance criteria and a price quote from a local landfill. Further evaluations will be done during the upcoming engineering design phase of the remedial action to identify the most appropriate disposal facilities for all wastes generated by site cleanup. USACE will consider all lawful options for disposal at the time a decision is made for off-site disposal of the materials removed from the site.

Response to PADEP #2:

As noted in this comment, the eight radionuclides of concern (ROCs) and those chemical contaminants commingled with the ROCs are the only constituents that can be addressed under the current Congressional authorization provided to the Corps. The concern expressed in this comment as to the hazards posed by chemical contamination not mixed with the ROCs at the site is noted, but the Army Corps does not have the authority to spend federal funds to address this concern. As discussed during the meeting of 21 February 2007 (as identified in this letter), a third Technical Project Planning (TPP) meeting between the Corps and stakeholders is suggested to discuss roles and responsibilities during remedial action. This meeting would be ideally held near the beginning of the engineering design phase, which is scheduled to start in the fall of 2007. The Corps' project team will pursue the scheduling of this meeting in the near future.

Responses to PADEP other comments:

1. Comment noted. The Army Corps will continue to work with PADEP in the application of the cleanup criteria at the site, and appreciates the assistance provided by PADEP in developing the PRGs.
2. While remedial activities at other FUSRAP sites have achieved residual concentrations well below required cleanup criteria, it is unknown if this will be the case at SLDA. The Army Corps will ensure that the residual radioactivity at the site has been reduced to levels that are as low as reasonably achievable (ALARA), as required by the ARAR for the Selected Remedy.
3. Comment noted. The safety of on-site workers and the general public is a very important element of this project. If the treatment of materials on-site cannot be accomplished safely, an alternative approach will be utilized. This will be evaluated further during the detailed engineering design phase.
4. Comment noted. The Army Corps will investigate all reasonable disposal options during the engineering design phase, including the possible use of DOE disposal facilities.

3.2.3 Deborah and William Secreto

U. S. Army Corps of Engineers
Pittsburgh District
Attention: Bill Lenart
2200 William S. Moorehead Federal Building 1000 Liberty Ave.
Pittsburgh, PA 15222

February 6, 2007

Dear Mr. Lenart,

My husband Bill and I have lived here for 30 years. Before that, I lived and was raised here within a quarter of a mile from this site. My home is less than a quarter of a mile from the site. Ten years ago I was diagnosed with breast cancer. I know that living here all my life has caused this. My husband William has an auto immune disease of the skin called Pemphigus Vulgaris. I was only 44 years old when I was diagnosed. We are not old people and I do not want to have to go through this fate again as I'm sure you can understand. We were unable to go to the last meeting due medical problems. I have many questions about cleaning up that site. One of which there is only one entrance and exit into this place. Cleaning up would mean following trucks filled with radiation on a daily basis. How do you propose to keep radiation that you remove contained enough so that it is not expelled into the environment? The hospitals Have lead walls!!!!! There are too many questions to write them all but I feel that maybe this site should be left alone. My father has also had prostate cancer, he lives a block from me.
We have lost our health, and there really isn't anything as important. Please notify us about any meetings so we can attend. Thank you for your time.

Our e-mail address: williamsecreto@comcast .net
Home address:
1124 Jane Street Vandergrift, PA 15690.

Sincerely,
Deborah and William Secreto

Response:
On February 13, 2007, the Corps responded, via email, to this commenter. The response still remains current. At this point in time, it is too soon to provide details of the cleanup and transport plans, as the work plans for this effort have not been developed. However, the Corps will ensure, through the Safety and Health Plans that are part of the overall Work Plans, that the utmost care to protect human health (residents and workers, alike) will be taken. The conceptual design, developed in the Feasibility Study for the site, includes the construction of a separate haul road, so trucks would not travel on the same access road as the residents of Kiskimere. Environmental monitoring, engineering design, and protective measures and equipment will address the types of concerns listed in this comment. In addition, the names and contact information of this commenter has been added to the mailing list for the site, thereby ensuring that the commenter receives any new information on activities regarding the site, as they occur. There will also be a public information session at the start of cleanup activities to inform the community of how the Corps plans on doing the work.

3.2.4 Mary Jo Knabb

February 22, 2007

Mr. William J. Lenart, Program Manager
US Army Corps of Engineers, Pittsburgh District
2200 William S. Moorhead Federal Building
1000 Liberty Avenue
Pittsburgh, PA 15222

RE: Shallow Land Disposal – Parks Twp., PA

Dear Mr. Lenart:

Thank you for returning my telephone call this morning. To reiterate our conversation my concern with the complete removal of the hazardous waste currently on the above mentioned property is that three years ago it was not feasible to remove this safely. Simply, I would like to know what in your investigation of the property changed. As we discussed, the concern I have is that the mines on the property are not stable, some contain stress fractures – how will the Army ensure the safety of the residents in the immediate area should one of the mines collapse during removal?

During the meeting in January it was mentioned that air monitoring devices would be in place, could you please describe what safety measures will be in place in the event contaminants are detected? Also, a road is to be constructed on the property of the SLDA for transport purposes of the waste due to the fact that there is only one access road to and from Kiskimere; taking in account for "worst case scenario" could you please advise if there are any plans in place for an alternate road to be constructed for the residents?

I would also like to piggy-back a gentleman's concerns at the meeting who worked for NUMEC that stated there were other contaminants (beryllium) buried with the radioactive materials discovered, I believe he asked how the Army planned on protecting the environment as well as the residents if the waste is going to be processed on site. I too would like to know the answer to this question as well. There was also mention of trichloroethylene on the property of what was Veado's Restaurant. Could you please tell me if any action is being taken to test this property again? The Pennsylvania Dept of Environmental Protection tested this property a few years ago and traces of TCE were found to have seeped into the ground and into the Kiskiminetas River; however these traces were found to be at an "acceptable" level. What is the likelihood that is no longer the case?
Finally, you made a comment in the Valley News Dispatch that the Army would have a meeting to discuss "real estate issues" could you please tell me what you meant by that

statement? Is the Army going to propose that the government come in and purchase homes from the residents prior to the removal? There is no such thing as “fair market value” here in Kiskimere. Sale of homes in this area is well below market value for obvious reasons.

Thank you for your time and I look forward to your response.

Sincerely,

Mary Jo Knabb
Parks Twp. PA

Responses to Mary Jo Knabb’s comments from the letter, above:

Comment #1: "Three years ago it was not possible to move this safely...what in your investigation of the property changed."

Response #1:
Three years ago, the Corps had very little information on exactly what types of chemical contaminants could be present in the wastes, and the concentrations of specific radionuclides in the trench contents. A Remedial Investigation (RI) was performed to determine the nature and extent of contamination at the site, as well as to estimate the risks posed by that contamination to human health and the environment. The RI included sampling of the waste in the trenches to confirm that the historical information was reasonable for planning purposes and to collect enough data to plan for the safe disposal of the trench contents.

In the last three years the Corps has devoted extensive time and resources to gaining a clearer picture of the site contamination and its effects on the surrounding environment. The result of this time and effort is the ability to design a process for the safe excavation, treatment, transportation, and disposal of the radioactive waste. The details of this approach will be developed during the detailed engineering design phase, which will begin after issuance of the Record of Decision.

Comment #2: "Mines on the property are not stable, some contain stress fractures... how shall the Army ensure the safety of the residents in the immediate area....?"

Response #2:
The depth of the abandoned coal mines on site ranges from about 40 to 80 feet below ground surface. This depth and the geologic layering, specifically the alternating layers of shale, siltstone, and sandstone, makes sudden collapse of the mines unlikely, and

sudden subsidence at ground surface even more unlikely. The threat posed by the abandoned mines is primarily the potential for ground-water contamination due to gradual subsidence occurring over the next 1,000 years.

At this point in time, it is premature to provide details of the cleanup and transport plans, as the work plans for this effort have not been developed. However, the Corps will ensure, through the Safety and Health Plans that are part of the overall work plans to be prepared for site remediation, that the utmost care to protect human health (residents and workers, alike) will be taken. Environmental monitoring, engineering design, and protective measures and equipment will address the types of concerns listed in this comment. In addition, the names and contact information of this commenter has been added to the mailing list for the site, thereby ensuring that the commenter receives any new information on activities regarding the site, as they occur.

Comment #3: "What safety measures will be in place?"

Response #3:
As noted in the previous response, it is premature to provide details of the cleanup and transport plans for site remediation at this time. However, the Corps will ensure, through the Safety and Health Plans that are part of the overall work plans to be developed during the engineering design phase, that the utmost care to protect human health (residents and workers, alike) will be taken. Completing this project safely is a major element of project planning, and all remedial actions will be performed consistent with the requirements of the Occupation Safety and Health Administration (OSHA) and comparable State standards.

Comment #4: "[will]... an alternate road be constructed for the residents?"

Response #4:
At this point in time, it is premature to provide details of the cleanup and transport plans, as the work plans for this effort have not been developed. Please note, however, that the construction of an alternate road for truck traffic was part of the conceptual design presented in the Feasibility Study and Proposed Plan.

Comment #5: " …there were other contaminants (beryllium) buried with the radioactive materials discovered, I believe he asked how the Army planned on protecting the environment as well as the residents if the waste is going to be processed on site. I too would like to know the answer to this question as well."

Response #5:
The Corps' authority at the SLDA site is limited to cleanup of radioactive waste and any other chemical contaminants mixed with that waste. Results of remedial investigation sampling showed various chemical contaminants, including beryllium, that could be mixed with the radioactive waste. The Corps is aware of these contaminants and will ensure the safe handling of all materials at the site during cleanup activities.

As noted in previous responses, it is premature to provide details of the cleanup and transport plans, as the work plans for this effort have not been developed. However, appropriate plans will be developed prior to initiation of site cleanup to ensure that the project is conducted safely. Environmental monitoring, engineering design, and protective measures and equipment will be in place to ensure that the environment, residents, and workers are protected during the cleanup activity.

Comment #6: "There was also mention of trichloroethylene on the property of what was Veado's Restaurant. Could you please tell me if any action is being taken to test this property again?"

Response #6:
The Corps' authority at the SLDA is limited to cleanup of radioactive waste, specifically the eight ROCs listed in the Proposed Plan, and any chemical contaminants that are mixed with that waste. Unless there is evidence that these ROCs have migrated off-site, the Corps can only address contamination on the SLDA site. The property where Veado's restaurant operated is not on the SLDA property and the Corps has seen no evidence of contamination related to activities on the SLDA site.

Comment #7: " Finally, you made a comment in the Valley News Dispatch that the Army would have a meeting to discuss "real estate issues" could you please tell me what you meant by that statement? Is the Army going to propose that the government come in and purchase homes from the residents prior to the removal?"

Response #7:
The real estate issues referred to pertain to residents affected by the relocation of the gas pipeline that currently crosses the site. The Corps has no plans to purchase homes.

PUBLIC MEETING TRANSCRIPT

U.S. ARMY CORPS OF ENGINEERS

PUBLIC MEETING ON THE

PARKS TOWNSHIP SHALLOW LAND DISPOSAL AREA

JANUARY 25, 2007

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TRANSCRIPT OF PROCEEDINGS

- - - -

Location:
Parks Township Volunteer Fire Department
No. 1 Social Hall
School Street
Leechburg, PA 15065

Present:
Colonel Stephen L. Hill, Pittsburgh District Engineer
William J. Lenart, LRP
Karen Auer
David Frothingham, Project Engineer, Buffalo
Jim Karsten, FUSRAP Program Manager, Buffalo

P R O C E E D I N G S

(7:32 p.m.)

MR. LENART: Back to the CERCLA evaluation criteria. Basically, this is the process that we followed. The first item is looking at the alternatives of the threshold. This is a pretty simple yes or no type of answer. It either meets with the requirements of the criteria or it does not.

From there into balancing. Basically, if you look at the long-term effectiveness of the alternatives. Basically, it consists of long-term maintenance and the controls required and any risks that are remaining at the site after the cleanup is completed.

The short term is the potential from the site cleanup itself to the community and the workers and the environmental impacts that are caused as a result during the duration of the cleanup.

Next item is the toxicity mobility or volume through treatment. Basically, this looks at trying to reduce the amount of contamination at the site.

The next item is the implement ability.

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Basically, this will look at how the construction, the reliability of the construction that's completed, the administrative issues that we would have to go through in terms of implementing the alternative.

And finally, the costs of the collected alternatives.

Then we go into the process modifying. That's basically where we are right now.

We're looking for comments from the public in terms of recommended alternatives. We'll evaluate your comments and answer your comments accordingly.

Here's a matrix example of how the

alternatives were compared. Basically, the no-action threshold does not meet the criteria, but as I indicated before, it needs to be carried forward.

A high indicates that it is the most favorable ranking, medium indicates an average favorable ranking and low indicates the least favorable ranking.

Alternative five is the most favorable for the protection of human health and the environment, implement ability and long-term effectiveness.

Back to the preferred alternative. Like I said, I outlined alternative one, four and five. This has been the selected and proposed plan as the recommended preferred alternative.

Basically, with this, we have no new disposal cell to be erected on site. We don't have to worry about exposure if the cap is disturbed or breached. It doesn't require

long-term maintenance and it's a permanent solution. Soil is removed and taken off-site.

Here, we have the project schedule way ahead. Right now, as I indicated, we're right here under the public review. From that, we'll take your comments, respond to the comments, prepare the record of decision. Basically, circulating through the applicable parties to receive approval in the August 2007 time frame.

After that, we'll begin the actual remediation in the summer of 2009 with complete remedial action in the spring of 2011.

Now, this is contingent upon receiving yearly funds from the professional appropriations. It is a rather ambitious schedule, but very doable type of schedule that we can move out with.

Here is the site cleanup work. Like I said, the site cleanup work is scheduled to start in 2008. The contaminated material will be shipped out of state to a licensed permanent disposal facility.

We will collect data during and after excavation to insure the cleanup goals are met. We will hold an information meeting before the actual cleanup work begins to give you the opportunity to hear about what we're actually going to do there.

Back to health and safety. As I indicated early on, the safety of the workers and community is our number one priority. We'll have strict adherence to the OSHA Regulations Corps Safety Manual and we'll also have environmental monitoring to insure that there's no contaminated releases from the site.

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We'll have dust suppression during excavation, air monitoring around the

perimeter of the site, collection of rainwater at excavation and treatment, if necessary.

Here is a conceptual plan of the proposed work at the site.

Here is the structure that will be built where the sortings will be and the loading and transferring of the material is, in the upper corner here.

Also note that we've determined that we will build a haul road, all the way down the property to Route 66, thereby, avoiding Mary Street all together and taking it straight to the Main Street State Road.

In summary, the preferred alternative is excavation and disposal off-site. The contaminated materials can be disposed outside the Commonwealth of Pennsylvania.

It will be protective of human and health environment and we will continue to work with regulators, including the Pennsylvania Department of Environmental Protection and the Nuclear Regulatory

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Commission throughout the life of the project.

With that, that completes my presentation of the proposed plan and the alternatives selected.

Now, we'll basically move into the comment period and from all the people who registered a card can make an official statement. I will call on the people in no particular order. As I announce the first person's name, I will also announce the person that follows so they can begin to come forward and be prepared to speak next.

During this evening's meeting, oral statements will be heard and written statements will be accepted.

It is not necessary to read a statement in order to make it a part of the record. A court reporter will be making a verbatim record of all oral statements. All written statements received will be recorded and provided to the United States Army Corps of Engineers.

After this meeting, the official record will remain open for the inclusion of

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additional written statements until February 23, 2007.

For written comments to be included in the record, they must be received at the addresses provided on the comment record no later than 4 p.m. on Friday, February 23.

Again, we will consider all relevant comments received throughout the pubic comment period. Full consideration will be given to all points of view and evaluated in the final decision process.

There will be no cross-examination or questioning of any speaker either from the floor or from the chair. Rather, the use of the loud speaker to comment directly setting forth for the record their comments on the project.

Also, there will be no responses to questions raised during the public comments.

Again, oral comments will be limited to ten minutes in order to give everyone present

the opportunity to speak.

Written comments may be submitted to supplement your oral comments.

Anyone whose comments that exceed the time allotted is asked to summarize their comments and submit full written comments the registration desk or by e-mail.

We ask that everyone be polite and let those making comments have their say without interruption.

We are asking for your comments tonight so that we could address any issues that have not been addressed and consider all the facts in our decision-making process. So if anyone has already commented and addressed on an issue that you are prepared to speak on, please be brief in repeating it.

If you have any questions regarding the project, they may be addressed by representatives in the open house area along

the wall there after the comments are complete.

Reiterating, anyone who wants to make oral comments at this meeting or submit written comments.

All relevant public interest issues raised at this meeting will be considered in the final decision document.

When called to speak, please clearly

state your name, hometown and organizational affiliation, if applicable, for the record as you begin your comments. The comments are being recorded and it will help the stenographer to hear your name and begin your comment.

If you have a copy of the prepared comments, please give it to the hearing assistant after your oral presentation.

The hearing assistant will stand when you have one minute left, Karen. And then she will stand again at the time your time is

up and request that you conclude your remarks promptly.

With that said, we will begin the comment period.

The first person up is Mary Knabb -- sorry, I can't read your writing.

Mary, you will be the first one up to provide a comment.

If you would come up to the speaker.

MS. KNABB: Actually, I'm going to defer mine to e-mail.

MR. LENART: That's fine.

Alan Summerhill, if you could come up to the speaker.

MR. SUMMERHILL: Alan Summerhill, Leechburg, Pennsylvania.

I own property immediately to the east of the site. I have several questions for you. I understand you won't be answering questions, but I would like them in the

record.

I want to know if there's any activity going to occur off the site on surrounding properties. I would like an explanation of exactly what that activity will be.

And I would also like to know, it's been brought to my attention that there may be some other chemicals on that site that aren't radioactive. The one in particular that was brought to my attention was trichloroethylene. It was cleaning fluid used on the site and apparently is in the ground water.

That concludes my comments.

MR. LENART: Thank you.

The next would be Tom Haley.

MR. HALEY: Good evening. my name is Tom Haley. I'm from Allegheny Township. I'm

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a former employee of New Medic for 11 years, 1960-1971. I'm familiar with what's in the trenches.

You've ruled out one of the other alternatives which was the encapsulation in situ, which would normally not require you to remove anything or process anything.

You've talked about the process you're going to use, though. Separations, size reduction and radiological sorting, obviously.

I want to know where you are going to do that, how you intend to protect the health and safety of the population and the environment if you're going to be processing materials at that site. That's my first question.

The second one is, you've given a list of requirements of the 10 CFR 20 to get the radioactivity down to a level that's acceptable. What do you intend to do with the other toxic materials such as beryllium, such as cyanide, such as other things that are in there? It's solid and liquid form. How do you intend to ship the materials

that's going to be there in liquid form to the site?

There are liquid materials in there, in canisters. There's drums. There's equipment that you've got listed in your report. I've read the report as well.

My question is, how do you intend to protect the environment and the people's health and safety in the Valley when you go through this processing of this material at the site?

Thank you.

MR. LENART: Thank you for your comments.

Is there anybody else present that would like to make a formal comment at the public meeting?

(No response.)

MR. LENART: Okay. That concludes the comments from those who indicated they wanted to make comments tonight.

This concludes our formal portion of the public meeting. Please feel free to view the displays and talk with our staff in the open house area.

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Remember that, besides tonight's oral presentations, there are other ways to give us your comments. Write down your comments and leave them with us tonight. Write down your comments and mail them to the address noted on your comment record form or send comments by e-mail to the e-mail address provided on the comment record form.

Keep in mind that all written comments must be received by 4 p.m. Friday, February 23. The Corps will respond to all comments received here tonight, as well as those received by mail and e-mail within the 30-day comment period. Your comments and all responses to those comments will become a part of the official administrative record which can be viewed at the Corps office in downtown Pittsburgh and also the Apollo Public Library.

Thank you for coming tonight and we do appreciate your desire to give us feedback and we value your import in this

decision-making process.

Thank you and please drive safely on your way home.

(Public meeting concluded at 7:47 p.m.)

C E R T I F I C A T I O N

I, Linda Walker, hereby certify that the transcript of the proceedings and the evidence are contained fully and accurately in the notes taken by me at the within cause, and that this is a true and correct transcript of the same.

Linda Walker

Notary Public

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