



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
2405 GUN SHED ROAD
JOINT BASE SAN ANTONIO FORT SAM HOUSTON, TX 78234-1223

September 26, 2019

ATTN: Document Control Desk
Deputy Director, Division of Decommissioning, Uranium Recovery and Waste Programs
Office of Nuclear Material Safety and Safeguards
Mailstop T8 F5
US Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Deputy Director:

Reference US Nuclear Regulatory Commission (NRC) license number SUB-1435 (docket 040-08838) issued to Commander, US Army Garrison-Rock Island Arsenal for possession for decommissioning of residual depleted uranium.

In accordance with Title 10, Code of Federal Regulations, Part 40, § 40.36d(2), we submit the updated decommissioning funding plan with adjustments as necessary to account for changes in costs and the extent of contamination.

If you have any questions concerning this letter, please contact me by telephone at 210- 466-0368 or by email at robert.n.cherry.civ@mail.mil.

Sincerely,

CHERRY.ROBERT
N.JR.1097626231

Digitally signed by
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Robert N. Cherry
License Radiation Safety Officer

Enclosure

NMSSOI

REVISED FINAL

**DECOMMISSIONING FUNDING PLAN
JEFFERSON PROVING GROUND, MADISON, INDIANA**

FOR MATERIAL LICENSE SUB-1435, DOCKET NO. 40-08838

September 18, 2019

Submitted By:

U.S. ARMY INSTALLATION MANAGEMENT COMMAND
ATTN: IMSO, Building 2261
2405 Gun Shed Road, Fort Sam Houston, Texas 78234-1223

Submitted To:

U.S. NUCLEAR REGULATORY COMMISSION
Office of Nuclear Material Safety and Safeguards
11545 Rockville Pike, Two White Flint North, Rockville, Maryland 20852-2738

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Appendix B. Statement of Intent and Proof of Authority

ACRONYMS AND ABBREVIATIONS

ac	Acre
BLS	Below Land Surface
CADD	Computer-Aided Design
CFR	Code of Federal Regulations
cm ³	Cubic Centimeter
CY	Cubic Yards
DFP	Decommissioning Funding Plan
DoD	U.S. Department of Defense
DU	Depleted Uranium
ft	Feet
ft ³	Cubic Feet
GIS	Geographic Information System
IMCOM	Installation Management Command
in ³	Cubic Inches
JPG	Jefferson Proving Ground
kg	Kilogram
km ²	Square Kilometers
lb	Pound
LLRW	Low-Level Radioactive Waste
m	Meter
mm	Millimeter
m ²	Square Meters
m ³	Cubic Meters
MEC	Munitions and Explosives of Concern
NRC	U.S. Nuclear Regulatory Commission
NUREG	U.S. Nuclear Regulatory Commission Regulation
QA	Quality Assurance
QC	Quality Control
RACER™	Remedial Action Cost Engineering Requirements
RSSO	Radiation Safety Support Officer
TRACES	Tri-Service Automated Cost Engineering System
UPB	Unit Price Book
UXO	Unexploded Ordnance
UXOQC	Unexploded Ordnance Quality Control

1.0 INTRODUCTION

This Decommissioning Funding Plan (DFP) has been developed for the U.S. Army's U.S. Nuclear Regulatory Commission (NRC) source material license SUB-1435, Docket Number 40-08838. This DFP provides a detailed site-specific cost estimate for decommissioning of the DU Impact Area to meet the criteria for unrestricted use in 10 Code of Federal Regulations (CFR) 20.1402. This document meets the requirements and elements set forth in U.S. Nuclear Regulatory Commission Regulation (NUREG)-1757, Volume 3, Revision 1, "Consolidated Decommissioning Guidance: Financial Assurance, Recordkeeping, and Timeliness" (NRC 2012) for the DFP.

1.1 PURPOSE

NRC issued source material license SUB-1435 for the depleted uranium (DU) related to the U.S. Army's historical munitions testing program at the DU Impact Area, Site 32, at Jefferson Proving Ground (JPG), Madison, Indiana. The U.S. Army is requesting that the NRC source material license SUB-1435 paragraph (9), Authorized Use, be amended as "For possession only" instead of "For possession only for decommissioning." In order to support the license amendment request, the U.S. Army is required to submit a detailed site-specific cost estimate for decommissioning based on the costs of an independent contractor to meet the criteria for unrestricted use in 10 CFR 20.1402. The document is required to include the following:

- Key assumptions used to develop the site-specific cost estimate for decommissioning
- A description of the means for adjusting the cost estimate and associated funding level periodically over the life of the facility
- Certification of financial assurance and the signed originals of the financial instruments provided as financial assurance.

1.2 FACILITY DESCRIPTION

JPG was established in 1941 as a proving ground for the test firing of a wide variety of conventional munitions. JPG is located in Jefferson, Jennings, and Ripley Counties in southeastern Indiana. A firing line with 268 fixed-gun positions used to test munitions separates the 55,264 acres (ac) (224 square kilometers [km²]) of real property at JPG into two areas: a southern portion with property that has been or will be transferred from U.S. Army control to a private individual and a northern portion that the U.S. Army will continue to own.

The U.S. Army used JPG as a proving ground from 1941 to 1995. During this time, more than 24 million rounds of conventional explosive ammunition were fired. Approximately 1.5 million rounds did not detonate upon impact, remaining as unexploded ordnance (UXO) either on or beneath the ground surface. An additional 3 to 5 million rounds with live detonators, primers, or fuzes remain within the installation north of the firing line due to Army munitions testing between 1941 and 1994 (U.S. Army 1995). Specifically within the DU Impact Area, a "very high" density of UXO (i.e., 85 UXO/acre) is suspected to be present (U.S. Army 1995).

As part of its munitions testing program, the U.S. Army test fired DU projectiles at JPG. The DU proof test firings were conducted under NRC source material license SUB-1435 in the same area as conventional munitions testing activities. The test firing of DU projectiles began on 18 March 1984 and concluded on 2 May 1994. Individual penetrators fired from 105-millimeter (mm) tank guns each weighed approximately 8.5 pounds (lb) (3.9 kilograms [kg]) and penetrators fired from 120-mm tank guns each weighed approximately 10.7 lb (4.9 kg). The volume of the individual DU penetrators associated with the

105-mm and 120-mm projectiles is estimated to be 12.89 cubic inches (in³) (211.28 cubic centimeters [cm³]) and 16.05 in³ (262.99 cm³), respectively.

Approximately 220,462 lb (100,000 kg) of DU projectiles were at soft targets fired in the 2,080-ac (8.4-km²) DU Impact Area. Approximately 58,423 lb (26,500 kg) of DU projectiles and projectile fragments were recovered during periodic (approximately every 6 months) surface sweeps of the DU Impact Area. Approximately 162,040 lb (73,500 kg) of DU remains in the DU Impact Area (Oxenberg and Herring 2013).

The DU projectiles were fired from 3 of the 268 fixed-gun positions on the firing line at soft (cloth or wood) targets placed at intervals of 3,280 feet (ft) (1,000 meters [m]), starting at 3,280 ft (1,000 m) from each gun position and continuing until each penetrator fell to the ground. Approximately 7 percent (11,343 lb; 5,145 kg) were fired from the J Firing Position, 89 percent (144,215 lb; 65,415 kg) were fired from the 500 Center Firing Position, and 4 percent (6,482 lb; 2,940 kg) were fired from the K5 Firing Position.

Because firing occurred from specifically identified, fixed positions and penetrators were fired at immobile targets, the DU projectiles impacted vegetation and the ground in approximately the same locations in their respective lines of fire. With repeated impacts in the same area of the 500 Center line of fire, this firing protocol resulted in the formation of a trench. Soil sampling, penetrator sampling, and gamma walkover surveys were conducted to characterize the nature and extent of contamination. While hundreds of samples were collected and several miles of gamma walkover survey data were collected over large areas, uncertainty remains in the actual locations of the thousands of DU penetrators that remain in the DU Impact Area.

A geographic information system (GIS) modeling approach was used to estimate the spatial distribution of residual DU within the DU Impact Area. This approach consisted of the following steps: determine characteristics of penetrators used, estimate distances penetrators traveled, predict dispersion and ricochet patterns, and estimate spatial masses from penetrator impacts in the DU Impact Area. Each step is described in detail in Appendix G (Updated Conceptual Site Model) of the Environmental Report (U.S. Army 2013). The analysis concluded that the penetrators and corrosion products cover an area approximately 6,270 ft (1,911 m) long and 82 ft (25 m) wide. In addition, a second trench was identified for the J Firing Position that covers an area approximately 1,929 ft (588 m) long and 82 ft (25 m) wide.

As shown in Figure 4-21 in Appendix G of the Environmental Report (U.S. Army 2013), the primary impact locations included the trenches covering an area of approximately 15 ac (0.061 km²) with an estimated penetrator density ranging from 200 to 400 penetrators per acre. Secondary impact locations developed when the projectiles ricocheted, either whole or in fragments, covering an area approximately 4,030 ac (16.3 km²) with an estimated penetrator density of 2 to 200 penetrators per acre. Figure 4-21 shows the spatial distribution for the DU penetrators suspected of remaining at and around the DU Impact Area. The total impact area covers approximately 4,045 ac (16.4 km²).

1.3 ESTIMATED VOLUME OF CONTAMINATED MATERIAL

The estimated volume of contaminated material includes the DU penetrators and contaminated soil from both the primary and secondary impact areas shown in Figure 4-21. The estimate also includes the removal of the minimum amount of UXO required to safely remove penetrators and contaminated soil. The following sections describe assumptions utilized to develop the estimated volume of contaminated material for remediation. Table 1-1 summarizes the facility description, including the volume of contaminated materials, as required in Table A.3.4 of NUREG-1757, Volume 3.

1.3.1 Primary Impact Area

Based on the spatial analysis, the area requiring remediation that contains DU penetrators and corrosion products within the primary impact area is approximately 15 ac (0.061 km²). Soil samples collected during historical characterization activities indicate corrosion impacts to a maximum depth of approximately 6 ft (1.8 m) below land surface (BLS). This includes the area within and surrounding the trenches associated with the 500 Center and J Firing Positions. The volume of contaminated soil within the primary impact area is estimated to be 3,920,400 cubic feet (ft³) (111,013 cubic meters [m³] or 145,200 cubic yards [CY]). Based on the spatial analysis, a total of 5,701 DU penetrators are suspected to be located within the primary impact area. Assuming all of the 5,701 penetrators are related to the 120-mm projectile and remain intact, the volume of the DU penetrators within the primary impact area is estimated to be 53 ft³ (1.5 m³ or 1.96 CY). The volume of contaminated material within the primary impact area is estimated to be 3,920,453 ft³ (111,014.5 m³ or 145,202 CY).

1.3.2 Secondary Impact Area

It is assumed that the secondary impact area contains either whole or fragments of penetrators resulting from ricochets and it is approximately 4,030 ac (16.3 km²). The whole or fragments of penetrators are expected to be located on the ground surface and, therefore, would be removed by surface retrieval. In some instances, removal of the surficial soil (0 to 0.5 ft [0.15 m] BLS) or (0 to 1 ft [0.31 m] BLS) may be necessary due to corrosion products within the soil directly beneath the items recovered. For the purposes of this cost estimate, it is assumed that 40 ac (0.16 km²) would require remediation to a depth of 1 ft (0.31 m) BLS under penetrators remaining in the secondary impact area. The areal extent of contaminated soil within the secondary impact area may be greater than 40 ac. The volume of contaminated soil within the 40 ac of the secondary impact area is estimated to be 1,742,400 ft³ (49,339 m³ or 64,533 CY). Based on the spatial analysis, a total of 9,448 penetrators are suspected to be located within the entire secondary impact area. Assuming all of the 9,448 penetrators are related to the 120-mm projectile, the volume of the penetrators within the secondary impact area is estimated to be 88 ft³ (2.5 m³ or 3.3 CY). The volume of contaminated material within the secondary impact area is estimated to be approximately 1,742,488 ft³ (49,341.77 m³ or 65,537 CY).

**Table 1-1. Facility Description Summary
(based on NUREG-1757, Volume 3, Table A.3.4)**

NRC license numbers and types (i.e., Parts 30, 40, 70, and 72):
License number: SUB-1435 License type: Part 40
Types and quantities of materials authorized under the licenses listed above:
Material type: DU metal, alloy, and/or other forms Material quantity: up to 80,000 kg
Description of how licensed materials are used:
Possession only
Description of facility, including buildings, rooms, grounds, and description of where particular types of materials are used: As described above, the area covered under the Nuclear Regulatory Commission (NRC) source material license SUB-1435 encompasses the 2,080-acre (ac) (8.4-[square kilometer] km ²) Depleted Uranium (DU) Impact Area where projectiles containing DU penetrators were fired during the U.S. Army's historical munitions testing program. Based on the geographic information system (GIS) modeling approach that estimated the spatial distribution, the primary impact area includes the trenches covering an area of approximately 15 ac (0.061 km ²) with an estimated penetrator density ranging from 200 to 400 penetrators per acre. Secondary impact locations developed when the projectiles ricocheted, either whole or in fragments, covering an area approximately 4,030 ac (16.3 km ²) with an estimated penetrator density of 2 to 200 penetrators per acre. The total area covers approximately 4,045 ac (16.4 km ²). Unexploded ordnance (UXO) is suspected to be present within the DU Impact Area at a "very high" density (i.e., 85 UXO/ac) due to the U.S. Army's historical munitions testing program.
Quantities of materials or waste accumulated before shipping or disposal: On occasion, a DU penetrator is recovered within the DU Impact Area and held for disposal in accordance with the Radiation Safety Plan. The U.S. Department of Defense (DoD) Executive Agency for Low-Level Radioactive Waste (LLRW) has primary responsibility for DoD LLRW disposal. The agency conducts periodic waste removals from U.S. Army installations worldwide. If the U.S. Army recovers any DU, the U.S. Army will secure and hold the DU for the next scheduled pickup. The Executive Agency will properly dispose of the DU in accordance with all applicable Federal and DoD regulations, including disposal site conditions.
Volume of contaminated material, including that in the subsurface, containing residual radioactivity that will require remediation: Primary Impact Area: Based on the GIS modeling, the area requiring remediation that contains DU penetrators and corrosion products within the primary impact area is approximately 15 ac (0.061 km ²) to a depth of 6 feet (ft) (1.8 meters [m]) below land surface (BLS). This includes the area within and surrounding the trenches associated with the 500 Center and J Firing Positions. The volume of contaminated soil within the primary impact area is estimated to be 3,920,400 cubic feet (ft ³) (111,013 cubic meters [m ³]). A total of 5,701 DU penetrators are suspected to be located within the primary impact area. Assuming all of the 5,701 penetrators are related to the 120-millimeter (mm) projectile and remain intact, the volume of the DU penetrators within the primary impact area is estimated to be 53 ft ³ (1.5 m ³). The total volume of contaminated material, including contaminated soil and penetrators, is estimated to be 3,920,453 ft ³ (111,015 m ³). Secondary Impact Area: It is assumed that the secondary impact area contains either whole or fragments of DU penetrators resulting from ricochet and is approximately 4,030 ac (16.3 km ²). The whole or fragments of DU penetrators are expected to be located on the ground surface and, therefore, would be removed by surface retrieval. In some instances, removal of the surficial soil (0 to 0.5 ft [0.15 m] BLS) or (0 to 1 ft [0.31 m] BLS) may be necessary due to corrosion products within the soil directly beneath the items recovered. For the purposes of this cost estimate, it is assumed that 40 ac (0.16 km ²) would require remediation to a depth of 1 ft (0.31 m) BLS directly under penetrators. The volume of contaminated soil is estimated to be 1,742,400 ft ³ (49,339 m ³). A total of 9,448 DU penetrators are suspected to be located within the secondary impact area. Assuming all of the 9,448 penetrators are related to the 120-mm projectile and remain intact, the volume of the DU penetrators within the secondary impact area is estimated to be 88 ft ³ (2.5 m ³). The total volume of contaminated material, including contaminated soil and penetrators, is estimated to be approximately 1,742,488 ft ³ (49,341.77 m ³).

2.0 DETAILED SITE-SPECIFIC COST ESTIMATE

This section and referenced appendices include a detailed site-specific cost estimate for all phases of decommissioning of the DU Impact Area to meet the criteria for unrestricted use in 10 CFR 20.1402. The cost estimate was prepared based on analyses performed using Remedial Action Cost Engineering Requirements (RACER™) 11.5, which draws primarily from the Unit Price Book (UPB), which is a module of the Tri-Service Automated Cost Engineering System (TRACES). The cost estimate is divided into the following major decommissioning tasks, as noted in NUREG-1757, Volume 3 (NRC 2012):

- Planning and Preparation
- Decontamination or Dismantling of Radioactive Facility Components
- Final Radiation Survey
- Restoration of Contaminated Areas on Facility Grounds
- Site Stabilization and Long-Term Surveillance.

Estimates for the packaging, shipping, and disposal of radioactive wastes have been included under the decontamination or dismantling of radioactive facility components task. Table 2-1 summarizes the relevant features of the facility, including the dimension of contaminated materials in the DU Impact Area, as required in Table A.3.5 of NUREG-1757, Volume 3.

2.1 PLANNING AND PREPARATION

The planning and preparation task was subdivided into the following subcomponents, as noted in NUREG-1757, Volume 3 (NRC 2012):

- Preparation of documentation for regulatory agencies
- Submittal of a Decommissioning Plan to NRC when required by 10 CFR 30.36(g)(1), 40.42(g)(1), or 72.54(g)
- Development of Work Plans
- Procurement of special equipment
- Characterization of radiological conditions of the facility
- Administrative fees.

Table 2-2 provides an estimate of workdays for individuals classified as professional labor along with the assumptions used to develop the workday estimate, as required in Table A.3.6 of NUREG-1757, Volume 3. Table 2-3 provides the overall estimated costs for materials, equipment, laboratory, and/or miscellany during each of the subcomponents of the planning and preparation task, as required in Table A.3.15, Table A.3.16, and Table A.3.17 of NUREG-1757, Volume 3. The RACER™ 11.5 output files are provided in Appendix A and include detailed breakdown of the costs and assumptions used in the cost estimating analyses.

2.2 DECONTAMINATION OR DISMANTLING OF RADIOACTIVE FACILITY COMPONENTS

As presented in Table 2-1, there are no facilities or structures that require decontamination or dismantling of radioactive facility components. The decontamination or dismantling of radioactive facility

task will focus on the remediation of the primary and secondary impact areas and was broken into the following subcomponents:

- Construction of access roads and site facilities
- Primary impact area remediation
- Secondary impact area remediation.

The construction of access roads and site facilities includes construction of onsite buildings, overhead electrical distribution, water storage, decontamination facilities, and material storage. The remediation subcomponents includes munitions and explosives of concern (MEC) surface clearance and DU penetrator retrieval, excavation and sifting of subsurface materials in order to remove MEC and DU penetrators, radiological screening and soil washing of the excavated/sifted materials, and the transportation and offsite disposal of low-level radiological waste (LLRW). The assumptions for the remediation dimensions and volumes are provided in Table 2-4. Following the excavation and sifting to remove MEC and DU penetrators, the soil would undergo onsite radiological screening and soil washing. The estimates assume 35 percent of the material would require offsite disposal by railway at the LLRW disposal facility, Energy Solutions, in Barnwell County, South Carolina. The remaining 65 percent of the treated material would be disposed of offsite as nonhazardous waste. In addition, approximately 354,280 gallons of liquid waste generated from the soil washing will be treated onsite and transported for offsite disposal.

Table 2-5 provides an estimate of workdays for individuals classified as professional labor along with the assumptions used to develop the workday estimate, as required in Table A.3.7 of NUREG-1757, Volume 3. Table 2-3 provides the overall estimated costs for materials, equipment, laboratory, and/or miscellany during each of the subcomponents of the decontamination or dismantling of the radioactive facility task, as required in Table A.3.15, Table A.3.16, and Table A.3.17 of NUREG-1757, Volume 3. The RACER™ 11.5 output files are provided in Appendix A and include detailed breakdown of the costs and assumptions used in the cost estimating analyses.

2.3 RESTORATION OF CONTAMINATED AREAS ON FACILITY GROUNDS

The restoration of contaminated areas on facility grounds task was broken into the following subcomponents:

- Additional site restoration
- Site facility demolition.

Site cleanup, re-grading, and seeding was incorporated into the RACER™ 11.5 estimates for the remediation of the primary and secondary impact areas. The additional site restoration subcomponent assumes that additional site restoration is required in order to assist in reforestation. The cost estimate includes the planting of 400 seedlings per acre and five 5- to 6-foot (1.5- to 1.8-m) trees per acre along with UXO support within 55 acres (222,577 m²) affected during the remediation of the DU Impact Area. The second subcomponent includes the costs for the demolition of the buildings and facilities constructed for the remediation activities.

Table 2-5 provides an estimate of workdays for individuals classified as professional labor along with the assumptions used to develop the workday estimate, as required in Table A.3.8 of NUREG-1757, Volume 3. Table 2-3 provides the overall estimated costs for materials, equipment, laboratory, and/or miscellany during each of the subcomponents of the restoration of contaminated areas of facility grounds task, as required in Table A.3.15, Table A.3.16, and Table A.3.17 of NUREG-1757, Volume 3. The RACER™ 11.5 output files are provided in Appendix A and include detailed breakdown of the costs and assumptions used in the cost estimating analyses.

2.4 FINAL RADIATION SURVEY

This cost estimate includes a gamma walkover survey over the remediated area and the sampling of bioassays, groundwater, surface water, sediment, surface soil, and subsurface soil. The results of the gamma walkover survey and sampling will be summarized in a final report. Table 2-6 provides an estimate of workdays for individuals classified as professional labor along with the assumptions used to develop the workday estimate, as required in Table A.3.9 of NUREG-1757, Volume 3. Table 2-3 provides the overall estimated costs for materials, equipment, laboratory, and/or miscellany during the final radiation survey task, as required in Table A.3.15, Table A.3.16, and Table A.3.17 of NUREG-1757, Volume 3. The RACER™ 11.5 output files are provided in Appendix A and include detailed breakdown of the costs and assumptions used in the cost estimating analyses.

2.5 SITE STABILIZATION AND LONG-TERM SURVEILLANCE

This cost estimate includes 5-year reviews of the DU Impact Area over a 30-year time period following the remediation to unrestricted use. The 5-year review includes a 5-day site visit for inspection and interviews with NRC and local parties. Due to the explosive safety hazards from UXO present in the DU Impact Area, additional professional labor hours were included for qualified safety personnel. Table 2-7 provides an estimate of workdays for individuals classified as professional labor along with the assumptions used to develop the workday estimate, as required in Table A.3.9 of NUREG-1757, Volume 3. Table 2-3 provides the overall estimated costs for materials, equipment, laboratory, and/or miscellany during the site stabilization and long-term surveillance task, as required in Table A.3.15, Table A.3.16, and Table A.3.17 of NUREG-1757, Volume 3. The RACER™ 11.5 output files are provided in Appendix A and include detailed breakdown of the costs and assumptions used in the cost estimating analyses.

2.6 OTHER KEY ASSUMPTIONS

The U.S. Army is currently requesting that the NRC source material license be amended to possession only and the present-day institutional controls will be maintained until a technology becomes available to safely and cost-effectively address the explosive safety hazards related to UXO and DU in the DU Impact Area. This cost estimate does not take credit for any salvage value that the U.S. Army might realize from the sale of potential assets, including the sale of recovered materials or equipment utilized during or after the decommissioning. In addition, the sale of the decontaminated land is prohibited due to the remaining explosive safety hazards due to UXO remaining throughout areas north of the firing line at JPG. The presence of a "very high" density of UXO comingled with the DU penetrators makes decommissioning to achieve the unrestricted release conditions unreasonable due the high cost and ineffectiveness of today's remediation technologies and places the personnel conducting remediation activities in hazardous conditions.

This cost estimate represents the cost to the U.S. Army if all decommissioning activities were performed by an independent contractor.

The U.S. Army has included a 25 percent contingency factor applied to all estimated costs associated with decommissioning.

2.7 TOTAL ESTIMATED COSTS

The total estimated costs, including the contingency costs, for all phases of decommissioning the DU Impact Area to meet the criteria for unrestricted use is \$3.5B. Approximately \$120M of the total estimated costs is due to the removal of the minimum amount of UXO required to safely remove the DU penetrators and contaminated soil. Table 2-9 summarizes the total professional labor workdays for each

task/component of the decommissioning, as required in Table A.3.11 of NUREG-1757, Volume 3. Table 2-10 includes estimated professional labor rates (including salary, fringe benefits, and corporate overhead) for the labor categories included in the cost estimate analyses, as required in Table A.3.12 of NUREG-1757, Volume 3. Table 2-11 is the resulting professional labor costs for each major decommissioning task, as required in Table A.3.13 of NUREG-1757, Volume 3. Table 2-12 summarizes the total estimated costs, including the contingency costs, and the percentages of each task as they represent the subtotal, as required in Table A.3.18 of NUREG-1757, Volume 3.

2.8 ADJUSTING THE COST ESTIMATE

In accordance with NUREG-1757, Volume 3, the U.S. Army will evaluate and adjust the decommissioning cost estimates on a 3-year cycle to ensure costs accurately reflect changes in material inventory and possession limits, contamination of applicable environmental media, facility modifications, remediation costs, and disposal costs. In addition, the U.S. Army will ensure any revisions to cost estimates also include inflation, for other changes in the prices of goods and services, for changes in facility conditions or operations, and for changes in expected decommissioning procedures. At present, the U.S. Army will continue to use the updated versions of RACERTM.

In addition, the U.S. Army has no plans to change facility conditions or operations at the DU Impact Area in a way that would require another license amendment.

**Table 2-1. Number and Dimensions of Facility Components
(based on NUREG-1757, Volume 3, Table A.3.5)**

Component	Number of Components	Dimensions of Component	Total Dimensions
Glove Boxes			
Fume Hoods			
Lab Benches			
Sinks			
Drains			
Floors			
Walls			
Ceilings			
Ventilation/Ductwork			
Hot Cells			
Equipment/ Materials			
Soil Plots	2	Primary Impact Area: 15 ac (0.061 km ²); Secondary Impact Area: 4,030 ac (16.3 km ²)	4,045 ac (16.4 km ²)
Storage Tanks			
Storage Areas			
Radwaste Areas			
Scrap Recovery Areas			
Maintenance Shop			
Equipment Decontamination Areas			
Total	2		4,045 ac (16.4 km ²)

Table 2-2. Planning and Preparation (Workdays)
(based on NUREG-1757, Volume 3, Table A.3.6)

Activity	NRC Staff ^a	IMCOM RSSO ^a	Installation RSO ^a	Army Oversight Health Physicist ^a	Army Oversight Safety ^a	UXO Program Manager	UXO Project Manager	Project Engineer	UXO Staff Engineer	Project Scientist	Staff Scientist	Geophysist
Preparation of Documentation for Regulatory Agencies ^b	90	36	14	8	10	42	133	147	458	73	512	22
Submittal of Decommissioning Plan to NRC when required by 10 CFR 30.36(g)(1), 10 CFR 40.42(g)(1), 10 CFR 70.38(g)(1), or 10 CFR 72.54(g) ^c	90	24	12	6	4	13	39	150	263	88	0	0
Development of Work Plans	90	48	36	24	20	30	90	293	158	293	158	72
Procurement of Special Equipment ^d	15	8	16	10	10	20	30	180	120	0	120	10
Characterization of Radiological Condition of the Facility (including sampling, soil and tailing analysis, or groundwater analysis, if applicable) ^{e,f}	6	24	48	8	8	0	0	0	0	0	0	0
Administrative Fees (such as procurement fees for third-party contractor, legal fees, financial assurance fees, and coordination with NRC staff)	24	180	65	32	32	0	0	0	0	0	0	0
Total Workdays	315	320	191	88	84	105	292	770	999	454	790	104

Table 2-2. Planning and Preparation (Workdays)
(based on NUREG-1757, Volume 3, Table A.3.6) (Continued)

Activity	Certified Health Physicist	QA/QC Officer	Word Processing/ Clerical	Draftsman/ CADD	UXOQC Specialist	UXO Safety Officer	Senior UXO Supervisor	UXO Technician III (Supervisor)	UXO Technician II	UXO Technician I	Field Health Physicist	Field Technician
Preparation of Documentation for Regulatory Agencies ^b	118	140	272	124	35	97	103	0	29	0	51	29
Submittal of Decommissioning Plan to NRC when required by 10 CFR 30.36(g)(1), 10 CFR 40.42(g)(1), 10 CFR 70.38(g)(1), or 10 CFR 72.54(g) ^c	72	36	97	30	0	0	0	0	0	0	0	0
Development of Work Plans	57	72	85	92	0	57	49	0	30	0	30	30
Procurement of Special Equipment ^d	48	48	40	40	0	120	155	0	80	0	240	240
Characterization of Radiological Condition of the Facility (including sampling, soil and tailing analysis, or groundwater analysis, if applicable) ^{e,f}	0	0	0	0	0	0	0	0	93	0	0	0
Administrative Fees (such as procurement fees for third-party contractor, legal fees, financial assurance fees, and coordination with NRC staff)	0	0	0	0	0	0	0	0	0	0	0	0
Total Workdays	295	296	494	286	35	274	307	0	232	0	321	299

Footnotes:

^aNRC review and Army oversight labor categories are not included in RACER™ 11.5. NRC assumptions were based on professional judgment. Army assumptions were based on professional judgment and the Davy Crocket DFP.

^bAssumes that this includes project planning, treatability study, preliminary design (30%), intermediate design (60%), pre-final design (90%), and final design (100%). In addition, this phase would include the preparation of bid documents. Each subphase would include site visits, data review, and public and regulatory meetings.

^cEstimates of the work days were based on previous project experience and the RACER™ 11.5 output for a complex and comprehensive MEC Feasibility Study. Additional workdays were added based on the radioactive component of the remediation activities.

^dAssumes 3 months of planning, procurement of special equipment and construction materials, and organization of subcontractors.

^eSampling of environmental media was conducted during previous investigations. Samples collected for the treatability study were included under Preparation of Documentation for Regulatory Agencies. It is assumed that additional geophysical investigation in the Primary Impact Area (15 acres) and portions of the Secondary Impact Area (120 acres).

^fUnder Characterization of Radiological Condition of the Facility, RACER™ 11.5 includes professional and non-professional labor hours with the equipment/supply, laboratory, and miscellaneous costs. These labor hours were not segregated due to the complexity of the algorithms used in RACER™ 11.5 cost estimating models, and the estimated costs are presented in Table 2-3.

**Table 2-3. Equipment/Supply, Laboratory, and Miscellaneous Costs
(based on NUREG-1757, Volume 3, Tables A.3.15, A.3.16, and A.3.17)**

Equipment/Supplies/Laboratory	Total Cost
Planning and Preparation	
Preparation of Documentation for Regulatory Agencies	\$250,485
Development of Work Plans	\$33,495
Submittal of Decommissioning Plan to NRC	\$12,315
Procurement of Special Equipment	\$35,345
Characterization of Radiological Condition of the Facility	\$1,784,580
Administrative Fees	\$74,253
Subtotal for Planning and Preparation	\$2,190,473
Decontamination or Dismantling of Radioactive Facility Components	
Construction of Access Roads and Site Features	\$50,011,080
Primary Impact Area Remediation	\$1,805,417,991
Secondary Impact Area Remediation	\$854,619,432
Subtotal for Decontamination or Dismantling of Radioactive Facility Components	\$2,710,048,503
Final Radiation Survey	
Subtotal for Final Radiation Survey	\$195,937
Restoration of Contaminated Areas on Facility Grounds	
Subtotal for Restoration of Contaminated Areas on Facility Grounds	\$1,467,076
Site Stabilization and Long-Term Surveillance	
5-Year Review	\$49,679
Subtotal for Site Stabilization and Long-Term Surveillance	\$49,679
TOTAL	\$2,713,951,667

Note: RACERT™ 11.5 includes non-professional labor as unit rates associated with various equipment/supply, laboratory, and miscellaneous costs. These non-professional labor hours were not segregated due to the complexity of the algorithms used in the RACERT™ 11.5 cost estimating models. In addition for Characterization of Radiological Condition of the Facility, RACERT™ 11.5 includes professional and non-professional labor hours with the equipment/supply, laboratory, and miscellaneous costs. These professional and non-professional labor hours under Characterization of Radiological Condition of the Facility were not segregated due to the complexity of the algorithms used in RACERT™ 11.5 cost estimating models.

Table 2-4. Remediation Volumes

Area of the DU Impact Area	Contaminated Area	Maximum Depth of Contamination	Contaminated Volume	Volume Excavated ^a	Offsite LLRW Disposal Volume ^b
Primary Impact Area	15 ac (0.061 km ²)	6 ft (1.8 m)	3,920,400 ft ³ (111,013 m ³ or 145,200 CY)	5,606,172 ft ³ (158,749 m ³ or 207,636 CY)	1,962,171 ft ³ (55,563 m ³ or 72,673 CY)
Secondary Impact Area	4,030 ac (16.3 km ²)	40 ac to a depth of 1 ft (0.31 m)	1,742,400 ft ³ (49,339 m ³ or 64,533 CY)	2,491,641 ft ³ (70,555 m ³ or 92,283 CY)	872,073 ft ³ (24,694.4 m ³ or 32,299 CY)

Footnotes:

^aThe volume excavated includes a fluff factor determined during the RACER™ 11.5 cost estimating analysis.

^bAssumes approximately 35% of the onsite treated materials will require offsite LLRW disposal. The remaining 65% will be disposed of offsite as nonhazardous waste.

Table 2-5. Decontamination or Dismantling of Radioactive Facility Components (Workdays)
(based on NUREG-1757, Volume 3, Table A.3.7)

Component	Decontamination Method	NRC Staff ^a	IMCOM RSSO ^a	Installation RSO ^a	Army Oversight Health Physicist ^a	Army Oversight Safety ^a	UXO Program Manager	UXO Project Manager	Project Engineer	UXO Staff Engineer	Staff Scientist	Certified Health Physicist
Glove Boxes												
Fume Hoods												
Lab Benches												
Sinks												
Drains												
Floors												
Walls												
Ceilings												
Ventilation/Ductwork												
Hot Cells												
Equipment/Materials												
Soil Plots ^b	Surface Clearance, Excavation and Sifting, Radiological Screening, Soil Washing, Transportation, and Offsite Disposal	848	170	848	509	509	2,170	27,784	0	14	0	0
Storage Tanks												
Storage Areas												
Radwaste Areas												
Scrap Recovery Areas												
Maintenance Shop												
Equipment Decontamination Areas												
Other												
Total Workdays		848	170	848	509	509	2,170	27,784	0	14	0	0

Table 2-5. Decontamination or Dismantling of Radioactive Facility Components (Workdays)
(based on NUREG-1757, Volume 3, Table A.3.7) (Continued)

Component	Decontamination Method	Geophysist	QA/QC Officer	Word Processing/ Clerical	Draftsman/ CADD	UXO QC Specialist	UXO Safety Officer	Senior UXO Supervisor	UXO Technician III (Supervisor)	UXO Technician II	UXO Technician I	Field Health Physicist	Field Technician
Glove Boxes													
Fume Hoods													
Lab Benches													
Sinks													
Drains													
Floors													
Walls													
Ceilings													
Ventilation/Ductwork													
Hot Cells													
Equipment/Materials													
Soil Plots ^b	Surface Clearance, Excavation and Sifting, Radiological Screening, Soil Washing, Transportation, and Offsite Disposal	0	0	0	27,121	2,647	2,647	11,569	2,101	2,304	222	0	0
Storage Tanks													
Storage Areas													
Radwaste Areas													
Scrap Recovery Areas													
Maintenance Shop													
Equipment Decontamination Areas													
Other													
Total Workdays		0	0	0	27,121	2,647	2,647	11,569	2,101	2,304	222	0	0

Footnotes:

^aNRC review and Army oversight labor categories are not included in RACER™ 11.5. NRC assumptions were based on professional judgment. Army assumptions were based on professional judgment and the Davy Crocket DFP.

^bFor multiple elements in RACER™ 11.5, the professional and non-professional labor hours are included with the equipment/supply, laboratory, and miscellaneous costs. These labor hours were not segregated due to the complexity of the algorithms used in RACER™ 11.5 cost estimating models, and the estimated costs are presented in Table 2-3.

Table 2-6. Restoration of Contaminated Areas on Facility Grounds (Workdays)
(based on NUREG-1757, Volume 3, Table A.3.8)

Activity	NRC Staff ^a	IMCOM RSSO ^a	Installation RSO ^a	Army Oversight Health Physicist ^a	Army Oversight Safety ^a	UXO Program Manager	UXO Project Manager	Project Engineer	UXO Technician II
Additional Site Restoration ^b	2	4	13	6	6	8	52	260	420
Site Facility Demolition	2	4	13	6	6	8	52	260	
Total Workdays	4	8	26	12	12	16	104	520	420

Footnotes:

^aNRC review and U.S. Army oversight labor categories are not included in RACER™ 11.5. NRC assumptions were based on professional judgment. U.S. Army assumptions were based on professional judgment and the Davy Crocket DFP.

^bSite cleanup, re-grading, and seeding was incorporated into the RACER™ 11.5 estimates for the remediation of the Primary Impact Area and Secondary Impact Area. The line item above assumes the additional site restoration is required in order to assist in reforestation.

Table 2-7. Final Radiation Survey (Workdays)
(based on NUREG-1757, Volume 3, Table A.3.9)

Activity	NRC Staff ^a	IMCOM RSSO ^a	Installation RSO ^a	Army Oversight Health Physicist ^a	Army Oversight Safety ^a	UXO Program Manager	Project Manager	Project Engineer	Staff Engineer
Final Radiation Survey ^b	10	16	24	64	64	4	20	11	46
Total Workdays	10	16	24	64	64	4	20	11	46

Activity	Project Scientist	Staff Scientist	Certified Health Physicist	QA/QC Officer	Word Processing/ Clerical	Draftsman/ CADD	UXO Technician II	Field Health Physicist	Field Technician
Final Radiation Survey ^b	26	168	93	9	29	19	343	343	180
Total Workdays	26	168	93	9	29	19	343	343	180

Footnotes:

^aNRC review and U.S. Army oversight labor categories are not included in RACER™ 11.5. NRC assumptions were based on professional judgment. U.S. Army assumptions were based on professional judgment and the Davy Crocket DFP.

^bThe Remedial Investigation technology for the Final Radiation Survey was utilized for this cost element and the gamma walkover survey was incorporated into the other investigations subtask. This cost estimate includes the sampling of bioassays, groundwater, surface water, sediment, surface soil, and subsurface soil. The results of the gamma walkover survey and sampling will be summarized in a final report.

Table 2-8. Site Stabilization and Long-Term Surveillance (Workdays)
(based on NUREG-1757, Volume 3, Table A.3.10)

Activity	NRC Staff ^a	IMCOM RSSO ^a	Installation RSO ^a	Army Oversight Health Physicist ^a	Army Oversight Safety ^a	Project Manager	Project Engineer	Project Scientist	Staff Scientist	Certified Health Physicist	Word Processing/Clerical	Draftsman/CADD	UXO Safety Officer	UXO Technician II
Initial 5-Year Review ^b	15	5	5	20	5	9	16	15	21	8	3	2	1	6
Total Workdays	15	5	5	20	5	9	16	15	21	8	3	2	1	6

Footnotes:

^aNRC review and U.S. Army oversight labor categories are not included in RACER™ 11.5. NRC assumptions were based on professional judgment. U.S. Army assumptions were based on professional judgment and the Davy Crocket DFP.

^bAdditional hours were included for the Certified Health Physicist, Word Processing/Clerical, Draftsman/CADD, UXO Safety Officer, and UXO Technician II. Assumes a 5-day site visit in order to conduct interviews with local parties.

Table 2-9. Total Workdays by Labor Category (Workdays)
(based on NUREG-1757, Volume 3, Table A.3.11)

Activity	NRC Staff*	IMCOM RSSO*	Installation RSO*	Army Oversight Health Physicist*	Army Oversight Safety*	UXO Program Manager	UXO Project Manager	Project Manager	Project Engineer	UXO Staff Engineer	Project Scientist	Staff Scientist
Planning and Preparation (Totals from Table 2-2)	315	320	191	88	84	105	292	770	999	454	790	104
Decontamination or Dismantling of Radioactive Facility Components (Totals from Table 2-5)	848	170	848	509	509	2,170	27,784	0	0	14	0	0
Restoration of Contaminated Areas on Facility Grounds (Totals from Table 2-6)	4	8	26	12	12	16	104	0	520	0	0	0
Final Radiation Survey (Totals from Table 2-7)	10	5	24	64	64	4	0	20	11	0	26	168
Site Stabilization and Long-Term Surveillance (Totals from Table 2-8)	5	5	5	20	5	0	0	9	16	0	15	21
Total Workdays	1,182	508	1,094	693	674	2,295	28,180	798	1,546	468	831	293

Table 2-9. Total Workdays by Labor Category (Workdays)
(based on NUREG-1757, Volume 3, Table A.3.11) (Continued)

Activity	Certified Health Physicist	QA/QC Officer	Word Processing/ Clerical	Draftsman/ CADD	UXOQC Specialist	UXO Safety Officer	Senior UXO Supervisor	UXO Technician III (Supervisor)	UXO Technician II	UXO Technician I	Field Health Physicist	Field Technician
Planning and Preparation (Totals from Table 2-2)	295	296	494	286	35	274	307	0	232	0	321	299
Decontamination or Dismantling of Radioactive Facility Components (Totals from Table 2-5)	0	0	0	27,121	4,124	2,647	11,569	2,101	2,304	222	0	0
Restoration of Contaminated Areas on Facility Grounds (Totals from Table 2-6)	0	0	0	0	0	0	0	0	0	0	0	420
Final Radiation Survey (Totals from Table 2-7)	93	9	29	19	0	0	0	0	343	0	343	180
Site Stabilization and Long-Term Surveillance (Totals from Table 2-8)	8	0	3	2	0	1	0	0	6	0	0	0
Total Workdays	396	305	526	27,428	4,159	2,922	11,876	2,101	2,884	222	664	899

Footnote:

*NRC review and Army oversight labor categories are not included in RACER™ 11.5. NRC assumptions were based on professional judgment. Army assumptions were based on professional judgment and the Davy Crocket DFP.

Table 2-10. Worker Unit Cost Schedule
(based on NUREG-1757, Volume 3, Table A.3.12)

Activity	NRC Staff ^a	IMCOM RSSO	Installation RSO	Army Oversight Health Physicist	Army Oversight Safety	UXO Program Manager	UXO Project Manager	Project Manager	Project Engineer	UXO Staff Engineer	Project Scientist	Staff Scientist
Salary & Fringe (\$/year)	NA	\$137,800	\$121,900	\$121,900	\$111,300	\$186,397	\$152,916	\$115,849	\$98,219	\$97,846	\$106,941	\$86,370
Overhead Rate (%)	NA	154%	154%	154%	154%	145%	145%	145%	145%	145%	145%	145%
Total Cost Per Year	\$551,200	\$350,012	\$309,626	\$309,626	\$282,702	\$456,672	\$374,644	\$283,830	\$240,637	\$239,723	\$262,005	\$211,607
Total Cost Per Work Day ^b	\$2,120	\$1,346	\$1,191	\$1,191	\$1,087	\$1,756	\$1,441	\$1,092	\$926	\$922	\$1,008	\$814

Activity	Geophysist	Certified Health Physicist	QA/QC Officer	Word Processing/ Clerical	Draftsman/ CADD	UXO Safety Officer	Senior UXO Supervisor	UXO Technician III (Supervisor)	UXO Technician II	UXO Technician I	Field Health Physicist	Field Technician
Salary & Fringe (\$/year)	\$134,311	\$142,502	\$79,284	\$54,324	\$63,318	\$93,901	\$104,918	\$78,495	\$66,445	\$55,156	\$65,742	\$55,156
Overhead Rate (%)	145%	145%	145%	145%	145%	145%	145%	145%	145%	145%	145%	145%
Total Cost Per Year	\$329,061	\$349,129	\$194,245	\$133,093	\$155,129	\$230,058	\$257,049	\$192,312	\$162,791	\$135,132	\$161,069	\$135,132
Total Cost Per Work Day ^b	\$1,266	\$1,343	\$747	\$512	\$597	\$885	\$989	\$740	\$626	\$520	\$619	\$520

Source: Salary & Fringe (\$/year) and Overhead Rate (%) information shown for contractor personnel was taken from RACER™ version 11.5. The Overhead Rate (%) is assumed to be 145% for all contractor personnel.

Footnotes:

^aThe total cost per work day for NRC staff was calculated using the professional staff-hour rate of \$265 per hour rate, as published in 10 CFR 170.20.

^bThe total cost per work day assumes 260 work days per year.

**Table 2-11. Total Labor Costs by Major Decommissioning Task
(based on NUREG-1757, Volume 3, Table A.3.13)**

Activity	NRC Staff*	IMCOM RSSO*	Installation RSO*	Army Oversight Health Physicist*	Army Oversight Safety*	UXO Program Manager	UXO Project Manager	Project Manager	Project Engineer	UXO Staff Engineer	Project Scientist	Staff Scientist
Planning and Preparation (Totals from Table 2-2)	\$667,800	\$430,784	\$227,456	\$104,796	\$91,334	\$184,425	\$420,754	\$840,572	\$924,600	\$418,939	\$796,091	\$84,338
Decontamination or Dismantling of Radioactive Facility Components (Totals from Table 2-5)	\$1,797,760	\$228,854	\$1,009,857	\$606,152	\$553,444	\$3,811,454	\$40,035,019	\$0	\$0	\$12,908	\$0	\$0
Restoration of Contaminated Areas on Facility Grounds (Totals from Table 2-6)	\$8,480	\$10,770	\$30,963	\$14,290	\$13,048	\$28,103	\$149,858	\$0	\$481,273	\$0	\$0	\$0
Final Radiation Survey (Totals from Table 2-7)	\$21,200	\$6,731	\$28,581	\$76,216	\$69,588	\$6,367	\$0	\$21,424	\$9,949	\$0	\$26,200	\$136,731
Site Stabilization and Long-Term Surveillance (Totals from Table 2-8)	\$10,600	\$6,731	\$1,302,811	\$23,817	\$5,437	\$0	\$0	\$7,867	\$14,752	\$0	\$20,142	\$15,689
Total Labor Costs	\$2,505,840	\$683,870	\$2,599,668	\$825,272	\$732,851	\$4,030,349	\$40,605,631	\$869,863	\$1,430,575	\$431,847	\$842,434	\$236,757

**Table 2-11. Total Labor Costs by Major Decommissioning Task
(based on NUREG-1757, Volume 3, Table A.3.13) (Continued)**

Activity	Geophysist	Certified Health Physicist	QA/QC Officer	Word Processing/ Clerical	Draftsman/ CADD	UXO Safety Officer	Senior UXO Supervisor	UXO Technician III (Supervisor)	UXO Technician II	UXO Technician I	Field Health Physicist	Field Technician
Planning and Preparation (Totals from Table 2-2)	\$373,358	\$397,470	\$369,066	\$146,403	\$20,808	\$242,446	\$303,516	\$0	\$144,946	\$0	\$198,858	\$155,402
Decontamination or Dismantling of Radioactive Facility Components (Totals from Table 2-5)	\$0	\$0	\$0	\$13,883,184	\$2,460,589	\$2,342,168	\$11,437,704	\$1,554,033	\$1,442,577	\$115,382	\$0	\$0
Restoration of Contaminated Areas on Facility Grounds (Totals from Table 2-6)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$218,290
Final Radiation Survey (Totals from Table 2-7)	\$117,703	\$12,085	\$21,292	\$9,534	\$0	\$0	\$0	\$0	\$214,446	\$0	\$212,177	\$93,553
Site Stabilization and Long-Term Surveillance (Totals from Table 2-8)	\$0	\$4,095	\$0	\$2,655	\$1,977	\$313	\$0	\$0	\$3,118	\$0	\$0	\$0
Total Labor Costs	\$491,060	\$413,650	\$390,359	\$14,041,775	\$2,483,374	\$2,584,927	\$11,741,220	\$1,554,033	\$1,805,088	\$115,382	\$411,035	\$467,244

Footnote:

* NRC review and Army oversight labor categories are not included in RACER™ 11.5. NRC assumptions were based on professional judgment. Army assumptions were based on professional judgment and the Davy Crockett DFP..

Table 2-12. Total Decommissioning Costs
(based on NUREG-1757, Volume 3, Table A.3.17)

Task/Component	Cost	Percentage
Planning and Preparation	\$9,734,635	0.35%
Decontamination or Dismantling of Radioactive Facility Components	\$2,791,339,588	99.47%
Final Radiation Survey	\$1,279,714	0.05%
Restoration of Contaminated Areas on Facility Grounds	\$2,422,150	0.09%
Site Stabilization and Long-Term Surveillance	\$1,469,684	0.05%
Subtotal	\$2,806,245,770	
25% Contingency	\$701,561,443	
TOTAL	\$3,507,807,213	

3.0 FINIANCIAL ASSURANCE

In accordance with the NRC's financial assurance regulations (10 CFR 30.35[e], 10 CFR 40.36[d], 10 CFR 70.25[b]), licensees must provide a certification of financial assurance by the licensee that financial assurance for the decommissioning has been provided in the amount of the decommissioning cost estimate and an originally signed duplicate of the financial instruments that provided financial assurance for decommissioning. A Statement of Intent and Proof of Authority to commit the funds in the amount of the decommissioning has been included in Appendix B.

4.0 REFERENCES

- NRC (U.S. Nuclear Regulatory Commission). 2012. Consolidated Decommissioning Guidance, Financial Assurance, Recordkeeping, and Timeliness. Final Report. NUREG-1757, Vol. 3, Rev. 1. U.S. Nuclear Regulatory Commission, Office of Nuclear Material Safety and Safeguards, Washington, DC 20555-0001. Prepared by K.M. Kline, C.M. Dean, T.L. Fredrichs, C.M. Maier, E.R. Pogue, and R.N. Young. Manuscript Completed: February 2012. Date Published: February 2012.
- Oxenber, T. and R. Herring. 2013. Personal communications between Ms. Tanya Oxenber and Mr. Richard Herring (former JPG Radiation Safety Officers) with Mr. Dennis Chambers, SAIC CHP, Subject: JPG DU Operations. 18 March.
- U.S. Army. 1995. Final Environmental Impact Statement for Disposal and Reuse of the Jefferson Proving Ground. U.S. Army Materiel Command (AMCSO). Alexandria, Virginia. September.
- U.S. Army. 2013. Army's Environmental Report for NRC, Materials License SUB-1435, Depleted Uranium Impact Area, Jefferson Proving Ground, Madison, Indiana. Final. Prepared for U.S. Department of Army, 1 Rock Island Arsenal, Rock Island, Illinois 61299-5000 and U.S. Army Corps of Engineers, Louisville District, 600 Dr. Martin Luther King, Jr. Place, Louisville, Kentucky 40202-2232. August.

APPENDIX A

**RACER™ 11.5 OUTPUT FILES WITH DETAILED COST BREAKDOWNS AND
ASSUMPTIONS**

Planning and Preparation

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR 20.1403. The RACER estimate accompanies the assumptions provided in the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input checked="" type="checkbox"/>	Safety Level: E
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input checked="" type="checkbox"/>	Safety Level: E
Removal/Interim Action	<input checked="" type="checkbox"/>	Safety Level: D
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input checked="" type="checkbox"/>	Safety Level: D

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Sr. Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Design

Phase Name: Documentation for Regulatory Agencies

Description: It is assumed that this phase of planning and preparation includes project planning, treatability study, preliminary design (30%), intermediate design (60%), prefinal design (90%), and final design (100%). In addition, this phase would include the preparation of bid documents. Each sub phase would include site visits, data review, and public and regulatory meetings.

Start Date: November, 2021

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

Markup % Prime % Sub.

Remedial Design

Yes

100

0

Total Marked-up Cost: \$2,538,678.97

Technologies:

Technology: Remedial Design

Element: Project Planning

Unit of

Material Labor Unit

Equipment

Sub Bid

Cost

Technology: Remedial Design

Assembly	Description	Quantity	Measure	Unit Cost	Cost	Unit Cost	Cost	Extended Cost	Override
33010104	Sample collection, vehicle mileage charge, car or van	50.00	MI	0.00	0.00	0.00	0.26	\$12.82	False
33040921	Senior UXO Supervisor (SUXOS)	173.00	HR	0.00	89.51	0.00	0.00	\$15,485.37	False
33040922	UXO Program Manager	58.00	HR	0.00	159.03	0.00	0.00	\$9,223.71	False
33040923	UXO Project Manager	460.00	HR	0.00	130.46	0.00	0.00	\$60,011.23	False
33040925	UXO Staff Engineer	587.00	HR	0.00	83.48	0.00	0.00	\$49,005.59	False
33040930	UXO QC Specialist	23.00	HR	0.00	79.64	0.00	0.00	\$1,831.77	False
33040931	UXO Safety Officer	23.00	HR	0.00	80.11	0.00	0.00	\$1,842.54	False
33040936	Geophysicist (UXO)	173.00	HR	0.00	114.59	0.00	0.00	\$19,824.61	False
33220105	Project Engineer	58.00	HR	0.00	159.72	0.00	0.00	\$9,263.68	False
33220108	Project Scientist	587.00	HR	0.00	173.91	0.00	0.00	\$102,083.31	False
33220109	Staff Scientist	1,024.00	HR	0.00	140.45	0.00	0.00	\$143,820.48	False
33220110	QA/QC Officer	449.00	HR	0.00	128.94	0.00	0.00	\$57,892.70	False
33220111	Certified Industrial Hygienist	23.00	HR	0.00	170.66	0.00	0.00	\$3,925.27	False
33220113	Secretarial/ Administrative	115.00	HR	0.00	97.18	0.00	0.00	\$11,175.98	False
33220114	Word Processing/Clerical	426.00	HR	0.00	88.35	0.00	0.00	\$37,635.06	False
33220115	Draftsman/CADD	46.00	HR	0.00	102.97	0.00	0.00	\$4,736.43	False
33222004	Radiation Technician	173.00	HR	0.00	56.09	0.00	0.00	\$9,703.81	False
33240101	Other Direct Costs	1.00	LS	83,105.80	0.00	0.00	0.00	\$83,105.80	False

Total Element Cost:

\$620,580.16

Element: Treatability or Other Studies

Unit of	Material	Labor	Unit	Equipment	Sub Bid	Cost
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Technology: Remedial Design

Assembly	Description	Quantity	Measure	Unit Cost	Cost	Unit Cost	Cost	Extended Cost	Override
33022336	Testing, rad analytical vegetation/sediment/soil, gas flow proportional counting, gross beta-total	25.00	EA	0.00	0.00	0.00	65.45	\$1,636.26	False
33022351	Testing, rad analytical vegetation/sediment/soil, liquid scintillation, tritium	25.00	EA	0.00	0.00	0.00	70.91	\$1,772.64	False
33029901	Magnetometer	16.00	DAY	0.00	0.00	0.00	107.05	\$1,712.85	False
33029933	Treatability Test Lump Sum for Site	12.00	EA	3,731.27	0.00	0.00	0.00	\$44,775.18	False
33040921	Senior UXO Supervisor (SUXOS)	230.00	HR	0.00	89.51	0.00	0.00	\$20,587.49	False
33040922	UXO Program Manager	35.00	HR	0.00	159.03	0.00	0.00	\$5,566.03	False
33040923	UXO Project Manager	69.00	HR	0.00	130.46	0.00	0.00	\$9,001.68	False
33040925	UXO Staff Engineer	759.00	HR	0.00	83.48	0.00	0.00	\$63,364.97	False
33040931	UXO Safety Officer	334.00	HR	0.00	80.11	0.00	0.00	\$26,756.83	False
33040934	UXO Technician II	230.00	HR	0.00	56.69	0.00	0.00	\$13,037.98	False
33220105	Project Engineer	334.00	HR	0.00	159.72	0.00	0.00	\$53,346.02	False
33220109	Staff Scientist	1,219.00	HR	0.00	140.45	0.00	0.00	\$171,208.17	False
33220110	QA/QC Officer	322.00	HR	0.00	128.94	0.00	0.00	\$41,517.71	False
33220111	Certified Industrial Hygienist	92.00	HR	0.00	170.66	0.00	0.00	\$15,701.07	False
33220112	Field Technician	230.00	HR	0.00	89.70	0.00	0.00	\$20,630.19	False
33220113	Secretarial/ Administrative	334.00	HR	0.00	97.18	0.00	0.00	\$32,458.93	False
33220114	Word Processing/Clerical	460.00	HR	0.00	88.35	0.00	0.00	\$40,638.80	False
33220115	Draftsman/CADD	288.00	HR	0.00	102.97	0.00	0.00	\$29,654.15	False
33222004	Radiation Technician	230.00	HR	0.00	56.09	0.00	0.00	\$12,901.01	False
33240101	Other Direct Costs	1.00	LS	62,752.31	0.00	0.00	0.00	\$62,752.31	False

Total Element Cost:

\$669,020.27

Element: Preliminary Design

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040921	Senior UXO Supervisor (SUXOS)	256.00	HR	0.00	89.51	0.00	0.00	\$22,914.77	False
33040922	UXO Program Manager	150.00	HR	0.00	159.03	0.00	0.00	\$23,854.42	False
33040923	UXO Project Manager	288.00	HR	0.00	130.46	0.00	0.00	\$37,572.25	False
33040925	UXO Staff Engineer	1,196.00	HR	0.00	83.48	0.00	0.00	\$99,847.84	False
33040930	UXO QC Specialist	256.00	HR	0.00	79.64	0.00	0.00	\$20,388.44	False
33040931	UXO Safety Officer	256.00	HR	0.00	80.11	0.00	0.00	\$20,508.23	False
33220105	Project Engineer	483.00	HR	0.00	159.72	0.00	0.00	\$77,144.09	False
33220109	Staff Scientist	644.00	HR	0.00	140.45	0.00	0.00	\$90,449.60	False
33220110	QA/QC Officer	173.00	HR	0.00	128.94	0.00	0.00	\$22,306.10	False
33220111	Certified Industrial Hygienist	483.00	HR	0.00	170.66	0.00	0.00	\$82,430.62	False
33220113	Secretarial/ Administrative	69.00	HR	0.00	97.18	0.00	0.00	\$6,705.59	False
33220114	Word Processing/Clerical	610.00	HR	0.00	88.35	0.00	0.00	\$53,890.58	False
33220115	Draftsman/CADD	345.00	HR	0.00	102.97	0.00	0.00	\$35,523.21	False
33240101	Other Direct Costs	1.00	LS	48,115.31	0.00	0.00	0.00	\$48,115.31	False

Total Element Cost:

\$641,651.04

Element: Intermediate Design

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
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Technology: Remedial Design

33040921	Senior UXO Supervisor (SUXOS)	35.00	HR	0.00	89.51	0.00	0.00	\$3,132.88	False
33040922	UXO Program Manager	16.00	HR	0.00	159.03	0.00	0.00	\$2,544.47	False
33040923	UXO Project Manager	23.00	HR	0.00	130.46	0.00	0.00	\$3,000.56	False
33040925	UXO Staff Engineer	345.00	HR	0.00	83.48	0.00	0.00	\$28,802.26	False
33040931	UXO Safety Officer	35.00	HR	0.00	80.11	0.00	0.00	\$2,803.86	False
33220105	Project Engineer	46.00	HR	0.00	159.72	0.00	0.00	\$7,347.06	False
33220110	QA/QC Officer	35.00	HR	0.00	128.94	0.00	0.00	\$4,512.79	False
33220111	Certified Industrial Hygienist	35.00	HR	0.00	170.66	0.00	0.00	\$5,973.23	False
33220113	Secretarial/ Administrative	23.00	HR	0.00	97.18	0.00	0.00	\$2,235.20	False
33220114	Word Processing/Clerical	35.00	HR	0.00	88.35	0.00	0.00	\$3,092.08	False
33220115	Draftsman/CADD	92.00	HR	0.00	102.97	0.00	0.00	\$9,472.85	False
33240101	Other Direct Costs	1.00	LS	6,601.59	0.00	0.00	0.00	\$6,601.59	False

Total Element Cost:

\$79,518.84

Element: Prefinal Design

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040921	Senior UXO Supervisor (SUXOS)	92.00	HR	0.00	89.51	0.00	0.00	\$8,234.99	False
33040922	UXO Program Manager	46.00	HR	0.00	159.03	0.00	0.00	\$7,315.36	False
33040923	UXO Project Manager	138.00	HR	0.00	130.46	0.00	0.00	\$18,003.37	False
33040925	UXO Staff Engineer	564.00	HR	0.00	83.48	0.00	0.00	\$47,085.44	False
33040931	UXO Safety Officer	92.00	HR	0.00	80.11	0.00	0.00	\$7,370.14	False
33220105	Project Engineer	104.00	HR	0.00	159.72	0.00	0.00	\$16,610.74	False
33220109	Staff Scientist	736.00	HR	0.00	140.45	0.00	0.00	\$103,370.97	False

Technology: Remedial Design

33220110	QA/QC Officer	92.00	HR	0.00	128.94	0.00	0.00	\$11,862.20	False
33220111	Certified Industrial Hygienist	219.00	HR	0.00	170.66	0.00	0.00	\$37,375.37	False
33220113	Secretarial/ Administrative	58.00	HR	0.00	97.18	0.00	0.00	\$5,636.58	False
33220114	Word Processing/Clerical	506.00	HR	0.00	88.35	0.00	0.00	\$44,702.67	False
33220115	Draftsman/CADD	115.00	HR	0.00	102.97	0.00	0.00	\$11,841.07	False
33240101	Other Direct Costs	1.00	LS	36,123.85	0.00	0.00	0.00	\$36,123.85	False

Total Element Cost:

\$355,532.76

Element: Final Design

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040921	Senior UXO Supervisor (SUXOS)	12.00	HR	0.00	89.51	0.00	0.00	\$1,074.13	False
33040922	UXO Program Manager	16.00	HR	0.00	159.03	0.00	0.00	\$2,544.47	False
33040923	UXO Project Manager	36.00	HR	0.00	130.46	0.00	0.00	\$4,696.53	False
33040925	UXO Staff Engineer	104.00	HR	0.00	83.48	0.00	0.00	\$8,682.42	False
33040931	UXO Safety Officer	12.00	HR	0.00	80.11	0.00	0.00	\$961.32	False
33220105	Project Engineer	56.00	HR	0.00	159.72	0.00	0.00	\$8,944.24	False
33220109	Staff Scientist	236.00	HR	0.00	140.45	0.00	0.00	\$33,146.13	False
33220110	QA/QC Officer	24.00	HR	0.00	128.94	0.00	0.00	\$3,094.49	False
33220111	Certified Industrial Hygienist	56.00	HR	0.00	170.66	0.00	0.00	\$9,557.17	False
33220114	Word Processing/Clerical	48.00	HR	0.00	88.35	0.00	0.00	\$4,240.57	False
33220115	Draftsman/CADD	40.00	HR	0.00	102.97	0.00	0.00	\$4,118.63	False
33240101	Other Direct Costs	0.00	LS	0.00	0.00	0.00	0.00	\$0.00	False

Total Element Cost:

\$81,060.11

Element: Bid Documents

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040921	Senior UXO Supervisor (SUXOS)	24.00	HR	0.00	89.51	0.00	0.00	\$2,148.26	False
33040922	UXO Program Manager	12.00	HR	0.00	159.03	0.00	0.00	\$1,908.35	False
33040923	UXO Project Manager	48.00	HR	0.00	130.46	0.00	0.00	\$6,262.04	False
33040925	UXO Staff Engineer	104.00	HR	0.00	83.48	0.00	0.00	\$8,682.42	False
33040931	UXO Safety Officer	24.00	HR	0.00	80.11	0.00	0.00	\$1,922.65	False
33220105	Project Engineer	88.00	HR	0.00	159.72	0.00	0.00	\$14,055.24	False
33220109	Staff Scientist	236.00	HR	0.00	140.45	0.00	0.00	\$33,146.13	False
33220110	QA/QC Officer	24.00	HR	0.00	128.94	0.00	0.00	\$3,094.49	False
33220111	Certified Industrial Hygienist	36.00	HR	0.00	170.66	0.00	0.00	\$6,143.90	False
33220114	Word Processing/Clerical	88.00	HR	0.00	88.35	0.00	0.00	\$7,774.38	False
33220115	Draftsman/CADD	60.00	HR	0.00	102.97	0.00	0.00	\$6,177.95	False
33240101	Other Direct Costs	0.00	LS	0.00	0.00	0.00	0.00	\$0.00	True

Total Element Cost:

\$91,315.80

Total 1st Year Tech Cost:

\$2,538,678.97

Total Phase Element Cost

\$2,538,678.97

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR
20.1403. The RACER estimate accompanies the assumptions provided in
the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input checked="" type="checkbox"/>	Safety Level: E
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input checked="" type="checkbox"/>	Safety Level: E
Removal/Interim Action	<input checked="" type="checkbox"/>	Safety Level: D
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input checked="" type="checkbox"/>	Safety Level: D

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Sr. Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Remedial Action

Phase Name: Development of Work Plans

Description: Assumes professional labor management hours for the preparation of the work plans for the decontamination of the DU Impact Area.

Approach: Ex Situ

Start Date: August, 2021

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
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Professional Labor Management	No	0	100
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Total Marked-up Cost: \$904,066.53

Technologies:

Technology: Professional Labor Management

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040921	Senior UXO Supervisor (SUXOS)	390.00	HR	0.00	73.14	0.00	0.00	\$28,523.98	False

Technology: Professional Labor Management

33040922	UXO Program Manager	240.00	HR	0.00	129.94	0.00	0.00	\$31,185.95	False
33040923	UXO Project Manager	720.00	HR	0.00	106.60	0.00	0.00	\$76,749.80	False
33040925	UXO Staff Engineer	1,260.00	HR	0.00	68.21	0.00	0.00	\$85,950.44	False
33040931	UXO Safety Officer	456.00	HR	0.00	65.46	0.00	0.00	\$29,848.54	False
33040934	UXO Technician II	240.00	HR	0.00	46.32	0.00	0.00	\$11,116.39	False
33040936	Geophysicist (UXO)	570.00	HR	0.00	93.63	0.00	0.00	\$53,370.77	False
33220105	Project Engineer	2,340.00	HR	0.00	68.47	0.00	0.00	\$160,218.66	False
33220108	Project Scientist	2,340.00	HR	0.00	74.55	0.00	0.00	\$174,451.28	False
33220109	Staff Scientist	1,260.00	HR	0.00	60.21	0.00	0.00	\$75,863.52	False
33220110	QA/QC Officer	570.00	HR	0.00	55.27	0.00	0.00	\$31,506.05	False
33220111	Certified Industrial Hygienist	456.00	HR	0.00	73.16	0.00	0.00	\$33,361.68	False
33220112	Field Technician	240.00	HR	0.00	38.45	0.00	0.00	\$9,228.44	False
33220114	Word Processing/Clerical	680.00	HR	0.00	37.87	0.00	0.00	\$25,753.34	False
33220115	Draftsman/CADD	735.00	HR	0.00	44.14	0.00	0.00	\$32,443.08	False
33220149	Lump Sum Percentage Labor Cost	1.00	LS	0.00	14,345.00	0.00	0.00	\$14,345.00	False
33222004	Radiation Technician	240.00	HR	0.00	45.83	0.00	0.00	\$10,999.61	False
33440302	Other Cost (Lump Sum)	1.00	LS	18,385.00	0.00	765.00	0.00	\$19,150.00	False

Total Element Cost:	\$904,066.53
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Total 1st Year Tech Cost:	\$904,066.53
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Total Phase Element Cost

\$904,066.53

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR 20.1403. The RACER estimate accompanies the assumptions provided in the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input checked="" type="checkbox"/>	Safety Level: E
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input checked="" type="checkbox"/>	Safety Level: E
Removal/Interim Action	<input checked="" type="checkbox"/>	Safety Level: D
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input checked="" type="checkbox"/>	Safety Level: D

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Sr. Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Pre-Study
Phase Name: Administrative Fees
Description: Assumes a lump sum for potential administrative fees (e.g., procurement fees for third party contractor, legal fees, financial assurance fees, and coordination with NRC staff).

Start Date: December, 2019
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate
Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
USER DEFINED ESTIMATE	Yes	100	0

Total Marked-up Cost: \$74,252.70

Technologies:

Technology: USER DEFINED ESTIMATE

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33229098	Non-Labor Permit Fees	4.00	EA	6,716.28	0.00	0.00	0.00	\$26,865.11	False

Print Date: 9/12/2019 2:01:19 PM

Page: 4 of 5

Technology: USER DEFINED ESTIMATE

33229099	Other Permit Fees	1.00	EA	22,387.59	0.00	0.00	0.00	\$22,387.59	False
33440302	Other Cost (Lump Sum)	1.00	LS	25,000.00	0.00	0.00	0.00	\$25,000.00	False

Total Element Cost:	\$74,252.70
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Total 1st Year Tech Cost:	\$74,252.70
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Total Phase Element Cost	\$74,252.70
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Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR
20.1403. The RACER estimate accompanies the assumptions provided in
the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input checked="" type="checkbox"/>	Safety Level: E
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input checked="" type="checkbox"/>	Safety Level: E
Removal/Interim Action	<input checked="" type="checkbox"/>	Safety Level: D
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input checked="" type="checkbox"/>	Safety Level: D

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Sr. Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Remedial Action
Phase Name: Submittal of Decommissioning Plan to NRC
Description: Preparation of the Decommissioning Plan to NRC

Approach: Ex Situ

Start Date: February, 2021

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

Markup % Prime % Sub.

Feasibility Study

Yes

100

0

Total Marked-up Cost: \$1,185,945.93

Technologies:

Technology: Feasibility Study

Element: Scoping

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	80.00	HR	0.00	229.75	0.00	0.00	\$18,379.74	False
33220105	Project Engineer	112.00	HR	0.00	194.78	0.00	0.00	\$21,815.23	False

Technology: Feasibility Study

33220106	Staff Engineer	104.00	HR	0.00	200.61	0.00	0.00	\$20,863.68	False
33220108	Project Scientist	144.00	HR	0.00	212.08	0.00	0.00	\$30,539.73	False
33220110	QA/QC Officer	48.00	HR	0.00	157.24	0.00	0.00	\$7,547.53	False
33220111	Certified Industrial Hygienist	32.00	HR	0.00	208.13	0.00	0.00	\$6,660.05	False
33220114	Word Processing/Clerical	96.00	HR	0.00	107.74	0.00	0.00	\$10,342.85	False
33220115	Draftsman/CADD	72.00	HR	0.00	125.57	0.00	0.00	\$9,040.90	False
33240101	Other Direct Costs	1.00	LS	1,313.62	0.00	0.00	0.00	\$1,313.62	False

Total Element Cost:

\$126,503.33

Element: Screening and Evaluation of Alternatives

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	60.00	HR	0.00	229.75	0.00	0.00	\$13,784.80	False
33220103	Office Manager	24.00	HR	0.00	190.07	0.00	0.00	\$4,561.58	False
33220105	Project Engineer	360.00	HR	0.00	194.78	0.00	0.00	\$70,120.37	False
33220106	Staff Engineer	1,040.00	HR	0.00	200.61	0.00	0.00	\$208,636.77	False
33220108	Project Scientist	104.00	HR	0.00	212.08	0.00	0.00	\$22,056.48	False
33220110	QA/QC Officer	72.00	HR	0.00	157.24	0.00	0.00	\$11,321.30	False
33220111	Certified Industrial Hygienist	480.00	HR	0.00	208.13	0.00	0.00	\$99,900.76	False
33220114	Word Processing/Clerical	68.00	HR	0.00	107.74	0.00	0.00	\$7,326.19	False
33220115	Draftsman/CADD	4.00	HR	0.00	125.57	0.00	0.00	\$502.27	False
33240101	Other Direct Costs	1.00	LS	4,598.16	0.00	0.00	0.00	\$4,598.16	False

Total Element Cost:

\$442,808.69

Element: Feasibility Report / Record of Decision

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	168.00	HR	0.00	229.75	0.00	0.00	\$38,597.45	False
33220103	Office Manager	80.00	HR	0.00	190.07	0.00	0.00	\$15,205.27	False
33220105	Project Engineer	728.00	HR	0.00	194.78	0.00	0.00	\$141,798.97	False
33220106	Staff Engineer	960.00	HR	0.00	200.61	0.00	0.00	\$192,587.79	False
33220108	Project Scientist	456.00	HR	0.00	212.08	0.00	0.00	\$96,709.16	False
33220110	QA/QC Officer	168.00	HR	0.00	157.24	0.00	0.00	\$26,416.36	False
33220111	Certified Industrial Hygienist	64.00	HR	0.00	208.13	0.00	0.00	\$13,320.10	False
33220114	Word Processing/Clerical	608.00	HR	0.00	107.74	0.00	0.00	\$65,504.74	False
33220115	Draftsman/CADD	160.00	HR	0.00	125.57	0.00	0.00	\$20,090.89	False
33240101	Other Direct Costs	1.00	LS	6,403.18	0.00	0.00	0.00	\$6,403.18	False

Total Element Cost:

\$616,633.91

Total 1st Year Tech Cost:

\$1,185,945.93

Total Phase Element Cost

\$1,185,945.93

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
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Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

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DU Impact Area to meet the criteria for unrestricted use in 10 CFR 20.1403. The RACER estimate accompanies the assumptions provided in the Decommissioning Funding Plan.

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ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input checked="" type="checkbox"/>	Safety Level: E
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input checked="" type="checkbox"/>	Safety Level: E
Removal/Interim Action	<input checked="" type="checkbox"/>	Safety Level: D
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input checked="" type="checkbox"/>	Safety Level: D

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Documentation

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and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Sr. Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Study
Phase Name: Characterization of Radiological Condition of the Facility
Description: Sampling of environmental media was conducted during previous investigations. Samples collected for the treatability study were included under Preparation of Documentation for Regulatory Agencies. It is assumed that additional geophysical investigation in the primary impact area (15 acres) and portions of the secondary impact area (120 acres).

Start Date: December, 2019

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
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MEC Remedial Investigation with AGC

Yes	100	0
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Total Marked-up Cost: \$2,134,638.94

Technologies:

Technology: MEC Remedial Investigation with AGC

Element: Systematic Project Planning

Unit of	Material	Labor	Unit	Equipment	Sub Bid	Cost
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Technology: MEC Remedial Investigation with AGC

Assembly	Description	Quantity	Measure	Unit Cost	Cost	Unit Cost	Cost	Extended Cost	Override
33010108	Sedan, Automobile, Rental	84.00	DAY	0.00	0.00	0.00	60.75	\$5,102.73	False
33010202	Per Diem (per person)	90.00	DAY	0.00	0.00	0.00	0.00	\$0.00	False
33040947	MEC: Systematic Project Planning Meeting, includes labor and facility rental expenses, per EA	9.00	EA	0.00	18,237.58	0.00	1,110.39	\$174,131.67	False
33040948	MEC: Systematic Project Planning, Site Visit, includes labor expenses, per EA	1.00	EA	0.00	5,430.68	0.00	0.00	\$5,430.68	False
33040949	MEC: Systematic Project Planning, UFP QAPP, includes labor expenses, per EA	1.00	EA	0.00	58,799.21	0.00	0.00	\$58,799.21	False
33040950	MEC: Systematic Project Planning, Establish and Management of GIS Database, includes labor expenses, per EA	1.00	EA	0.00	18,877.73	0.00	0.00	\$18,877.73	False
33040952	MEC: Systematic Project Planning, Explosive Siting Plan, includes labor expenses, per EA	1.00	EA	0.00	14,105.19	0.00	0.00	\$14,105.19	False
33040953	MEC: Systematic Project Planning, PMP/Quality Assurance Surveillance Plan, includes labor expenses, per EA	1.00	EA	0.00	8,449.28	0.00	0.00	\$8,449.28	False
33040954	MEC: Systematic Project Planning, Health and Safety Plan, includes labor expenses, per EA	1.00	EA	0.00	13,272.98	0.00	0.00	\$13,272.98	False
33041101	Airfare	6.00	LS	0.00	0.00	0.00	575.00	\$3,450.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	7,398.00	\$7,398.00	False

Total Element Cost:

\$309,017.49

Element: Site Preparation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	58.00	DAY	0.00	0.00	0.00	60.75	\$3,523.31	False
33010202	Per Diem (per person)	82.00	DAY	0.00	0.00	0.00	0.00	\$0.00	False
33040957	MEC: Establish Transects & Grids, includes labor and equipment expenses, per Day	58.00	DAY	0.00	1,616.89	19.06	93.97	\$100,335.25	False
33041101	Airfare	1.00	LS	0.00	0.00	0.00	575.00	\$575.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	2,576.27	\$2,576.27	False

Total Element Cost:

\$107,009.83

Element: Site Screening

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	47.95	ACR	0.00	1,354.32	459.79	0.00	\$86,986.45	False
17010402	Chipping brush, medium brush	47.95	ACR	0.00	1,741.19	591.13	0.00	\$111,834.48	False
17010403	Chipping brush, heavy brush	95.90	ACR	0.00	3,386.41	1,149.69	0.00	\$435,011.80	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	264.00	DAY	0.00	0.00	0.00	0.00	\$0.00	False
33040651	4 X 4 Truck- Rental/Lease	209.00	DAY	0.00	0.00	243.88	0.00	\$50,969.97	False
33040934	UXO Technician II	740.00	HR	0.00	56.69	0.00	0.00	\$41,948.28	False
33040958	MEC: Surface Clearance , includes labor and equipment expenses, per Day	32.00	DAY	0.00	2,937.14	0.00	76.46	\$96,435.29	False

Technology: MEC Remedial Investigation with AGC

33041101	Airfare	11.00	LS	0.00	0.00	0.00	575.00	\$6,325.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	20,173.13	\$20,173.13	False

Total Element Cost:

\$853,643.39

Element: RI Field Activities

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	353.00	DAY	0.00	0.00	0.00	0.00	\$0.00	False
33040170	MEC: Instrument Verification Strip Installation, per EA	1.00	EA	503.25	4,208.62	11.43	596.38	\$5,319.68	False
33040171	MEC: UXO Seeding, Quality Seeding Installation, per EA	58.00	EA	5.81	48.38	0.00	121.78	\$10,206.24	False
33040172	MEC: UXO Mag and Flag Transects Team, per HR	50.00	HR	0.00	142.01	0.00	109.26	\$12,563.86	False
33040173	MEC: UXO Mag and Flag Grid Team, per HR	20.00	HR	0.00	322.36	0.00	109.26	\$8,632.35	False
33040174	MEC: Land-Based Advanced Classification Survey Transects Team, per HR	320.00	HR	0.00	216.78	0.00	182.14	\$127,653.65	False
33040175	MEC: Land-Based Advanced Classification Survey Grid Team, MEC Remedial Investigation, per HR	120.00	HR	0.00	216.78	0.00	182.14	\$47,870.12	False
33040270	Geometrics MetalMapper Mobilization Fee	4.00	EA	0.00	0.00	0.00	1,175.53	\$4,702.13	False
33040651	4 X 4 Truck- Rental/Lease	119.00	DAY	0.00	0.00	243.88	0.00	\$29,021.18	False

Technology: MEC Remedial Investigation with AGC

33041101	Airfare	17.00	LS	0.00	0.00	0.00	575.00	\$9,775.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	6,965.16	\$6,965.16	False

Total Element Cost:

\$266,668.34

Element: Investigation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010114	Mobilization Equipment (Soils)	4.00	LS	0.00	2,001.31	1,957.67	0.00	\$15,835.91	False
33010202	Per Diem (per person)	209.00	DAY	0.00	0.00	0.00	0.00	\$0.00	False
33040183	UXO Anomaly Dig Crew, MEC Remedial Investigation, includes Labor and Equipment, per HR	200.00	HR	2.91	224.24	0.00	46.99	\$54,826.77	False
33040184	Advanced Geophysics Classification Cueing, MEC Investigation, per EA	3,429.00	EA	0.00	10.66	0.00	4.78	\$52,963.22	False
33040185	UXO Anomaly Explosive Demolition, MEC Activities, includes Labor, Material and Equipment, per EA	2.00	EA	220.01	494.61	0.00	0.00	\$1,429.25	False
33040186	Munitions Deemed As Safe (MDAS) Disposal, bulk solid waste, includes materials, documentation, transport and disposal fees, per LB	373.00	LB	0.00	0.00	0.00	7.77	\$2,897.10	False
33040651	4 X 4 Truck- Rental/Lease	399.00	DAY	0.00	0.00	243.88	0.00	\$97,306.32	False
33041101	Airfare	7.00	LS	0.00	0.00	0.00	575.00	\$4,025.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	5,742.09	\$5,742.09	False

Total Element Cost:

\$235,025.65

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
16019934	Temporary Office 50' X 12'	3.00	MO	692.63	0.00	0.00	0.00	\$2,077.90	False
16019935	Field office expense, office supplies, average, per month	3.00	MO	113.43	0.00	0.00	0.00	\$340.29	False
20020310	1/C #2 Aluminum, Bare, Wire	500.00	LF	0.51	1.09	0.10	0.00	\$850.73	False
20020403	40' Class 3 Treated Power Pole	5.00	EA	623.87	722.35	104.63	0.00	\$7,254.23	False
20020431	Terminal Structure, 15 KV Pole Top	2.00	EA	2,360.06	2,340.03	299.06	0.00	\$9,998.30	False
33010202	Per Diem (per person)	340.00	DAY	0.00	0.00	0.00	0.00	\$0.00	False
33010475	Toilet, portable, chemical, rent per month	3.00	MO	140.37	0.00	0.00	0.00	\$421.11	False
33040651	4 X 4 Truck- Rental/Lease	239.00	DAY	0.00	0.00	243.88	0.00	\$58,286.24	False
33040699	Storage boxes, rent per month, 40' x 8'	3.00	MO	153.13	0.00	0.00	0.00	\$459.39	False
33040921	Senior UXO Supervisor (SUXOS)	795.00	HR	0.00	89.51	0.00	0.00	\$71,161.09	False
33040923	UXO Project Manager	239.00	HR	0.00	130.46	0.00	0.00	\$31,179.75	False
33040930	UXO QC Specialist	360.00	HR	0.00	79.64	0.00	0.00	\$28,671.25	False
33040931	UXO Safety Officer	360.00	HR	0.00	80.11	0.00	0.00	\$28,839.69	False
33040940	GIS Manager (UXO)	159.00	HR	0.00	94.06	0.00	0.00	\$14,955.89	False
33041101	Airfare	5.00	LS	0.00	0.00	0.00	575.00	\$2,875.00	False
33220101	Senior Project Manager	16.00	HR	0.00	196.61	0.00	0.00	\$3,145.73	False
33220113	Secretarial/ Administrative	16.00	HR	0.00	97.18	0.00	0.00	\$1,554.92	False
33222006	Electrician	40.00	HR	0.00	92.25	0.00	0.00	\$3,689.89	False

Total Element Cost:

\$265,761.41

Element: RI Reporting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33041319	MEC Remedial Investigation Report - Site Complexity (High), per EA	1.00	EA	0.00	65,345.24	0.00	0.00	\$65,345.24	False
33041325	MEC: Independent Blind Seed Tracking, per EA	1.00	EA	0.00	4,426.91	0.00	0.00	\$4,426.91	False
33041326	MEC: IVS Memo, per EA	1.00	EA	0.00	7,662.68	0.00	0.00	\$7,662.68	False
33041330	MEC: Anomaly Selection Memo, per EA	1.00	EA	0.00	7,662.68	0.00	0.00	\$7,662.68	False
33041331	MEC: TOI Memo, per EA	1.00	EA	0.00	7,662.68	0.00	0.00	\$7,662.68	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	4,752.62	\$4,752.62	False

Total Element Cost:

\$97,512.82

Total 1st Year Tech Cost:

\$2,134,638.94

Total Phase Element Cost

\$2,134,638.94

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

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Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR
20.1403. The RACER estimate accompanies the assumptions provided in
the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input checked="" type="checkbox"/>	Safety Level: E
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input checked="" type="checkbox"/>	Safety Level: E
Removal/Interim Action	<input checked="" type="checkbox"/>	Safety Level: D
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input checked="" type="checkbox"/>	Safety Level: D

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Sr. Environmental Engineer

Agency/Org./Office: Leidos for USACE, Louisville District

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Remedial Action
Phase Name: Procurement of Special Equipment
Description: Assumes 3 months of planning, procurement of special equipment and construction materials, and organization of subcontractors.

Approach: Ex Situ

Start Date: February, 2022

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

Markup % Prime % Sub.

Professional Labor Management	No	0	100
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Total Marked-up Cost: \$731,140.75

Technologies:

Technology: Professional Labor Management

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040921	Senior UXO Supervisor (SUXOS)	1,240.00	HR	0.00	73.14	0.00	0.00	\$90,691.63	False

Technology: Professional Labor Management

33040922	UXO Program Manager	160.00	HR	0.00	129.94	0.00	0.00	\$20,790.63	False
33040923	UXO Project Manager	240.00	HR	0.00	106.60	0.00	0.00	\$25,583.27	False
33040925	UXO Staff Engineer	960.00	HR	0.00	68.21	0.00	0.00	\$65,486.05	False
33040931	UXO Safety Officer	960.00	HR	0.00	65.46	0.00	0.00	\$62,839.02	False
33040934	UXO Technician II	640.00	HR	0.00	46.32	0.00	0.00	\$29,643.71	False
33040936	Geophysicist (UXO)	80.00	HR	0.00	93.63	0.00	0.00	\$7,490.63	False
33220105	Project Engineer	1,440.00	HR	0.00	68.47	0.00	0.00	\$98,596.10	False
33220109	Staff Scientist	960.00	HR	0.00	60.21	0.00	0.00	\$57,800.78	False
33220110	QA/QC Officer	380.00	HR	0.00	55.27	0.00	0.00	\$21,004.04	False
33220111	Certified Industrial Hygienist	380.00	HR	0.00	73.16	0.00	0.00	\$27,801.40	False
33220112	Field Technician	1,920.00	HR	0.00	38.45	0.00	0.00	\$73,827.51	False
33220114	Word Processing/Clerical	320.00	HR	0.00	37.87	0.00	0.00	\$12,119.22	False
33220115	Draftsman/CADD	320.00	HR	0.00	44.14	0.00	0.00	\$14,124.88	False
33220149	Lump Sum Percentage Labor Cost	1.00	LS	0.00	24,573.00	0.00	0.00	\$24,573.00	False
33222004	Radiation Technician	1,920.00	HR	0.00	45.83	0.00	0.00	\$87,996.88	False
33440302	Other Cost (Lump Sum)	1.00	LS	4,785.00	0.00	5,987.00	0.00	\$10,772.00	False

Total Element Cost:	\$731,140.75
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Total 1st Year Tech Cost:	\$731,140.75
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Total Phase Element Cost	\$731,140.75
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Decontamination or Dismantling of Radioactive Facility Components

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR 20.1403. The RACER estimate accompanies the assumptions provided in the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input type="checkbox"/>	
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input type="checkbox"/>	
Removal/Interim Action	<input type="checkbox"/>	
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input type="checkbox"/>	

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Senior Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Remedial Action

Phase Name: Primary Impact Area Remediation

Description: Assumes two phases of remediation: MEC sifting and low level radiation soil treatment of the 15 acres within the Primary Impact Area to a depth of 6 feet BLS. Considering a fluff factor, approximately 207,636 CY of soil would be excavated following a surface clearance. The materials removed would either be sifted mechanically or hand sifted. Bulletproof resistant glass and steel would be equipped on all excavation and sifting equipment. Following the MEC sifting, the soil would undergo onsite radiological screening and soil washing. The estimate assumes 35% of the material (72,673 CY) requires offsite disposal by railway at the LLRW disposal facility, Energy Solutions, in Barnwell County, SC. It is assumed that the material for offsite disposal would be loaded and hauled approximately 25 miles to the nearest railway loading point. Includes backfill and site restoration.

Approach: Ex Situ

Start Date: March, 2022

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
MEC Sifting	Yes	100	0
Low Level Rad Soil Treatment	Yes	100	0
MEC Sifting	Yes	100	0
MEC Sifting	Yes	100	0
MEC Sifting	Yes	100	0
MEC Sifting	Yes	100	0
MEC Sifting	Yes	100	0
Load and Haul	Yes	100	0
Off-site Transportation and Waste Disposal	Yes	100	0
Professional Labor Management	No	0	100
Off-site Transportation and Waste Disposal	Yes	100	0

Total Marked-up Cost: \$1,806,777,858.23

Technologies:

Technology: MEC Sifting

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
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Technology: MEC Sifting

33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	226.86	19,869.53	0.00	0.00	\$20,096.39	False
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Total Element Cost:								\$20,096.39
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Element: Site Visit

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.26	\$15.39	False
33010108	Sedan, Automobile, Rental	6.00	DAY	0.00	0.00	0.00	60.75	\$364.48	False
33010202	Per Diem (per person)	6.00	DAY	0.00	0.00	0.00	161.31	\$967.86	False
33040921	Senior UXO Supervisor (SUXOS)	16.00	HR	0.00	89.51	0.00	0.00	\$1,432.17	False
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040925	UXO Staff Engineer	16.00	HR	0.00	83.48	0.00	0.00	\$1,335.76	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	700.00	\$2,100.00	False
33041303	Munitions Response Workplan (High Complexity)	1.00	EA	113.43	20,157.00	0.00	0.00	\$20,270.43	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False
33240101	Other Direct Costs	1.00	LS	746.25	0.00	0.00	0.00	\$746.25	False

Total Element Cost:								\$65,335.25
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Element: Site Preparation

Unit of	Material	Labor Unit	Equipment	Sub Bid	Cost
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Technology: MEC Sifting

Assembly	Description	Quantity	Measure	Unit Cost	Cost	Unit Cost	Cost	Extended Cost	Override
17010401	Chipping brush, light brush	1.25	ACR	0.00	1,354.32	459.79	0.00	\$2,267.63	False
17010402	Chipping brush, medium brush	1.25	ACR	0.00	1,741.19	591.13	0.00	\$2,915.39	False
17010403	Chipping brush, heavy brush	2.50	ACR	0.00	3,386.41	1,149.69	0.00	\$11,340.25	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	10.00	DAY	0.00	0.00	0.00	161.31	\$1,613.10	False
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	96.63	\$579.79	False
33040933	UXO Technician I	30.00	HR	0.00	47.06	0.00	0.00	\$1,411.78	False
33040934	UXO Technician II	40.00	HR	0.00	56.69	0.00	0.00	\$2,267.47	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False

Total Element Cost:

\$28,363.40

Element: Excavation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	32,266.67	CY	0.00	0.94	1.19	0.00	\$68,625.43	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False
33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False

Total Element Cost:

\$97,354.25

Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	420.00	HR	0.00	71.48	51.60	0.00	\$51,690.26	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False
17030436	0.75 CY Wheel Loader	420.00	HR	0.00	107.80	41.54	0.00	\$62,725.06	False
33010202	Per Diem (per person)	294.00	DAY	0.00	0.00	0.00	161.31	\$47,425.14	False
33040651	4 X 4 Truck- Rental/Lease	6.00	DAY	0.00	0.00	243.88	0.00	\$1,463.25	False
33040662	Trommel Screener	3.00	MO	0.00	0.00	11,122.99	0.00	\$33,368.97	False
33040693	Manual Clean Suspended Electromagnet	3.00	MO	0.00	0.00	0.00	2,047.68	\$6,143.04	False
33040933	UXO Technician I	200.00	HR	0.00	47.06	0.00	0.00	\$9,411.89	False
33040934	UXO Technician II	100.00	HR	0.00	56.69	0.00	0.00	\$5,668.69	False
33040935	UXO Technician III (UXO Supervisor)	50.00	HR	0.00	66.97	0.00	0.00	\$3,348.33	False
33188605	Adjustable Height Radial Stacker Conveyor	42.00	DAY	0.00	0.00	247.96	0.00	\$10,414.28	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	42.00	DAY	0.00	0.00	143.15	0.00	\$6,012.27	False
33240101	Other Direct Costs	2.00	LS	13,155.74	0.00	0.00	0.00	\$26,311.47	False

Total Element Cost:

\$264,563.97

Element: Backfill

Unit of	Material	Labor Unit	Equipment	Sub Bid	Cost
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Technology: MEC Sifting

Assembly	Description	Quantity	Measure	Unit Cost	Cost	Unit Cost	Cost	Extended Cost	Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	32,267.00	CY	26.54	1.19	1.15	0.01	\$932,310.38	False
17040101	Cleaning Up, site debris clean up and removal	5.00	ACR	0.00	570.30	66.85	0.00	\$3,185.77	False
18050101	Area Preparation, 67% Level & 33% Slope	5.00	ACR	0.00	21.62	28.00	0.00	\$248.13	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	5.00	ACR	2,192.58	912.24	564.52	0.00	\$18,346.67	False
18050408	Fertilizer, Hydro Spread	5.00	ACR	1,219.82	86.46	58.67	0.00	\$6,824.76	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False

Total Element Cost:

\$964,874.67

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	384.00	DAY	0.00	0.00	0.00	161.31	\$61,943.04	False
33040921	Senior UXO Supervisor (SUXOS)	680.00	HR	0.00	89.51	0.00	0.00	\$60,867.35	False
33040923	UXO Project Manager	680.00	HR	0.00	130.46	0.00	0.00	\$88,712.26	False
33040930	UXO QC Specialist	680.00	HR	0.00	79.64	0.00	0.00	\$54,156.80	False
33040931	UXO Safety Officer	680.00	HR	0.00	80.11	0.00	0.00	\$54,474.98	False

Total Element Cost:

\$320,154.43

Technology: MEC Sifting

Element: Stakeholder Involvement

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040935	UXO Technician III (UXO Supervisor)	16.00	HR	0.00	66.97	0.00	0.00	\$1,071.46	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False
Total Element Cost:								\$39,174.37	
Total 1st Year Tech Cost:								\$1,799,916.73	

Technology: Low Level Rad Soil Treatment

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030109	Pad Subgrade Preparation	498.77	CY	0.00	7.57	3.19	0.00	\$5,368.66	False
17030222	926, 2.0 CY, Wheel Loader	25,487.00	HR	0.00	94.65	56.47	0.00	\$3,851,757.76	False
17030347	Standby, 926, 2.0 CY Wheel Loader	7,881.00	HR	0.00	0.00	56.47	0.00	\$445,073.07	False
17030501	Compaction, subgrade, 18" wide, 8" lifts, walk behind, vibrating plate	748.15	ECY	0.00	3.37	0.16	0.00	\$2,639.29	False
17030510	Dry Roll Gravel, Steel Roller	2,244.44	SY	0.00	1.18	0.41	0.00	\$3,561.90	False

Technology: Low Level Rad Soil Treatment

18010102	Gravel, Delivered & Dumped	498.77	CY	41.83	8.94	7.73	0.00	\$29,175.30	False
18020321	6" Structural Slab on Grade	20,200.00	SF	5.23	5.31	0.11	0.00	\$215,207.11	False
18040205	Fence, chain link, gates & posts, corner posts, chain link fence, vinyl, (1/3 post length in ground), 4" OD, 5', set in concrete, includes excavation	600.00	EA	116.98	40.44	7.29	0.00	\$98,824.35	False
19020313	5' x 5' x 5' Reinforced Concrete Sump	2.00	EA	2,339.23	4,213.37	82.15	0.00	\$13,269.51	False
19040406	Wastewater holding tanks, above ground, steel, closed, stationary, monthly rental, 21,000 gal	56.00	MO	0.00	0.00	0.00	1,064.83	\$59,630.71	False
19040625	6,000 Gallon Horizontal Plastic Sump with 6" NPT Connection	2.00	EA	12,938.16	1,807.00	166.08	0.00	\$29,822.48	False
33090701	CIP Reinforced Concrete Containment Wall	11.11	CY	226.69	137.31	21.65	0.00	\$4,284.59	False
33130915	Mobilize/Demobilize Soil Washing System	1,800.00	MI	0.00	2.18	10.90	0.00	\$23,547.95	False
33130916	Assemble/Disassemble Soil Washing System	2.00	EA	0.00	55,606.51	12,854.51	0.00	\$136,922.04	False
33130917	Startup/Shakedown - Soil Washing System	1.00	EA	0.00	37,860.87	0.00	0.00	\$37,860.87	False
33130918	Decontaminate Soil Washing System	15.00	EA	0.00	659.73	0.00	0.00	\$9,895.94	False
33130920	25 Tons per Hour Soil Washing System, Monthly Rental	29.00	MO	0.00	0.00	0.00	318,066.51	\$9,223,928.82	False
33130921	Operational Labor, 10 - 25 Tons per Hour System	4,906.00	HR	0.00	567.91	0.00	0.00	\$2,786,181.60	False
33130927	Maintenance/Spare Parts, 25 Tons per Hour System	98,108.00	TON	0.00	4.24	0.00	0.00	\$415,619.91	False

Technology: Low Level Rad Soil Treatment

33180401	Mobilize/Demobilize Radiological Screening System	360.00	MI	0.00	2.18	10.90	0.00	\$4,709.59	False
33180402	Assemble/Shakedown Radiological Screening System	1.00	EA	0.00	123,315.28	0.00	0.00	\$123,315.28	False
33180403	Disassemble/Decontaminate Radiological Screening System	1.00	EA	0.00	180,745.20	0.00	0.00	\$180,745.20	False
33180404	13 Tons per Hour Radiological Screening System - Monthly Rental	155.00	MO	0.00	0.00	0.00	142,357.50	\$22,065,412.22	False
33180405	Operational Labor - 13 Tons per Hour Radiological Screening System	26,953.00	HR	0.00	227.17	0.00	0.00	\$6,122,970.99	False
33180406	Soil Conditioning Charges	280,309.00	TON	0.00	14.20	0.00	0.00	\$3,979,294.05	False
33180407	Maintenance/Spare Parts - 13 Tons per Hour Radiological Screening System	280,309.00	TON	0.00	9.46	0.00	0.00	\$2,651,247.07	False
33180901	Radioactive Waste Disposal Fee	3,779.00	CY	0.00	0.00	0.00	1,829.58	\$6,913,977.40	False
33197103	Process Water Hauling Fee, Subcontracted	245,270.00	GAL	0.00	0.00	0.00	0.03	\$8,379.85	False
33197104	Radioactive Process Water Treatment/Disposal, Subcontracted	245,270.00	GAL	0.00	0.00	0.00	2.71	\$664,801.09	False
33231306	High Sump Level Switch for Avoiding Overflow	2.00	EA	155.47	0.00	0.00	0.00	\$310.94	False
33290412	Pump, submersible sump, automatic, 15 GPM, 1-1/2" discharge, 15' head	2.00	EA	616.78	222.95	0.00	0.00	\$1,679.46	False
33330125	Alkylbenzene Sulfonate Surfactant, Bulk	392,432.00	LB	1.12	0.00	0.00	0.00	\$439,573.18	False
33330127	Non-ionic Polymeric Flocculant	78,486.	LB	0.58	0.00	0.00	0.00	\$45,626.58	False

Technology: Low Level Rad Soil Treatment

		40							
33420101	Electrical Charge	5,882,174.15	KWH	0.20	0.00	0.00	0.00	\$1,167,630.95	False
33420302	Process Water, Supplied by Water Line	5,886.48	KGA	5.33	0.00	0.00	0.00	\$31,382.19	False

Total Element Cost: \$61,793,627.92

Total 1st Year Tech Cost: \$61,793,627.92

Technology: MEC Sifting

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	226.86	19,869.53	0.00	0.00	\$20,096.39	False

Total Element Cost: \$20,096.39

Element: Site Visit

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.26	\$15.39	False
33010108	Sedan, Automobile, Rental	6.00	DAY	0.00	0.00	0.00	60.75	\$364.48	False
33010202	Per Diem (per person)	6.00	DAY	0.00	0.00	0.00	161.31	\$967.86	False

Technology: MEC Sifting

33040921	Senior UXO Supervisor (SUXOS)	16.00	HR	0.00	89.51	0.00	0.00	\$1,432.17	False
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040925	UXO Staff Engineer	16.00	HR	0.00	83.48	0.00	0.00	\$1,335.76	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	700.00	\$2,100.00	False
33041303	Munitions Response Workplan (High Complexity)	1.00	EA	113.43	20,157.00	0.00	0.00	\$20,270.43	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False
33240101	Other Direct Costs	1.00	LS	746.25	0.00	0.00	0.00	\$746.25	False

Total Element Cost:

\$65,335.25

Element: Site Preparation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	1.25	ACR	0.00	1,354.32	459.79	0.00	\$2,267.63	False
17010402	Chipping brush, medium brush	1.25	ACR	0.00	1,741.19	591.13	0.00	\$2,915.39	False
17010403	Chipping brush, heavy brush	2.50	ACR	0.00	3,386.41	1,149.69	0.00	\$11,340.25	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	10.00	DAY	0.00	0.00	0.00	161.31	\$1,613.10	False
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	96.63	\$579.79	False
33040933	UXO Technician I	30.00	HR	0.00	47.06	0.00	0.00	\$1,411.78	False
33040934	UXO Technician II	40.00	HR	0.00	56.69	0.00	0.00	\$2,267.47	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False

Total Element Cost:

\$28,363.40

Element: Excavation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	32,266.67	CY	0.00	0.94	1.19	0.00	\$68,625.43	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False
33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False

Total Element Cost:

\$97,354.25

Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	420.00	HR	0.00	71.48	51.60	0.00	\$51,690.26	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False
17030436	0.75 CY Wheel Loader	420.00	HR	0.00	107.80	41.54	0.00	\$62,725.06	False
33010202	Per Diem (per person)	294.00	DAY	0.00	0.00	0.00	161.31	\$47,425.14	False
33040651	4 X 4 Truck- Rental/Lease	6.00	DAY	0.00	0.00	243.88	0.00	\$1,463.25	False
33040662	Trommel Screener	3.00	MO	0.00	0.00	11,122.99	0.00	\$33,368.97	False
33040693	Manual Clean Suspended Electromagnet	3.00	MO	0.00	0.00	0.00	2,047.68	\$6,143.04	False

Technology: MEC Sifting

33040933	UXO Technician I	200.00	HR	0.00	47.06	0.00	0.00	\$9,411.89	False
33040934	UXO Technician II	100.00	HR	0.00	56.69	0.00	0.00	\$5,668.69	False
33040935	UXO Technician III (UXO Supervisor)	50.00	HR	0.00	66.97	0.00	0.00	\$3,348.33	False
33188605	Adjustable Height Radial Stacker Conveyor	42.00	DAY	0.00	0.00	247.96	0.00	\$10,414.28	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	42.00	DAY	0.00	0.00	143.15	0.00	\$6,012.27	False
33240101	Other Direct Costs	2.00	LS	13,155.74	0.00	0.00	0.00	\$26,311.47	False

Total Element Cost:

\$264,563.97

Element: Backfill

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	32,267.00	CY	26.54	1.19	1.15	0.01	\$932,310.38	False
17040101	Cleaning Up, site debris clean up and removal	5.00	ACR	0.00	570.30	66.85	0.00	\$3,185.77	False
18050101	Area Preparation, 67% Level & 33% Slope	5.00	ACR	0.00	21.62	28.00	0.00	\$248.13	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	5.00	ACR	2,192.58	912.24	564.52	0.00	\$18,346.67	False
18050408	Fertilizer, Hydro Spread	5.00	ACR	1,219.82	86.46	58.67	0.00	\$6,824.76	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False

Total Element Cost:

\$964,874.67

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	384.00	DAY	0.00	0.00	0.00	161.31	\$61,943.04	False
33040921	Senior UXO Supervisor (SUXOS)	680.00	HR	0.00	89.51	0.00	0.00	\$60,867.35	False
33040923	UXO Project Manager	680.00	HR	0.00	130.46	0.00	0.00	\$88,712.26	False
33040930	UXO QC Specialist	680.00	HR	0.00	79.64	0.00	0.00	\$54,156.80	False
33040931	UXO Safety Officer	680.00	HR	0.00	80.11	0.00	0.00	\$54,474.98	False

Total Element Cost:

\$320,154.43

Element: Stakeholder Involvement

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040935	UXO Technician III (UXO Supervisor)	16.00	HR	0.00	66.97	0.00	0.00	\$1,071.46	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False

Total Element Cost:

\$39,174.37

Total 1st Year Tech Cost:

\$1,799,916.73

Technology: MEC Sifting

Technology: MEC Sifting

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	226.86	19,869.53	0.00	0.00	\$20,096.39	False

Total Element Cost:

\$20,096.39

Element: Site Visit

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.26	\$15.39	False
33010108	Sedan, Automobile, Rental	6.00	DAY	0.00	0.00	0.00	60.75	\$364.48	False
33010202	Per Diem (per person)	6.00	DAY	0.00	0.00	0.00	161.31	\$967.86	False
33040921	Senior UXO Supervisor (SUXOS)	16.00	HR	0.00	89.51	0.00	0.00	\$1,432.17	False
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040925	UXO Staff Engineer	16.00	HR	0.00	83.48	0.00	0.00	\$1,335.76	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	700.00	\$2,100.00	False
33041303	Munitions Response Workplan (High Complexity)	1.00	EA	113.43	20,157.00	0.00	0.00	\$20,270.43	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False
33240101	Other Direct Costs	1.00	LS	746.25	0.00	0.00	0.00	\$746.25	False

Total Element Cost:

\$65,335.25

Element: Site Preparation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	1.25	ACR	0.00	1,354.32	459.79	0.00	\$2,267.63	False
17010402	Chipping brush, medium brush	1.25	ACR	0.00	1,741.19	591.13	0.00	\$2,915.39	False
17010403	Chipping brush, heavy brush	2.50	ACR	0.00	3,386.41	1,149.69	0.00	\$11,340.25	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	10.00	DAY	0.00	0.00	0.00	161.31	\$1,613.10	False
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	96.63	\$579.79	False
33040933	UXO Technician I	30.00	HR	0.00	47.06	0.00	0.00	\$1,411.78	False
33040934	UXO Technician II	40.00	HR	0.00	56.69	0.00	0.00	\$2,267.47	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False

Total Element Cost:

\$28,363.40

Element: Excavation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	32,266.67	CY	0.00	0.94	1.19	0.00	\$68,625.43	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False

Technology: MEC Sifting

33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False
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Total Element Cost:

\$97,354.25

Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	420.00	HR	0.00	71.48	51.60	0.00	\$51,690.26	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False
17030436	0.75 CY Wheel Loader	420.00	HR	0.00	107.80	41.54	0.00	\$62,725.06	False
33010202	Per Diem (per person)	294.00	DAY	0.00	0.00	0.00	161.31	\$47,425.14	False
33040651	4 X 4 Truck- Rental/Lease	6.00	DAY	0.00	0.00	243.88	0.00	\$1,463.25	False
33040662	Trommel Screener	3.00	MO	0.00	0.00	11,122.99	0.00	\$33,368.97	False
33040693	Manual Clean Suspended Electromagnet	3.00	MO	0.00	0.00	0.00	2,047.68	\$6,143.04	False
33040933	UXO Technician I	200.00	HR	0.00	47.06	0.00	0.00	\$9,411.89	False
33040934	UXO Technician II	100.00	HR	0.00	56.69	0.00	0.00	\$5,668.69	False
33040935	UXO Technician III (UXO Supervisor)	50.00	HR	0.00	66.97	0.00	0.00	\$3,348.33	False
33188605	Adjustable Height Radial Stacker Conveyor	42.00	DAY	0.00	0.00	247.96	0.00	\$10,414.28	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	42.00	DAY	0.00	0.00	143.15	0.00	\$6,012.27	False
33240101	Other Direct Costs	2.00	LS	13,155.74	0.00	0.00	0.00	\$26,311.47	False

Total Element Cost:

\$264,563.97

Element: Backfill

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	32,267.00	CY	26.54	1.19	1.15	0.01	\$932,310.38	False
17040101	Cleaning Up, site debris clean up and removal	5.00	ACR	0.00	570.30	66.85	0.00	\$3,185.77	False
18050101	Area Preparation, 67% Level & 33% Slope	5.00	ACR	0.00	21.62	28.00	0.00	\$248.13	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	5.00	ACR	2,192.58	912.24	564.52	0.00	\$18,346.67	False
18050408	Fertilizer, Hydro Spread	5.00	ACR	1,219.82	86.46	58.67	0.00	\$6,824.76	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False

Total Element Cost:

\$964,874.67

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	384.00	DAY	0.00	0.00	0.00	161.31	\$61,943.04	False
33040921	Senior UXO Supervisor (SUXOS)	680.00	HR	0.00	89.51	0.00	0.00	\$60,867.35	False
33040923	UXO Project Manager	680.00	HR	0.00	130.46	0.00	0.00	\$88,712.26	False
33040930	UXO QC Specialist	680.00	HR	0.00	79.64	0.00	0.00	\$54,156.80	False
33040931	UXO Safety Officer	680.00	HR	0.00	80.11	0.00	0.00	\$54,474.98	False

Total Element Cost:

\$320,154.43

Element: Stakeholder Involvement

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040935	UXO Technician III (UXO Supervisor)	16.00	HR	0.00	66.97	0.00	0.00	\$1,071.46	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False

Total Element Cost:

\$39,174.37

Total 1st Year Tech Cost:

\$1,799,916.73

Technology: MEC Sifting

Element: Excavation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	16,133.33	CY	0.00	0.94	1.19	0.00	\$34,312.71	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False
33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False

Total Element Cost:

\$63,041.52

Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	280.00	HR	0.00	71.48	51.60	0.00	\$34,460.17	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False
17030436	0.75 CY Wheel Loader	280.00	HR	0.00	107.80	41.54	0.00	\$41,816.70	False
33010202	Per Diem (per person)	196.00	DAY	0.00	0.00	0.00	161.31	\$31,616.76	False
33040651	4 X 4 Truck- Rental/Lease	4.00	DAY	0.00	0.00	243.88	0.00	\$975.50	False
33040662	Trommel Screener	2.00	MO	0.00	0.00	11,122.99	0.00	\$22,245.98	False
33040693	Manual Clean Suspended Electromagnet	2.00	MO	0.00	0.00	0.00	2,047.68	\$4,095.36	False
33040933	UXO Technician I	120.00	HR	0.00	47.06	0.00	0.00	\$5,647.14	False
33040934	UXO Technician II	60.00	HR	0.00	56.69	0.00	0.00	\$3,401.21	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False
33188605	Adjustable Height Radial Stacker Conveyor	28.00	DAY	0.00	0.00	247.96	0.00	\$6,942.85	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	28.00	DAY	0.00	0.00	143.15	0.00	\$4,008.18	False
33240101	Other Direct Costs	2.00	LS	8,718.75	0.00	0.00	0.00	\$17,437.50	False

Total Element Cost:

\$175,237.69

Element: Backfill

Unit of	Material	Labor Unit	Equipment	Sub Bid	Cost
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Technology: MEC Sifting

Assembly	Description	Quantity	Measure	Unit Cost	Cost	Unit Cost	Cost	Extended Cost	Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	16,134.00	CY	26.54	1.19	1.15	0.01	\$466,169.63	False
17040101	Cleaning Up, site debris clean up and removal	5.00	ACR	0.00	570.30	66.85	0.00	\$3,185.77	False
18050101	Area Preparation, 67% Level & 33% Slope	5.00	ACR	0.00	21.62	28.00	0.00	\$248.13	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	5.00	ACR	2,192.58	912.24	564.52	0.00	\$18,346.67	False
18050408	Fertilizer, Hydro Spread	5.00	ACR	1,219.82	86.46	58.67	0.00	\$6,824.76	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False

Total Element Cost:

\$498,733.93

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	224.00	DAY	0.00	0.00	0.00	161.31	\$36,133.44	False
33040921	Senior UXO Supervisor (SUXOS)	400.00	HR	0.00	89.51	0.00	0.00	\$35,804.32	False
33040923	UXO Project Manager	400.00	HR	0.00	130.46	0.00	0.00	\$52,183.68	False
33040930	UXO QC Specialist	400.00	HR	0.00	79.64	0.00	0.00	\$31,856.94	False
33040931	UXO Safety Officer	400.00	HR	0.00	80.11	0.00	0.00	\$32,044.10	False

Total Element Cost:

\$188,022.49

Total 1st Year Tech Cost:

\$925,035.63

Technology: MEC Sifting

Element: Excavation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	16,133.33	CY	0.00	0.94	1.19	0.00	\$34,312.71	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False
33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False
Total Element Cost:								\$63,041.52	

Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	280.00	HR	0.00	71.48	51.60	0.00	\$34,460.17	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False
17030436	0.75 CY Wheel Loader	280.00	HR	0.00	107.80	41.54	0.00	\$41,816.70	False
33010202	Per Diem (per person)	196.00	DAY	0.00	0.00	0.00	161.31	\$31,616.76	False
33040651	4 X 4 Truck- Rental/Lease	4.00	DAY	0.00	0.00	243.88	0.00	\$975.50	False
33040662	Trommel Screener	2.00	MO	0.00	0.00	11,122.99	0.00	\$22,245.98	False
33040693	Manual Clean Suspended Electromagnet	2.00	MO	0.00	0.00	0.00	2,047.68	\$4,095.36	False

Technology: MEC Sifting

33040933	UXO Technician I	120.00	HR	0.00	47.06	0.00	0.00	\$5,647.14	False
33040934	UXO Technician II	60.00	HR	0.00	56.69	0.00	0.00	\$3,401.21	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False
33188605	Adjustable Height Radial Stacker Conveyor	28.00	DAY	0.00	0.00	247.96	0.00	\$6,942.85	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	28.00	DAY	0.00	0.00	143.15	0.00	\$4,008.18	False
33240101	Other Direct Costs	2.00	LS	8,718.75	0.00	0.00	0.00	\$17,437.50	False

Total Element Cost:

\$175,237.69

Element: Backfill

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	16,134.00	CY	26.54	1.19	1.15	0.01	\$466,169.63	False
17040101	Cleaning Up, site debris clean up and removal	5.00	ACR	0.00	570.30	66.85	0.00	\$3,185.77	False
18050101	Area Preparation, 67% Level & 33% Slope	5.00	ACR	0.00	21.62	28.00	0.00	\$248.13	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	5.00	ACR	2,192.58	912.24	564.52	0.00	\$18,346.67	False
18050408	Fertilizer, Hydro Spread	5.00	ACR	1,219.82	86.46	58.67	0.00	\$6,824.76	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False

Total Element Cost:

\$498,733.93

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	224.00	DAY	0.00	0.00	0.00	161.31	\$36,133.44	False
33040921	Senior UXO Supervisor (SUXOS)	400.00	HR	0.00	89.51	0.00	0.00	\$35,804.32	False
33040923	UXO Project Manager	400.00	HR	0.00	130.46	0.00	0.00	\$52,183.68	False
33040930	UXO QC Specialist	400.00	HR	0.00	79.64	0.00	0.00	\$31,856.94	False
33040931	UXO Safety Officer	400.00	HR	0.00	80.11	0.00	0.00	\$32,044.10	False

Total Element Cost:

\$188,022.49

Total 1st Year Tech Cost:

\$925,035.63

Technology: MEC Sifting

Element: Excavation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	16,133.33	CY	0.00	0.94	1.19	0.00	\$34,312.71	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False
33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False

Total Element Cost:

\$63,041.52

Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	280.00	HR	0.00	71.48	51.60	0.00	\$34,460.17	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False
17030436	0.75 CY Wheel Loader	280.00	HR	0.00	107.80	41.54	0.00	\$41,816.70	False
33010202	Per Diem (per person)	196.00	DAY	0.00	0.00	0.00	161.31	\$31,616.76	False
33040651	4 X 4 Truck- Rental/Lease	4.00	DAY	0.00	0.00	243.88	0.00	\$975.50	False
33040662	Trommel Screener	2.00	MO	0.00	0.00	11,122.99	0.00	\$22,245.98	False
33040693	Manual Clean Suspended Electromagnet	2.00	MO	0.00	0.00	0.00	2,047.68	\$4,095.36	False
33040933	UXO Technician I	120.00	HR	0.00	47.06	0.00	0.00	\$5,647.14	False
33040934	UXO Technician II	60.00	HR	0.00	56.69	0.00	0.00	\$3,401.21	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False
33188605	Adjustable Height Radial Stack Conveyor	28.00	DAY	0.00	0.00	247.96	0.00	\$6,942.85	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	28.00	DAY	0.00	0.00	143.15	0.00	\$4,008.18	False
33240101	Other Direct Costs	2.00	LS	8,718.75	0.00	0.00	0.00	\$17,437.50	False

Total Element Cost:

\$175,237.69

Element: Backfill

Technology: MEC Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	16,134.00	CY	26.54	1.19	1.15	0.01	\$466,169.63	False
17040101	Cleaning Up, site debris clean up and removal	5.00	ACR	0.00	570.30	66.85	0.00	\$3,185.77	False
18050101	Area Preparation, 67% Level & 33% Slope	5.00	ACR	0.00	21.62	28.00	0.00	\$248.13	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	5.00	ACR	2,192.58	912.24	564.52	0.00	\$18,346.67	False
18050408	Fertilizer, Hydro Spread	5.00	ACR	1,219.82	86.46	58.67	0.00	\$6,824.76	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
Total Element Cost:								\$498,733.93	

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	224.00	DAY	0.00	0.00	0.00	161.31	\$36,133.44	False
33040921	Senior UXO Supervisor (SUXOS)	400.00	HR	0.00	89.51	0.00	0.00	\$35,804.32	False
33040923	UXO Project Manager	400.00	HR	0.00	130.46	0.00	0.00	\$52,183.68	False
33040930	UXO QC Specialist	400.00	HR	0.00	79.64	0.00	0.00	\$31,856.94	False
33040931	UXO Safety Officer	400.00	HR	0.00	80.11	0.00	0.00	\$32,044.10	False
Total Element Cost:								\$188,022.49	

Total 1st Year Tech Cost:

\$925,035.63

Technology: Load and Haul

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030226	988, 7.0 CY, Wheel Loader	232.00	HR	0.00	94.65	162.57	0.00	\$59,676.52	False
17030289	32 CY, Semi Dump	4,206.00	HR	0.00	87.17	81.54	0.00	\$709,583.31	False

Total Element Cost:

\$769,259.83

Total 1st Year Tech Cost:

\$769,259.83

Technology: Off-site Transportation and Waste Disposal

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33171009	Radioactive Waste Disposal, Energy Solutions, SC, LLRW, Bulk or Containerized	72,673.00	CY	0.00	0.00	0.00	21,296.68	\$1,547,693,751.57	False
33190102	Bulk Solid Waste Loading Into Disposal Vehicle or Bulk Disposal Container	72,673.00	BCY	1.47	1.64	0.52	0.00	\$264,666.23	False
33190289	Disposal of radioactive waste, rail car transportation, rail gondola car	1,925,834.00	CWT	0.00	0.00	0.00	9.40	\$18,094,356.07	False
33190317	Waste Stream Evaluation Fee, Not Including 50% Rebate on 1st	1.00	EA	0.00	0.00	0.00	58.71	\$58.71	False

Technology: Off-site Transportation and Waste Disposal

Shipment									
33190812	50 to 54 Ft Rail Gondola, 10 Mil Liner, disposable	845.00	EA	213.19	0.00	0.00	0.00	\$180,147.70	False

Total Element Cost: \$1,566,232,980.27

Total 1st Year Tech Cost: \$1,566,232,980.27

Technology: Professional Labor Management

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33220149	Lump Sum Percentage Labor Cost	1.00	LS	0.00	163,439,431.00	0.00	0.00	\$163,439,431.00	False

Total Element Cost: \$163,439,431.00

Total 1st Year Tech Cost: \$163,439,431.00

Technology: Off-site Transportation and Waste Disposal

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33190102	Bulk Solid Waste Loading Into Disposal Vehicle or Bulk Disposal Container	134,963.00	BCY	1.47	1.64	0.52	0.00	\$491,518.84	False

Technology: Off-site Transportation and Waste Disposal

33190205	Transport Bulk Solid Hazardous Waste, Maximum 20 CY (per Mile)	404,940.00	MI	0.00	0.00	0.00	2.11	\$853,164.43	False
33190317	Waste Stream Evaluation Fee, Not Including 50% Rebate on 1st Shipment	1.00	EA	0.00	0.00	0.00	58.71	\$58.71	False
33190807	32 Ft. Dump Truck, 6 Mil Liner, disposable	6,749.00	EA	39.84	0.00	0.00	0.00	\$268,896.68	False
33197270	Landfill Nonhazardous Solid Bulk Waste by CY	134,963.00	CY	0.00	0.00	0.00	35.22	\$4,754,063.49	False

Total Element Cost:	\$6,367,702.14
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Total 1st Year Tech Cost:	\$6,367,702.14
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Total Phase Element Cost	\$1,806,777,858.23
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Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR 20.1403. The RACER estimate accompanies the assumptions provided in the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input type="checkbox"/>	
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input type="checkbox"/>	
Removal/Interim Action	<input type="checkbox"/>	
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input type="checkbox"/>	

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Senior Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Remedial Action

Phase Name: Secondary Impact Area Remediation

Description: Assumes three phases of remediation: surface clearance, MEC sifting, and low level radiation soil treatment within the Secondary Impact Area. The estimate includes a clearance of the 4,032 acres of the Secondary Impact Area. It is assumed that approximately 40 acres will require additional excavation to a depth of 1 foot BLS. Considering a fluff factor, approximately 92,283 CY of soil would be excavated following a surface clearance. The materials removed would either be sifted mechanically or hand sifted. Bulletproof resistant glass and steel would be equipped on all excavation and sifting equipment. Following the MEC sifting, the soil would undergo onsite radiological screening and soil washing. The estimate assumes 35% of the material (32,299 CY) requires offsite disposal by railway at the LLRW disposal facility, Energy Solutions, in Barnwell County, SC. It is assumed that the material for offsite disposal would be loaded and hauled approximately 25 miles to the nearest railway loading point. Site restoration would be accounted for under an alternative phase of remediation.

Approach: Ex Situ

Start Date: March, 2024

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
MEC Removal Action with AGC	Yes	100	0
MEC Sifting	Yes	100	0
MEC Sifting	Yes	100	0
MEC Sifting	Yes	100	0
MEC Sifting	Yes	100	0
Low Level Rad Soil Treatment	Yes	100	0
Load and Haul	Yes	100	0
Off-site Transportation and Waste Disposal	Yes	100	0
Off-site Transportation and Waste Disposal	Yes	100	0

Total Marked-up Cost: \$918,157,433.20

Technologies:

Technology: MEC Removal Action with AGC

Element: Systematic Project Planning

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	84.00	DAY	0.00	0.00	0.00	60.75	\$5,102.73	False
33010202	Per Diem (per person)	90.00	DAY	0.00	0.00	0.00	161.31	\$14,517.90	False

Technology: MEC Removal Action with AGC

33040947	MEC: Systematic Project Planning Meeting, includes labor and facility rental expenses, per EA	9.00	EA	0.00	18,237.58	0.00	1,110.39	\$174,131.67	False
33040948	MEC: Systematic Project Planning, Site Visit, includes labor expenses, per EA	1.00	EA	0.00	5,430.68	0.00	0.00	\$5,430.68	False
33040949	MEC: Systematic Project Planning, UFP QAPP, includes labor expenses, per EA	1.00	EA	0.00	58,799.21	0.00	0.00	\$58,799.21	False
33040950	MEC: Systematic Project Planning, Establish and Management of GIS Database, includes labor expenses, per EA	1.00	EA	0.00	18,877.73	0.00	0.00	\$18,877.73	False
33040953	MEC: Systematic Project Planning,PMP/Quality Assurance Surveillance Plan, includes labor expenses, per EA	1.00	EA	0.00	8,449.28	0.00	0.00	\$8,449.28	False
33040954	MEC: Systematic Project Planning, Health and Safety Plan, includes labor expenses, per EA	1.00	EA	0.00	13,272.98	0.00	0.00	\$13,272.98	False
33040955	MEC: Systematic Project Planning, Cultural and Archeological Plan, includes labor expenses, per EA	1.00	EA	0.00	9,128.61	0.00	0.00	\$9,128.61	False
33040961	Explosive Safety Submission, includes labor and equipment expenses, per EA	1.00	EA	0.00	24,847.24	0.00	0.00	\$24,847.24	False
33041101	Airfare	6.00	LS	0.00	0.00	0.00	575.00	\$3,450.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	8,398.94	\$8,398.94	False

Total Element Cost:

\$344,406.98

Element: Surface and Sub Removal - Site Prep

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	1,007.50	ACR	0.00	1,354.32	459.79	0.00	\$1,827,713.24	False
17010402	Chipping brush, medium brush	1,007.50	ACR	0.00	1,741.19	591.13	0.00	\$2,349,806.83	False
17010403	Chipping brush, heavy brush	2,015.00	ACR	0.00	3,386.41	1,149.69	0.00	\$9,140,237.59	False
33010108	Sedan, Automobile, Rental	116.00	DAY	0.00	0.00	0.00	60.75	\$7,046.63	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	16,456.00	DAY	0.00	0.00	0.00	161.31	\$2,654,517.36	False
33040651	4 X 4 Truck- Rental/Lease	9,736.00	DAY	0.00	0.00	243.88	0.00	\$2,374,371.65	False
33040934	UXO Technician II	16,710.00	HR	0.00	56.69	0.00	0.00	\$947,237.59	False
33040935	UXO Technician III (UXO Supervisor)	15,450.00	HR	0.00	66.97	0.00	0.00	\$1,034,632.50	False
33040958	MEC: Surface Clearance , includes labor and equipment expenses, per Day	384.00	DAY	0.00	2,937.14	0.00	76.46	\$1,157,223.51	False
33040959	MEC: Archeological Survey, includes labor and equipment expenses, per Day	116.00	DAY	0.00	1,397.80	0.00	109.26	\$174,819.62	False
33041101	Airfare	52.00	LS	0.00	0.00	0.00	575.00	\$29,900.00	False
33220212	Surveying - 2-man Crew	126.00	DAY	0.00	1,050.03	19.06	0.00	\$134,704.34	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	558,320.16	\$558,320.16	False
Total Element Cost:								\$22,394,490.00	

Technology: MEC Removal Action with AGC

Element: RA Field Activities

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010114	Mobilization Equipment (Soils)	10.00	LS	0.00	2,001.31	1,957.67	0.00	\$39,589.78	False
33010202	Per Diem (per person)	3,523.00	DAY	0.00	0.00	0.00	161.31	\$568,295.13	False
33040170	MEC: Instrument Verification Strip Installation, per EA	1.00	EA	503.25	4,208.62	11.43	596.38	\$5,319.68	False
33040171	MEC: UXO Seeding, Quality Seeding Installation, per EA	591.00	EA	5.81	48.38	0.00	121.78	\$103,998.09	False
33040173	MEC: UXO Mag and Flag Grid Team, per HR	1,740.00	HR	0.00	322.36	0.00	109.26	\$751,014.28	False
33040179	Digital Geophysical Mapping with Array Sensor, Survey Grid Team, per HR	5,914.00	HR	0.00	400.47	0.00	534.80	\$5,531,148.22	False
33040182	Land-Based Advanced Classification Survey Grid Team, MEC Removal Action, per HR	2,280.00	HR	0.00	216.78	0.00	182.14	\$909,532.25	False
33040270	Geometrics MetalMapper Mobilization Fee	1.00	EA	0.00	0.00	0.00	1,175.53	\$1,175.53	False
33040651	4 X 4 Truck- Rental/Lease	1,404.00	DAY	0.00	0.00	243.88	0.00	\$342,401.17	False
33040653	All Terrain Vehicle (ATV) - Rental/Lease	592.00	DAY	0.00	0.00	0.00	182.22	\$107,872.82	False
33041101	Airfare	9.00	LS	0.00	0.00	0.00	575.00	\$5,175.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	231,702.65	\$231,702.65	False
Total Element Cost:								\$8,597,224.60	

Technology: MEC Removal Action with AGC

Element: Investigation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
12020401	Lightning Protection System	1.00	EA	219.67	388.12	0.00	0.00	\$607.79	False
16029002	Mobilization & Fee	1.00	LS	2,620.24	0.00	0.00	0.00	\$2,620.24	False
17030103	Rough Grading, 14G, 1 Pass	1,111.00	SY	0.00	0.26	0.41	0.00	\$740.37	False
18010102	Gravel, Delivered & Dumped	185.00	CY	41.83	7.33	7.73	0.00	\$10,523.79	False
18040101	Security Fence, 10' Galvanized with 3 Strands Barbed Wire	400.00	LF	48.21	21.31	4.82	0.00	\$29,735.79	False
18040119	Chain link fence gates and posts, auger fence post hole, medium soil, 3' deep, by hand, includes excavation	2.00	EA	0.00	13.64	0.00	0.00	\$27.28	False
18040132	Chain link fences & gates, gate, chain link, galvanized steel, double gate, 3 strand barbed wire, 10' x 10', excludes excavation	1.00	EA	1,375.34	511.43	113.64	0.00	\$2,000.42	False
33010202	Per Diem (per person)	43,238.00	DAY	0.00	0.00	0.00	161.31	\$6,974,721.78	False
33022601	Safety Signs, Barriers, Yellow Nylon Tape Allowance	4.00	EA	31.17	0.00	0.00	0.00	\$124.66	False
33040181	UXO Anomaly Dig Crew, MEC Removal Action, includes Labor and Equipment, per HR	11,330.00	HR	0.00	247.15	0.00	54.63	\$3,419,188.87	False
33040184	Advanced Geophysics Classification Cueing, MEC Investigation, per EA	1,722,825.00	EA	0.00	10.66	0.00	4.78	\$26,610,194.46	False
33040185	UXO Anomaly Explosive Demolition, MEC Activities,	23,604.00	EA	220.01	494.61	0.00	0.00	\$16,868,033.11	False

Technology: MEC Removal Action with AGC

	includes Labor, Material and Equipment, per EA								
33040186	Munitions Deemed As Safe (MDAS) Disposal, bulk solid waste, includes materials, documentation, transport and disposal fees, per LB	1,593,246.00	LB	0.00	0.00	0.00	7.77	\$12,374,781.68	False
33040651	4 X 4 Truck- Rental/Lease	10,671.00	DAY	0.00	0.00	243.88	0.00	\$2,602,395.22	False
33040817	Explosives Storage Locker/Shelter, 22' x 7' x 7'	1.00	EA	48,689.31	0.00	0.00	0.00	\$48,689.31	False
33041101	Airfare	10.00	LS	0.00	0.00	0.00	575.00	\$5,750.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	1,869,650.23	\$1,869,650.23	False

Total Element Cost:

\$70,819,785.01

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
16019934	Temporary Office 50' X 12'	282.00	MO	692.63	0.00	0.00	0.00	\$195,322.99	False
16019935	Field office expense, office supplies, average, per month	282.00	MO	113.43	0.00	0.00	0.00	\$31,987.39	False
20020310	1/C #2 Aluminum, Bare, Wire	500.00	LF	0.51	1.09	0.10	0.00	\$850.73	False
20020403	40' Class 3 Treated Power Pole	5.00	EA	623.87	722.35	104.63	0.00	\$7,254.23	False
20020431	Terminal Structure, 15 KV Pole Top	2.00	EA	2,360.06	2,340.03	299.06	0.00	\$9,998.30	False
33010202	Per Diem (per person)	35,494.00	DAY	0.00	0.00	0.00	161.31	\$5,725,537.14	False

Technology: MEC Removal Action with AGC

33010475	Toilet, portable, chemical, rent per month	282.00	MO	140.37	0.00	0.00	0.00	\$39,584.39	False
33040651	4 X 4 Truck- Rental/Lease	35,494.00	DAY	0.00	0.00	243.88	0.00	\$8,656,116.19	False
33040699	Storage boxes, rent per month, 40' x 8'	282.00	MO	153.13	0.00	0.00	0.00	\$43,182.97	False
33040921	Senior UXO Supervisor (SUXOS)	84,495.00	HR	0.00	89.51	0.00	0.00	\$7,563,215.68	False
33040923	UXO Project Manager	211,236.00	HR	0.00	130.46	0.00	0.00	\$27,557,679.90	False
33040930	UXO QC Specialist	15,170.00	HR	0.00	79.64	0.00	0.00	\$1,208,174.57	False
33040931	UXO Safety Officer	15,170.00	HR	0.00	80.11	0.00	0.00	\$1,215,272.62	False
33040940	GIS Manager (UXO)	211,236.00	HR	0.00	94.06	0.00	0.00	\$19,869,323.82	False
33041101	Airfare	5.00	LS	0.00	0.00	0.00	575.00	\$2,875.00	False
33220101	Senior Project Manager	16,899.00	HR	0.00	196.61	0.00	0.00	\$3,322,477.71	False
33220113	Secretarial/ Administrative	16,899.00	HR	0.00	97.18	0.00	0.00	\$1,642,285.89	False
33222006	Electrician	40.00	HR	0.00	92.25	0.00	0.00	\$3,689.89	False

Total Element Cost:

\$77,094,829.42

Element: RA Reporting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
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Technology: MEC Removal Action with AGC

33041322	MEC After Action Report - Site Complexity (High), per EA	1.00	EA	0.00	29,982.72	0.00	0.00	\$29,982.72	False
33041325	MEC: Independent Blind Seed Tracking, per EA	1.00	EA	0.00	4,426.91	0.00	0.00	\$4,426.91	False
33041326	MEC: IVS Memo, per EA	1.00	EA	0.00	7,662.68	0.00	0.00	\$7,662.68	False
33041330	MEC: Anomaly Selection Memo, per EA	1.00	EA	0.00	7,662.68	0.00	0.00	\$7,662.68	False
33041331	MEC: TOI Memo, per EA	1.00	EA	0.00	7,662.68	0.00	0.00	\$7,662.68	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	1,217.66	\$1,217.66	False

Total Element Cost:	\$58,615.33
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Total 1st Year Tech Cost:	\$179,309,351.34
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Technology: MEC Sifting

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	226.86	19,869.53	0.00	0.00	\$20,096.39	False

Total Element Cost:	\$20,096.39
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Element: Site Visit

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
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Technology: MEC Sifting

33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.26	\$15.39	False
33010108	Sedan, Automobile, Rental	6.00	DAY	0.00	0.00	0.00	60.75	\$364.48	False
33010202	Per Diem (per person)	6.00	DAY	0.00	0.00	0.00	161.31	\$967.86	False
33040921	Senior UXO Supervisor (SUXOS)	16.00	HR	0.00	89.51	0.00	0.00	\$1,432.17	False
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040925	UXO Staff Engineer	16.00	HR	0.00	83.48	0.00	0.00	\$1,335.76	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	700.00	\$2,100.00	False
33041303	Munitions Response Workplan (High Complexity)	1.00	EA	113.43	20,157.00	0.00	0.00	\$20,270.43	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False
33240101	Other Direct Costs	1.00	LS	746.25	0.00	0.00	0.00	\$746.25	False

Total Element Cost:

\$65,335.25

Element: Site Preparation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	2.50	ACR	0.00	1,354.32	459.79	0.00	\$4,535.27	False
17010402	Chipping brush, medium brush	2.50	ACR	0.00	1,741.19	591.13	0.00	\$5,830.79	False
17010403	Chipping brush, heavy brush	5.00	ACR	0.00	3,386.41	1,149.69	0.00	\$22,680.49	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	20.00	DAY	0.00	0.00	0.00	161.31	\$3,226.20	False
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	96.63	\$579.79	False

Technology: MEC Sifting

33040933	UXO Technician I	60.00	HR	0.00	47.06	0.00	0.00	\$2,823.57	False
33040934	UXO Technician II	79.00	HR	0.00	56.69	0.00	0.00	\$4,478.26	False
33040935	UXO Technician III (UXO Supervisor)	59.00	HR	0.00	66.97	0.00	0.00	\$3,951.02	False

Total Element Cost:	\$52,064.37
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Element: Excavation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	16,133.33	CY	0.00	0.94	1.19	0.00	\$34,312.71	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False
33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False

Total Element Cost:	\$63,041.52
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Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	280.00	HR	0.00	71.48	51.60	0.00	\$34,460.17	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False

Technology: MEC Sifting

17030436	0.75 CY Wheel Loader	280.00	HR	0.00	107.80	41.54	0.00	\$41,816.70	False
33010202	Per Diem (per person)	196.00	DAY	0.00	0.00	0.00	161.31	\$31,616.76	False
33040651	4 X 4 Truck- Rental/Lease	4.00	DAY	0.00	0.00	243.88	0.00	\$975.50	False
33040662	Trommel Screener	2.00	MO	0.00	0.00	11,122.99	0.00	\$22,245.98	False
33040693	Manual Clean Suspended Electromagnet	2.00	MO	0.00	0.00	0.00	2,047.68	\$4,095.36	False
33040933	UXO Technician I	120.00	HR	0.00	47.06	0.00	0.00	\$5,647.14	False
33040934	UXO Technician II	60.00	HR	0.00	56.69	0.00	0.00	\$3,401.21	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False
33188605	Adjustable Height Radial Stacker Conveyor	28.00	DAY	0.00	0.00	247.96	0.00	\$6,942.85	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	28.00	DAY	0.00	0.00	143.15	0.00	\$4,008.18	False
33240101	Other Direct Costs	2.00	LS	8,718.75	0.00	0.00	0.00	\$17,437.50	False

Total Element Cost:

\$175,237.69

Element: Backfill

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	16,134.00	CY	26.54	1.19	1.15	0.01	\$466,169.63	False
17040101	Cleaning Up, site debris clean up and removal	10.00	ACR	0.00	570.30	66.85	0.00	\$6,371.53	False
18050101	Area Preparation, 67% Level & 33% Slope	10.00	ACR	0.00	21.62	28.00	0.00	\$496.26	False

Technology: MEC Sifting

18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	10.00	ACR	2,192.58	912.24	564.52	0.00	\$36,693.33	False
18050408	Fertilizer, Hydro Spread	10.00	ACR	1,219.82	86.46	58.67	0.00	\$13,649.51	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False

Total Element Cost: \$527,339.25

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	260.00	DAY	0.00	0.00	0.00	161.31	\$41,940.60	False
33040921	Senior UXO Supervisor (SUXOS)	460.00	HR	0.00	89.51	0.00	0.00	\$41,174.97	False
33040923	UXO Project Manager	460.00	HR	0.00	130.46	0.00	0.00	\$60,011.23	False
33040930	UXO QC Specialist	460.00	HR	0.00	79.64	0.00	0.00	\$36,635.48	False
33040931	UXO Safety Officer	460.00	HR	0.00	80.11	0.00	0.00	\$36,850.72	False

Total Element Cost: \$216,613.01

Element: Stakeholder Involvement

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040935	UXO Technician III (UXO Supervisor)	16.00	HR	0.00	66.97	0.00	0.00	\$1,071.46	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False

Technology: MEC Sifting

Total Element Cost:	\$39,174.37
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Total 1st Year Tech Cost:	\$1,158,901.84
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Technology: MEC Sifting

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	226.86	19,869.53	0.00	0.00	\$20,096.39	False

Total Element Cost:	\$20,096.39
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Element: Site Visit

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.26	\$15.39	False
33010108	Sedan, Automobile, Rental	6.00	DAY	0.00	0.00	0.00	60.75	\$364.48	False
33010202	Per Diem (per person)	6.00	DAY	0.00	0.00	0.00	161.31	\$967.86	False
33040921	Senior UXO Supervisor (SUXOS)	16.00	HR	0.00	89.51	0.00	0.00	\$1,432.17	False
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040925	UXO Staff Engineer	16.00	HR	0.00	83.48	0.00	0.00	\$1,335.76	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	700.00	\$2,100.00	False

Technology: MEC Sifting

33041303	Munitions Response Workplan (High Complexity)	1.00	EA	113.43	20,157.00	0.00	0.00	\$20,270.43	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False
33240101	Other Direct Costs	1.00	LS	746.25	0.00	0.00	0.00	\$746.25	False

Total Element Cost:

\$65,335.25

Element: Site Preparation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	2.50	ACR	0.00	1,354.32	459.79	0.00	\$4,535.27	False
17010402	Chipping brush, medium brush	2.50	ACR	0.00	1,741.19	591.13	0.00	\$5,830.79	False
17010403	Chipping brush, heavy brush	5.00	ACR	0.00	3,386.41	1,149.69	0.00	\$22,680.49	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	20.00	DAY	0.00	0.00	0.00	161.31	\$3,226.20	False
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	96.63	\$579.79	False
33040933	UXO Technician I	60.00	HR	0.00	47.06	0.00	0.00	\$2,823.57	False
33040934	UXO Technician II	79.00	HR	0.00	56.69	0.00	0.00	\$4,478.26	False
33040935	UXO Technician III (UXO Supervisor)	59.00	HR	0.00	66.97	0.00	0.00	\$3,951.02	False

Total Element Cost:

\$52,064.37

Element: Excavation

Technology: MEC Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	16,133.33	CY	0.00	0.94	1.19	0.00	\$34,312.71	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False
33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False

Total Element Cost:

\$63,041.52

Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	280.00	HR	0.00	71.48	51.60	0.00	\$34,460.17	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False
17030436	0.75 CY Wheel Loader	280.00	HR	0.00	107.80	41.54	0.00	\$41,816.70	False
33010202	Per Diem (per person)	196.00	DAY	0.00	0.00	0.00	161.31	\$31,616.76	False
33040651	4 X 4 Truck- Rental/Lease	4.00	DAY	0.00	0.00	243.88	0.00	\$975.50	False
33040662	Trommel Screener	2.00	MO	0.00	0.00	11,122.99	0.00	\$22,245.98	False
33040693	Manual Clean Suspended Electromagnet	2.00	MO	0.00	0.00	0.00	2,047.68	\$4,095.36	False
33040933	UXO Technician I	120.00	HR	0.00	47.06	0.00	0.00	\$5,647.14	False
33040934	UXO Technician II	60.00	HR	0.00	56.69	0.00	0.00	\$3,401.21	False

Technology: MEC Sifting

33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False
33188605	Adjustable Height Radial Stacker Conveyor	28.00	DAY	0.00	0.00	247.96	0.00	\$6,942.85	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	28.00	DAY	0.00	0.00	143.15	0.00	\$4,008.18	False
33240101	Other Direct Costs	2.00	LS	8,718.75	0.00	0.00	0.00	\$17,437.50	False

Total Element Cost:

\$175,237.69

Element: Backfill

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	16,134.00	CY	26.54	1.19	1.15	0.01	\$466,169.63	False
17040101	Cleaning Up, site debris clean up and removal	10.00	ACR	0.00	570.30	66.85	0.00	\$6,371.53	False
18050101	Area Preparation, 67% Level & 33% Slope	10.00	ACR	0.00	21.62	28.00	0.00	\$496.26	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	10.00	ACR	2,192.58	912.24	564.52	0.00	\$36,693.33	False
18050408	Fertilizer, Hydro Spread	10.00	ACR	1,219.82	86.46	58.67	0.00	\$13,649.51	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False

Total Element Cost:

\$527,339.25

Technology: MEC Sifting

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	260.00	DAY	0.00	0.00	0.00	161.31	\$41,940.60	False
33040921	Senior UXO Supervisor (SUXOS)	460.00	HR	0.00	89.51	0.00	0.00	\$41,174.97	False
33040923	UXO Project Manager	460.00	HR	0.00	130.46	0.00	0.00	\$60,011.23	False
33040930	UXO QC Specialist	460.00	HR	0.00	79.64	0.00	0.00	\$36,635.48	False
33040931	UXO Safety Officer	460.00	HR	0.00	80.11	0.00	0.00	\$36,850.72	False
Total Element Cost:								\$216,613.01	

Element: Stakeholder Involvement

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040935	UXO Technician III (UXO Supervisor)	16.00	HR	0.00	66.97	0.00	0.00	\$1,071.46	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False
Total Element Cost:								\$39,174.37	
Total 1st Year Tech Cost:								\$1,158,901.84	

Technology: MEC Sifting

Technology: MEC Sifting

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	226.86	19,869.53	0.00	0.00	\$20,096.39	False

Total Element Cost:

\$20,096.39

Element: Site Visit

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.26	\$15.39	False
33010108	Sedan, Automobile, Rental	6.00	DAY	0.00	0.00	0.00	60.75	\$364.48	False
33010202	Per Diem (per person)	6.00	DAY	0.00	0.00	0.00	161.31	\$967.86	False
33040921	Senior UXO Supervisor (SUXOS)	16.00	HR	0.00	89.51	0.00	0.00	\$1,432.17	False
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040925	UXO Staff Engineer	16.00	HR	0.00	83.48	0.00	0.00	\$1,335.76	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	700.00	\$2,100.00	False
33041303	Munitions Response Workplan (High Complexity)	1.00	EA	113.43	20,157.00	0.00	0.00	\$20,270.43	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False
33240101	Other Direct Costs	1.00	LS	746.25	0.00	0.00	0.00	\$746.25	False

Total Element Cost:

\$65,335.25

Element: Site Preparation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	2.50	ACR	0.00	1,354.32	459.79	0.00	\$4,535.27	False
17010402	Chipping brush, medium brush	2.50	ACR	0.00	1,741.19	591.13	0.00	\$5,830.79	False
17010403	Chipping brush, heavy brush	5.00	ACR	0.00	3,386.41	1,149.69	0.00	\$22,680.49	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	20.00	DAY	0.00	0.00	0.00	161.31	\$3,226.20	False
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	96.63	\$579.79	False
33040933	UXO Technician I	60.00	HR	0.00	47.06	0.00	0.00	\$2,823.57	False
33040934	UXO Technician II	79.00	HR	0.00	56.69	0.00	0.00	\$4,478.26	False
33040935	UXO Technician III (UXO Supervisor)	59.00	HR	0.00	66.97	0.00	0.00	\$3,951.02	False

Total Element Cost:

\$52,064.37

Element: Excavation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	16,133.33	CY	0.00	0.94	1.19	0.00	\$34,312.71	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False

Technology: MEC Sifting

33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False
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Total Element Cost:	\$63,041.52
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Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	280.00	HR	0.00	71.48	51.60	0.00	\$34,460.17	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False
17030436	0.75 CY Wheel Loader	280.00	HR	0.00	107.80	41.54	0.00	\$41,816.70	False
33010202	Per Diem (per person)	196.00	DAY	0.00	0.00	0.00	161.31	\$31,616.76	False
33040651	4 X 4 Truck- Rental/Lease	4.00	DAY	0.00	0.00	243.88	0.00	\$975.50	False
33040662	Trommel Screener	2.00	MO	0.00	0.00	11,122.99	0.00	\$22,245.98	False
33040693	Manual Clean Suspended Electromagnet	2.00	MO	0.00	0.00	0.00	2,047.68	\$4,095.36	False
33040933	UXO Technician I	120.00	HR	0.00	47.06	0.00	0.00	\$5,647.14	False
33040934	UXO Technician II	60.00	HR	0.00	56.69	0.00	0.00	\$3,401.21	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False
33188605	Adjustable Height Radial Stacker Conveyor	28.00	DAY	0.00	0.00	247.96	0.00	\$6,942.85	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	28.00	DAY	0.00	0.00	143.15	0.00	\$4,008.18	False
33240101	Other Direct Costs	2.00	LS	8,718.75	0.00	0.00	0.00	\$17,437.50	False

Total Element Cost:

\$175,237.69

Element: Backfill

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	16,134.00	CY	26.54	1.19	1.15	0.01	\$466,169.63	False
17040101	Cleaning Up, site debris clean up and removal	10.00	ACR	0.00	570.30	66.85	0.00	\$6,371.53	False
18050101	Area Preparation, 67% Level & 33% Slope	10.00	ACR	0.00	21.62	28.00	0.00	\$496.26	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	10.00	ACR	2,192.58	912.24	564.52	0.00	\$36,693.33	False
18050408	Fertilizer, Hydro Spread	10.00	ACR	1,219.82	86.46	58.67	0.00	\$13,649.51	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False

Total Element Cost:

\$527,339.25

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	260.00	DAY	0.00	0.00	0.00	161.31	\$41,940.60	False
33040921	Senior UXO Supervisor (SUXOS)	460.00	HR	0.00	89.51	0.00	0.00	\$41,174.97	False
33040923	UXO Project Manager	460.00	HR	0.00	130.46	0.00	0.00	\$60,011.23	False
33040930	UXO QC Specialist	460.00	HR	0.00	79.64	0.00	0.00	\$36,635.48	False
33040931	UXO Safety Officer	460.00	HR	0.00	80.11	0.00	0.00	\$36,850.72	False

Total Element Cost:

\$216,613.01

Element: Stakeholder Involvement

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040935	UXO Technician III (UXO Supervisor)	16.00	HR	0.00	66.97	0.00	0.00	\$1,071.46	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False

Total Element Cost:

\$39,174.37

Total 1st Year Tech Cost:

\$1,158,901.84

Technology: MEC Sifting

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	226.86	19,869.53	0.00	0.00	\$20,096.39	False

Total Element Cost:

\$20,096.39

Element: Site Visit

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
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Technology: MEC Sifting

33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.26	\$15.39	False
33010108	Sedan, Automobile, Rental	6.00	DAY	0.00	0.00	0.00	60.75	\$364.48	False
33010202	Per Diem (per person)	6.00	DAY	0.00	0.00	0.00	161.31	\$967.86	False
33040921	Senior UXO Supervisor (SUXOS)	16.00	HR	0.00	89.51	0.00	0.00	\$1,432.17	False
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040925	UXO Staff Engineer	16.00	HR	0.00	83.48	0.00	0.00	\$1,335.76	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	700.00	\$2,100.00	False
33041303	Munitions Response Workplan (High Complexity)	1.00	EA	113.43	20,157.00	0.00	0.00	\$20,270.43	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False
33240101	Other Direct Costs	1.00	LS	746.25	0.00	0.00	0.00	\$746.25	False

Total Element Cost:

\$65,335.25

Element: Site Preparation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	2.50	ACR	0.00	1,354.32	459.79	0.00	\$4,535.27	False
17010402	Chipping brush, medium brush	2.50	ACR	0.00	1,741.19	591.13	0.00	\$5,830.79	False
17010403	Chipping brush, heavy brush	5.00	ACR	0.00	3,386.41	1,149.69	0.00	\$22,680.49	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	20.00	DAY	0.00	0.00	0.00	161.31	\$3,226.20	False
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	96.63	\$579.79	False

Technology: MEC Sifting

33040933	UXO Technician I	60.00	HR	0.00	47.06	0.00	0.00	\$2,823.57	False
33040934	UXO Technician II	79.00	HR	0.00	56.69	0.00	0.00	\$4,478.26	False
33040935	UXO Technician III (UXO Supervisor)	59.00	HR	0.00	66.97	0.00	0.00	\$3,951.02	False

Total Element Cost: \$52,064.37

Element: Excavation

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	16,133.33	CY	0.00	0.94	1.19	0.00	\$34,312.71	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	57.42	0.00	0.00	0.00	\$7,005.75	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	4.11	63.55	6.52	0.00	\$5,192.85	False
33040521	UXO Vehicle Modification - Bullet-Resisting laminated Glass 2.4" Thick	26.00	SF	443.41	192.36	0.00	0.00	\$16,530.22	False

Total Element Cost: \$63,041.52

Element: Sifting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	280.00	HR	0.00	71.48	51.60	0.00	\$34,460.17	False
17030427	Sand Bags	1,000.00	EA	0.58	0.00	0.00	0.00	\$581.33	False

Technology: MEC Sifting

17030436	0.75 CY Wheel Loader	280.00	HR	0.00	107.80	41.54	0.00	\$41,816.70	False
33010202	Per Diem (per person)	196.00	DAY	0.00	0.00	0.00	161.31	\$31,616.76	False
33040651	4 X 4 Truck- Rental/Lease	4.00	DAY	0.00	0.00	243.88	0.00	\$975.50	False
33040662	Trommel Screener	2.00	MO	0.00	0.00	11,122.99	0.00	\$22,245.98	False
33040693	Manual Clean Suspended Electromagnet	2.00	MO	0.00	0.00	0.00	2,047.68	\$4,095.36	False
33040933	UXO Technician I	120.00	HR	0.00	47.06	0.00	0.00	\$5,647.14	False
33040934	UXO Technician II	60.00	HR	0.00	56.69	0.00	0.00	\$3,401.21	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	66.97	0.00	0.00	\$2,009.00	False
33188605	Adjustable Height Radial Stacker Conveyor	28.00	DAY	0.00	0.00	247.96	0.00	\$6,942.85	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	28.00	DAY	0.00	0.00	143.15	0.00	\$4,008.18	False
33240101	Other Direct Costs	2.00	LS	8,718.75	0.00	0.00	0.00	\$17,437.50	False

Total Element Cost:

\$175,237.69

Element: Backfill

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	16,134.00	CY	26.54	1.19	1.15	0.01	\$466,169.63	False
17040101	Cleaning Up, site debris clean up and removal	10.00	ACR	0.00	570.30	66.85	0.00	\$6,371.53	False
18050101	Area Preparation, 67% Level & 33% Slope	10.00	ACR	0.00	21.62	28.00	0.00	\$496.26	False

Technology: MEC Sifting

18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	10.00	ACR	2,192.58	912.24	564.52	0.00	\$36,693.33	False
18050408	Fertilizer, Hydro Spread	10.00	ACR	1,219.82	86.46	58.67	0.00	\$13,649.51	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False

Total Element Cost: \$527,339.25

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	260.00	DAY	0.00	0.00	0.00	161.31	\$41,940.60	False
33040921	Senior UXO Supervisor (SUXOS)	460.00	HR	0.00	89.51	0.00	0.00	\$41,174.97	False
33040923	UXO Project Manager	460.00	HR	0.00	130.46	0.00	0.00	\$60,011.23	False
33040930	UXO QC Specialist	460.00	HR	0.00	79.64	0.00	0.00	\$36,635.48	False
33040931	UXO Safety Officer	460.00	HR	0.00	80.11	0.00	0.00	\$36,850.72	False

Total Element Cost: \$216,613.01

Element: Stakeholder Involvement

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	16.00	HR	0.00	130.46	0.00	0.00	\$2,087.35	False
33040935	UXO Technician III (UXO Supervisor)	16.00	HR	0.00	66.97	0.00	0.00	\$1,071.46	False
33041306	Explosive Safety Submission (High Complexity)	1.00	EA	226.86	35,788.70	0.00	0.00	\$36,015.56	False

Technology: MEC Sifting

Total Element Cost: \$39,174.37

Total 1st Year Tech Cost: \$1,158,901.84

Technology: Low Level Rad Soil Treatment

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030109	Pad Subgrade Preparation	498.77	CY	0.00	7.57	3.19	0.00	\$5,368.66	False
17030222	926, 2.0 CY, Wheel Loader	11,328.00	HR	0.00	94.65	56.47	0.00	\$1,711,959.50	False
17030347	Standby, 926, 2.0 CY Wheel Loader	3,464.00	HR	0.00	0.00	56.47	0.00	\$195,626.59	False
17030501	Compaction, subgrade, 18" wide, 8" lifts, walk behind, vibrating plate	748.15	ECY	0.00	3.37	0.16	0.00	\$2,639.29	False
17030510	Dry Roll Gravel, Steel Roller	2,244.44	SY	0.00	1.18	0.41	0.00	\$3,561.90	False
18010102	Gravel, Delivered & Dumped	498.77	CY	41.83	8.94	7.73	0.00	\$29,175.30	False
18020321	6" Structural Slab on Grade	20,200.00	SF	5.23	5.31	0.11	0.00	\$215,207.11	False
18040205	Fence, chain link, gates & posts, corner posts, chain link fence, vinyl, (1/3 post length in ground), 4" OD, 5', set in concrete, includes excavation	600.00	EA	116.98	40.44	7.29	0.00	\$98,824.35	False
19020313	5' x 5' x 5' Reinforced Concrete Sump	2.00	EA	2,339.23	4,213.37	82.15	0.00	\$13,269.51	False

Technology: Low Level Rad Soil Treatment

19040406	Wastewater holding tanks, above ground, steel, closed, stationary, monthly rental, 21,000 gal	24.00	MO	0.00	0.00	0.00	1,064.83	\$25,556.02	False
19040625	6,000 Gallon Horizontal Plastic Sump with 6" NPT Connection	2.00	EA	12,938.16	1,807.00	166.08	0.00	\$29,822.48	False
33090701	CIP Reinforced Concrete Containment Wall	11.11	CY	226.69	137.31	21.65	0.00	\$4,284.59	False
33130915	Mobilize/Demobilize Soil Washing System	1,800.00	MI	0.00	2.18	10.90	0.00	\$23,547.95	False
33130916	Assemble/Disassemble Soil Washing System	2.00	EA	0.00	55,606.51	12,854.51	0.00	\$136,922.04	False
33130917	Startup/Shakedown - Soil Washing System	1.00	EA	0.00	37,860.87	0.00	0.00	\$37,860.87	False
33130918	Decontaminate Soil Washing System	15.00	EA	0.00	659.73	0.00	0.00	\$9,895.94	False
33130920	25 Tons per Hour Soil Washing System, Monthly Rental	13.00	MO	0.00	0.00	0.00	318,066.51	\$4,134,864.64	False
33130921	Operational Labor, 10 - 25 Tons per Hour System	2,181.00	HR	0.00	567.91	0.00	0.00	\$1,238,618.44	False
33130927	Maintenance/Spare Parts, 25 Tons per Hour System	43,604.00	TON	0.00	4.24	0.00	0.00	\$184,721.84	False
33180401	Mobilize/Demobilize Radiological Screening System	360.00	MI	0.00	2.18	10.90	0.00	\$4,709.59	False
33180402	Assemble/Shakedown Radiological Screening System	1.00	EA	0.00	123,315.28	0.00	0.00	\$123,315.28	False
33180403	Disassemble/Decontaminate Radiological Screening System	1.00	EA	0.00	180,745.20	0.00	0.00	\$180,745.20	False
33180404	13 Tons per Hour Radiological Screening System - Monthly Rental	69.00	MO	0.00	0.00	0.00	142,357.50	\$9,822,667.38	False

Technology: Low Level Rad Soil Treatment

33180405	Operational Labor - 13 Tons per Hour Radiological Screening System	11,980.00	HR	0.00	227.17	0.00	0.00	\$2,721,522.37	False
33180406	Soil Conditioning Charges	124,582.00	TON	0.00	14.20	0.00	0.00	\$1,768,578.29	False
33180407	Maintenance/Spare Parts - 13 Tons per Hour Radiological Screening System	124,582.00	TON	0.00	9.46	0.00	0.00	\$1,178,334.13	False
33180901	Radioactive Waste Disposal Fee	5,459.00	CY	0.00	0.00	0.00	1,829.58	\$9,987,669.40	False
33197103	Process Water Hauling Fee, Subcontracted	109,010.00	GAL	0.00	0.00	0.00	0.03	\$3,724.41	False
33197104	Radioactive Process Water Treatment/Disposal, Subcontracted	109,010.00	GAL	0.00	0.00	0.00	2.71	\$295,470.16	False
33231306	High Sump Level Switch for Avoiding Overflow	2.00	EA	155.47	0.00	0.00	0.00	\$310.94	False
33290412	Pump, submersible sump, automatic, 15 GPM, 1-1/2" discharge, 15' head	2.00	EA	616.78	222.95	0.00	0.00	\$1,679.46	False
33330125	Alkylbenzene Sulfonate Surfactant, Bulk	174,416.00	LB	1.12	0.00	0.00	0.00	\$195,367.85	False
33330127	Non-ionic Polymeric Flocculant	34,883.20	LB	0.58	0.00	0.00	0.00	\$20,278.69	False
33420101	Electrical Charge	2,614,310.15	KWH	0.20	0.00	0.00	0.00	\$518,949.18	False
33420302	Process Water, Supplied by Water Line	2,616.24	KGA	5.33	0.00	0.00	0.00	\$13,947.78	False

Total Element Cost:

\$34,938,997.15

Total 1st Year Tech Cost:

\$34,938,997.15

Technology: Load and Haul

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030226	988, 7.0 CY, Wheel Loader	103.00	HR	0.00	94.65	162.57	0.00	\$26,494.32	False
17030289	32 CY, Semi Dump	1,870.00	HR	0.00	87.17	81.54	0.00	\$315,482.83	False

Total Element Cost:

\$341,977.15

Total 1st Year Tech Cost:

\$341,977.15

Technology: Off-site Transportation and Waste Disposal

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33171009	Radioactive Waste Disposal, Energy Solutions, SC, LLRW, Bulk or Containerized	32,299.00	CY	0.00	0.00	0.00	21,296.68	\$687,861,523.29	False
33190102	Bulk Solid Waste Loading Into Disposal Vehicle or Bulk Disposal Container	32,299.00	BCY	1.47	1.64	0.52	0.00	\$117,629.03	False
33190289	Disposal of radioactive waste, rail car transportation, rail gondola car	855,924.00	CWT	0.00	0.00	0.00	9.40	\$8,041,915.15	False
33190317	Waste Stream Evaluation Fee, Not Including 50% Rebate on 1st	1.00	EA	0.00	0.00	0.00	58.71	\$58.71	False

Technology: Off-site Transportation and Waste Disposal

Shipment									
33190812	50 to 54 Ft Rail Gondola, 10 Mil Liner, disposable	376.00	EA	213.19	0.00	0.00	0.00	\$80,160.39	False

Total Element Cost: \$696,101,286.57

Total 1st Year Tech Cost: \$696,101,286.57

Technology: Off-site Transportation and Waste Disposal

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33190102	Bulk Solid Waste Loading Into Disposal Vehicle or Bulk Disposal Container	59,984.00	BCY	1.47	1.64	0.52	0.00	\$218,454.43	False
33190205	Transport Bulk Solid Hazardous Waste, Maximum 20 CY (per Mile)	180,000.00	MI	0.00	0.00	0.00	2.11	\$379,240.38	False
33190317	Waste Stream Evaluation Fee, Not Including 50% Rebate on 1st Shipment	1.00	EA	0.00	0.00	0.00	58.71	\$58.71	False
33190807	32 Ft. Dump Truck, 6 Mil Liner, disposable	3,000.00	EA	39.84	0.00	0.00	0.00	\$119,527.34	False
33197270	Landfill Nonhazardous Solid Bulk Waste by CY	59,984.00	CY	0.00	0.00	0.00	35.22	\$2,112,932.76	False
Total Element Cost:								\$2,830,213.62	

Total 1st Year Tech Cost:

\$2,830,213.62

Total Phase Element Cost

\$918,157,433.20

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR 20.1403. The RACER estimate accompanies the assumptions provided in the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input type="checkbox"/>	
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input type="checkbox"/>	
Removal/Interim Action	<input type="checkbox"/>	
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input type="checkbox"/>	

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Senior Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Remedial Action

Phase Name: Construction of Access Road and Site Facilities

Description: This task or subcomponent to remediation of the DU Impact Area includes construction of access roads, onsite buildings, overhead electrical distribution, water storage, decontamination facilities, and material storage. Construction of access roads to assist in the remediation of the DU Impact Area assumes 25 miles (40 km) of a 2-lane asphalt access road with ditches. The total width with the right-of-way is estimated at 43 feet (0.78 km). Due to the heavy truck loads during the remediation, additional stabilization and base material stabilization was assumed. Due to the normal climate conditions, 2 culverts will be placed each mile (1.6 km). The parking lot technology was used to estimate a 15,750 square foot (1,463 square meter) asphalt paved work space near the remediation areas. The estimate also assumes the construction of three onsite buildings to be utilized during the remediation: an Onsite Office Building, a Treatment System Building, and a Garage for Equipment. Overhead electrical distribution for 79,200 linear feet would be required to establish electricity to the site and buildings. In addition, water storage and material storage areas would be required.

Approach: Ex Situ

Start Date: April, 2022

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
Access Roads	Yes	100	0
Onsite Office Building	Yes	100	0
Parking Lots	Yes	100	0
Treatment System Building	Yes	100	0
Garage for Equipment	Yes	100	0
Overhead Electrical Distribution	Yes	100	0
Bulk Material Storage	Yes	100	0
Decontamination Facilities	Yes	100	0
Drum Staging	Yes	100	0
MEC Removal Action with AGC	Yes	100	0
Water Storage Tanks	Yes	100	0

Total Marked-up Cost: \$51,856,355.33

Technologies:

Technology: Access Roads

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
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Technology: Access Roads

17010107	Medium Brush, Medium Trees, Clear, Grub, Haul	130.30	ACR	0.00	7,842.19	2,244.70	0.00	\$1,314,322.80	False
17030103	Rough Grading, 14G, 1 Pass	938,666. 67	SY	0.00	0.31	0.41	0.00	\$678,118.61	False
17030108	Fine Grading, 130G, 2 Passes	425,333. 33	SY	0.00	0.73	0.54	0.00	\$538,057.82	False
17030315	Excavation, bulk, bank measure, rock, borrow, dozer excavation for roadway	312,888. 88	BCY	0.00	3.39	3.87	0.00	\$2,271,540.39	False
17030504	Compact Borrowed Subgrade, 4 Lifts	312,888. 89	BCY	17.58	5.41	1.70	0.00	\$7,726,894.89	False
17030602	Cement Stabilization, 6%	156,444. 44	BCY	14.68	0.93	2.45	0.00	\$2,825,656.44	False
18010105	Plant Mixed Asphaltic Base Courses, Aggregate Base Course for Roadways and Large Paved Areas	118,148. 15	CY	97.12	7.00	2.31	0.00	\$12,575,561.43	False
18010310	Prime Coat	352,000. 00	SY	0.92	0.05	0.01	0.00	\$347,661.58	False
18010312	Asphalt Wearing Course, 3" Thick, No Hauling Included	57,420. 00	TON	111.66	10.18	3.84	0.00	\$7,216,838.07	False
19030402	34' Complete, 24" Corrugated Metal Pipe Culvert with Headwalls	50.00	EA	7,125.56	4,386.99	504.67	0.00	\$600,860.88	False

Total Element Cost:

\$36,095,512.92

Total 1st Year Tech Cost:

\$36,095,512.92

Technology: Onsite Office Building

Technology: Onsite Office Building

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
01010101	0.305 m X 0.51 m(1'0" X 1'8") Strip Footing 20,684 kPa(3000 PSI)	176.00	LF	19.41	38.92	1.35	0.00	\$10,503.74	False
01010201	Spread Footing	5.25	CY	160.65	115.14	4.88	0.00	\$1,473.49	False
01010211	Column Piers 0.41 m X 0.61 m X 1.73 m(1'4" X 2'0" X 5'8") High	2.00	EA	255.30	625.72	1.02	0.00	\$1,764.08	False
01010213	Column Piers 0.81 m X 0.81 m X 1.42 m(2'8" X 2'8" X 4'8") High	1.00	EA	553.44	983.02	2.31	0.00	\$1,538.78	False
01010241	Spread Footing, Reinforcing Steel	1.13	TON	1,361.17	1,569.27	0.00	0.00	\$3,311.39	False
01010277	Spread Footing Column Bolts	30.00	EA	6.83	8.59	0.00	0.00	\$462.84	False
01030201	203.2 mm(8") Structural Slab On Grade	2,500.00	SF	8.27	8.46	0.18	0.00	\$42,264.95	False
02020130	50.8 mm x 101.6 mm(2x4) Wood Truss Roof Framing W/19.05 mm(3/4") Plywd Roof Deck	2,638.00	SF	3.33	4.70	0.04	0.00	\$21,309.16	False
02020136	Structural Steel, Lt Load, Columns	1.25	TON	3,757.38	849.40	105.96	0.00	\$5,890.92	False
03010145	50.8 mm X 101.6 mm(2 X 4) Wood Stud Partition	3,545.00	SF	1.69	3.20	0.00	0.00	\$17,321.42	False
03010151	Metal Siding	2,645.00	SF	4.28	3.86	0.00	0.00	\$21,524.86	False
03010201	Polystyrene Rigid Wall Insulation, 25.4 mm(1") Thick	2,645.00	SF	0.79	0.93	0.00	0.00	\$4,569.87	False
03010310	5/8" Gypsum Board/Installed/Taped & Finished	4,445.00	SF	0.55	1.49	0.00	0.00	\$9,067.88	False
03010311	Paint to Gypsum Board Walls	4,445.00	SF	0.30	0.73	0.00	0.00	\$4,551.62	False

Technology: Onsite Office Building

Using Roller

03020105	Aluminum Frm Casement Type Window - 6.35 mm(1/4") Clear	25.00	SF	97.07	40.93	0.00	0.00	\$3,449.91	False
03040102	3660 mm X 3660 mm(12'0" X 12'0") Heavy Duty Steel Overhead Door	2.00	EA	7,883.19	3,552.74	150.58	0.00	\$23,173.02	False
04010107	Metal Roof W/Vinyl Backed Ins (Typical Metal Bldg)	2,638.00	SF	5.39	3.08	0.00	0.00	\$22,332.74	False
04010404	Misc. Roofing Items - 101.6 mm(4") Gravel Stop	130.00	LF	11.40	8.47	0.00	0.00	\$2,583.42	False
04010601	5" Box Gutters With Downspouts	50.00	LF	5.19	8.96	0.00	0.00	\$707.31	False
05020101	3'0" X 7'0" Hollow Metal Door	2.00	EA	1,306.89	274.81	0.00	0.00	\$3,163.40	False
05020117	3'0" X 7'0" Wood Door, H.M. Frm	2.00	EA	919.14	385.01	0.00	0.00	\$2,608.30	False
05040106	Lavatory Accessories	2.00	EA	662.86	112.10	0.00	0.00	\$1,549.92	False
05040202	Sanitary Napkin Dispenser	1.00	EA	893.26	49.82	0.00	0.00	\$943.08	False
05040203	Paper Towel Dispenser And Waste Receptacle	2.00	EA	446.63	74.73	0.00	0.00	\$1,042.73	False
05040206	Grab Bars	2.00	EA	52.46	37.37	0.00	0.00	\$179.66	False
05040402	Door Sign, 6" X 6"	6.00	EA	68.77	15.60	0.00	0.00	\$506.18	False
05040501	12" X 15" X 36" Double Tier Lockers	6.00	EA	165.18	15.44	0.00	0.00	\$1,083.74	False
05040702	Fire Extinguisher Cabinet, 8" X 16" X 38"	1.00	EA	334.62	206.27	0.00	0.00	\$540.89	False
06029003	Floor Hardener, Non-Metallic Light Service	2,000.00	SF	0.21	0.90	0.00	0.00	\$2,223.65	False
06030301	5/8" Gypsum Wallboard Ceiling, 1 Layer, Fire Rated	500.00	SF	0.55	1.49	0.00	0.00	\$1,020.01	False
06030603	Paint Exposed Steel Joists And Roof Deck	2,500.00	SF	1.91	2.33	0.00	0.00	\$10,621.14	False

Technology: Onsite Office Building

06030704	Suspension System For Gypsum Board Ceiling	500.00	SF	1.63	5.78	0.00	0.00	\$3,702.92	False
08010104	Wall Mounted Water Closet	1.00	EA	2,516.74	544.45	0.00	0.00	\$3,061.19	False
08010301	Wall Hung 16" By 14" White Single Bowl Lavatory	2.00	EA	1,325.72	1,414.58	0.00	0.00	\$5,480.59	False
08010506	Emergency Shower And Eyewash	1.00	EA	964.16	486.18	0.00	0.00	\$1,450.34	False
08010508	Fiberglass Shower Unit	1.00	EA	985.43	388.93	0.00	0.00	\$1,374.36	False
08010604	Electric Water Fountain, Wall Mounted	2.00	EA	3,040.72	2,084.61	0.00	0.00	\$10,250.66	False
08020101	Copper Pipe & Fittings (1/2" to 4" Dia. Piping)	1.00	EA	1,040.20	2,235.13	0.00	0.00	\$3,275.33	False
08020152	Domestic Hot Water Heater, Electric (30 Gal)	1.00	EA	1,283.18	506.72	0.00	0.00	\$1,789.90	False
08020201	Valves & Hydrants	1.00	EA	2,408.58	812.22	0.00	0.00	\$3,220.80	False
08030101	Waste Pipe & Fittings	2.00	EA	848.66	1,095.78	0.00	0.00	\$3,888.88	False
08030303	Medium Duty And Heavy Duty Cast Iron Floor Drains	6.00	EA	1,141.39	218.79	0.00	0.00	\$8,161.08	False
09040732	0.17 m3/s(350 CFM) Exhaust Fan	1.00	EA	3,736.70	2,735.47	0.00	0.00	\$6,472.17	False
09050288	Horizontal Unit Heater, Electric, 15 KW w/Encl Coil	3.00	EA	3,013.00	243.24	0.00	0.00	\$9,768.70	False
09060172	Controls, Hot Water Unit Heater	1.00	EA	18.22	112.50	0.00	0.00	\$130.72	False
09060204	Instrument Panels	1.00	EA	538.79	929.01	0.00	0.00	\$1,467.80	False
11010121	Underground 150 Amp 240 Volt 1 Phase Transformer	1.00	EA	7,372.98	2,249.93	0.00	0.00	\$9,622.91	False
11010221	Underground 125 Amp Secondary Cable	1.00	EA	2.04	15.70	0.00	0.00	\$17.74	False
11010501	Panel board 120/208V 100A Mlo	1.00	EA	2,244.51	3,119.11	0.00	0.00	\$5,363.62	False

Technology: Onsite Office Building

	24 Cir W/Bkr								
11010571	Residential 125 Amp MB Load Center W/Bkr.	1.00	EA	730.21	1,199.32	0.00	0.00	\$1,929.53	False
11019001	Transformer Grounding	1.00	EA	70.01	262.34	0.00	0.00	\$332.36	False
11020103	Duplex Receptacle Long Run	5.00	EA	306.18	876.79	0.00	0.00	\$5,914.82	False
11020137	Equipment Connections For Up To 10 HP	7.00	EA	654.08	1,528.22	0.00	0.00	\$15,276.09	False
11020156	120 Volt 20 Amp Single Pole Switch	4.00	EA	153.70	457.70	0.00	0.00	\$2,445.59	False
11020183	120 Volt Residential GFI Receptacle	6.00	EA	73.09	159.34	0.00	0.00	\$1,394.58	False
11020209	Surface Mount 2' X 4' Fluorescent Fixture	2.00	EA	333.88	606.99	0.00	0.00	\$1,881.75	False
11020230	100W Metal Halide Wall Mount	2.00	EA	441.07	680.38	0.00	0.00	\$2,242.90	False
11020251	Low Bay 150W Hps Fixture	18.00	EA	594.01	1,016.29	0.00	0.00	\$28,985.38	False
11020272	Exit Light With Battery Backup	4.00	EA	359.48	637.23	0.00	0.00	\$3,986.84	False
11020280	Dock Lights	1.00	EA	329.06	651.91	0.00	0.00	\$980.98	False
11029010	4-Pair Telephone Outlet	1.00	EA	123.03	442.48	0.00	0.00	\$565.51	False
11029011	Fire Alarm Pull Station	1.00	EA	203.54	484.95	0.00	0.00	\$688.49	False
11029012	Fire Alarm Horn Light	1.00	EA	219.13	547.39	0.00	0.00	\$766.52	False
12010601	Clock System	1.00	EA	385.34	663.27	0.00	0.00	\$1,048.61	False
12020302	Building Grounding	1.00	EA	404.10	688.40	0.00	0.00	\$1,092.49	False
12020401	Lightning Protection System	1.00	EA	219.67	473.31	0.00	0.00	\$692.99	False
13010602	1.83m x 2.44m (6'0" X 8'0") Long 9.07Mg (10 Ton) Capacity With Stairs	1.00	EA	13,874.59	3,383.53	85.48	0.00	\$17,343.60	False
13010606	609.60mm (24") Deep Dock Leveler Pit Wall W/Stl Angle	1.00	EA	1,253.73	1,444.39	1.84	0.00	\$2,699.96	False

Technology: Onsite Office Building

13011509	Oak Bench - 42"	2.00	EA	560.06	124.81	0.00	0.00	\$1,369.74	False
19040107	Septic tanks, precast concrete, 5,000 gallon, excludes excavation or piping	1.00	EA	13,469.87	1,266.98	158.41	0.00	\$14,895.25	False

Total Element Cost: \$408,317.77

Total 1st Year Tech Cost: \$408,317.77

Technology: Parking Lots

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010107	Medium Brush, Medium Trees, Clear, Grub, Haul	0.49	ACR	0.00	7,842.19	2,244.70	0.00	\$4,942.58	False
17030102	Rough Grading, 12G, 1 Pass	1,925.03	SY	0.00	0.31	0.24	0.00	\$1,063.16	False
17030107	Fine Grading, 120G, 2 Passes	1,925.03	SY	0.00	0.55	0.24	0.00	\$1,529.16	False
17030204	Roadway Sand Excavation, with Scraper, Load & Haul Spoil	392.60	CY	0.00	4.69	3.49	0.00	\$3,209.08	False
17030256	Cat 215, 1.0 CY, Sand, Shallow, Trenching, Excludes Sheeting, Excludes Dewatering	39.21	BCY	0.00	1.05	0.35	0.00	\$55.26	False
17030501	Compaction, subgrade, 18" wide, 8" lifts, walk behind, vibrating plate	490.75	ECY	0.00	3.37	0.16	0.00	\$1,731.25	False
17030510	Dry Roll Gravel, Steel Roller	1,766.69	SY	0.00	1.18	0.41	0.00	\$2,803.72	False
17030515	Backfill and compact, by hand, 6" layers, air rammer/tamper	26.74	ECY	0.00	15.58	0.95	0.00	\$442.00	False

Technology: Parking Lots

17030602	Cement Stabilization, 6%	490.75	BCY	14.68	0.93	2.45	0.00	\$8,863.79	False
18010102	Gravel, Delivered & Dumped	392.60	CY	41.83	8.94	7.73	0.00	\$22,964.94	False
18010202	Concrete Curb & Gutter, 6" x 24", Formed	502.00	LF	22.83	11.65	0.00	0.00	\$17,310.05	False
18010310	Prime Coat	1,766.69	SY	0.92	0.05	0.01	0.00	\$1,744.92	False
18010312	Asphalt Wearing Course, 3" Thick, No Hauling Included	144.10	TON	111.66	10.18	3.84	0.00	\$18,111.22	False
18020205	24" Diameter, 5' Deep Area Drain with Grate	3.00	EA	1,701.46	2,986.26	52.31	0.00	\$14,220.08	False
18020401	Lines on pavement, parking stall, paint, white, 4" wide	35.00	EA	6.55	3.41	0.89	0.00	\$379.76	False
19030174	12" Reinforced Concrete Pipe, Class 4, with Gaskets	101.50	LF	23.10	31.94	2.21	0.00	\$5,810.48	False
19030176	18" Reinforced Concrete Pipe, Class 4, with Gaskets	38.50	LF	29.29	27.93	1.93	0.00	\$2,277.16	False

Total Element Cost:	\$107,458.59
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Total 1st Year Tech Cost:	\$107,458.59
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Technology: Treatment System Building

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
01010101	0.305 m X 0.51 m(1'0" X 1'8") Strip Footing 20,684 kPa(3000 PSI)	376.00	LF	19.41	38.92	1.35	0.00	\$22,439.80	False

Technology: Treatment System Building

01010201	Spread Footing	9.00	CY	160.65	115.14	4.88	0.00	\$2,525.99	False
01010211	Column Piers 0.41 m X 0.61 m X 1.73 m(1'4" X 2'0" X 5'8") High	5.00	EA	255.30	625.72	1.02	0.00	\$4,410.21	False
01010213	Column Piers 0.81 m X 0.81 m X 1.42 m(2'8" X 2'8" X 4'8") High	3.00	EA	553.44	983.02	2.31	0.00	\$4,616.33	False
01010241	Spread Footing, Reinforcing Steel	1.50	TON	1,361.17	1,569.27	0.00	0.00	\$4,395.65	False
01010277	Spread Footing Column Bolts	120.00	EA	6.83	8.59	0.00	0.00	\$1,851.35	False
01030201	203.2 mm(8") Structural Slab On Grade	10,000.00	SF	8.27	8.46	0.18	0.00	\$169,059.79	False
02020115	Lrg Span, Lt Ld, Stl Frm, Mtl Joist	12.00	TON	3,781.39	858.25	107.53	0.00	\$56,966.05	False
02020136	Structural Steel, Lt Load, Columns	5.00	TON	3,757.38	849.40	105.96	0.00	\$23,563.70	False
03010151	Metal Siding	8,767.00	SF	4.28	3.86	0.00	0.00	\$71,345.35	False
03010312	Paint CMU/Concrete	3,500.00	SF	0.37	0.64	0.00	0.00	\$3,529.49	False
03020105	Aluminum Frm Casement Type Window - 6.35 mm(1/4") Clear	50.00	SF	97.07	40.93	0.00	0.00	\$6,899.82	False
03040103	6100 mm X 4270mm(20'0" X 14'0") Metal Overhead Door	4.00	EA	11,534.23	4,931.15	150.58	0.00	\$66,463.83	False
04010107	Metal Roof W/Vinyl Backed Ins (Typical Metal Bldg)	10,550.00	SF	5.39	3.08	0.00	0.00	\$89,314.03	False
04010404	Misc. Roofing Items - 101.6 mm(4") Gravel Stop	260.00	LF	11.40	8.47	0.00	0.00	\$5,166.84	False
04010601	5" Box Gutters With Downspouts	100.00	LF	5.19	8.96	0.00	0.00	\$1,414.63	False
05010114	Non-Load Bearing 8 X 8 X 16 Concrete Block	3,500.00	SF	6.38	2.25	0.00	0.00	\$30,199.13	False
05020101	3'0" X 7'0" Hollow Metal Door	3.00	EA	1,306.89	274.81	0.00	0.00	\$4,745.10	False
05020117	3'0" X 7'0" Wood Door, H.M. Frm	2.00	EA	919.14	385.01	0.00	0.00	\$2,608.30	False

Technology: Treatment System Building

05040106	Lavatory Accessories	2.00	EA	662.86	112.10	0.00	0.00	\$1,549.92	False
05040202	Sanitary Napkin Dispenser	1.00	EA	893.26	49.82	0.00	0.00	\$943.08	False
05040203	Paper Towel Dispenser And Waste Receptacle	2.00	EA	446.63	74.73	0.00	0.00	\$1,042.73	False
05040206	Grab Bars	2.00	EA	52.46	37.37	0.00	0.00	\$179.66	False
05040402	Door Sign, 6" X 6"	9.00	EA	68.77	15.60	0.00	0.00	\$759.28	False
05040501	12" X 15" X 36" Double Tier Lockers	6.00	EA	165.18	15.44	0.00	0.00	\$1,083.74	False
05040702	Fire Extinguisher Cabinet, 8" X 16" X 38"	1.00	EA	334.62	206.27	0.00	0.00	\$540.89	False
06029003	Floor Hardener, Non-Metallic Light Service	9,500.00	SF	0.21	0.90	0.00	0.00	\$10,562.35	False
06030301	5/8" Gypsum Wallboard Ceiling, 1 Layer, Fire Rated	500.00	SF	0.55	1.49	0.00	0.00	\$1,020.01	False
06030704	Suspension System For Gypsum Board Ceiling	500.00	SF	1.63	5.78	0.00	0.00	\$3,702.92	False
08010104	Wall Mounted Water Closet	1.00	EA	2,516.74	544.45	0.00	0.00	\$3,061.19	False
08010301	Wall Hung 16" By 14" White Single Bowl Lavatory	2.00	EA	1,325.72	1,414.58	0.00	0.00	\$5,480.59	False
08010506	Emergency Shower And Eyewash	1.00	EA	964.16	486.18	0.00	0.00	\$1,450.34	False
08010508	Fiberglass Shower Unit	1.00	EA	985.43	388.93	0.00	0.00	\$1,374.36	False
08010604	Electric Water Fountain, Wall Mounted	2.00	EA	3,040.72	2,084.61	0.00	0.00	\$10,250.66	False
08020101	Copper Pipe & Fittings (1/2" to 4" Dia. Piping)	1.00	EA	1,040.20	2,235.13	0.00	0.00	\$3,275.33	False
08020152	Domestic Hot Water Heater, Electric (30 Gal)	1.00	EA	1,283.18	506.72	0.00	0.00	\$1,789.90	False
08020201	Valves & Hydrants	1.00	EA	2,408.58	812.22	0.00	0.00	\$3,220.80	False

Technology: Treatment System Building

08030101	Waste Pipe & Fittings	2.00	EA	848.66	1,095.78	0.00	0.00	\$3,888.88	False
08030303	Medium Duty And Heavy Duty Cast Iron Floor Drains	21.00	EA	1,141.39	218.79	0.00	0.00	\$28,563.78	False
09040732	0.17 m3/s(350 CFM) Exhaust Fan	1.00	EA	3,736.70	2,735.47	0.00	0.00	\$6,472.17	False
09050288	Horizontal Unit Heater,Electric,15 KW w/Encl Coil	9.00	EA	3,013.00	243.24	0.00	0.00	\$29,306.09	False
09060172	Controls, Hot Water Unit Heater	1.00	EA	18.22	112.50	0.00	0.00	\$130.72	False
09060204	Instrument Panels	1.00	EA	538.79	929.01	0.00	0.00	\$1,467.80	False
11010121	Underground 150 Amp 240 Volt 1 Phase Transformer	1.00	EA	7,372.98	2,249.93	0.00	0.00	\$9,622.91	False
11010221	Underground 125 Amp Secondary Cable	1.00	EA	2.04	15.70	0.00	0.00	\$17.74	False
11010501	Panel board 120/208V 100A Mlo 24 Cir W/Bkr	1.00	EA	2,244.51	3,119.11	0.00	0.00	\$5,363.62	False
11010571	Residential 125 Amp MB Load Center W/Bkr.	1.00	EA	730.21	1,199.32	0.00	0.00	\$1,929.53	False
11019001	Transformer Grounding	1.00	EA	70.01	262.34	0.00	0.00	\$332.36	False
11020103	Duplex Receptacle Long Run	10.00	EA	306.18	876.79	0.00	0.00	\$11,829.63	False
11020137	Equipment Connections For Up To 10 HP	25.00	EA	654.08	1,528.22	0.00	0.00	\$54,557.46	False
11020156	120 Volt 20 Amp Single Pole Switch	6.00	EA	153.70	457.70	0.00	0.00	\$3,668.38	False
11020183	120 Volt Residential GFI Receptacle	7.00	EA	73.09	159.34	0.00	0.00	\$1,627.01	False
11020209	Surface Mount 2' X 4' Fluorescent Fixture	2.00	EA	333.88	606.99	0.00	0.00	\$1,881.75	False
11020230	100W Metal Halide Wall Mount	4.00	EA	441.07	680.38	0.00	0.00	\$4,485.80	False
11020251	Low Bay 150W Hps Fixture	72.00	EA	594.01	1,016.29	0.00	0.00	\$115,941.52	False

Technology: Treatment System Building

11020272	Exit Light With Battery Backup	7.00	EA	359.48	637.23	0.00	0.00	\$6,976.96	False
11020280	Dock Lights	1.00	EA	329.06	651.91	0.00	0.00	\$980.98	False
11029010	4-Pair Telephone Outlet	1.00	EA	123.03	442.48	0.00	0.00	\$565.51	False
11029011	Fire Alarm Pull Station	1.00	EA	203.54	484.95	0.00	0.00	\$688.49	False
11029012	Fire Alarm Horn Light	2.00	EA	219.13	547.39	0.00	0.00	\$1,533.04	False
12010401	Sound And Public Address	10,000.00	SF	0.91	0.81	0.00	0.00	\$17,201.31	False
12010601	Clock System	1.00	EA	385.34	663.27	0.00	0.00	\$1,048.61	False
12020302	Building Grounding	2.00	EA	404.10	688.40	0.00	0.00	\$2,184.99	False
12020401	Lightning Protection System	4.00	EA	219.67	473.31	0.00	0.00	\$2,771.94	False
13010602	1.83m x 2.44m (6'0" X 8'0") Long 9.07Mg (10 Ton) Capacity With Stairs	1.00	EA	13,874.59	3,383.53	85.48	0.00	\$17,343.60	False
13010606	609.60mm (24") Deep Dock Leveler Pit Wall W/Stl Angle	1.00	EA	1,253.73	1,444.39	1.84	0.00	\$2,699.96	False
13011509	Oak Bench - 42"	2.00	EA	560.06	124.81	0.00	0.00	\$1,369.74	False
19040107	Septic tanks, precast concrete, 5,000 gallon, excludes excavation or piping	1.00	EA	13,469.87	1,266.98	158.41	0.00	\$14,895.25	False

Total Element Cost:	\$974,150.65
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Total 1st Year Tech Cost:	\$974,150.65
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Technology: Garage for Equipment

Element:

Technology: Garage for Equipment

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
01010101	0.305 m X 0.51 m(1'0" X 1'8") Strip Footing 20,684 kPa(3000 PSI)	376.00	LF	19.41	38.92	1.35	0.00	\$22,439.80	False
01010201	Spread Footing	9.00	CY	160.65	115.14	4.88	0.00	\$2,525.99	False
01010211	Column Piers 0.41 m X 0.61 m X 1.73 m(1'4" X 2'0" X 5'8") High	5.00	EA	255.30	625.72	1.02	0.00	\$4,410.21	False
01010213	Column Piers 0.81 m X 0.81 m X 1.42 m(2'8" X 2'8" X 4'8") High	3.00	EA	553.44	983.02	2.31	0.00	\$4,616.33	False
01010241	Spread Footing, Reinforcing Steel	1.50	TON	1,361.17	1,569.27	0.00	0.00	\$4,395.65	False
01010277	Spread Footing Column Bolts	120.00	EA	6.83	8.59	0.00	0.00	\$1,851.35	False
01030201	203.2 mm(8") Structural Slab On Grade	10,000.00	SF	8.27	8.46	0.18	0.00	\$169,059.79	False
02020115	Lrg Span, Lt Ld, Stl Frm, Mtl Joist	12.00	TON	3,781.39	858.25	107.53	0.00	\$56,966.05	False
02020136	Structural Steel, Lt Load, Columns	5.00	TON	3,757.38	849.40	105.96	0.00	\$23,563.70	False
03010150	Aluminum Siding	7,327.00	SF	6.10	6.05	0.00	0.00	\$89,014.38	False
03020105	Aluminum Frm Casement Type Window - 6.35 mm(1/4") Clear	50.00	SF	97.07	40.93	0.00	0.00	\$6,899.82	False
03040103	6100 mm X 4270mm(20'0" X 14'0") Metal Overhead Door	2.00	EA	11,534.23	4,931.15	150.58	0.00	\$33,231.92	False
04010107	Metal Roof W/Vinyl Backed Ins (Typical Metal Bldg)	10,550.00	SF	5.39	3.08	0.00	0.00	\$89,314.03	False
04010404	Misc. Roofing Items - 101.6 mm(4") Gravel Stop	260.00	LF	11.40	8.47	0.00	0.00	\$5,166.84	False
04010601	5" Box Gutters With Downspouts	100.00	LF	5.19	8.96	0.00	0.00	\$1,414.63	False
05020101	3'0" X 7'0" Hollow Metal Door	3.00	EA	1,306.89	274.81	0.00	0.00	\$4,745.10	False

Technology: Garage for Equipment

05040402	Door Sign, 6" X 6"	5.00	EA	68.77	15.60	0.00	0.00	\$421.82	False
05040702	Fire Extinguisher Cabinet, 8" X 16" X 38"	1.00	EA	334.62	206.27	0.00	0.00	\$540.89	False
06029003	Floor Hardener, Non-Metallic Light Service	10,000.00	SF	0.21	0.90	0.00	0.00	\$11,118.26	False
08010506	Emergency Shower And Eyewash	1.00	EA	964.16	486.18	0.00	0.00	\$1,450.34	False
08010604	Electric Water Fountain, Wall Mounted	1.00	EA	3,040.72	2,084.61	0.00	0.00	\$5,125.33	False
08020201	Valves & Hydrants	1.00	EA	2,408.58	812.22	0.00	0.00	\$3,220.80	False
08030303	Medium Duty And Heavy Duty Cast Iron Floor Drains	20.00	EA	1,141.39	218.79	0.00	0.00	\$27,203.60	False
11010221	Underground 125 Amp Secondary Cable	1.00	EA	2.04	15.70	0.00	0.00	\$17.74	False
11010532	Panel board 277/480V 100A Mlo 24 Cir W/Bkr	1.00	EA	3,081.05	3,318.50	0.00	0.00	\$6,399.55	False
11010572	Residential 200 Amp MB Load Center W/Bark.	1.00	EA	978.34	1,240.94	0.00	0.00	\$2,219.28	False
11019001	Transformer Grounding	1.00	EA	70.01	262.34	0.00	0.00	\$332.36	False
11020103	Duplex Receptacle Long Run	10.00	EA	306.18	876.79	0.00	0.00	\$11,829.63	False
11020138	480 Volt Equipment Connections For Motors - 15 To 25 HP	25.00	EA	659.06	1,333.46	0.00	0.00	\$49,813.11	False
11020156	120 Volt 20 Amp Single Pole Switch	4.00	EA	153.70	457.70	0.00	0.00	\$2,445.59	False
11020183	120 Volt Residential GFI Receptacle	3.00	EA	73.09	159.34	0.00	0.00	\$697.29	False
11020230	100W Metal Halide Wall Mount	4.00	EA	441.07	680.38	0.00	0.00	\$4,485.80	False
11020251	Low Bay 150W Hps Fixture	72.00	EA	594.01	1,016.29	0.00	0.00	\$115,941.52	False
11020272	Exit Light With Battery Backup	5.00	EA	359.48	637.23	0.00	0.00	\$4,983.54	False

Technology: Garage for Equipment

11029010	4-Pair Telephone Outlet	1.00	EA	123.03	442.48	0.00	0.00	\$565.51	False
11029011	Fire Alarm Pull Station	1.00	EA	203.54	484.95	0.00	0.00	\$688.49	False
11029012	Fire Alarm Horn Light	2.00	EA	219.13	547.39	0.00	0.00	\$1,533.04	False
12010401	Sound And Public Address	10,000.00	SF	0.91	0.81	0.00	0.00	\$17,201.31	False
12010601	Clock System	1.00	EA	385.34	663.27	0.00	0.00	\$1,048.61	False
12020302	Building Grounding	2.00	EA	404.10	688.40	0.00	0.00	\$2,184.99	False
12020401	Lightning Protection System	4.00	EA	219.67	473.31	0.00	0.00	\$2,771.94	False

Total Element Cost: \$793,855.92

Total 1st Year Tech Cost: \$793,855.92

Technology: Overhead Electrical Distribution

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
20020301	1/0 ACSR Conductor	251,856.00	LF	0.67	1.38	0.11	0.00	\$544,797.92	False
20020310	1/C #2 Aluminum, Bare, Wire	99,852.00	LF	0.51	1.33	0.10	0.00	\$193,824.04	False
20020405	50' Class 3 Treated Power Pole	318.00	EA	836.55	1,111.64	132.02	0.00	\$661,504.94	False
20020422	Straight-line Structure, 35 KV Pole Top	316.00	EA	671.37	1,241.42	130.10	0.00	\$645,554.80	False
20020432	Terminal Structure, 35 KV Pole Top	2.00	EA	3,543.99	3,481.80	364.92	0.00	\$14,781.42	False

Technology: Overhead Electrical Distribution

20020526	35 KV, 3/0, Shielded Cable, Copper	150.00	LF	11.39	6.76	0.52	0.00	\$2,800.66	False
20020547	Cable splice, stranded, 35 kV, # 1-4/0	6.00	EA	421.11	1,755.08	0.00	0.00	\$13,057.12	False
20039902	4" Rigid Steel Conduit	50.00	LF	25.10	34.62	0.00	0.00	\$2,985.68	False

Total Element Cost: \$2,079,306.58

Total 1st Year Tech Cost: \$2,079,306.58

Technology: Bulk Material Storage

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030102	Rough Grading, 12G, 1 Pass	2,025.00	SY	0.00	0.31	0.24	0.00	\$1,118.37	False
17030105	Fine Grading, Hand	787.00	SY	0.00	4.36	0.00	0.00	\$3,429.27	False
17030106	Fine Grading, 12G, 2 Passes	2,025.00	SY	0.00	0.73	0.54	0.00	\$2,561.68	False
17030423	Unclassified Fill, 6" Lifts, Off-Site, Includes Delivery, Spreading, and Compaction	286.00	CY	26.54	1.45	1.15	0.01	\$8,338.35	False
17030430	Gravel, 6" Lifts	537.41	CY	26.54	10.96	1.06	0.01	\$20,733.37	False
33080504	Herbicide Application	0.42	ACR	0.00	167.38	137.25	0.00	\$127.94	False
33080507	Clay, Low Permeability, 6"Lifts, Off-Site	134.35	CY	11.65	3.41	2.24	0.00	\$2,324.47	False
33080563	40 Mil Polymeric Liner, PVC	14,510.08	SF	0.85	0.59	0.06	0.00	\$21,697.58	False

Total Element Cost:

\$60,331.02

Total 1st Year Tech Cost:

\$60,331.02

Technology: Decontamination Facilities

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030109	Pad Subgrade Preparation	133.33	CY	0.00	7.57	3.19	0.00	\$1,435.14	False
17030257	Cat 215, 1.0 CY, Soil, Shallow, Trenching, Excludes Sheeting, Excludes Dewatering	2.49	BCY	0.00	1.11	0.37	0.00	\$3.67	False
17030501	Compaction, subgrade, 18" wide, 8" lifts, walk behind, vibrating plate	133.33	ECY	0.00	3.37	0.16	0.00	\$470.36	False
17030510	Dry Roll Gravel, Steel Roller	200.00	SY	0.00	1.18	0.41	0.00	\$317.40	False
18010102	Gravel, Delivered & Dumped	55.56	CY	41.83	8.94	7.73	0.00	\$3,249.95	False
18010103	Gravel (90%) & Sand Base (10%), with Calcium Chloride 3/4 - 1 Lb/CY	55.56	CY	5.84	0.43	0.41	0.00	\$371.43	False
18010201	Concrete Curb, 6" x 6"	166.00	LF	4.98	2.49	0.00	0.00	\$1,239.47	False
18020203	26" x 26", 5' Deep Area Drain with Grate	1.00	EA	2,084.28	3,018.03	56.55	0.00	\$5,158.86	False
18020321	6" Structural Slab on Grade	1,500.00	SF	5.23	5.31	0.11	0.00	\$15,980.73	False
19020313	5' x 5' x 5' Reinforced Concrete Sump	1.00	EA	2,339.23	4,213.37	82.15	0.00	\$6,634.76	False
19020604	12" x 12" CIP Concrete In-Ground Trench Drain with Metal Grate	28.00	LF	97.14	91.00	0.40	0.00	\$5,279.11	False

Technology: Decontamination Facilities

19040606	5,000 Gallon Steel Sump, Aboveground with Supports & Fittings, Excludes Foundation, Pumps, Piping	1.00	EA	29,066.55	1,318.73	0.00	0.00	\$30,385.29	False
33080503	Polymeric Liner Anchor Trench, 3' x 1.5'	199.20	LF	0.28	2.84	0.35	0.00	\$691.98	False
33080532	Geotextile Fabric, Non-Woven 80 Mil	200.00	SY	0.94	1.19	0.07	0.00	\$439.96	False
33080571	40 Mil Polymeric Liner, High- density Polyethylene	1,800.00	SF	0.69	0.31	0.03	0.00	\$1,861.85	False
33170814	1,800 PSI Pressure Washer, 6 HP, 4.8 GPM	1.00	EA	2,755.24	0.00	0.00	0.00	\$2,755.24	False
33170821	8' x 24' Decontamination Trailer with 4 Showers, HVAC, 2 Sinks	70.00	MO	0.00	0.00	0.00	3,802.08	\$266,145.88	False
33170823	Operation of Pressure Washer, Including Water, Soap, Electricity, Labor	3,000.00	HR	0.00	96.26	0.00	0.00	\$288,780.80	False
33199921	DOT steel drums, 55 gal., open, 17C	650.00	EA	122.50	0.00	0.00	0.00	\$79,628.18	False
33220112	Field Technician	30,000. 00	HR	0.00	109.39	0.00	0.00	\$3,281,577.97	False
33231306	High Sump Level Switch for Avoiding Overflow	1.00	EA	155.47	0.00	0.00	0.00	\$155.47	False
33260623	(2 1/2", 4") PVC Double-wall Piping, with Fittings	30.00	LF	69.52	56.42	0.00	0.00	\$3,778.20	False
33290401	Pump, pedestal sump, single stage, 25 GPM, 1 H.P., 1-1/2" discharge	1.00	EA	5,423.39	1,080.39	0.00	0.00	\$6,503.78	False

Total Element Cost:

\$4,002,845.47

Total 1st Year Tech Cost:

\$4,002,845.47

Technology: Drum Staging

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17030276	Excavate and load, bank measure, medium material, 3/4 C.Y. bucket, hydraulic excavator	37.04	BCY	0.00	4.62	1.29	0.00	\$218.80	False
33080572	60 Mil Polymeric Liner, High-density Polyethylene	1,581.26	SF	0.91	0.31	0.03	0.00	\$1,971.90	False
33100101	Transfer Drums to Staging Area with Grappler	25.00	EA	0.00	38.47	21.08	0.00	\$1,488.92	False
Total Element Cost:								\$3,679.62	
Total 1st Year Tech Cost:								\$3,679.62	

Technology: MEC Removal Action with AGC

Element: Systematic Project Planning

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	84.00	DAY	0.00	0.00	0.00	60.75	\$5,102.73	False
33010202	Per Diem (per person)	90.00	DAY	0.00	0.00	0.00	161.31	\$14,517.90	False
33040947	MEC: Systematic Project Planning Meeting, includes labor and facility rental expenses, per EA	9.00	EA	0.00	18,237.58	0.00	1,110.39	\$174,131.67	False

Technology: MEC Removal Action with AGC

33040948	MEC: Systematic Project Planning, Site Visit, includes labor expenses, per EA	1.00	EA	0.00	5,430.68	0.00	0.00	\$5,430.68	False
33040949	MEC: Systematic Project Planning, UFP QAPP, includes labor expenses, per EA	1.00	EA	0.00	58,799.21	0.00	0.00	\$58,799.21	False
33040950	MEC: Systematic Project Planning, Establish and Management of GIS Database, includes labor expenses, per EA	1.00	EA	0.00	18,877.73	0.00	0.00	\$18,877.73	False
33040951	MEC: Systematic Project Planning, Community Relation Plan, includes labor expenses, per EA	1.00	EA	0.00	10,812.08	0.00	0.00	\$10,812.08	False
33040953	MEC: Systematic Project Planning, PMP/Quality Assurance Surveillance Plan, includes labor expenses, per EA	1.00	EA	0.00	8,449.28	0.00	0.00	\$8,449.28	False
33040954	MEC: Systematic Project Planning, Health and Safety Plan, includes labor expenses, per EA	1.00	EA	0.00	13,272.98	0.00	0.00	\$13,272.98	False
33040955	MEC: Systematic Project Planning, Cultural and Archeological Plan, includes labor expenses, per EA	1.00	EA	0.00	9,128.61	0.00	0.00	\$9,128.61	False
33040961	Explosive Safety Submission, includes labor and equipment expenses, per EA	1.00	EA	0.00	24,847.24	0.00	0.00	\$24,847.24	False
33041101	Airfare	6.00	LS	0.00	0.00	0.00	575.00	\$3,450.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	8,659.47	\$8,659.47	False

Total Element Cost:

\$355,479.59

Element: Surface and Sub Removal - Site Prep

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	36.25	ACR	0.00	1,354.32	459.79	0.00	\$65,761.39	False
17010402	Chipping brush, medium brush	72.50	ACR	0.00	1,741.19	591.13	0.00	\$169,092.80	False
17010403	Chipping brush, heavy brush	36.25	ACR	0.00	3,386.41	1,149.69	0.00	\$164,433.55	False
33010108	Sedan, Automobile, Rental	4.00	DAY	0.00	0.00	0.00	60.75	\$242.99	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,001.31	1,957.67	0.00	\$3,958.98	False
33010202	Per Diem (per person)	586.00	DAY	0.00	0.00	0.00	161.31	\$94,527.66	False
33040651	4 X 4 Truck- Rental/Lease	362.00	DAY	0.00	0.00	243.88	0.00	\$88,282.92	False
33040934	UXO Technician II	560.00	HR	0.00	56.69	0.00	0.00	\$31,744.65	False
33040935	UXO Technician III (UXO Supervisor)	500.00	HR	0.00	66.97	0.00	0.00	\$33,483.25	False
33040958	MEC: Surface Clearance , includes labor and equipment expenses, per Day	42.00	DAY	0.00	2,937.14	0.00	76.46	\$126,571.32	False
33040959	MEC: Archeological Survey, includes labor and equipment expenses, per Day	4.00	DAY	0.00	1,397.80	0.00	109.26	\$6,028.26	False
33041101	Airfare	20.00	LS	0.00	0.00	0.00	575.00	\$11,500.00	False
33220212	Surveying - 2-man Crew	6.00	DAY	0.00	1,050.03	19.06	0.00	\$6,414.49	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	20,607.59	\$20,607.59	False

Total Element Cost:

\$822,649.86

Element: RA Field Activities

Technology: MEC Removal Action with AGC

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010114	Mobilization Equipment (Soils)	7.00	LS	0.00	2,001.31	1,957.67	0.00	\$27,712.85	False
33010202	Per Diem (per person)	190.00	DAY	0.00	0.00	0.00	161.31	\$30,648.90	False
33040170	MEC: Instrument Verification Strip Installation, per EA	1.00	EA	503.25	4,208.62	11.43	596.38	\$5,319.68	False
33040171	MEC: UXO Seeding, Quality Seeding Installation, per EA	72.00	EA	5.81	48.38	0.00	121.78	\$12,669.82	False
33040173	MEC: UXO Mag and Flag Grid Team, per HR	70.00	HR	0.00	322.36	0.00	109.26	\$30,213.22	False
33040179	Digital Geophysical Mapping with Array Sensor, Survey Grid Team, per HR	147.00	HR	0.00	400.47	0.00	534.80	\$137,483.73	False
33040182	Land-Based Advanced Classification Survey Grid Team, MEC Removal Action, per HR	320.00	HR	0.00	216.78	0.00	182.14	\$127,653.65	False
33040270	Geometrics MetalMapper Mobilization Fee	1.00	EA	0.00	0.00	0.00	1,175.53	\$1,175.53	False
33040651	4 X 4 Truck- Rental/Lease	68.00	DAY	0.00	0.00	243.88	0.00	\$16,583.53	False
33040653	All Terrain Vehicle (ATV) - Rental/Lease	15.00	DAY	0.00	0.00	0.00	182.22	\$2,733.26	False
33041101	Airfare	9.00	LS	0.00	0.00	0.00	575.00	\$5,175.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	10,932.02	\$10,932.02	False

Total Element Cost:

\$408,301.19

Element: Investigation

Unit of	Material	Labor	Unit	Equipment	Sub Bid	Cost
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Technology: MEC Removal Action with AGC

Assembly	Description	Quantity	Measure	Unit Cost	Cost	Unit Cost	Cost	Extended Cost	Override
12020401	Lightning Protection System	1.00	EA	219.67	388.12	0.00	0.00	\$607.79	False
16029002	Mobilization & Fee	1.00	LS	2,620.24	0.00	0.00	0.00	\$2,620.24	False
17030103	Rough Grading, 14G, 1 Pass	1,111.00	SY	0.00	0.26	0.41	0.00	\$740.37	False
18010102	Gravel, Delivered & Dumped	185.00	CY	41.83	7.33	7.73	0.00	\$10,523.79	False
18040101	Security Fence, 10' Galvanized with 3 Strands Barbed Wire	400.00	LF	48.21	21.31	4.82	0.00	\$29,735.79	False
18040119	Chain link fence gates and posts, auger fence post hole, medium soil, 3' deep, by hand, includes excavation	2.00	EA	0.00	13.64	0.00	0.00	\$27.28	False
18040132	Chain link fences & gates, gate, chain link, galvanized steel, double gate, 3 strand barbed wire, 10' x 10', excludes excavation	1.00	EA	1,375.34	511.43	113.64	0.00	\$2,000.42	False
33010202	Per Diem (per person)	1,444.00	DAY	0.00	0.00	0.00	161.31	\$232,931.64	False
33022601	Safety Signs, Barriers, Yellow Nylon Tape Allowance	4.00	EA	31.17	0.00	0.00	0.00	\$124.66	False
33040181	UXO Anomaly Dig Crew, MEC Removal Action, includes Labor and Equipment, per HR	504.00	HR	0.00	247.15	0.00	54.63	\$152,098.08	False
33040184	Advanced Geophysics Classification Cueing, MEC Investigation, per EA	52,750.00	EA	0.00	10.66	0.00	4.78	\$814,759.34	False
33040185	UXO Anomaly Explosive Demolition, MEC Activities, includes Labor, Material and Equipment, per EA	839.00	EA	220.01	494.61	0.00	0.00	\$599,571.25	False
33040186	Munitions Deemed As Safe (MDAS) Disposal, bulk solid	56,599.00	LB	0.00	0.00	0.00	7.77	\$439,605.85	False

Technology: MEC Removal Action with AGC

waste, includes materials,
documentation, transport and
disposal fees, per LB

33040651	4 X 4 Truck- Rental/Lease	359.00	DAY	0.00	0.00	243.88	0.00	\$87,551.30	False
33040817	Explosives Storage Locker/Shelter, 22' x 7' x 7'	1.00	EA	48,689.31	0.00	0.00	0.00	\$48,689.31	False
33041101	Airfare	10.00	LS	0.00	0.00	0.00	575.00	\$5,750.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	65,570.01	\$65,570.01	False

Total Element Cost:

\$2,492,907.13

Element: Site Management

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
16019934	Temporary Office 50' X 12'	10.00	MO	692.63	0.00	0.00	0.00	\$6,926.35	False
16019935	Field office expense, office supplies, average, per month	10.00	MO	113.43	0.00	0.00	0.00	\$1,134.30	False
20020310	1/C #2 Aluminum, Bare, Wire	500.00	LF	0.51	1.09	0.10	0.00	\$850.73	False
20020403	40' Class 3 Treated Power Pole	5.00	EA	623.87	722.35	104.63	0.00	\$7,254.23	False
20020431	Terminal Structure, 15 KV Pole Top	2.00	EA	2,360.06	2,340.03	299.06	0.00	\$9,998.30	False
33010202	Per Diem (per person)	1,209.00	DAY	0.00	0.00	0.00	161.31	\$195,023.79	False
33010475	Toilet, portable, chemical, rent per month	10.00	MO	140.37	0.00	0.00	0.00	\$1,403.70	False
33040651	4 X 4 Truck- Rental/Lease	1,209.00	DAY	0.00	0.00	243.88	0.00	\$294,845.45	False
33040699	Storage boxes, rent per month, 40' x 8'	10.00	MO	153.13	0.00	0.00	0.00	\$1,531.31	False

Technology: MEC Removal Action with AGC

33040921	Senior UXO Supervisor (SUXOS)	2,864.00	HR	0.00	89.51	0.00	0.00	\$256,358.95	False
33040923	UXO Project Manager	5,727.00	HR	0.00	130.46	0.00	0.00	\$747,139.85	False
33040930	UXO QC Specialist	924.00	HR	0.00	79.64	0.00	0.00	\$73,589.54	False
33040931	UXO Safety Officer	924.00	HR	0.00	80.11	0.00	0.00	\$74,021.88	False
33040940	GIS Manager (UXO)	5,727.00	HR	0.00	94.06	0.00	0.00	\$538,694.24	False
33041101	Airfare	5.00	LS	0.00	0.00	0.00	575.00	\$2,875.00	False
33220101	Senior Project Manager	459.00	HR	0.00	196.61	0.00	0.00	\$90,243.05	False
33220113	Secretarial/ Administrative	459.00	HR	0.00	97.18	0.00	0.00	\$44,606.74	False
33222006	Electrician	40.00	HR	0.00	92.25	0.00	0.00	\$3,689.89	False

Total Element Cost:

\$2,350,187.31

Element: RA Reporting

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33041322	MEC After Action Report - Site Complexity (High), per EA	1.00	EA	0.00	29,982.72	0.00	0.00	\$29,982.72	False
33041325	MEC: Independent Blind Seed Tracking, per EA	1.00	EA	0.00	4,426.91	0.00	0.00	\$4,426.91	False
33041326	MEC: IVS Memo, per EA	1.00	EA	0.00	7,662.68	0.00	0.00	\$7,662.68	False
33041330	MEC: Anomaly Selection Memo, per EA	1.00	EA	0.00	7,662.68	0.00	0.00	\$7,662.68	False
33041331	MEC: TOI Memo, per EA	1.00	EA	0.00	7,662.68	0.00	0.00	\$7,662.68	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	1,217.66	\$1,217.66	False

Total Element Cost:	\$58,615.33
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Total 1st Year Tech Cost:	\$6,488,140.41
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Technology: Water Storage Tanks

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
19010330	50,000 Gallon Water Tanks, Elevated (100' +), Includes Painting, Excludes Pipes or Pumps	4.00	EA	0.00	0.00	0.00	210,689.10	\$842,756.39	False

Total Element Cost:	\$842,756.39
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Total 1st Year Tech Cost:	\$842,756.39
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Total Phase Element Cost	\$51,856,355.33
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Restoration of Contaminated Areas on Facility Grounds

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR 20.1403. The RACER estimate accompanies the assumptions provided in the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input type="checkbox"/>	
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input type="checkbox"/>	
Removal/Interim Action	<input type="checkbox"/>	
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input type="checkbox"/>	

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Senior Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Remedial Action

Phase Name: Restoration of Contaminated Areas on Facility Grounds

Description: Assumes additional revegetation of 55 acres affected during the remediation activities of the DU Impact Area. The cost estimate includes the planting of 400 seedlings per acre and 5 5 to 6 ft trees per acre along with UXO support during the planting activities. The second task/subcomponent in the demolition of the buildings constructed for the remediation activities.

Approach: Ex Situ

Start Date: March, 2026

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
Cleanup and Landscaping	Yes	100	0
Demolition, Buildings	Yes	100	0
Demolition, Buildings	Yes	100	0
Demolition, Buildings	Yes	100	0
Professional Labor Management	No	0	100

Total Marked-up Cost: \$1,886,264.64

Technologies:

Technology: Cleanup and Landscaping

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
18050101	Area Preparation, 67% Level & 33% Slope	55.00	ACR	0.00	26.37	28.00	0.00	\$2,990.47	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	55.00	ACR	2,192.58	1,112.48	564.52	0.00	\$212,826.92	False
18050408	Fertilizer, Hydro Spread	110.00	ACR	1,219.82	105.44	58.67	0.00	\$152,232.38	False
18050413	Watering with 3,000-Gallon Tank Truck, per Pass	440.00	ACR	277.93	61.00	49.41	0.00	\$170,873.81	False
18050415	Mowing	110.00	ACR	0.00	334.43	0.00	0.00	\$36,787.26	False
33029901	Magnetometer	44.00	DAY	0.00	0.00	0.00	107.05	\$4,710.32	False
33040934	UXO Technician II	420.00	HR	0.00	69.13	0.00	0.00	\$29,034.74	False
33111070	General planting, local varieties, trees, 5' - 6'	275.00	EA	255.22	130.15	33.35	0.00	\$115,147.49	False
33111078	Planting, trees, shrubs, and ground cover, heavy or stony soil, bare root seedlings, 17" to 24", includes planting only	22,000.00	EA	0.00	4.95	0.00	0.00	\$108,796.41	False

Total Element Cost:

\$833,399.80

Total 1st Year Tech Cost:

\$833,399.80

Technology: Demolition, Buildings

Element:

Technology: Demolition, Buildings

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
16029024	Asbestos contaminated waste Packaging, Handling & Disposal, disposal charges, excl. haul, average	847.50	CY	0.00	0.00	0.00	108.65	\$92,078.54	False
17020105	Single-level, Steel, Nonexplosive, Building Demolition, Excludes Foundation Demolition, Excludes Dump Fees	250,000.00	CF	0.00	0.17	0.10	0.00	\$68,040.98	False
17020401	Dump Charges	7,628.00	EA	21.48	0.00	0.00	0.00	\$163,872.47	False
17030222	926, 2.0 CY, Wheel Loader	16.00	HR	0.00	94.65	56.47	0.00	\$2,418.02	False
17030226	988, 7.0 CY, Wheel Loader	25.00	HR	0.00	94.65	162.57	0.00	\$6,430.66	False
17030287	20 CY, Semi Dump	34.00	HR	0.00	87.17	70.17	0.00	\$5,349.42	False
17030296	50 Ton, 773, Off-highway Truck	49.00	HR	0.00	87.17	180.98	0.00	\$13,139.03	False

Total Element Cost: \$351,329.12

Total 1st Year Tech Cost: \$351,329.12

Technology: Demolition, Buildings

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17020105	Single-level, Steel, Nonexplosive, Building Demolition, Excludes Foundation Demolition, Excludes	37,500.00	CF	0.00	0.17	0.10	0.00	\$10,206.15	False

Technology: Demolition, Buildings

Dump Fees

17020401	Dump Charges	1,272.00	EA	21.48	0.00	0.00	0.00	\$27,326.43	False
17030226	988, 7.0 CY, Wheel Loader	5.00	HR	0.00	94.65	162.57	0.00	\$1,286.13	False
17030295	35 Ton, 769, Off-highway Truck	9.00	HR	0.00	87.17	146.57	0.00	\$2,103.58	False

Total Element Cost: \$40,922.29

Total 1st Year Tech Cost: \$40,922.29

Technology: Demolition, Buildings

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
17020105	Single-level, Steel, Nonexplosive, Building Demolition, Excludes Foundation Demolition, Excludes Dump Fees	200,000.00	CF	0.00	0.17	0.10	0.00	\$54,432.79	False
17020401	Dump Charges	6,780.00	EA	21.48	0.00	0.00	0.00	\$145,655.01	False
17030226	988, 7.0 CY, Wheel Loader	22.00	HR	0.00	94.65	162.57	0.00	\$5,658.98	False
17030296	50 Ton, 773, Off-highway Truck	44.00	HR	0.00	87.17	180.98	0.00	\$11,798.31	False

Total Element Cost: \$217,545.09

Total 1st Year Tech Cost: \$217,545.09

Technology: Professional Labor Management

Element:

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040922	UXO Program Manager	128.00	HR	0.00	129.94	0.00	0.00	\$16,632.51	False
33040923	UXO Project Manager	832.00	HR	0.00	106.60	0.00	0.00	\$88,688.66	False
33220105	Project Engineer	4,160.00	HR	0.00	68.47	0.00	0.00	\$284,833.17	False
33220149	Lump Sum Percentage Labor Cost	2.00	LS	0.00	26,457.00	0.00	0.00	\$52,914.00	True
Total Element Cost:								\$443,068.34	
Total 1st Year Tech Cost:								\$443,068.34	
Total Phase Element Cost								\$1,886,264.64	

Final Radiation Survey

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR 20.1403. The RACER estimate accompanies the assumptions provided in the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input type="checkbox"/>	
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input type="checkbox"/>	
Removal/Interim Action	<input type="checkbox"/>	
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input type="checkbox"/>	

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Senior Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Study
Phase Name: Final Radation Survey
Description: The Remedial Investigation technology for the Final Radiation Survey was utilized for this cost element and the gamma walkover survey was incorporated into the other investigations subtask. This cost estimate includes the sampling of bioassys, groundwater, surface water, sediment, surface soil, and subsurface soil.

Start Date: August, 2030
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate
Phase Markup Template: System Defaults

<u>Technology Markups</u>	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
Remedial Investigation	Yes	100	0

Total Marked-up Cost: \$1,342,144.44

Technologies:

Technology: Remedial Investigation

Element: Groundwater

Unit of	Material	Labor	Unit	Equipment	Sub Bid	Cost
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Technology: Remedial Investigation

Assembly	Description	Quantity	Measure	Unit Cost	Cost	Unit Cost	Cost	Extended Cost	Override
33020401	Disposable Materials per Sample	129.00	EA	11.02	0.00	0.00	0.00	\$1,421.18	False
33020402	Decontamination Materials per Sample	129.00	EA	25.17	0.00	0.00	0.00	\$3,246.59	False
33020561	Lysimeter accessories, nylon tubing, 1/4" OD	2,525.00	LF	0.61	0.00	0.00	0.00	\$1,539.46	False
33021509	Monitor well sampling equipment, rental, water quality testing parameter device rental	4.00	WK	0.00	0.00	0.00	349.25	\$1,397.02	False
33022124	Testing, RCRA evaluations, EP toxicity analysis, metals (6010,7470)	1.00	EA	0.00	0.00	0.00	128.12	\$128.12	False
33022257	Testing, rad analytical liquid, gas flow proportional counting, gross beta-total	129.00	EA	0.00	0.00	0.00	56.37	\$7,272.19	False
33022284	Testing, rad analytical, liquid scintillation, tritium (direct counting)	129.00	EA	0.00	0.00	0.00	82.99	\$10,705.55	False
33220102	Project Manager	16.00	HR	0.00	229.75	0.00	0.00	\$3,675.95	False
33220112	Field Technician	266.00	HR	0.00	109.39	0.00	0.00	\$29,096.66	False
33230614	Peristaltic Pump, Weekly Rental	4.00	WK	0.00	0.00	0.00	112.18	\$448.71	False

Total Element Cost:

\$58,931.43

Element: Surface Soil

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33020401	Disposable Materials per Sample	251.00	EA	11.02	0.00	0.00	0.00	\$2,765.25	False

Technology: Remedial Investigation

33020402	Decontamination Materials per Sample	251.00	EA	25.17	0.00	0.00	0.00	\$6,317.01	False
33022336	Testing, rad analytical vegetation/sediment/soil, gas flow proportional counting, gross beta-total	251.00	EA	0.00	0.00	0.00	65.45	\$16,428.02	False
33022351	Testing, rad analytical vegetation/sediment/soil, liquid scintillation, tritium	251.00	EA	0.00	0.00	0.00	70.91	\$17,797.26	False
33220102	Project Manager	25.00	HR	0.00	229.75	0.00	0.00	\$5,743.67	False
33220112	Field Technician	402.00	HR	0.00	109.39	0.00	0.00	\$43,973.14	False

Total Element Cost:

\$93,024.36

Element: Surface Water

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33020401	Disposable Materials per Sample	34.00	EA	11.02	0.00	0.00	0.00	\$374.58	False
33020402	Decontamination Materials per Sample	34.00	EA	25.17	0.00	0.00	0.00	\$855.69	False
33021509	Monitor well sampling equipment, rental, water quality testing parameter device rental	1.00	WK	0.00	0.00	0.00	349.25	\$349.25	False
33022257	Testing, rad analytical liquid, gas flow proportional counting, gross beta-total	34.00	EA	0.00	0.00	0.00	56.37	\$1,916.70	False
33022284	Testing, rad analytical, liquid scintillation, tritium (direct counting)	34.00	EA	0.00	0.00	0.00	82.99	\$2,821.62	False

Technology: Remedial Investigation

33220102	Project Manager	5.00	HR	0.00	229.75	0.00	0.00	\$1,148.73	False
33220112	Field Technician	82.00	HR	0.00	109.39	0.00	0.00	\$8,969.65	False

Total Element Cost:

\$16,436.22

Element: Subsurface Soil

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33020401	Disposable Materials per Sample	251.00	EA	11.02	0.00	0.00	0.00	\$2,765.25	False
33020402	Decontamination Materials per Sample	251.00	EA	25.17	0.00	0.00	0.00	\$6,317.01	False
33020667	Direct Push Rig, Truck Mounted, Non Hydraulic, Includes Labor, Sampling, Decontamination	16.00	DAY	0.00	0.00	0.00	1,708.29	\$27,332.64	False
33020668	Mobilize Direct Push Rig and Crew	1.00	DAY	0.00	0.00	0.00	1,708.29	\$1,708.29	False
33020669	Demobilize Direct Push Rig and Crew	1.00	EA	2,126.82	0.00	0.00	0.00	\$2,126.82	False
33022336	Testing, rad analytical vegetation/sediment/soil, gas flow proportional counting, gross beta-total	251.00	EA	0.00	0.00	0.00	65.45	\$16,428.02	False
33022351	Testing, rad analytical vegetation/sediment/soil, liquid scintillation, tritium	251.00	EA	0.00	0.00	0.00	70.91	\$17,797.26	False
33220102	Project Manager	20.00	HR	0.00	229.75	0.00	0.00	\$4,594.93	False
33220112	Field Technician	319.00	HR	0.00	109.39	0.00	0.00	\$34,894.11	False

Total Element Cost:

\$113,964.34

Element: Sediment

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33020401	Disposable Materials per Sample	34.00	EA	11.02	0.00	0.00	0.00	\$374.58	False
33020402	Decontamination Materials per Sample	34.00	EA	25.17	0.00	0.00	0.00	\$855.69	False
33020522	Sample collection, field vehicles, boat rental, with motor	1.00	DAY	0.00	0.00	0.00	532.42	\$532.42	False
33020602	Sludge sampler, stainless steel, thread on, 3.25" x 12"	1.00	EA	957.76	0.00	0.00	0.00	\$957.76	False
33022336	Testing, rad analytical vegetation/sediment/soil, gas flow proportional counting, gross beta-total	34.00	EA	0.00	0.00	0.00	65.45	\$2,225.31	False
33022351	Testing, rad analytical vegetation/sediment/soil, liquid scintillation, tritium	34.00	EA	0.00	0.00	0.00	70.91	\$2,410.78	False
33220102	Project Manager	5.00	HR	0.00	229.75	0.00	0.00	\$1,148.73	False
33220112	Field Technician	82.00	HR	0.00	109.39	0.00	0.00	\$8,969.65	False

Total Element Cost:

\$17,474.92

Element: Scoping

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	120.00	MI	0.00	0.00	0.00	0.26	\$30.78	False

Technology: Remedial Investigation

33010202	Per Diem (per person)	3.00	DAY	0.00	0.00	0.00	161.31	\$483.93	False
33220102	Project Manager	15.00	HR	0.00	229.75	0.00	0.00	\$3,446.20	False
33220105	Project Engineer	42.00	HR	0.00	194.78	0.00	0.00	\$8,180.71	False
33220106	Staff Engineer	31.00	HR	0.00	200.61	0.00	0.00	\$6,218.98	False
33220108	Project Scientist	47.00	HR	0.00	212.08	0.00	0.00	\$9,967.83	False
33220109	Staff Scientist	140.00	HR	0.00	171.28	0.00	0.00	\$23,979.22	False
33220110	QA/QC Officer	11.00	HR	0.00	157.24	0.00	0.00	\$1,729.64	False
33220111	Certified Industrial Hygienist	21.00	HR	0.00	208.13	0.00	0.00	\$4,370.66	False
33220114	Word Processing/Clerical	36.00	HR	0.00	107.74	0.00	0.00	\$3,878.57	False
33220115	Draftsman/CADD	17.00	HR	0.00	125.57	0.00	0.00	\$2,134.66	False

Total Element Cost:

\$64,421.18

Element: Site Characterization

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	240.00	MI	0.00	0.00	0.00	0.26	\$61.56	False
33010202	Per Diem (per person)	5.00	DAY	0.00	0.00	0.00	161.31	\$806.55	False
33220102	Project Manager	71.00	HR	0.00	229.75	0.00	0.00	\$16,312.02	False
33220103	Office Manager	29.00	HR	0.00	190.07	0.00	0.00	\$5,511.91	False
33220105	Project Engineer	44.00	HR	0.00	194.78	0.00	0.00	\$8,570.27	False
33220106	Staff Engineer	334.00	HR	0.00	200.61	0.00	0.00	\$67,004.50	False
33220108	Project Scientist	158.00	HR	0.00	212.08	0.00	0.00	\$33,508.88	False
33220109	Staff Scientist	1,198.00	HR	0.00	171.28	0.00	0.00	\$205,193.57	False

Technology: Remedial Investigation

33220110	QA/QC Officer	57.00	HR	0.00	157.24	0.00	0.00	\$8,962.69	False
33220111	Certified Industrial Hygienist	35.00	HR	0.00	208.13	0.00	0.00	\$7,284.43	False
33220112	Field Technician	134.00	HR	0.00	109.39	0.00	0.00	\$14,657.71	False
33220114	Word Processing/Clerical	192.00	HR	0.00	107.74	0.00	0.00	\$20,685.71	False
33220115	Draftsman/CADD	132.00	HR	0.00	125.57	0.00	0.00	\$16,574.98	False

Total Element Cost: \$405,134.79

Element: Other Investigations

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33021203	Survey Meter, Explosion Proof, Gamma Survey, Nal(Tl) Scintillator Monthly Rental	4.00	MO	188.12	0.00	0.00	0.00	\$752.50	False
33029902	Electromagnetics	58.00	DAY	0.00	0.00	0.00	5.69	\$330.27	False
33040934	UXO Technician II	2,740.00	HR	0.00	69.13	0.00	0.00	\$189,417.10	False
33220111	Certified Industrial Hygienist	685.00	HR	0.00	208.13	0.00	0.00	\$142,566.72	False
33222004	Radiation Technician	2,740.00	HR	0.00	68.40	0.00	0.00	\$187,427.23	False

Total Element Cost: \$520,493.81

Element: Bioassay

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33020401	Disposable Materials per Sample	50.00	EA	11.02	0.00	0.00	0.00	\$550.85	False

Technology: Remedial Investigation

33021901	Freshwater Discharge, LC50, Bioassay Analysis	50.00	EA	0.00	0.00	0.00	706.09	\$35,304.66	False
33220112	Field Technician	150.00	HR	0.00	109.39	0.00	0.00	\$16,407.89	False

Total Element Cost:	\$52,263.40
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Total 1st Year Tech Cost:	\$1,342,144.44
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Total Phase Element Cost	\$1,342,144.44
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Site Stabilization and Long-Term Surveillance

Phase Technology Cost Detail Report (with Markups)

Software:

RACER Version: RACER® Version 11.5.99.0

Database Location: C:\Users\johnsonjr6\Documents\RACER 11.3\RACER_11_5_002.mdb

Folder:

Folder Name: New Folder

Project:

ID: Jefferson Proving Ground

Name: DU Impact Area

Category: None

Location

State / Country: INDIANA

City: INDIANA STATE AVERAGE

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	0.950	0.950	

Options

Database: System Costs

Cost Database Date: 2019

Report Option: Fiscal

Description

Detailed site-specific cost estimate developed for decommissioning of the

DU Impact Area to meet the criteria for unrestricted use in 10 CFR
20.1403. The RACER estimate accompanies the assumptions provided in
the Decommissioning Funding Plan.

Site:

ID: Site 32
Name: DU Impact Area
Type: None

Media/Waste Type

Primary: Soil
Secondary: Ordnance (not residual)

Contaminant

Primary: Radioactive (Low Level)
Secondary: Ordnance (residual)

Phase Names

Pre-Study	<input type="checkbox"/>	
Study	<input checked="" type="checkbox"/>	Safety Level: D
Design	<input type="checkbox"/>	
Removal/Interim Action	<input type="checkbox"/>	
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input checked="" type="checkbox"/>	Safety Level: D
Site Closeout	<input type="checkbox"/>	

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: The following cost estimate supports the various tasks/components for the DU Impact Area and includes preparation and planning, construction of access roads

and site facilities, remediation of the primary impact area, remediation of the secondary impact area, final radiation survey, site restoration, and five year review.

Support Team: This cost estimate was prepared utilizing Project Engineers at Leidos along with the Senior Project Manager.

References: References used during the preparation of the cost estimate include historical reports for the DU Impact Area at Jefferson Proving Ground, Madison, Indiana.

Estimator Information

Estimator Name: Jamie Johnson

Estimator Title: Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.526.7746

Email Address: johnsonjr6@leidos.com

Estimate Prepared Date: 09/09/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Selvam Arunachalam

Reviewer Title: Senior Environmental Engineer

Agency/Org./Office: Leidos

Business Address: 11951 Freedom Drive
Reston, VA 20190

Telephone Number: 571.830.5139

Email Address: selvam.arunachalam@leidos.com

Date Reviewed: 09/09/2019

Reviewer Signature: _____

Date: _____

Phase Documentation:

Phase Type: Long Term Monitoring
Phase Name: Five Year Review
Description: Assumes an estimate for the initial Five Year Review. Additional hours were included for the Certified Health Physicist, Word Processing/ Clerical, Draftsman/CADD, UXO Safety Officer, and UXO Technican II. Assumes a 5 day site vist in order to conduct interviews with local parties.

Start Date: March, 2031
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate
Phase Markup Template: System Defaults

<u>Technology Markups</u>	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
Five-Year Review	Yes	100	0

Total Marked-up Cost: \$790,935.24

Technologies:

Technology: Five-Year Review

Element: Document Review

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
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Technology: Five-Year Review

33220102	Project Manager	17.00	HR	0.00	229.75	0.00	0.00	\$3,905.69	False
33220105	Project Engineer	20.00	HR	0.00	194.78	0.00	0.00	\$3,895.58	False
33220108	Project Scientist	16.00	HR	0.00	212.08	0.00	0.00	\$3,393.30	False
33220109	Staff Scientist	30.00	HR	0.00	171.28	0.00	0.00	\$5,138.40	False
33220111	Certified Industrial Hygienist	16.00	HR	0.00	208.13	0.00	0.00	\$3,330.03	False

Total Element Cost:

\$19,663.00

Element: Interviews

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	20.00	HR	0.00	229.75	0.00	0.00	\$4,594.93	False

Total Element Cost:

\$4,594.93

Element: Site Inspection

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33040931	UXO Safety Officer	8.00	HR	0.00	97.70	0.00	0.00	\$781.56	False
33040934	UXO Technician II	48.00	HR	0.00	69.13	0.00	0.00	\$3,318.26	False
33220102	Project Manager	6.00	HR	0.00	229.75	0.00	0.00	\$1,378.48	False
33220105	Project Engineer	8.00	HR	0.00	194.78	0.00	0.00	\$1,558.23	False
33220108	Project Scientist	7.00	HR	0.00	212.08	0.00	0.00	\$1,484.57	False
33220109	Staff Scientist	8.00	HR	0.00	171.28	0.00	0.00	\$1,370.24	False

Total Element Cost:

\$9,891.34

Element: Report

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	19.00	HR	0.00	229.75	0.00	0.00	\$4,365.19	False
33220105	Project Engineer	46.00	HR	0.00	194.78	0.00	0.00	\$8,959.83	False
33220108	Project Scientist	41.00	HR	0.00	212.08	0.00	0.00	\$8,695.34	False
33220109	Staff Scientist	75.00	HR	0.00	171.28	0.00	0.00	\$12,846.01	False
33220111	Certified Industrial Hygienist	41.00	HR	0.00	208.13	0.00	0.00	\$8,533.19	False
33220114	Word Processing/Clerical	24.00	HR	0.00	107.74	0.00	0.00	\$2,585.71	False
33220115	Draftsman/CADD	16.00	HR	0.00	125.57	0.00	0.00	\$2,009.09	False
33220149	Lump Sum Percentage Labor Cost	4.00	LS	0.00	5,600.00	0.00	0.00	\$22,400.00	False
33440302	Other Cost (Lump Sum)	4.00	LS	4,500.00	0.00	0.00	0.00	\$18,000.00	False

Total Element Cost:

\$88,394.35

Element: Travel

Assembly	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	10.00	DAY	0.00	0.00	0.00	60.75	\$607.47	False
33010202	Per Diem (per person)	24.00	DAY	0.00	0.00	0.00	161.31	\$3,871.44	False
33041101	Airfare	4.00	LS	0.00	0.00	0.00	1,200.00	\$4,800.00	False

Total Element Cost:

\$9,278.91

Total 1st Year Tech Cost:

\$131,822.54

Total Phase Element Cost

\$131,822.54

APPENDIX B

STATEMENT OF INTENT AND PROOF OF AUTHORITY



DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
US ARMY GARRISON-ROCK ISLAND ARSENAL
1 ROCK ISLAND ARSENAL
ROCK ISLAND, ILLINOIS 61299-5000

REPLY TO
ATTENTION OF:

September 20, 2019

Office of the Garrison Commander

US Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: STATEMENT OF INTENT

As Commander of the US Army Garrison-Rock Island Arsenal, I exercise express authority and responsibility to request from Headquarters, Department of the Army, funding for decommissioning activities associated with operations authorized by US Nuclear Regulatory Commission Material License No. SUB-1435.

This authority is established by Department of Defense Financial Management Regulation 7000.14-R. Within this authority, I intend to request that funds be made available, if a decision is made to engage in decommissioning activities, in the amount of \$3,500,000,000 to decommission license activities in its entirety. I intend to request and obtain these funds sufficiently in advance of decommissioning to prevent delay of required activities.

A copy of my Assumption of Command Memorandum, dated 20 June 2018, is enclosed as evidence that I am authorized to represent the US Army Garrison-Rock Island Arsenal in this transaction.

Sincerely,

Digitally signed by
MARR.STEPHEN.CLIFFORD.11477
79948
Date: 2019.09.25 12:49:05 -05'00'

Enclosure:
Assumption of Command
Memorandum

Stephen C. Marr
Colonel, US Army
Garrison Commander



DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
US ARMY GARRISON-ROCK ISLAND ARSENAL
1 ROCK ISLAND ARSENAL
ROCK ISLAND, ILLINOIS 61299-5000

REPLY TO
ATTENTION OF:

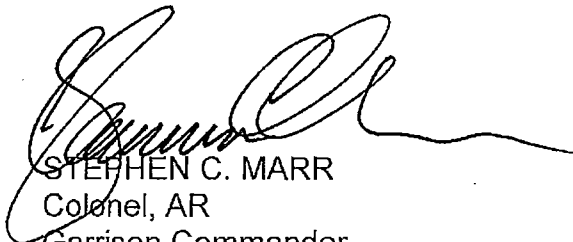
IMRI-ZA

20 June 2018

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Assumption of Command By Authority of AR 600-20, Paragraph 2-5b(4)(b)

The undersigned assumes command of the United States Army Garrison-Rock Island Arsenal (UIC: W6B9AA), effective 1000, 20 June 2018.



STEPHEN C. MARR
Colonel, AR
Garrison Commander

DISTRIBUTION:

IMCOM Directorate - Sustainment
HQ, US Army Sustainment Command
HQ, First US Army
HQ, US Army Joint Munitions Command
HQ, US Army Joint Manufacturing and Technology Center