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February 14, 2002

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REVISED CORRECTIVE MEASURES STUDY REPORT



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1.0 INTRODUCTION

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This Revised Corrective Measure Study Report (CMS) has been prepared by the URS Corporation (URS) on behalf of GE Power Systems (GEPS) for the Former GE Apparatus Service Center (USEPA ID Number NMD047140256), located at 4420 McLeod Road, NE, in Albuquerque, New Mexico (site or facility).

The purpose of this CMS is to present corrective measures objectives and recommend an appropriate corrective measure alternative based on the conditions at the facility. The revised CMS was prepared based on the outcome of recent meetings and discussions between the United States Environmental Protection Agency (USEPA), the New Mexico Environmental Department (NMED), and GEPS in which the USEPA and NMED suggested that GEPS revisit the approach and activities necessary to close the site under the Resource Conservation and Recovery Act (RCRA).

This Revised CMS supercedes the preceding CMS Report that was prepared by Law Environmental, Inc., (Law) on behalf of GEPS and submitted to the USEPA and NMED in April 1992 pursuant to Consent Decree (Civil Action Number 87-1073-jb). The USEPA and NMED have not provided comments on the April 1992 CMS and it is understood that the USEPA and NMED will review and comment on this Revised CMS instead of the preceding 1992 CMS. Following review and acceptance of this document by the USEPA and NMED, it is understood that the Revised CMS will be subject to a 30-day public comment period per the Consent Decree.

The basis and justification for revising the original 1992 CMS is supported by the USEPA and NMED to identify current corrective measure objectives, recommend an appropriate corrective measure alternative, and outline the approach for implementation of the selected corrective measure alternative. Based on recent discussions, the appropriate corrective measure is readily apparent and has been conceptually agreed upon by the USEPA, NMED, and GEPS. Furthermore, it is understood and intended that this Revised CMS effort and corrective measure implementation will be focused and

streamlined to benefit all parties while meeting the requirements of the Consent Decree to develop a corrective measure alternative and to recommend the corrective measure to be taken.

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After this introductory section, background information and a review of findings of previous investigations conducted at the facility, are provided in Sections 2.0 and 3.0, respectively. Section 4.0 summarizes the revised and updated risk characterization conducted for the property and Section 5.0 evaluates and proposes the corrective measure alternative.

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2.0 BACKGROUND

This section provides background information about the site. The information in this section is based on previous reports prepared by Law.

2.1 SITE DESCRIPTION AND HISTORY

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The Former GE Apparatus Service Center is located at 4420 McLeod Road, NE, Albuquerque, New Mexico, on an approximately two-acre property within a light industrial park. The site is approximately four miles northeast of Albuquerque and approximately 4.5 miles east of the Rio Grande River, as shown on Figure 1.

The site layout is presented on Figure 2. There is one building on the property. The former service shop building is in the northeast quadrant of the property. An enclosure, which was formerly used for equipment storage and steam cleaning of parts, is attached to the south side of the building. The south end of this enclosure is open and a concrete slab extends approximately 20 feet beyond the enclosure. Asphalt pavement covers the area immediately north and northeast of the building. The remainder of the area to the east and the area to the south is covered with gravel and natural sparsely-vegetated soils. All equipment and materials were removed from outdoor areas when operations were discontinued and the facility was closed in 1994. There is no equipment or materials currently stored outdoors at the property and the property is not being used for any business purpose at this time.

GEPS retains a property manager to maintain the property. The entire parcel is secured by a perimeter chain link fence except for the northern McLeod Road frontage parking area that extends approximately 80 feet south from the McLeod Road curb to the front wall of the building.

URS Corporation February 11, 2002 The Former GE Apparatus Service Shop was constructed in 1969 for the repair of industrial equipment, primarily electrical motors. Transformers containing dielectric fluids and insulating oils (some containing polychlorinated biphenyl [PCBs] compounds) were also repaired at the shop. Until 1983, wastewater from steam cleaning operations was discharged into in two on-site dry wells. Site operations were discontinued and the facility was closed in 1994.

2.1.1 Geology

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The geology underneath the site consists of gravel sediments. These deposits form a veneer on the river-cut surfaces and have a maximum thickness of approximately 50 feet. Borings conducted at the site indicated the presence of interbedded layers of sands with minor silt and clay layers (Law, 1990). Soils encountered in the vicinity of the dry wells are generally silty gravels that are partially cemented in some areas. Fine to coarse sands were encountered from a depth of 10 to 15 feet below the ground surface. The depth to groundwater at the site ranges from approximately 250 feet below ground surface (bgs) to approximately 260 feet bgs. Based on the groundwater data presented by Law, groundwater generally flows to the south beneath the site.

GE Albuquerque L6003R URS Corporation February 11, 2002

3.0 PREVIOUS INVESTIGATIONS

In 1990, a RCRA Facility Investigation (RFI) was performed at the site by Law on behalf of GEPS to obtain information and other data to characterize the facility, identify sources of contamination, determine the nature and extent of contamination, and identify actual and potential receptors. The RFI Report was submitted to the USEPA, Region VI, in November 1990. RET approved

The remainder of this section discusses the results of the RFI regarding sources, nature and extent, and receptors.

3.1 POTENTIAL SOURCES

Three former release areas were identified during the RFI:

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- The former dry well areas;
- The former waste storage area; and
- The former drum rack area.

Each of these areas, which are shown on Figure 2, are described briefly below.

Former Dry Well Areas

The two dry wells were constructed in 1969 during the construction of the facility. Dry well 1 is approximately 10 feet northwest of the southwest corner of the building (see Figure 2). Dry well 1 is approximately 12 feet deep, with an inner diameter of approximately 2.5 feet at the top. The base of the dry well is slightly wider than the surface. The wall of the dry well is constructed of masonry blocks with the cavities

orientated horizontally. A concrete lid spanning the concrete blocks is approximately one foot below the ground surface.

Dry well 2 is approximately 20 feet northwest of Dry well 1 (see Figure 2). Dry well 2 is approximately 15 feet deep, with an inner diameter of approximately 3 to 5 feet, based on borings conducted during the supplemental soil boring investigation. The boring (B-7) advanced in dry well 2 encountered soil from the surface to approximately seven feet bgs, and cobbles from 7 feet bgs to the bottom of the dry well, approximately 15 feet. It has been assumed that the cobbles are confined to the dry well and were placed into the dry well when it was taken from service.

Former Waste Storage Area

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The former waste storage area is approximately 130 feet southwest of the building, as shown on Figure 2, and measure approximately 30 feet by 20 feet. This area was formerly used for the temporary storage of 55-gallon drums of waste oil from facility operations.

Former Drum Rack

The former drum rack is approximately 50 feet south of the building, and was used from approximately 1970 to 1985.

3.1.1 Nature and Extent of Contamination

The analytical results for the soil sampling conducted at the former waste storage and former drum rack areas did not indicate evidence of any extensive impact of analyzed chemicals to those areas. Furthermore, additional near-surface soil sampling and analysis was conducted in these areas to explore for previously undetected impacts (if any).

Similarly, this additional sampling did not identify evidence of contaminant sources or releases in the former waste storage of former drum rack areas.

However, the analytical results for the soil sampling conducted to investigate the former dry wells indicated the presence of compounds of concern at levels requiring additional investigation. Consequently, a series of additional investigations were conducted to thoroughly evaluate the degree and extent of compound of concerns in the vicinity of the former dry wells. Additional investigation in the area of the dry wells was presented in a Work Plan prepared by Law on behalf of GEPS and submitted to the USEPA in January 1991, and revised and resubmitted in February 1991. Following approval, the workplan was implemented and the results of this investigation were presented in the Supplemental Soil Assessment Report, submitted to the USEPA in July 1991.

The available site data provide a thorough and adequate delineation of the degree and extent of compounds of concern in soils at the site. A comprehensive presentation of all sampling locations completed as part of the various phases of RCRA investigations are presented on Figure 3. The results of laboratory analysis performed on samples collected during the RFI and the supplemental investigations are also presented on Figure 3. As can be seen from the results presented on Figure 3, PCBs were limited in their lateral extent and the vertical extent varied across the site from 0 to 0.5 foot bgs to as much as 97 feet bgs. The data indicate that the majority of impacts are limited to the upper 15 feet of soil surrounding the dry wells. Data also indicate the presence of incidental near-surface PCB impacts at other locations south and southwest of the building. The findings of the RFI and supplemental investigations also indicated the presence of select volatile organics compounds (primarily xylene, ethylbenzene, and toluene) in the soils. The results also indicated the presence of chlorinated volatile organic compounds in soils at much lower concentrations. Volatile organic compounds were predominantly found near the former dry wells.

During the RFI, several monitoring wells and piezometers were installed across the site to characterize the groundwater quality, depth to the groundwater, and groundwater flow

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direction. The monitoring wells ranged in depth from approximately 279 feet bgs to 290feet bgs. Groundwater was encountered at approximately 250 feet bgs to 260 feet bgs.The results of the groundwater samples collected from the monitoring wells during tworounds of groundwater sampling at the site indicated that groundwater quality had notbeen impacted by the subject site.

3.1.2 Potential Receptors

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The RFI efforts included identification of potential migration pathways for site constituents and a review of potential human and environmental receptors. Based on the review of the potential exposure pathways and potential receptors, Law concluded that site workers could potentially be exposed to constituents in the soils via dermal contact and ingestion. Based upon the nature of the development near the service shop and population distribution discussed in the RFI, it is considered unlikely that potential environmental receptors would be affected by site-specific constituents detected in site soils.

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4.0 **RISK CHARACTERIZATION**

On the behalf of GEPS, URS has revised the previously-completed Risk Assessment for the site. The Revised Risk Assessment is in Appendix A. In accordance with the USEPA's December 12, 2001 letter, the revision to the Risk Assessment was performed based on an uncontrolled, residential future land use scenario assumption to satisfy January 2001 changes in New Mexico law. Based on information provided by USEPA and NMED, GEPS understands that this revision to the risk assessment is required due to a change of the risk-based goals for RCRA corrective action remediation of soils by the NMED Hazardous Waste Bureau (HWB). Because the State of New Mexico currently has no available mechanism in place to restrict future land use and ensure that industrial use scenarios will permanently be met, under the new risk-based regulations, NMED HWB no longer allows the use of industrial screening levels (which was the basis of the previous Risk Assessment) to achieve a No-Further-Action (NFA) RCRA closure determination for soils. In conjunction with this, the NMED HWB has also revised the target excess risk level for determination of NFA closures from 10⁻⁶ to 10⁻⁵ for the total risk from all carcinogenic constituents in soil. NMED HWB target screening levels for non-carcinogenic compounds remain based on a Hazard Index (HI) of 1.

The risk assessment has been performed to evaluate non-PCB compounds of potential concern present in site soils. Quantitative risk assessment of PCB compounds has been excluded from the attached Revised Risk Assessment. Instead, PCB data are compared to TSCA guidance for PCB remediation waste (40 CFR §761.61), which has been adopted as the corrective measure objective (i.e., cleanup level) for the site. The risk assessment has employed standard values and approaches as set out by the USEPA, NMED, and relevant guidance, which are typically designed to be conservative and thus are likely to overestimate actual exposure potential. Use of these values and approaches in the Revised Risk Assessment should not be regarded as agreement that they represent the actual exposures at the site. Similarly, the use of published TSCA cleanup levels should not be regarded as agreement that they exposure which

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excess risks may be encountered. GEPS's election to use these inputs for PCBs and non-PCB compounds does not represent a conclusion that this approach is appropriate for all sites.

The primary potential exposure pathways at the site are associated with potential ingestion or dermal contact with shallow soils (less than 15 feet bgs). The Revised Risk Assessment also evaluated a potential exposure pathway of inhalation of volatile organic compounds from the soil. The current potential human receptors at the site include the caretaker of the property. Potential future human receptors are likely to be industrial users of the site. However, as explained above, the Revised Risk Assessment considers an uncontrolled, residential future land use scenario in accordance with NMED requirements. Exposures associated with residential use are likely limited to the top five feet of soil. It was further assumed that a construction worker could be exposed to contaminants from the five feet to 15 feet interval during redevelopment of the site. Investigations conducted at the site have demonstrated that there is no potential for groundwater is not a complete potential exposure pathway for the site. Information presented in Section 4.2 demonstrates that there is no potential threat to site groundwater regardless of the depth at which chemical constituents are present.

As stated above, a PCB cleanup level of less than or equal to 1 milligram per kilogram (mg/kg) has been adopted as the corrective measure objective (i.e., cleanup goal) for soils from zero to 15 feet bgs at the site. As supported by the regulating agency, based on established potential exposure risk assessment scenarios, there is no potential for direct exposure to soil at depths greater than 15 feet bgs and the corresponding direct-contact exposure pathway to these deep soil can be eliminated from further consideration. Specifically in relation to PCBs, it is therefore understood that the proposed clean/NFA RCRA closure will also satisfy TSCA clean closure requirements and allow USEPA to also issue a TSCA closure certification for the site once corrective action measures are completed.

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4.1 SOIL

The complete Revised Risk Assessment is presented in Appendix A. Based on the conservative inputs for the evaluated compounds, the results of the risk assessment (even in the absence of corrective action/remediation) demonstrate that there is no significant risk to human health or the environment posed by non-PCB compounds evaluated by the risk assessment at the site. This determination is based on the recently-promulgated revision to NMED HWB regulations that requires risk assessments petitioning for NFA RCRA closure utilize an uncontrolled, residential future land use scenario. Furthermore, this revised risk assessment was based upon all non-PCB data currently present at the site (ignoring the potential affect of any remediation/corrective measures such as soil removal/off-site disposal).

The results of the exposure assessment were combined with the toxicity criteria to estimate lifetime excess cancer risk for carcinogenic chemicals and a hazard quotient for non-carcinogenic chemicals. A hazard quotient below one was assumed to be below the threshold for non-carcinogenic effects. In accordance with current NMED HWB regulations, both NMED and USEPA agree upon a target risk level of 10⁻⁵ for this site. The results of the Revised Risk Assessment demonstrates that corrective measures are not required for non-PCB compounds to achieve a condition supporting a complete NFA RCRA closure.

4.2 GROUNDWATER

The results of the RFI and subsequent investigations indicated that the groundwater at the site had not been affected by the former site operations or presence of compounds of potential concern at this site. Furthermore, as part of the previously submitted 1992 CMS effort, Daniel B. Stephens and Associates, Inc. (Stephens) of Albuquerque, New Mexico, under subcontract to Law, completed a conservative contaminant transport model for the

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site. Appendix B of this document presents Stephens' contaminant transport model for the site.

The results of this conservative modeling indicate that the concentrations of chemical constituents present at the site would not surpass drinking water standards at the point of regulatory compliance, which is the GE property boundary, at any point in the future regardless of site remedial activities. Furthermore, soil quality sampling indicate that the higher concentrations of compounds are relegated to within 15 feet of the surface and concentrations diminish with greater depth, the results of groundwater sampling conducted at the site did not detect the presence of chemicals in groundwater. Also, the results of <u>soil gas sampling</u> conducted years after discontinuation of discharge of materials into the dry wells indicate no impact that would suggest the potential or possibility for groundwater contamination to occur at the site. The results of these evaluations including the conservative modeling, soil and groundwater sampling, and soil gas sampling provide sufficient evidence that there is no apparent potential for impact to the groundwater beneath the site from site-related compounds.

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5.0 EVALUATION OF CORRECTIVE MEASURES ALTERNATIVES

This section provides the corrective measure objectives for the site and then identifies and proposes an appropriate corrective measure alternative. Several corrective measure alternatives were evaluated in the prior 1992 CMS. Based upon recent discussions between GEPS, NMED, and USEPA, the corrective measure alternative evaluation presented in this revised CMS focuses upon and recommends the viable alternative of excavation and off-site landfill disposal.

5.1 CORRECTIVE MEASURES OBJECTIVES

The cleanup goals for the corrective measures planned for the site are based on the RFI information, public health and the environmental criteria, USEPA guidance, and applicable state and federal statutes. The cleanup goals for the corrective measures of the site are:

Cleanup goal for PCBs in soils from zero to 15 feet bgs is equal to or less than 1 milligram per kilogram (mg/kg) (based on USEPA recommended TSCA bulk PCB remediation waste standard for high-occupancy areas without further conditions). As stated previously in this document, soils at depths greater than 15 feet bgs that may exhibit PCBs do not pose a risk to human health or the environment and do not require excavation to satisfy the corrective measure objectives;

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Non-PCB constituent cleanup goals, necessary to satisfy the corrective measure objectives, are based on NMED Technical Background Document for Development of Soil Screening Levels dated 18 December 2000 and site specific risk assessment evaluations. Furthermore, based on the results of the various phases of RFI and the revised Risk Assessment, volatile and semi-volatile organic compounds found at the site do not present an unacceptable risk based on the exposure scenarios and pathways evaluated. As shown by the RFI results and the transport modeling previously conducted for the site, groundwater quality has not and will not be impacted by the site.

Fulfilling the corrective measure objectives will require remediation of the areas identified on Figure 4. The areas identified for corrective measures are driven by the PCB concentrations and include the former dry well locations and several other localized areas where incidental impacts of PCBs have been identified.

As discussed and reviewed with the USEPA and NMED, it is GEPS's understanding that completion of the corrective measure will achieve the following corrective measure objectives:

- obtain a clean/NFA RCRA corrective action closure to the satisfaction of USEPA and NMED; and
- fulfill TSCA standards and facilitate a USEPA TSCA closure for the subject site. In total, GEPS understands that completion of the corrective measure activities presented herein will facilitate complete closure of all environmental cases with the subject site and allow unrestricted use and possibly including divestment of the property.

GEPS will demonstrate that the site activities completed during this corrective measure meet the requirements of clean closure equivalency [40 CFR 270.1 (c) (5) and (c) (6)] through the collection of appropriate samples during closure and reliance on existing data previously collected during the RFI. Clean closure equivalency will be demonstrated in the corrective measures certification report which will be completed following successful implementation.

5.2 EVALUATION CRITERIA

The following criteria were used to evaluate and confirm the suitability of the single chosen corrective measure alternative recommended for the site.

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Short Term Effectiveness: The ability of the corrective measure to meet the corrective measure goals in the short term and be effective; Long Term Effectiveness and Reliability: The demonstrated and/or expected ability of the corrective measure alternative to function properly without frequent and/or complex operating or maintenance activities and maintain the corrective measure goals; Remediation of Sources: The ability of the corrective measure to remediate the source areas; Implementability: The technical and administrative feasibility of constructing and operating the corrective measure system including the time it takes to implement and the time required to achieve a given level of response; Health and Safety: The ability to comply with all regulatory requirements to protect human health and minimize human exposure to compounds of potential concern; The effectiveness to mitigate potential **Community Acceptance:** impacts to the environment and the ability to comply with environmental standards and criteria and be accepted by the public; and The affordability of the corrective measure Cost: alternative from capital, operational, and maintenance perspectives.

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5.3 CORRECTIVE MEASURE ALTERNATIVE – EXCAVATION AND OFF-SITE DISPOSAL

This alternative includes excavation and off-site disposal of soil in the zero to 15-foot horizon that exceeds the cleanup goal of 1 mg/kg for PCBs.

Data indicate the volume of materials that exceed the cleanup goals and will be excavated as part of the corrective measure at the site is estimated to be approximately 100 cubic yards. Based upon the laboratory data, potential limits of the proposed corrective action excavation areas are shown on Figure 4. The actual extent of excavation and volume of soil removed may vary based upon actual excavation methodology and the findings of post-excavation sampling. The following sub-sections summarizes the corrective measure alternative and evaluates the alternative against the criteria listed above.

5.3.1 Alternative Description

Excavation involves the physical removal of the contaminated materials from the ground. This can be accomplished using conventional excavation techniques and equipment such as a backhoe or front-end loader. Conventional excavation equipment should be capable of excavating soils down to the maximum excavation depth of 15 feet bgs.

Based upon current site data, the depth and lateral limits of the soils that exceed the cleanup goals and would be excavated are illustrated on Figure 4. Based on the distribution of PCBs in site soils and the maximum excavation depth of 15 feet bgs, it is forecasted that approximately 100 cubic yards (in place) of soil would be excavated during implementation of the corrective measure. Actual excavation volumes and areas may vary if unanticipated conditions arise such as potential for building or utility instability or if results of the post excavation sampling do not meet the cleanup goals.

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Following excavation, post-excavation soil samples will be collected from exposed excavation surfaces above the maximum excavation depth for laboratory analysis of PCBs. These data will be evaluated to determine if the corrective measure objectives have been achieved. Additional excavation will be contemplated for areas that indicate residual levels of PCBs are greater than the cleanup goals.

After post-excavation sampling demonstrates that the cleanup levels have been achieved, the excavated areas will be backfilled with clean soil obtained from an off-site source, which will be sampled/analyzed and confirmed clean prior to placement. Following backfilling operations the ground surface will be restored to pre-existing conditions.

Excavated soils will be temporarily stockpiled at the site upon and covered with plastic sheeting to prevent erosion. Representative samples will be collected from the stockpiled materials and submitted to a laboratory for analyses to characterize the waste in accordance with RCRA 40 CFR §261 and TSCA 40 CFR §761 protocol. The method of waste disposal will be based on the waste characterization data, applicable regulations, GEPS waste management policy and cost. Landfilling is the probable offsite disposal option. However, offsite destruction by incineration (possibly for liquid wastes such as decontamination rinsates) may also be considered by GEPS.

Additional details concerning the implementation of this alternative are provided in Appendix C, which presents an outline description of the scope of work, for implementation of this corrective measure.

5.3.2 Alternative Evaluation

As previously discussed this alternative has been evaluated against the seven criteria.

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5.3.2.1 Short Term Effectiveness

The excavation and off-site disposal of the soils would effectively address the areas considered for corrective action in a short period of time. It is anticipated that the effort can be coordinated and performed over a period of several months.

5.3.2.2 Long Term Effectiveness and Reliability

Excavation and off-site disposal is a one time operation and does not require complex or frequent maintenance activities the remove of the excavation and off-site disposal of soils would result in an effective long term corrective measure.

5.3.2.2 Remediation of Sources

The excavation and off-site disposal of impacted soils will result in the removal of all potential source areas.

5.3.2.3 Implementability

Excavation and off-site disposal is a widely used corrective action measure and is considered to be both technically and administratively feasible. Since this alternative involves the excavation and off-site disposal of the contaminated materials the necessary cleanup goals for the site will be met when the material is removed.

5.3.2.4 Health and Safety

Potential short-term impacts during the excavation and removal operations primarily involve exposure to air borne contaminants and organic vapors and physical risks associated with construction equipment. The potential for physical risks and exposure will be reduced through the implementation of site health and safety controls such as site access restriction, dust control, decontamination and use of personnel protective equipment during site activities.

Potential exposure to the public due to accidental releases, can be minimized by utilizing sealed transport containers, decontamination of transport vehicles before exiting the site, and the use of reputable transportation companies.

The long-term impact to the public health would be minimal since this alternative involves the excavation and off-site disposal of soils to meet the cleanup goals and the placement of clean fill.

5.3.2.5 Community Acceptance

As presented in the RFI report, the soils at the site do not presently pose any adverse potential impacts to the environment. Removal of the impacted soils would meet the corrective measure objectives and eliminate the potential for future potential environmental impacts. The removal and off-site disposal of the impacted soils is expected to meet with high community acceptance, any comments generated on the proposed corrective measure will be address during the public comment period.

5.3.2.6 Cost

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The budgetary cost estimate associated with the implementation of this alternative is \$240,500. A summary of these costs is presented in Table 1. This estimate is based on the excavation of approximately 100 cubic yards (in place) of soil and transport/disposal at a Subtitle C landfill. Limited quantities of other wastes generated during the implementation of the corrective measure may also be generated. These wastes, including but not limited to equipment decontamination rinsates, will also be disposed appropriately.

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3 - 20	DDEL IMINA DV COST ESTIMATE	
i as	GE- FORMER APPRATUS SHOP, ALBUQUERQUE, NEW MEXICO	
1.00	SOIL EXCAVATION, AND OFF-SITE DISPOSAL	
s Jackis	Elements	Cost
手灣	Design Phase	\$ 50,000
i 199	Subtotal	\$ 50,000
ę 1000	Implementation	
	Soil Removal	\$ 53,500
	Site Restoration	\$ 80,000 \$ 5,000
> 消費	Construction Oversight	\$ 26,000
1 200	Subtotal	\$ 164,500
1	Construction Certification Report	° 26.000
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