CORNELL – DUBILIER ELECTRONICS SUPERFUND SITE

Value Engineering Study
For
U.S. Environmental Protection Agency
Region 2

Study Date: August 7-9, 2007

Final Report
October 23, 2007

US Army
Corps of Engineers

US Environmental
Protection Agency

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EXECUTIVE SUMMARY

General

The United States Army Corp of Engineers (USACE) Hazardous, Toxic, and Radioactive Waste (HTRW) Center of Expertise (CX) performed a Value Engineering Screen and Study (VE Study) on the Cornell-Dubilier Electronics Superfund Site, Operable Unit 2 (OU-2) Soils Remediation, South Plainfield, New Jersey project. OU- 2 has several parts including building demolition and off site disposal, capacitor removal and soils remediation. This VE study addresses only OU-2 soils remediation. The Cornell-Dubilier Electronics Superfund site OU-2 study area covers approximately 25 acres. A previous remedy, OU-1, addressed contaminated soil and interior dust at properties in the vicinity of the site. Additional remedial actions are planned to address the contaminated groundwater and sediments within the Bound Brook that is located on the northeast boundary of the project site. The VE Study was conducted at the site in the Corps of Engineers project trailer August 7-9, 2007. The study included a site visit on August 7, 2007.

This VE Study is based on the principals and standards used in the Value Engineering (VE) Study process consisting of six phases. The EPA VE process is broken into two components, the screening phase that addresses the first four phases (Information Gathering, Function Analysis, Speculation, Analysis) and the study phase that encompasses the final two phases (Development and Presentation). A VE process studies the functions of individual items of a project and the relationships of those functions to the overall function of the project. The result of studying the functions in this way allows the team to take a critical look at how these functions are being met and then develop alternative ways to achieve the same function while increasing the value and maintaining the primary function of the project. In the end, it is hoped that the project will realize a reduction in cost, increase or maintain the execution of the primary function, and improve or maintain the bidability, constructability and maintainability of the completed operable unit thereby improving the site environment.

Another objective in executing a VE Study is to meet the requirements of the Office of Solid Waste and Emergency Response (OSWER) Directive OSWER 9335.5-24, Value Engineering for Fund Financed Remedial Design and Remedial Action Projects dated 14 April, 2006. The VE process accomplishes this within the existing design schedule with minimal disruption.

Preliminary recommendations and comments resulting from a VE Study are briefed to the primary stakeholder, EPA, for comment and content, and screened to eliminate those considered to be outside the scope of the study prior to full development to eliminate lost effort. The resulting recommendations are then developed and provided to the EPA RPM, remedial action design team, or others designated by the RPM for comment. Following review comment incorporation, the final report is presented to the designer for incorporation within the design concurrently with comments from the EPA, USACE, State, or other stakeholder with no impact on the overall schedule. Guidelines for incorporation of VE design comments and recommendations are addressed in OSWER 9335.5-24.

Estimate of Construction Costs and Budget
The total projected capital construction cost for the OU-2 soils remediation, as identified in the 65 percent remedial design submittal by Malcolm Pirnie dated July 17, 2007 is $77,394,000.00. Total project cost for the site would include cost for OU-1 thru OU-4.

Summary of VE Study Results

During the speculation phase of this study, 52 creative ideas were identified. Eight of these ideas were developed into VE recommendations with cost implications where applicable.

The following table presents a summary of the ideas that were developed into recommendations and cost addressed where considered feasible. Cost can be an important issue for comparison of VE recommendations. Cost estimates as prepared for this VE Study are from the 65% design estimate, published cost databases and/or VE team member experience. The estimates provided should be of sufficient detail to allow a decision regarding implementation, but the estimates should not be used to compute actual savings associated with adoption of any one recommendation.

In addition to the Summary of Recommendations, one idea was developed that was not viable. This developed recommendation is included in Appendix F as "Withdrawn Recommendation". This is included in the report to document the reason why the recommendation was withdrawn.

SUMMARY OF RECOMMENDATIONS

REC # NUMBER	DESCRIPTION	POTENTIAL SAVINGS (COST)
1	Develop a cost sensitivity analysis to aid to selecting a final remedy.	Not calculated.
2	Selection of trucking vs. onsite rail vs. intermodal rail.	$1,034,116
3	Government purchase of LTTD.	$1,018,456
4	Break down cost estimate item 0005D into units of tons (soil), time (lease), and time (operation).	Not calculated.
5	Manage the contract to minimize re-treatment of soil and post-treatment sampling and analysis.	$3,669,004
6	Sheet flow storm water runoff into storm water detention pond.	$420,000
7	Eliminate Post-treatment stabilization of treated soils for metals.	$426,800

Significant Aspects of the VE Study

The 65% design presents a remediation based on Low Temperature Thermal Desorption (LTTD) and disposal off site of material that cannot be processed thorough the LTTD unit. The challenge with this treatment will be the need to run this unit on a continuous basis once start up and test runs are completed. This could require a significant guaranteed funding in order to make this treatment an economical and practical solution. The team expended considerable effort in discussing this issue and resulting recommendation. More engineering effort and economical analysis are needed to present the information necessary in order to make a management decision. The ultimate decision appears to be one based on funding availability rather than technical engineering parameters. The decision whether to treat on site with LTTD or haul all material off site needs to be made as soon as possible in order to eliminate lost design effort. The team thinks the need to complete this analysis before proceeding with a design could be the most significant "value added" benefit of this VE study.

NOTICE

Application of Results of this Value Engineering Study

This VE Study constitutes a review of 65% design documents at this point in time. As with all VE studies, the design documents are reviewed using VE principles in an effort to improve its overall value and worth. Numerous recommendations for changes and design comments have resulted from this effort. The team believes these end results add to the overall value and goals of this project. However, this effort does not in any way constitute or imply approval, consent, or acceptance of the 65% design documents by any of the team members or the organizations that they represent. Nor does acceptance of any of the recommendations and design comments imply that the design documents are therefore approved. It is the team's position that incorporation of the recommendations and design comments into the design documents would aid in the approval process.

Acknowledgments

The study members should be commended for their effort and perseverance in accomplishing this successful VE study. Special thanks are extended to the EPA RPM and the design firm, Malcolm Pirnie, for their cooperation and full participation in this team VE study effort. Combined with the members from the USACE, these experts shared information with each other and generated several significant ideas that could improve the value of this remediation. The designers and EPA RPM and other technical personnel are always encouraged to participate in these studies to the maximum extent possible.

The combined efforts of all of these individuals are what produced the positive results of this study. The facilities and support provided to the team at the site were outstanding. Special thanks are extended to the RPM, Peter Mannino for his interest, cooperation, support, and participation during the study.

Value Engineering Screening Study Team Members

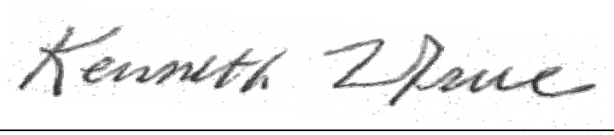
NAME	ORGANIZATION
Ken True	CVS, Contractor
Greg Mellema	USACE-HTRW CX
Bill Crawford	USACE-HTRW CX
Curtis Payton	USACE
John Hartley	USACE
Ken Mass	USACE
James Harbert	USACE
Patrick Nejand	USACE
Frank Bales	USACE
Pete Mannino	USEPA-RPM
Ben Girard	Malcolm Pirnie

Results of Study

The EPA RPM is requested to prepare a short written response for the record that explains reasons for accepting or rejecting each VE recommendation (or task a contractor or the project designer to prepare such a response), and send this written response to the USACE VE Coordinator.

Certification

This is to verify that the Value Engineering Screening Study was conducted in accordance with standard Value Engineering principles and practices.



Kenneth True, PE, CVS
Value Engineering Study Team Facilitator

SECTION 1 – INTRODUCTION

This report documents the results of the VE Study, on Cornell-Dubilier Electronics Superfund Site, Operable Unit 2 (OU-2) Soils Remediation, South Plainfield, New Jersey project. The VE Study was conducted on site in the Corps of Engineers' site trailer on August 7-9, 2007. A short site visit was included on August 7. The study team was comprised of members from the USACE, the EPA RPM, the design firm Malcolm Pirnie, and facilitated by Kenneth True, a Certified Value Specialist (CVS) and Professional Engineer. The names and telephone numbers of all participants in the study are listed in Appendix A.

The Job Plan

This study followed the basic VE methodology as endorsed by Society of American Value Engineers (SAVE) International, the professional organization of Value Engineering. This report does not include any detailed explanations of the value engineering/value analysis processes used during the workshop in development of the results presented herein. A summary of the basic processes used in the study is included to give the reader an idea of the standard VE methodology, consisting of six phases:

Information Phase: The Team studied the current intermediate Design, Basis of Design Report dated March 26, 2007, the Record of Decision (ROD), portions of the Remedial Investigation and Feasibility Study, EPA criteria documents, figures, descriptions of project work, and the cost estimate to fully understand the project scope and required functions. This phase was largely done by the team prior to the on site portion of the VE Study.

Function Analysis Phase: The purpose of this phase is to clearly identify the function(s) of the project, and to formulate a concept from which new directions can be taken. A Function Analysis Study Technique (FAST) Diagram is an end product of the Functional Analysis Phase. The FAST Diagram is included in Appendix C.

Speculation Phase: The CVS led the Team brainstorming sessions to generate ideas that could potentially be beneficial to the remedial action. All team members contributed ideas and critical analysis of the ideas was discouraged until the Analysis Phase (see Appendix B).

Analysis Phase: Evaluation, testing, and critical analysis of all ideas generated during speculation was performed to determine potential for savings or improvement to the site remediation. Ideas that did not survive critical analysis were deleted. Those feasible ideas that survive the analysis phase are then developed into recommendations. Those surviving ideas were assigned to members of the team for further development and validation of the merit of the recommendation. Sometimes this attempt to substantiate the recommendation results in the modification or even elimination of the original idea.

Development Phase: Usually during a full VE Study more research and in-depth resolution is pursued with the entire group present to substantiate an idea. The ideas were developed enough to determine if they were worthy of refinement. After returning to

their individual offices, the VE Study Team Members completed development of the surviving ideas into written recommendations. Recommendation descriptions, along with technical support documentation, and cost estimates were prepared to support implementation of ideas. Development generally takes the form of a written document that clearly expresses the proposed idea, with a "Before" and "After" depiction. In addition, the VE Study Team identified items of interest as Comments that were not developed as recommendations. These comments follow the study recommendations.

Presentation Phase: This portion of the study was done in a short presentation on the afternoon of August 9, 2007, by the team to the EPA Region staff via conference call. See list of attendees in appendix A. The recommendations were in rough draft form at the time of the presentation. This report will be distributed for review by the Corps of Engineers and EPA to project supporters and decision makers. The EPA will determine responsibilities for implementation of accepted recommendations.

This study differs slightly from a “standard” VE study. The differences lie in the applications of some of the methodologies and the way they can be applied to an ongoing HTRW Superfund site that has numerous operable units in order to achieve the desired end result. Also, the time the team spent together was considerably decreased in part to attempt to reduce costs, save or accommodate team members’ schedules and/or other obligations. The recommendations were initially developed during the August 7-9 meeting, and completed when team members returned to their offices. In any case, the results should be considered as completion of a Value Engineering Study for OU-2 for this site.

Boundary of the Study

This study was performed for OU-2 Cornell-Dubilier Electronics Superfund site, Operable Unit 2 (OU-2) Soils Remediation, South Plainfield, New Jersey. The study evaluated the proposed remediation as identified in the 65% design submittal, date July 2007. This VE study did not address any remediation other than the soils, OU-2, but some discussions about the other work at the site was included during this study. There were no limits put on the discussion during the VE study regarding the soil remediation.

Ideas and Recommendations

Part of the VE methodology is to generate as many ideas as is practical, evaluate each idea, and then select, as candidates for further development, only those ideas that offer added value to the project. If an idea thus selected, turns out to work in the manner expected, then that idea is put forth as a formal VE recommendation. Recommendations represent only those ideas that are proven to the VE team’s satisfaction.

Design Comments

Some ideas that did not make the selection for development as recommendations were nevertheless judged worthy of further consideration. These ideas have been written up as Design Comments and are included in Section 4.

Level of Development

VE Studies are working sessions for the purpose of developing and recommending alternative approaches to a given project. As such, the results and recommendations presented are of a conceptual nature, and are not intended as a final design. Detailed feasibility assessment and final design development of any of the recommendations presented herein, should they be accepted, remain the responsibility of the EPA.

SECTION 2 – PROJECT DESCRIPTION

Background

This report presents the results of the VE Study performed for the Cornell-Dubilier Electronics (CDE) Superfund Site located in South Plainfield, New Jersey. A VE study is intended to add value to projects, in terms of improved quality, enhanced construction methods, reduction in waste volume generated, or money expended on the remediation process. This VE Study was funded as part of a pilot program funded by HQ EPA, and coordinated by EPA Region 2 and the USACE HTRW-CX.

Project Description

The Cornell-Dubilier Electronics Superfund Site (the Site) is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey. The Site consists of the former CDE facility, now known as the Hamilton Industrial Park, consisting of 26 acres containing 18 subdivided buildings, contaminated portions of the Bound Brook adjacent to and downstream of the industrial park, and contaminated residential, municipal, and commercial properties in the vicinity of the former Cornell-Dubilier Electronics Corporation, Inc. (Cornell-Dubilier Electronics) facility.

The Site has been divided into separate Operable Units (OUs). Operable Unit-1 (OU-1) consists of the residential, commercial, and municipal properties in the vicinity of the former Cornell-Dubilier Electronics facility and is being addressed by others. A Record of Decision for OU-1 was signed on September 30, 2003. Operable Unit-2 consists of 22 acres of contaminated Site soils and buildings. Operable Unit-3 (OU-3) addresses the contaminated groundwater, and Operable Unit-4 (OU-4) will address contaminated sediments in the adjacent Bound Brook.

On September 30, 2004 the United States Environmental Protection Agency (USEPA) issued a ROD for OU-2. This Value Engineering report addresses the 65% design documents for the remediation of OU-2 contaminated soils, excluding the capacitor disposal area as identified in the ROD and the demolition of existing site buildings, both of which are addressed in separate, area-specific remedial designs.

The response action selected in the ROD dated September 2004 for OU-2 soils includes:

1. Excavation of an estimated 107,000 cubic yards of contaminated soil containing PCBs at concentrations greater than 500 ppm and contaminated soils that exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) for contaminants other than PCBs;

2. On-Site treatment of excavated soils amenable to treatment by Low Temperature Thermal Desorption (LTTD), followed by backfilling of excavated areas with treated soils;

3. Transportation of contaminated soil and debris not suitable for LTTD treatment to an off-Site facility for disposal, with treatment as necessary;

4. Excavation of an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas and transportation for disposal off Site, with treatment as necessary [as noted above, this is addressed in a separate design];

5. Installation of a multi-layer cap or hardscape;

6. Installation of engineering controls;

7. Property restoration; and

8. Implementation of institutional controls.

Estimate of Costs

According to the cost estimate provided in the 65% design, the total capital construction costs for the OU 2 Soils Remediation are approximately $74,812,452, which includes health and safety additions and prime contractor mark-ups (12%), escalation (3.43%), and contingencies (10%). Operation and maintenance (O&M) costs were also estimated to be $2,580,800 ($100,000 at 1%, over 30 years).

The estimated total project cost (OU 2), provided in the 65% design, is $77,393,252.

SECTION 3 – VE RECOMMENDATIONS

Organization of Recommendations

This section contains the complete documentation of all recommendations resulting from this study. Each recommendation has been marked with a unique identification number. The parent idea, or ideas from which the recommendation began, can be determined from the Creative Idea List located in Appendix B of this report. For tracking purposes, the original idea numbers that make up a recommendation are shown within the recommendation.

Each recommendation is documented by a separate write-up that includes a description of both the original design and recommended change, a list of advantages and disadvantages, sketches where appropriate, calculations, cost estimate, and the economic impact of the recommendation on the first cost, and where applicable, the life cycle cost. The economic impact is shown in terms of savings or added cost.

VALUE ENGINEERING RECOMMENDATION # 1

PROJECT: Cornell – Dubilier Electronics
LOCATION: S. Plainfield, NJ
STUDY DATE: August 7-9, 2007

DESCRIPTIVE TITLE OF RECOMMENDATION:

Develop a cost sensitivity analysis as an aid to decision makers in the selection of the final remedy. The driving factor for this recommendation is that LTTD treatment costs (current Independent Government Estimate (IGE)) are very similar to off-site disposal costs. The 65% IGE should be refined and corrected prior to doing this analysis. Further, the analysis should consider the impact of quantity overruns and duration overruns in its evaluation.

Creative Idea 7.

ORIGINAL DESIGN:

The current 65% design calls for the excavation and LTTD treatment on site of contaminated soil and backfill treated soils on site with offsite disposal of debris. The site will be backfilled and capped with asphalt.

RECOMMENDED DESIGN CHANGE:

It is recommended that a Cost Sensitivity Analysis be performed on the site remediation for using on-site Low-Temperature Thermal Desorption treatment (LTTD) verses Off-site Disposal of all site wastes both with and without a constructed Railroad Spur. The purpose of the analysis is to determine the optimum method for remediating the site. The current estimate shows onsite treatment costs to be very similar to the total offsite disposal costs. Review of the current cost estimate reveals a need to revise production rates and evaluate potential cost benefits from a phased multi-mob operation against a continuous operation in order to develop a more accurate estimate.

A major consideration in treatment method selection is funding availability. Both LTTD and off site disposal have considerably varying cost bases with potential for a number of startups or delay periods. To make the LTTD system perform at the maximum cost efficiency, a production rate for the size unit selected needs to be established to determine a baseline operating period. Continuous funding over this baseline LTTD operating period would maximize cost efficiency. If sufficient funding is not available in future fiscal years, thus requiring shut down of the LTTD unit, significant cost impacts could be realized. This could be mitigated to some extent by planning the initial mobilization so that the expenditure of the first year money overlaps with the receipt of the following year funds.

VALUE ENGINEERING RECOMMENDATION # 1

The current 65% IGE has some errors that need to be corrected for the cost analysis. It is recommended that the IGE revision include detailed costs for the LTTD such as: mobilization/setup/treatment building/concrete pads, permit equivalent testing/application/submittals, design/capital expenses, labor expenses (monthly including per diem and overtime), utilities (natural gas, water, electricity), pretreatment costs, management costs, lease costs or depreciation costs. The LTTD costs should be revised and re-quoted using the indirect fired method approved in the ROD versus the current specification.

It is also recommended that the IGE revision for off site disposal include: more accurate calculation of production rates, backfill costs, overhead and management costs associated with potential funding and schedule duration scenarios, and railroad spur construction costs.

It is also recommended that the Cost Sensitivity Analysis include Corps of Engineers management costs to account for total customer costs due to changes in project duration.

VALUE ENGINEERING RECOMMENDATION # 1

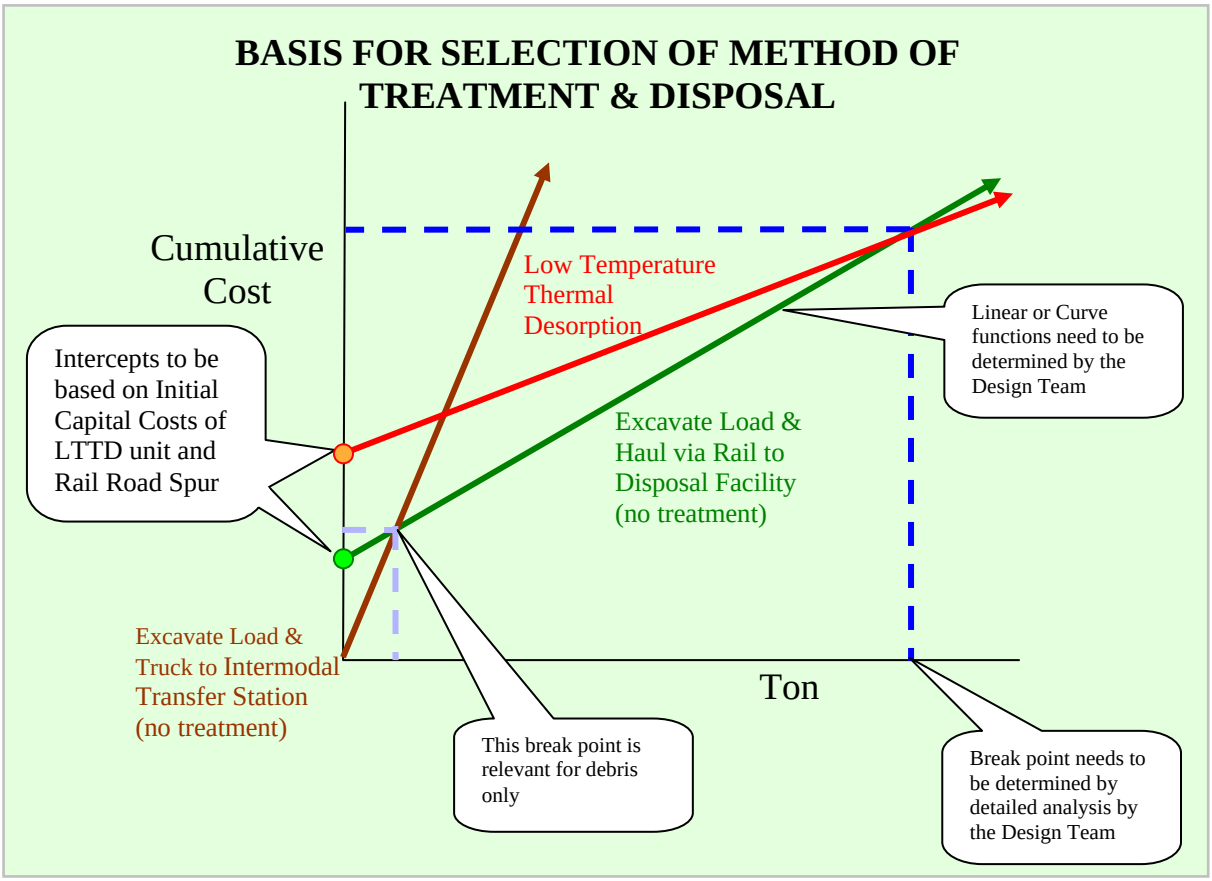
ADVANTAGES: A cost sensitivity analysis and a graphical comparison describing capital costs of the LTTD and railroad spur and operating costs based on variable quantities of contaminated soil and debris would be a useful tool for the decision makers. Actual bid costs for the LTTD option may vary from the 65% estimate. Incremental project funding for this project may be an important part of the decision making process. A preliminary graphical representation of cost sensitivity is provided as a starting point for this analysis.

DISADVANTAGES: None

JUSTIFICATION:

Actual bid price for the LTTD unit and off site disposal costs may vary from the estimate. Project funding and estimated quantities may change during remedial activity and a sensitivity analysis would be a useful tool in selection of the final remedy.

SKETCH OF PROPOSED GRAPH



VALUE ENGINEERING RECOMMENDATION # 1

Considerations for the new IGE:

For Dig and Haul option, consider:

- 65% design excavation rates ($17/cy) are representative of full scale excavation operation staffed to optimize equipment utilization. Based on experience at other projects, the following cost per yard excavated was calculated as follows for reference purposes:

- Dozer $850/day
- 3 off road 29 ton trucks $3600/day
- 330 excavator $1200/day
- Loader $750/day
- Screen Plant 1000/day
- 7 operators $7000/day including PD
- Fuel and maintenance $1750

- Direct load contaminated soil and haul to landfill instead of onsite treatment eliminates the need for the screen plant and one operator for a $2000/day reduction.

- Estimate 3 cy/ excavator cycle x 60 cycle (1 minute/cycle) hr x 0.8 efficiency = 144 cy hr x 8 hr = 1152 cy day. This would be a minimum rate. This production rate results in a per yard cost of $14.7 for LTTD option and $12.76/cy for the direct load option (accounts for removal of screening step). This gives a total excavation time of less than 90 days under ideal conditions. Utilities, site layout, etc. will reduce this production rate.

- Management and Overhead are considered separate and were not included in the cost per yard excavation costs as they are a function of project duration. Current operating costs for COE and site management and infrastructure were estimated at greater than $225,000/month. Project duration is a significant cost factor that far outweighs any costs for mob/demob and should be minimized.

- Direct load production will be limited by over the road truck load out and funding. Assume 450 cy/day as a reasonable shipping rate, 85,600 cy total, resulting in 190 shipping days. 450 cy/ 18 cy/truck = 25 trucks/8hr or 3 trucks/hr. With unlimited funding, excavation and shipping could be completed within 6 months to a year. Scheduling the project so that expenditure of year one funds overlaps with year two funding will ensure continuity of the project and eliminate or significantly reduce the need for multiple mobilizations.

VALUE ENGINEERING RECOMMENDATION # 1

For LTTD option, consider:

- One year pre-approval effort, such as permits, from the state
- 18 months from initial order to get it on site
- 2-3 months to get unit set up and operational

These tasks add to a cumulative total of up to two years from start of contract award to production. This time could be shortened if an acceptable unit is available for lease or purchase. Accurate cost accounting is needed to apply escalation to overall costs to account for the thermal unit procurement delay. This could then be compared to immediate application of funds used for design and procurement of the LTTD to remedial work for a dig and haul option.

- LTTD production will be approximately 336 ton/day and requires pre-conditioning of the soil. 85,600 cy x .75 x 1.5 = 96,300 tons resulting in 284 day treatment time frame assuming consistent productivity.

- LTTD demands full time management 24-7 for the duration of treatment as dictated by the production capabilities of the unit. If the unit is leased, the costs to keep a unit onsite for the duration of the project, needs to be funded each year, even if O&M funds are not available to run it the entire year.

Other considerations for evaluating offsite disposal vs LTTD:

- Trucking allows for maximum efficiency during temporary shutdown of the site, with nothing but fixed infrastructure costs if EPA allows for demob. This can reduce overall costs associated with health and safety, management, cost tracking, manifest manager, etc. Under current contract, the COE, prime contractor and sub contractor management and infrastructure costs are in excess of $200,000/mo.

- Offsite shipping would require that all RCRA hazardous materials for metals be treated to meet LDRs, which may not be applicable with onsite treatment in an LTTD and replacement on site.

- If multiple mob/demob events are unacceptable to EPA, then keeping the site operational for a full year under the direct haul, partial funding scenario would require operating excavation and shipping activities at less than optimum efficiency. That effectively adds a multiplier to the per yard excavation and handling cost. Example: If the project duration, based on max efficiency, has all contaminated soil off the site in 1 year, and funding dictates a two year project duration, excavation can be performed 6 months in a year with a shut down and demob to take advantage of production efficiency.

- If demob is not allowed and the project is stretched to accommodate a full year work, the cost per cubic yard of excavation would increase by an estimated 80%, since rental costs and labor costs on a daily basis are the same and production is less. Potential reduction

of these costs could be realized by splitting worker activities and with the crew digging half the day and shipping the other half or alternating digging and shipping days. Some efficiency is lost by switching tasks. Haul trucks and excavator rental rates lose 50% efficiency (double in effective rental cost) since they sit half of the time.

- If partial funding occurs, schedule the project so the end date for the first year money corresponds with arrival of the second year money, to reduce or eliminate demob costs.

Backfill considerations:

- Offsite trucking of all contaminated soil will require the need to bring in backfill from an off-site source. ($30/cy)

- LTTD option assumes a need for some limited backfill as 25% of the material goes off site.

- The cost per ton for disposal of material removed from the capacitor area was approx $180 (or $270/cy) according to the project team. This is a much lower cost than included in the current IGE cost estimate for OU2 excavation work.

- O&M costs for the thermal unit were given at $226/ton for 113,000 tons treated in the current IGE.

- To get a true cost/ton for LTTD, the costs for extended field operations need to be compared to a dig and haul operation.

Summary

The method of remediation, LTTD versus offsite disposal needs to be established prior to proceeding with the design. Numerous factors affect the cost of these two systems and need to be taken into consideration in a complete cost analysis study before any other design work is accomplished.

VALUE ENGINEERING RECOMMENDATION # 2

PROJECT: Cornell – Dubilier Electronics
LOCATION: S. Plainfield, NJ
STUDY DATE: August 7-9, 2007

DESCRIPTIVE TITLE OF RECOMMENDATION:

Selection of trucking vs. onsite rail vs. intermodal rail.

Creative Idea 14.

ORIGINAL DESIGN:

The original design addresses the likelihood of utilizing an on-site RR spur for hauling material for disposal. Other options considered were the use of trucks to take material to a trans-shipment facility, using either gondola cars or intermodal containers, and direct haul to the treatment/disposal facility via trucks.

RECOMMENDED CHANGE:

Use trucks to direct haul waste to the Model City landfill and utilize an intermodal facility for all other off site transportation under the LTTD treatment scenario.

Utilize an on-site rail spur only under the dig and haul for all material scenarios (i.e., no LTTD).

All backfill should be direct hauled from local sources to the site via truck. This will help to minimize multiple handling required if rail cars were to be used for backfill instead.

SUMMARY OF COST ANALYSIS			
	First Cost	O & M Costs (Present Worth)	Total LC Cost (Present Worth)
ORIGINAL DESIGN	$525,000		
65% DESIGN cost	$871,257		
ESTIMATED SAVINGS OR (COST) (Capital cost of rail spur plus handling and management costs associated with RR spur const and operation)	$1,034,116		

VALUE ENGINEERING RECOMMENDATION # 2

ADVANTAGES:

No need to coordinate with RR to gain access to their lines.

No delay in remedial action implementation or sequencing conflicts at the site during spur construction.

More funds available for disposal or treatment the first year.

No need to demo spur or deal with capping in place following completion of the job (abandonment of RR is not addressed in the original estimate or here).

Less handling for debris load out.

Load-out area would potentially need decontamination/soil removal at completion of job, whereas truck load-out could take place on contaminated soil with in the site.

DISADVANTAGES:

More truck traffic in and out of the site.

Need to stockpile containers on site if intermodal containers are used.

Use of trains is dependent on car change out by the RR.

In the case where RR cars need to go to different facilities, or hold different types of waste, a gondola car would need to be staged until filled (107 ton). Use of intermodal boxes (24 ton) or direct haul via truck (18-22 ton) would allow for less stockpile accumulation prior to shipment.

COST BUILD UP

65% design cost for the RR spur is $739,500 not including mark up (G&A + Overhead likely to be approx 13 to 15%) and fee (likely to be 7% to 7.5%). Using the smaller numbers for markup and fee the total capital cost would be $842,364. The cost of money used as a capital expense rather than for T&D would delay that portion of remediation one yr which would accrue escalation of .0343% for a total of $28,893. The total capital cost for the RR per the 65% design would be $871,257 with a resulting capital cost per ton of $26 using the 21,900 cy or $15 using the larger 37,560 bcy estimate used in the original cost analysis. Since the 21,900 cy quantity was used in the 65% design, it is assumed that $26/ton additional capital cost is the more accurate number.

VALUE ENGINEERING RECOMMENDATION # 2

Utilization of a RR spur would require moving debris from the debris segregation area to a load out stockpile area via truck. If direct trucking was used, the load out could occur at the debris segregation area, thereby reducing one additional handling step. The cost for that additional handling should be included in the cost evaluation. Based on the estimate, excavation and stockpiling was estimated at $17/cy. 30% of that cost will be used to account for stockpile relocation to facilitate RR transportation which comes to $122,859, representing an additional cost of $3.74/ton. Based on costs used in the estimate, it is possible this number is low.

Additional savings, conservatively estimated at $20,000, would be realized by not finalizing the spur design.

Additional savings would be realized by reduction of government oversight of the RR spur design and construction. Assuming other work concurrent with the RR spur construction, ¼ of a COE rep time at $800/day x 8 mo x 25 day/mo would be required at a minimum for spur construction. Assume $20,000 for government review and management of finalization of design and contracting/ management of the construction contractor.

It is possible that delays getting RR car change outs could cause project delays which lead to an overall increase in general condition and govt. oversight costs. This becomes more likely if the LTTD onsite treatment is not used for some reason. In the case of all material being shipped off site, rather than treated via LTTD, excavation and shipping schedules could be significantly compressed to accommodate funding cycles. This could lead to additional savings in general conditions funding requirements.

JUSTIFICATION:

An initial evaluation was performed in the Transportation and Disposal Feasibility Study Tech memo. A total excavation volume of 43,800 bcy (bank cubic yards) was calculated with 6,240 bcy being suitable for reuse on site, for a maximum total volume requiring potential offsite disposal of 37,560 bcy. Additional evaluation of the soils to be excavated for PCBs assumed that only 50% of the total volume would need to go offsite due to high debris quantities which prevent that material from being treated on site with a resulting volume of 21,900 bcy.

Additional quantity refinement resulted in a total Pre-Design Investigation derived estimated volume of 89,700 bcy, of which 14,500 bcy was clean material likely to be removed during

excavation. In that evaluation, there was also a change from 50% of the material needing offsite disposal to 25%. The total amount to be shipped off site in that evaluation was 21,900 bcy.

Capital cost estimates used in the initial evaluation were $525,000. 37,560 bcy (56,500 tons) were also used for the cost comparison. It is not clear why the larger volume was used in the cost analysis. The cost estimate determined an average capital cost over and above actual shipping costs of $10/ton and an evaluation of overall T&D costs showed this option to be roughly competitive with intermodal transportation and cheaper than direct trucking.

Using 21,900 bcy (32,850 tons) from the T&D document, the capital cost per ton would be $16 which impacts the level of competitiveness.

The T&D tech memo identifies trucking as only being cost effective within 100 miles. However, a cost of $106/ton was provided for trucking to Model City NY (400 miles). That cost is roughly comparable to an intermodal cost to Belleville, MI. So, utilization of a truck could be feasible, especially when schedule driven, if that facility is used. In all other cases, use of an intermodal facility is the cheaper option, with dump trailer haul to a transfer facility for loadout into gondola cars being the cheapest.

Recalculation of capital cost per ton based on 65% design data and inclusion of additional handling costs results in a per ton capital cost of approximately $30/ton. This increase of almost $20/ton makes using the intermodal options significantly more attractive per ton than constructing an onsite spur under the scenario for shipping debris only. If all material is shipped offsite, the RR spur becomes the better option.

VALUE ENGINEERING RECOMMENDATION # 3

PROJECT: Cornell – Dubilier Electronics
LOCATION: S. Plainfield, NJ
STUDY DATE: August 7-9, 2007

DESCRIPTIVE TITLE OF RECOMMENDATION:

Government Purchase of LTTD.

Creative Idea 20.

ORIGINAL DESIGN:

The government intends to have Prime contractor subcontract with a designer for the LTTD who also contracts for the construction and delivery of the final unit. Given the specialty piece nature of the unit the government ultimately will pay the full cost of the equipment plus markups applied by both the design/build sub and the Prime sub.

RECOMMENDED CHANGE:

Have the government contract directly with the LTTD design/build contractor and assume ownership of the equipment eliminating the markup by the Prime contractor.

SUMMARY OF COST ANALYSIS			
	First Cost	O & M Costs (Present Worth)	Total LC Cost (Present Worth)
ORIGINAL DESIGN	$3,018,456		
RECOMMENDED DESIGN	$2,000,000		
ESTIMATED SAVINGS OR (COST)	$1,018,456		

VALUE ENGINEERING RECOMMENDATION # 3

COST BUILDUP:

Estimated LTTD unit cost (for comparison only, per design engineer) $2,000,000 based on Industrial Latex project. Government direct purchase would pay this amount.

If the procurement through the prime, with limitations on ultimate lease + depreciation not to exceed total purchase price

Additional prime contractor markup 5% per estimate
Fee 7%
Markup $220,000 for a total of $2,220,000

From data pertaining to the situation where the contractor owns the equipment and leased it for the project costs were: Lease $30,000 per month, plus $24/ton depreciation (200,000 ton total depreciation).

Under that situation, there was a negotiated assumed total depreciation based on tonnage, but depreciation charges continued to accrue after total depreciation was reached (per KC District COE). Exceeding planned utilization may result in additional claim for increased O&M costs over the initial negotiated amount due to assumption that those costs rise with extended use prior to refurbishing the entire unit.

VALUE ENGINEERING RECOMMENDATION # 3

ADVANTAGES:

Allows for long-term down time that may result from funding uncertainties, without risking demobilization of the equipment by the owning contractor.

Reduces costs by avoiding Prime contractor markups.

Government pays actual capital costs, while leasing from an independent contractor may include profit above markups in the lease rate.

Government may realize cost recovery from post project sale or salvage.

Contingencies for maintenance built into any lease contract are likely to be conservative and may be more than actual costs.

Government may be more inclined to stockpile spare parts to avoid maintenance related downtime.

Government would potentially be able to negotiate a better utility rate (requires direct payment by EPA, Pemaco Superfund site is an example where this occurs) and actual utility costs would be paid by government not a potentially loaded per ton rate.

Labor would be potentially direct from the prime which would reduce markup on that cost.

DISADVANTAGES:

Government via the operation contractor is responsible for all maintenance.

Operation will likely be on a cost plus basis for labor, requiring more management of personnel and assumption of more risk in treatment effectiveness.

Need to manage/dispose of government owned property after the project.

May be more difficult to obtain trained operators for a government owned unit than get a fully crewed unit.

VALUE ENGINEERING RECOMMENDATION # 3

JUSTIFICATION:

Total procurement of the thermal treatment unit, preferably directly from the design/build contractor or via the prime ($220,000 additional cost) will result in significant potential cost savings relative to lease from an independent owner. That cost difference was used in the cost determination; however, it assumes that a unit will be available on the street for purchase.

Members of the team feel that availability is unlikely and that a special unit will need to be made for the site. The government will ultimately end up paying the full cost for the unit via one of the three options above, with the main decision being whether to lease or purchase.

VALUE ENGINEERING RECOMMENDATION # 4

PROJECT: Cornell – Dubilier Electronics
LOCATION: S. Plainfield, NJ
STUDY DATE: August 7-9, 2007

DESCRIPTIVE TITLE OF RECOMMENDATION:

Break down cost estimate item 0005D into units of tons (soil), time (lease), and time (operation). The idea of purchase is related to Creative Idea 7 (for future LTTD cost estimates) but in this case the recommendation is for the contractor to explore purchase rather than government making the purchase.

Creative Idea 35.

ORIGINAL DESIGN:

Original Design calls out Contract Line Item Number (CLIN) 005D as Indirect Fire, LTTD System, Rental, and Operation in units of tons.

RECOMMENDED CHANGE:

CLIN	Description	Quantity	Unit	Unit Cost
005D	Indirect Fire LTTD System Lease/Depreciation (107,000 tons)	TBD	month	TBD
005E	Indirect Fire LTTD System Operation Labor (107,000 tons treated)	TBD	month	TBD
005F	LTTD System Utilities (107,000 tons treated)	TBD	month	TBD
005G	(Optional) Indirect Fire LTTD System purchase	1	LS	TBD
005H	Equipment Maintenance (if purchase)	TBD	month	TBD

The objective of this recommendation is to force the contractor to reveal the difference in cost of equipment purchase verses lease and to establish a baseline for demanding that the contractor depreciate the equipment (after purchase) or limit the monthly lease cost to a figure close to the depreciation value.

VALUE ENGINEERING RECOMMENDATION # 4

SUMMARY OF COST ANALYSIS			
	First Cost	O & M Cost	Total LC Cost
ORIGINAL DESIGN			
RECOMMENDED DESIGN			
ESTIMATED SAVINGS OR (COST)	Not Quantifiable		

This has no effect on cost of capital equipment as designed, but instead affects how the EPA and/or USACE negotiate the cost with the contractor before award of contract to favor the government. This is a cost advantage but is not quantifiable at this time.

ADVANTAGES:

- Provides a solid base line cost transparency.
- Encourages all bidders to be fair and reasonable with respect to lease costs.
- Creates competition on the basis of cost AND efficiency.

DISADVANTAGES:

- Requires that RFP / IFB announcement and design package warn the contractor that costs of purchase and depreciation will be compared to lease costs, and lease costs exceeding purchase, depreciation, and resale will not be tolerated and will be part of the selection criteria.
- May discourage some contractors from bidding on job.

SCHEDULE EFFCTS:

- Up front contract negotiation time may increase.

JUSTIFICATION:

This approach will save the government money by eliminating the potential for leasing abuses.

VALUE ENGINEERING RECOMMENDATION # 5

PROJECT: Cornell – Dubilier Electronics
LOCATION: S. Plainfield, NJ
STUDY DATE: August 7-9, 2007

DESCRIPTIVE TITLE OF RECOMMENDATION:

Manage the contract operations to minimize re-treatment of soil and post-treatment sampling and analysis, and still meet the goals of the ROD.

Creative Idea 34.

ORIGINAL DESIGN:
The Record of Decision (ROD) dated September 2004 for OU-2 includes:

- Excavation of an estimated 107,000 cubic yards of contaminated soil containing polychlorinated biphenyls (PCBs) at concentrations greater than 500 ppm and contaminated soils that exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) for contaminates other than PCBs.
- On-Site treatment of excavated soils amenable to treatment by Low Temperature Thermal Desorption (LTTD), followed by backfilling of excavated areas with treated soils.
- Installation of a multi-layer cap or hardscape.

The 65% Design dated July 2007 anticipates pre-excavation testing within the limits of soil to be excavated to include borings or test pits for sample collection and PCB analytical purposes at a frequency of 1 sample per 250 CY of anticipated excavation. Once the excavated material is screened to remove debris and material over 2 inches, it is estimated that 64,200 cubic yards (102,720 tons) of soils will be amenable to treatment by LTTD. The soil that is treated on-site is required to have a total PCB concentrations less than 10 ppm confirmed by analytical results prior to reuse on site. An LTTD feed rate is estimated to be 14 tons/hr. This equates to 336 tons/day or 210 CY/day.

Once the soil is processed through the LTTD unit, the treated soil is placed in 250 CY stockpiles to determine disposition of the treated material. Samples will be collected for each stockpile of treated material, and analyzed for all ROD-specified parameters and TCLP metals. Soil meeting ROD-criteria and passing the metal TCLP criteria will be used as backfill on-site. Material failing the ROD-criteria is treated again via LTTD until the ROD criteria are met, and then used as backfill on-site. It is estimated that 10% of initially treated soil will require re-treatment (6,400 CY or 10,240 tons). Soils failing TCLP metals, once all ROD-criteria are met, will be treated again using a stabilization/solidification process and backfilled on-site. It is estimated that 15% of the initially treated LTTD volume (9,700 CY or 15,520 tons) will fail RCRA metal TCLP and require on-site stabilization/solidification.

Once the soil remediation is complete, the site is graded to meet drainage criteria and a bituminous cap will be constructed.

VALUE ENGINEERING RECOMMENDATION # 5

RECOMMENDED CHANGE:

Recommend maintaining the LTTD treatment goals including the 10 ppm for PCBs with the exception that backfill soils may contain PCBs above this goal. If accepted, the quantity of re-treatment is decreased, post treatment sampling is lessened, and the inefficient soil double handling is reduced. Once complete, the bituminous pavement is constructed over the site to meet the ROD requirement to cap areas where soils contain PCB concentrations between 10 -500 ppm.

The first recommended change is for the pre-excavation testing phase. Metal TCLP sampling and analysis must be included as part of the pre-excavation testing requirements. The ROD does not require the stabilization of metals in the post-treated soils to be backfilled; however, the current design requires the stabilization/solidification. Since it is estimated that approximately 15% of the soil amenable to LTTD treatment may exceed metal TCLP criteria, the pre-treatment metal test results are used to manage the post-treatment soil. When pre-excavation sample results exceed RCRA TLCP values for metals, that soil will be treated through the thermal desorption unit. However, the treated soil is stockpiled and tested before stabilization (if required) and backfilled.

The next recommendation is to set up a demonstration and performance test prior to full-scale LTTD operation. During this phase, the post-treatment soil is stockpiled and tested for PCBs, VOCs and RCRA Metal TLCPs as originally designed. Once the LTTD system optimization is determined and demonstrated to meet the treatment goals and criteria, full-scale operation may commence. The target treatment temperature for the LTTD unit is higher than the 689 – 788 ºF boiling points for the PCBs found at the site. This temperature is far greater than the associated site VOCs boiling points; therefore, the likelihood of post-treatment soils containing VOCs exceeding the IGWSCC criteria is unlikely.

During the Full-Operational Phase, as work progresses through the learning curve and results become more predictable, the USEPA/USACE has the option to allow the LTTD contractor to direct backfill from the treated soil stock pile without awaiting analytical results. This assumes the acknowledgment that backfilled soil may periodically contain PCBs greater the 10 ppm. Once completed, the originally designed bituminous pavement cap is constructed over the site.

Acceptance of this value engineering recommendation will result in a reduction of soil requiring re-treatment, minimize the doubling handling of post-treatment stockpiles, and reduce the number of post-treatment sampling and analysis. The delay time between soil treatment and backfilling will be reduced by decreasing the testing and associated waiting periods for PCB and VOC analytical results.

VALUE ENGINEERING RECOMMENDATION # 5

SUMMARY OF COST ANALYSIS			
	First Cost	O & M Costs (Present Worth)	Total LC Cost (Present Worth)
ORIGINAL DESIGN	$41,610,298	$2,580,800	$44,191,098
RECOMMENDED DESIGN	$37,941,254	$2,580,800	$40,522,054
ESTIMATED SAVINGS OR (COST)	$3,669,004	$0.00	$3,669,004

ADVANTAGES:

- Easier post-treated soil means and method management and the reduction of material double handling.
- Will require less post-treatment sampling and analysis.
- Will reduce the amount of required soil re-treatment which will ultimately reduce the amount of LTTD operation time.
- Does not vary from the ROD.
- Complies with EPA's response #22 from the July 13, 2004 public meeting concerning OU-2
    - Comment #22: A resident asked for the concentrations of the PCBs in soil that would be placed back in the ground after the contaminated soils have been treated in the LTTD unit.
    - EPA Response: Although the operational parameters of the LTTD unit will be evaluated during the remedial design phase, EPA anticipates that soils treated by the on-site LTTD will achieve a treatment goal of 10 ppm for PCBs prior to backfilling on site.

DISADVANTAGES:

- Public perception that the EPA and the USACE has relaxed quality control measures to assure ROD compliance.
- Will require increased on-site oversight and contract management of the LTTD operation to assure contractor complacency towards the 10 ppm PCB treatment goal does not occur.

JUSTIFICATION:

The selected remedy and design for Cornell-Dubilier Superfund OU-2 appears to mirror a similar Thermal Desorption Remedial Action at the Industrial Latex Superfund Site in Wallington, New Jersey. One difference was the 1 ppm treatment criteria for residential standards at the Industrial Latex Superfund Site. Therefore, the need for tight control of treated soil confirmation prior to

backfilling was essential. This resulted in the need to stockpile, test, and wait for analytical results before either backfilling and/or re-treat. In the case of Cornell-Dubilier OU-2, these residential standards are not applicable. The Cornell-Dubilier OU-2 selected remedy is to excavate and treat contaminated soil with PCBs at concentrations greater than 500 ppm and contaminated soils the exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) for contaminates other than PCBs. Then the site was going to be capped with a multi –layer cap or hardscape.

A lesson learned from the Industrial Latex Superfund Site was of the 53,685 CY of PCB contaminated soil treated using thermal desorption, only six percent was re-treated because they did not meet the remediation goal of 1ppm. The residual PCB concentrations in the treated soil was the driver for all retreated soil. Therefore, assumption that the LTTD treatment temperatures/requirements for PCBs will consequentially treat the VOCs to IGWSCC criteria was demonstrated.

Using the philosophy to determine the selected remedy excavation limits, PCBs are very persistent, hydrophobic, and generally do not migrate, PCBs greater than 10 ppm in the treated soil backfill that will ultimately be capped meets the ROD and continues to be protective of Human, Health and Environment. Acceptance of this concept and recommendation will reduce testing, decrease treated soil multiple handling scenarios, and diminish the need to re-treat the soil, thus saving time and cost.

The design assumption is that 10 percent of treated soils will contain PCB concentrations greater than 10 ppm. It is more than likely that those concentrations, thought greater than 10 ppm, will be close to the treatment goal. A protective cap designed to cover the entire site is required for in-situ soils containing PCB concentrations less than 500 ppm. In order for the cap to function as designed, it has to be all-inclusive site feature and include the area backfilled with treated soil. Therefore, the risk associated with backfilling treated soil that may contain PCBs concentrations slightly above 10 ppm is minimal when compared to the remaining in-situ soil concentrations. That minimal risk does not warrant the estimated costs to the project associated with the original designed treated soil management plan compliance. Furthermore, this recommendation acceptance is still within the ROD selected remedy.

VALUE ENGINEERING RECOMMENDATION # 5

Cost Item	Units	$/Unit	Source Code	Original Design		Recommended Design	
				Num of Units	Total $	Num of Units	Total $
LTTD Treatment	Tons	226.00	A	118,300	$26,735,800		$0
LTTD Treatment	Tons	226.00	A		$0	108,060	$24,421,560
					$0		$0
Analysis	each	2,000.00	B	295	$590,000	100	$200,000
					$0		$0
Backfill Treated Soil	CY	19.00	A	67,400	$1,280,600		$0
Backfill Treated Soil - Direct from LTTD Unit	CY	17.00	B		$0	67,400	$1,145,800
					$0		$0
General Conditions	Mon	277,875.00	A	24	$6,669,000	23	$6,391,125
					$0		$0
Air Monitoring	Mon	11,000.00	A	18	$198,000	17	$187,000
					$0		$0
Level C Work Factor			A		$709,468		$646,910
					$0		$0
					$0		$0
Source Code: A= data from AE 65% Design Cost Estimate					$0		$0
Source Code: B=Data from engineer judgement					$0		$0
					$0		$0
					$0		$0
					$0		$0
					$0		$0
					$0		$0
					$0		$0
					$0		$0
Subtotal					$36,182,868		$32,992,395
Mark-up		@	15%		$5,427,430		$4,948,859
Redesign Costs							
Total					$41,610,298		$37,941,254

VALUE ENGINEERING RECOMMENDATION # 6

PROJECT: Cornell – Dubilier Electronics
LOCATION: S. Plainfield, NJ
STUDY DATE: August 7-9, 2007

DESCRIPTIVE TITLE OF RECOMMENDATION:

Sheet flow storm water runoff into storm water detention pond and eliminate storm drainage system.

Creative Idea 53.

ORIGINAL DESIGN:

Original design included a storm water collection system including a total of approximately 40 catch basins and approximately 3,900 LF of conveyance piping. Additional excavation (and subsequent handling and re-backfilling) of material outside of the delineated contamination limits would also be required if the proposed storm water conveyance system is installed.

RECOMMENDED CHANGE:

The recommended change includes elimination of the proposed subsurface storm water conveyance system. The final grading plan will be designed for overland sheet flow for storm water over the entire site.

SUMMARY OF COST ANALYSIS			
	First Cost	O & M Costs (Present Worth)	Total LC Cost (Present Worth)
ORIGINAL DESIGN	$420,000	$2,500,000	$2,920,000
RECOMMENDED DESIGN	$0	$2,500,000	$2,500,000
ESTIMATED SAVINGS OR (COST)	$420,000	$0	$420,000

VALUE ENGINEERING RECOMMENDATION # 6

ADVANTAGES:

Decreases the potential for storm water to infiltrate into the potentially contaminated subsurface soils due to the elimination of the conveyance system (fittings, basins etc).

Eliminates the need to construct a subsurface stormwater conveyance system that may or may not fit in with overall redevelopment of the site following remediation.

It is likely that a detention pond will be required even with a storm water sewer system to mitigate impact to the stream from increased runoff so the pond will not have a significant cost impact.

DISADVANTAGES:

The need for additional fill and other grading considerations need to be taken into account since the entire site will need to slope to a single collection point.

JUSTIFICATION:

It is anticipated that elimination of the subsurface storm water conveyance system will likely limit the infiltration of storm water into potentially contaminated subsurface soils following remedial activities. The approximate cost savings of $420,000 is also an additional benefit/justification for this recommendation.

VALUE ENGINEERING RECOMMENDATION # 7

PROJECT: Cornell – Dubilier Electronics
LOCATION: S. Plainfield, NJ
STUDY DATE: August 7-9, 2007

DESCRIPTIVE TITLE OF RECOMMENDATION:

Eliminate Post-treatment stabilization of treated soils for metals.

Creative Idea 54.

ORIGINAL DESIGN:

Metals stabilization for thermally treated soils isn't included in the OU-2 ROD. However, to address the potential of treated soils exceeding RCRA TCLP criteria for metals, the 65% remedial design includes a process to treat soils for metals prior to using the soil for backfill material on-site.

The proposed process for on-site stabilization in the design includes stockpiling thermally treated material failing TCLP. The material will be sent through a pug mill to mix kiln dust into the soil and stabilize the metals. The estimated quantity of this bid item is 9,700 cubic yards (15,520 tons) at a unit cost of $44 per cubic yard. Total estimated cost is $426,800.

RECOMMENDED CHANGE:

Eliminate metal stabilization process. The engineered cap constructed on-site will serve to minimize the migration of metals in the soil used as backfill.

SUMMARY OF COST ANALYSIS			
	First Cost	O & M Costs (Present Worth)	Total LC Cost (Present Worth)
ORIGINAL DESIGN	$426,800		
RECOMMENDED DESIGN	$0.00		
ESTIMATED SAVINGS OR (COST)	$426,800		

VALUE ENGINEERING RECOMMENDATION # 7

ADVANTAGES:

- Reduces post-treatment metals sampling.
- Reduces additional soil stockpiling and handling.
- Eliminates soil stabilization treatment process.
- Simplifies the remedy.

DISADVANTAGES:

- Potential Leaching metals if the cap is compromised.
- Requires policy decision to implement.
- Material failing metals TCLP will not be identified or documented in the deed notice.

JUSTIFICATION:

Metals stabilization following thermal treatment of soils isn’t a requirement of the OU-2 ROD.

SECTION 4 – DESIGN COMMENTS

These items are numbered per the Creative Ideas list numbering

4. Perform an ambient study for metals and SVOCs to refine cleanup goals.

This effort would come at a cost of about $45,000. The ambient study would establish area-wide non-point source levels of contamination. While the historical activities have certainly contributed to contamination at the site, there are also regional sources of metals and SVOCs that may exceed certain cleanup goals that the EPA should not be expected to clean up.

5. Establish key chemicals of concern (CoCs); use PCBs and TCE for excavation (for final confirmation sampling).

The current list of cleanup criteria is several pages long and includes compounds that are not Chemicals of Concern. The excavation criteria and backfill criteria should be limited to site contaminants. This will simplify decision making in the field and reduce analytical and sampling costs.

6. Perform additional pre-excavation Dioxin sampling to limit post-excavation and post-treatment dioxin sampling.

The current design analysis states that dioxins were detected in an area of the site where burning occurred. Dioxin sampling overall was very limited. The design calls for inclusion of Dioxin sampling at 250 cy intervals during the remediation. Additional pre-excavation sampling should be performed to narrow the area where dioxins are likely to be found, or to confirm their prevalence. If dioxins are indeed localized, that area should be segregated so that post excavation and/or post treatment samples for dioxins can be limited to the volume represented by the identified dioxin impacted area.

11. Better define stockpile management.

Current design requires the LTTD treated soil to be stockpiled in 250 CY piles and then tested for PCBs, Metal TCLP and VOC. Because of the analysis time, the stockpiles could eventually consume valuable space and become a management burden. If not addressed, treated soil could ultimately be handled multiple times before final backfill placement. Multiple handling of the treated soil along with congested work areas will lead to cost inefficiencies.

Design Comments

12. Risk analysis of post LTTD soil placement.

Current design requires the LTTD treated soil to be stockpiled in 250 CY piles and then tested for PCBs, Metal TCLP and VOC. It is anticipated that the VOCs and PCBs will be handled through the LTTD. Metals were estimated to be contained in approximately 15% of the treated soil. A Risk Analysis should be performed to determine if and when soils can be directly backfilled without going through the confirmation process.

13. Use Amminoassay (onsite) with 10% laboratory backup for backfilling soils.

The current sampling requirements are exhaustive. To simplify operations it is recommended that amminoassays be used to establish that soils are ready for backfill. The aminoassay could be completed onsite in 24 hours to allow backfilling of site soils. The testing would have to be verified during the startup operations and shown to be protective before using this method.

16. Decrease asphalt and base course thickness for cap.

The existing cap thickness requirements, including a 9-inch sub base aggregate course beneath a 6-inch bituminous pavement layer, should be reduced due to costing considerations. Evaluation of the future use of the cap should be considered prior to this reduction.

17. Minimize excavation Sub-Areas.

Drawing G-10 shows a numerous excavation sub-areas. Some of the smaller shallow excavation sub-areas should be eliminated from the Drawing for Contractor practicality purposes.

18. Have LTTD in place to treat RR soils, to eliminate double handling.

A substantial amount of contaminated soil will require excavation to build the rail spur on-site. The LTTD unit should be in-place to treat this soil to avoid stockpiling and additional handling, or to avoid shipping this soil for off-site disposal.

23. Increase number of steel sprung structures for stockpile storage.

To protect contaminated soil from weather and wind, temporary fabric structures should be considered for stockpiling and storing soil waiting for thermal treatment.

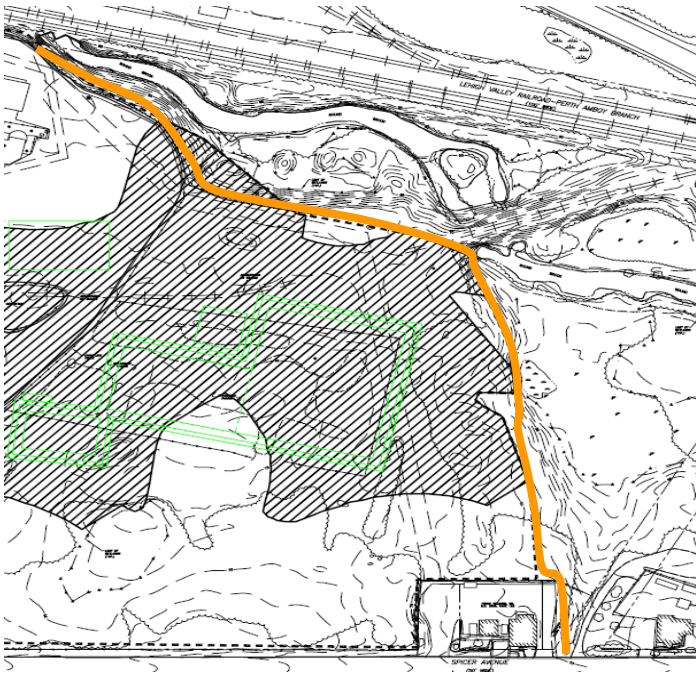
Design Comments

26. Locate LTTD unit on final cap (finish grade).

Recommend consideration of locating the LTTD unit on the final cap (finish grade). To facilitate this the LTTD unit should be placed in an area that has been previously remediated or in an area that will not require site remediation.

28. (Combine 28 & 29) Temporary flood protection with sandbags and validate the 500 year flood plain elevation.

The current OU2 boundary to the east is the 500 year flood elevation. This elevation may be inaccurate since it is extrapolated from historical data. The source of the flood plain mapping might be explored with a view toward revising the elevation to reflect a more conservative level based on more recent climate data. In addition, since the flood level may be exceeded during the lifetime of the project, temporary flood protection in the form of sand bags could be utilized to enhance the flood protection for the project. This may require that the area of excavation to the northeast be performed before placement of flood protection.



30. Ensure culverts along Bound Brook are cleared of debris, both on-site and off-site.

To the extent possible, it is recommended to minimize site impacts from potential storm water run-on and run-off by improving site drainage during large storm events by clearing existing culverts of debris in Bound Brook.

32. Perform quality of life assessment (dust, noise, etc.).

The design team should be prepared to assess potential quality of life engineering measures to minimize impacts of noise, dust, odors, etc. to adjacent residential properties.

Design Comments

33. Improve public relations and awareness during remedial action activities.

EPA will conduct public meetings to increase community awareness and allow participation in the planned remedy. The design team should be prepared to support and assist EPA as needed, and incorporate design changes as a result of public input.

36. Don't treat soils that have contamination below the clean-up criteria (that have been excavated in areas for benching and access purposes).

It is recommended to the design team to minimize the amount of soil to be treated via LTTD, as some of the soil excavated in the various areas, primarily for benching and access purposes, will have contamination below the clean-up criteria.

37. Include LTTD Feed Soil Preparation in the Cost Estimate and the Construction Management Plan

The LTTD operating utility is greatly enhanced by providing a uniform feed soil. Contaminated soil containing different levels of contamination and moisture content typically is prescreened, blended, and stockpiled in a feed preparation building or structure. This aspect of the work should be addressed in the cost estimate and Construction Management Plans.

38. Leave existing storm water system in place to the greatest possible.

The existing design requires removal and disposal of the existing subsurface storm water conveyance system. Since a portion of that system serves adjacent properties, the design should be revised to leave the existing storm system in place to the extent practicable.

40. Storm water runoff detention, meeting requirements for both construction and post construction.

The design needs to consider additional storm water runoff volumes and peak flow rates, and resulting impact to the stream receiving the added flow, due to the net increase of proposed impervious cover at the site. The design also needs to consider the required storm water retention/E&SC controls that need to take place during construction. A draft Erosion and Sediment Control Plan (including proposed retention pond sizing and location) should be included with the design to help facilitate the storm water permitting process that the contractor is currently responsible for.

Design Comments

41. Coordinate the excavation plan with the storm water system design and construction.

Drawing G-10, Excavation Sequencing Plan, should be coordinated with the installation of the proposed storm water conveyance system (if installed).

42. Reevaluate site layout to minimize haul distances.

A construction work plan needs to be developed to assure site remediation phasing and LTTD/Site layout is amenable to material handling processes that reduces inefficient haul distances and cross contamination potential.

43. Screen material at the excavation site.

The current site layout has a debris staging area immediately adjacent to the LTTD on the opposite side from the excavation. That area may become congested with trucks removing treated soil, trucks bringing soil to be treated and stockpile management operations. Screening the soil pile for debris in this same location would further congest the area.

Recommend placing the screen plant near the excavation to allow segregation of debris in a less congested area. Any debris could also be taken directly from the point of generation to the off-site load out stockpile. The screen may need to be moved during the excavation process but that is a simple, relatively quick procedure.

44. The Construction Management Plan should make the LTTD contractor responsible for soil conditioning.

The LTTD operating utility is greatly enhanced by providing a uniform feed soil. Contaminated soil containing different levels of contamination and moisture content typically is prescreened, blended, and stockpiled in a feed preparation building or structure. The contract should specify that the LTTD contractor is responsible for feed preparation to avoid conflicts with the excavation contractor.

45. Increase sampling in area of 36” water line to better define limits of required excavation.

The design should include a strategy for excavating soils adjacent to the 36 inch water supply line or rerouting the waterline. The strategy will require coordination with the local water company.

Design Comments

48. Prepare a conceptual erosion and control plan with associated costs.

It is recommended that a cost estimate for anticipated site erosion and control measures be incorporated in the final design.

50. Reevaluate how capping will be sequenced with open excavations over time.

It is recommended to develop a sequencing plan for site excavation and subsequent capping activities. Currently, temporary caps have been installed at areas where buildings have been removed. These temporary caps will require removal in order to excavate remaining underlying soil contamination. During large scale excavation activities at the site, there is potential for having multiple open excavations, which may not be backfilled for some time. It is recommended to minimize temporary capping measures to the extent possible.

51. Design should include minimum requirements for wastewater treatment.

Minimum requirements of wastewater treatment (other than LTTD wastewater) including permit discharge standards should be included in the design. Requirements for reusing treated water for dust control could also be evaluated as a disposal option.

52. Investigate the possibility for treating contaminated materials at a Canadian Waste Disposal Facility.

Cost savings may be available by shipping contaminated materials to a Canadian Waste Disposal Contractor. Investigate the possibility that facilities there can successfully treat the contaminated soil/debris from the Cornell Dubilier SF Site at a competitive cost.

APPENDICES

The appendices in this report contain backup information supporting the body of the report, and the mechanics of the workshop. The following appendices are included.

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APPENDIX G – Resumes

APPENDIX A
STUDY PARTICIPANTS

Attendees						
Cornell – Dubilier Electronics Superfund Site August 7-9, 2007						
Name	**Firm/Agency**	**Role in Study**	**Phone**	**Aug 7**	**Aug 8**	**Aug 9**
Ken True	Contractor	Team Facilitator	402-516-2635	Yes	Yes	Yes
Ken Maas	USACE Kansas City	KC Rep	816-389-3709	Yes	Yes	Yes
Curtis Payton	USACE Sacramento District	VE Team	916-557-7431	Yes	Yes	Yes
Peter Mannino	US EPA Region II	Site RPM	631-258-3725	Yes	AM Only	AM and by Telephone PM
James Harbert	USACE Baltimore District	VE Team	570-895-7052	Yes	Yes	Yes
Dino Vizzora	USACE NY District	Site Construction Rep	908-769-1601	Entrance Brief Only		
Patrick Nejand	USACE NY District	Site Project Engineer	908-769-167	Yes	PM only	Yes
John Hartley	USACE Rapid Response	VE Team	402-293-2523	Yes	Yes	Yes
Frank Bales	USACE Kansas City	Process Engineer	816-389-3591	Yes	Yes	Yes
Bill Crawford	USACE Omaha	Chemical Engineer	402-697-2579	Yes	Yes	Yes
Greg Mellema	USACE Omaha	VE Coordinator	402-697-2658	Yes	Yes	Yes
Ben Girard	Malcolm Pirnie	Design Engineer	716-667-6645	Yes	Yes	Yes
Gladys Durand	USACE Summer Intern	Observer	973-303-2654		PM Only	
Neal Kolb	USACE NY District	Resident Engineer	732-846-5832			Out-brief Only
Carol Peterson	US EPA Region II					Out brief by telephone
John Prince	US EPA Region II					Out brief by telephone
Bob Pender	USACE KCD					Out brief by telephone

APPENDIX B
CREATIVE IDEAS LIST

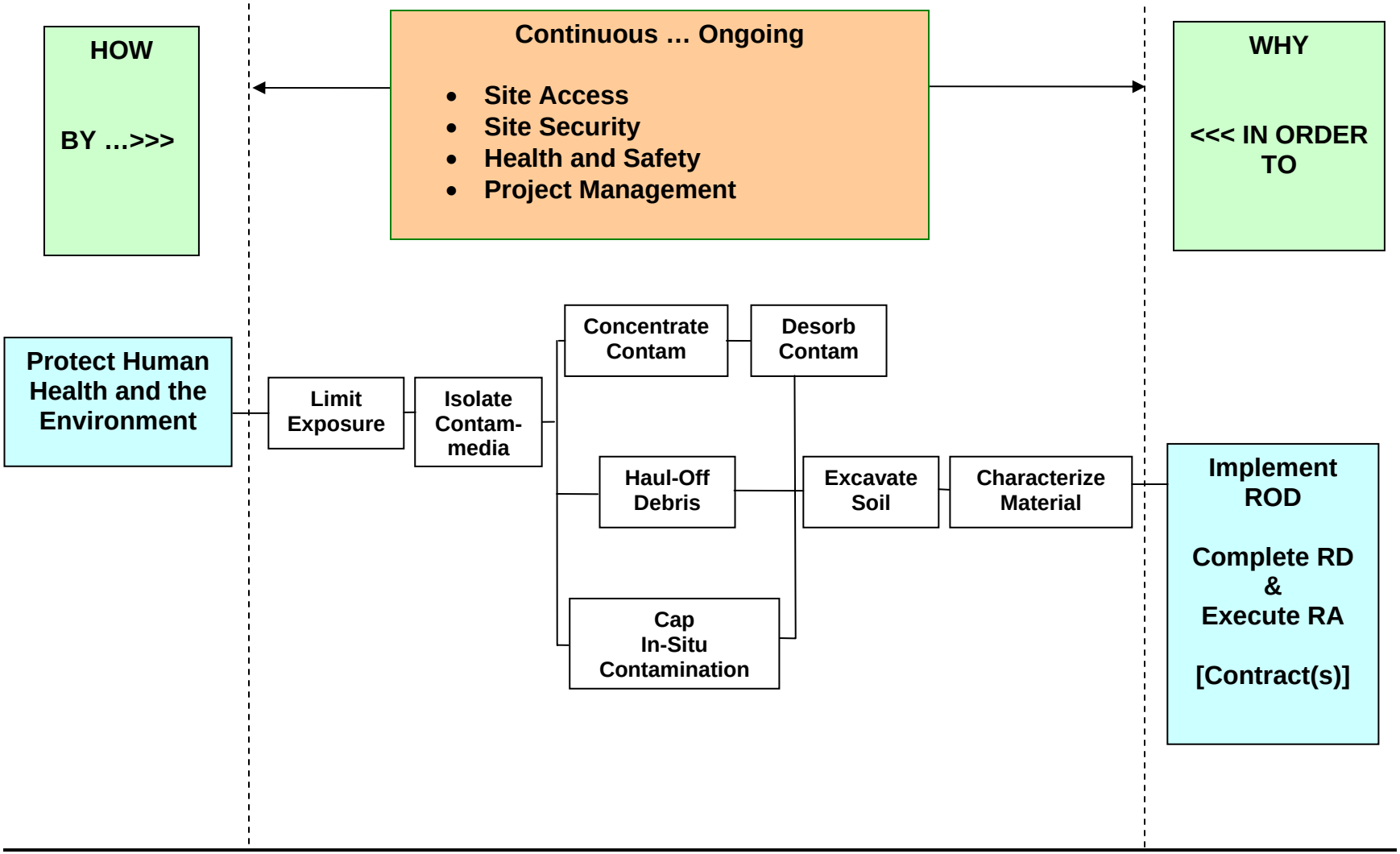
Idea Category: Cornell Dubilier Superfund Site 7-9 Aug 2007 R=Recommendation D=Design Comment E=Eliminate WD=Withdrawn		
ID #	**Name of Idea / description**	**Value Potential**
1	Stabilization of Soil in lieu of LTTD with RCRA Cap	E
2	Utilize RCRA Cap in lieu of Asphalt	E
3	Use Asphalt Cap only, with no treatment	E
4	Perform an ambient study for metals and SVOCs to refine cleanup goals	D
5	Establish key Chemicals of Concern (COCs), use PCBs and TCE for excavation (for final confirmation samples)	D
6	Predesign samples to isolate areas of dioxin concern and minimize ultimate dioxin sampling	D
7	Estimate total cost for LTTD and dig & haul vs. just dig & haul (see 35)	R
8	Establish impact of various durations for #7	R
9	Establish impact of quantity growth for #7	R
10	More upfront site sampling to better define quantities	E
11	Better define stockpile management	D
12	Risk analysis of post LTTD soil placement	D
13	Use aminoassay (onsite) with 10% lab backup for backfill	D
14	Cost analysis of RR vs trucking	R
15	Use soil cover with geotextile (dermal cover) in lieu of asphalt cap	R
16	Decrease asphalt and base course thicknesses for cap	D
17	Minimize excavation Sub-areas	D
18	Have LTTD in place to treat RR soils, to eliminate double handling	D
19	Separate contact for LTTD	E
20	Gov't purchase LTTD	R
21	Store treatable soils onsite, separate contract to treat it	E
22	Keep building on site for stockpile storage and pretreatment	E
23	Increase number of steel sprung structures for stockpile storage	D
24	Use conveyor belt to transfer soil in/out of building (see #22) – if soil is stockpiled in buildings	E
25	Consider impact of multiple mob/demobs	E

Idea Category: Cornell Dubilier Superfund Site 7-9 Aug 2007 R=Recommendation D=Design Comment E=Eliminate WD=Withdrawn		
ID #	**Name of Idea / description**	**Value Potential**
26	Locate LTTD unit on final cap (finish grade)	D
27	Confirmatory sampling in LTTD pad area prior to unit placement	E
28	Temporary flood protection (sandbags) along 500-yr flood boundary	D
29	Verify 500-yr flood elevation	D
30	Ensure culverts along Bound Brook are cleared of debris, both on-site and off-site	D
31	In-situ thermal vs ex-situ thermal desorption	E
32	Perform quality of life assessment (dust, noise, etc.)	D
33	Improve public relations and awareness during remedial action activities	D
34	Manage the contract operation to minimize retreatment of soil and post-treatment testing, and still meet the goals of the ROD.	R
35	Break down cost estimate item 005D into units of tons (soil), time (lease), time (operation & maintenance) – leave an optional item for purchase vs lease Related to #7	R
36	Don't treat "clean" soils excavated for benching, access purposes	D
37	Include in construction management plan and cost estimate, the preparation of soil to be treated for moisture, consistent feed stream (homogenization process)	D
38	Leave existing storm sewer system in place to the extent possible	D
39	Coordinate new storm sewer system to accommodate future development	E
40	Storm water runoff detention, meeting requirements for both construction and post construction	D
41	Coordinate the excavation plan with storm water system design and construction	D
42	Reevaluate site layout to minimize haul distances	D
43	Screen debris at the excavation site	D
44	LTTD contractor should be responsible for soil conditioning	D
45	Re-route 36" water supply line or determine how to protect, and/or how to excavate around the line.	D
46	Increase sampling in area of 36" water line to better define limits of required excavation	E

Idea Category: Cornell Dubilier Superfund Site 7-9 Aug 2007 R=Recommendation D=Design Comment E=Eliminate WD=Withdrawn		
ID #	**Name of Idea / description**	**Value Potential**
47	Clarify Figure 4-1 of the 65% DA for screening and sorting of excavated materials to be removed from the site	E
48	Prepare a conceptual erosion and control plan with associated costs	D
49	Existing cap (asphalt) and fill (down to geotextile) in "clean" areas may be re-used on site	E
50	Reevaluate how capping will be sequenced with open excavations over time. (rational for capping existing building footprints vs open excavations)	D
51	Design should include minimum requirements for wastewater treatment	D
52	Check into Canadian Waste Disposal Facilities	D
53	Sheet flow storm water runoff, into storm water detention pond (eliminate storm drainage system)	R
54	Eliminate post-treatment stabilization of treated soils for metals	R

APPENDIX C
FUNCTION ANALYSIS SYSTEM TECHNIQUE (FAST) DIAGRAM

Cornell-Dubilier Site
OU 2 Soil Excavation and Treatment
FAST DIAGRAM



APPENDIX D
PHOTOGRAPHS

Project Sign

Exterior View 1, Removed Building Location

Interior View

Exterior View 2, Temporary Asphalt Cap

Touring Site

APPENDIX E
ACRONYMS LIST

Acronyms List

°F	degrees Fahrenheit
µg / L	micrograms per liter
amsl	above mean sea level
ARARs	applicable or relevant and appropriate requirements
ASTM	American Society for Testing and Materials
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CAH	chlorinated aliphatic hydrocarbons
CCE	Certified Cost Engineer
CCV	Continuing calibration verification
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
cis-DCE	cis-1,2, dichloroethene
CLP	Contract Laboratory Program
cm/ day	centimeters per day
cm/ sec	centimeter per second
COC	contaminant of concern also chemicals of concern
COPC	chemicals of potential concern
CPT	cone penetrometer technology
CVS	Certified Value Specialist
CWA	Clean Water Act
CX	center of expertise
DNAPL	dens non-aqueous phase liquid
DO	dissolved oxygen
DOE	U.S. Department of Energy
DPE	dual phase extraction
DPT	direct push technology
DQOs	data quality objectives
DW	domestic well
EAB	enhanced anaerobic bioremediation
ECD	electron capture detector
Eh	reduction/ oxidation potential
EPA	U.S. Environmental Protection Agency
FFS	focused feasibility study
FS	feasibility study
ft	Feet
ft/ day	feet per day
ft^3	cubic feet
FWQC	Federal Water Quality Criteria
GAC	granulated activated carbon
gpm	gallons per minute
GPS	global positioning system
GRA	general response action
HTRW	Hazardous, Toxic and Radioactive Waste
in	Inches
K	hydraulic conductivity
L	lower aquifer zone
LGAC	liquid granulated activated carbon
LTTD	Low Temperature Thermal Desorption

M	middle aquifer zone
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
mg/ L	milligrams per liter
MIP	membrane interface probe
mL	Milliliter
mm / yr	millimeters per year
MTBE	methyl tert-butyl ether
MW	monitoring well
NAPL	non-aqueous phase liquid
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	operation and maintenance
OU	operable unit
PA	preliminary assessment
PAC	powdered activated carbon
PCE	Tetrachloroethene
PE	Professional Engineer
POTW	publicly owned treatment works
PP	proposed plan
ppb	parts per billion
PRB	permeable reactive barrier
PRP	potentially responsible party
PVC	polyvinyl chloride
RA	remedial action
RAO	remedial action objectives
RCRA	Resources Conservation and Recovery Act
RD	remedial design
RI	remedial investigation
ROD	record of decision
RPM	remedial program manager
SAP	sampling and analysis plan
SARA	Superfund Amendments and Reauthorization Act of 1986
scfm	standard cubic feet per minute
SDWA	Safe Drinking Water Act
SPME	solid phase micro extraction
SVE	soil vapor extraction
TBC	to be considered
TCE	Trichloroethene
TMDL	total maximum daily load
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
UV	Ultraviolet
VC	vinyl chloride
VE	Value Engineering
VGAC	vapor granulated activated carbon
VOC	volatile organic compound
WBZ	water bearing zone

APPENDIX F

Withdrawn Recommendation

One idea was developed as a recommendation but did not prove out viable. This developed recommendation is included as a "Withdrawn Recommendation" and is included in this report to document the reason why the recommendation was withdrawn.

WITHDRAWN VALUE ENGINEERING RECOMMENDATION

PROJECT: Cornell – Dubilier Electronics
LOCATION: S. Plainfield, NJ
STUDY DATE: August 7-9, 2007

DESCRIPTIVE TITLE OF RECOMMENDATION:
Use soil cover with geotextile (dermal cover) in lieu of asphalt cap.
This recommended is withdrawn
Creative Idea 15.

ORIGINAL DESIGN: The 65% design utilizes a 6" asphalt cover (4" Base Course, with a 2" Surface Course) over a minimum 9" dense graded aggregate base course for the site (101,000 SY). A geotextile is to be placed under the dense graded aggregate.

RECOMMENDED CHANGE: Install a soil cover with a geotextile (dermal cover) over the site. The soil cover would then be seeded with low-maintenance vegetation.
The cover would be constructed (bottom to top): 12 oz geotextile, 24" clean fill, 6" topsoil, and seeding. A 12' wide gravel access road was also estimated to be installed for site maintenance and related activities.

This Recommendation is withdrawn. See the Justification paragraph for the reason.

SUMMARY OF COST ANALYSIS			
	First Cost*	O & M Costs** (Present Worth)	Total LC Cost (Present Worth)
ORIGINAL DESIGN	$3,423,000	$1,800,000	$5,223,000
RECOMMENDED DESIGN	$3,000,000	$2,990,000	$5,990,000
ESTIMATED SAVINGS OR (COST)	$423,000	($1,190,000)	($767,000)

* Marked up costs
** Present worth over 30 years

WITHDRAWN VALUE ENGINEERING RECOMMENDATION

ADVANTAGES:

- Decreased runoff from site.
- Aesthetics.
- Eliminates removal of asphalt cover by future developers.
- No need for storm water collection system.

DISADVANTAGES:

- Higher site erosion potential (cap breaching, higher sediment load off-site).
- Increased annual O&M effort (mowing, quarterly inspections, erosion repair, burrowing animal control).
- Increased infiltration to underlying soils.
- Lower level of site protectiveness due to potential exposures from vandalism, unauthorized excavations, and potential exposures from erosion areas until repaired.

JUSTIFICATION:

Analysis of the present worth indicates that a soil cover system will cost more than an asphalt cover for the site. Therefore this recommended is withdrawn.

APPENDIX G

Resumes

Kenneth L. True, P.E., CVS.
Mobile: 402-516-2635
Home: 402-339-1936
E-mail kentrue@maladon.com

Summary

Seven years working as an independent Value Engineering (VE) consultant and working part time for URS Corporation as a VE specialist. Thirty-one years with the Corps of Engineers (CE). Retired as the Northwest Division Value Engineer, coordinator for Division's Architect /Engineer selection process, and team leader for Engineering Divisions Engineering Quality Management System. Other CE work included cost engineering, Division construction quality control management team leader, District construction supervision and inspection, Engineering Division project management, District Value Engineer and nine years of construction field experience.

Major Accomplishments

- Participated in numerous CE VE studies in various roles.
- Achieved Certified Value Specialist Certificate from the nationally accredited program maintained by the Society of American Value Engineers, International.
- Successfully lead more than fifty VE studies.
- Leading role in the CE Value Engineering Advisory Committee.
- Prepared and presented a special one-day VE workshop for EPA regional office personnel. Delivered this presentation to the majority of the regional offices. This workshop highlighted some of the very successful Value Engineering applications performed on superfund sites.
- Taught in the CE PROSPECT program for fifteen years. Subjects included roofing, construction quality management, soils and masonry.
- Member of America Society of Civil Engineers, Society of American Value Engineers, and past member of American Society of Military Engineers.
- Active in many local community organizations.

Education

BS in Civil Engineering, University of Nebraska at Omaha
Mod I, VE workshop, Mod II, VE workshop
SAVE International yearly conferences and workshops
Numerous CE 40 hour workshops including HTRW overview program

Registrations

Professional Engineer, State of Colorado
Certified Value Specialist, SAVE International

Frank Bales, Senior Process Engineer
Environmental Engineering Branch CENWK-EC-ED
Kansas City District
U.S. Army Corps of Engineers
Kansas City, MO 64106-2896
(816) 389-3591 (v)
(816) 389-2008 (fax)
francis.e.bales@usace.army.mil

Professional Experience

2001 to Present: Senior Process Engineer, U.S. Army Corps of Engineers Kansas City District
1995 to 2000: Chief Geotechnical and Process Engineering Section, U.S. Army Corps of Engineers, Kansas City District
1989 to 1994: Process Engineer, U.S. Army Corps of Engineers, U.S. Army Corps of Engineers, Kansas City District

Education

M.S. Chemical Engineering, University of Utah, 1995
B.S. Chemical Engineering, University of Missouri, 1988

Special Knowledge and Skills (as it relates to environmental work)

Working knowledge of and practical experience with design of groundwater and soil remediation, preparing CERCLA documents (PA, RI/FS, PP/ROD, RD, Five Year Reviews), NPDES permitting, developing guidance documents. Performed Remediation System Evaluations of 12 EPA Fund Lead Pump and Treat Remedies to enhance remedies and increase efficiency (2001). Wrote the Corps of Engineers Guide Specifications for Onsite Incineration and Thermal Desportion (1993).

Projects

I am the senior process engineer and provide guidance to a staff of 7 with a large program that includes Superfund Sites, IRP Sites, and FUDS sites. Most work is currently FUDS projects in Kansas and Superfund Projects in EPA Region II.

Affiliations

American Institute of Chemical Engineers

Publications

Guide Specification 02181 Remediation of Contaminated Soils by Thermal Desorption
Guide Specification 02180 Remediation of Contaminated Soils by Incineration
Numerous presentations at Conferences on Groundwater Remediation and Soils Remediation methods

William J. Crawford, Chemical Engineer
Geoenvironmental and Process Engineering Branch CENWO-HX-E
HTRW Center of Expertise
U.S. Army Corps of Engineers
Omaha, NE 68144-3869
(402)697-2579 (v)
(402)697-2613 (fax)
william.j.crawford@usace.army.mil

Professional Experience:

William Crawford is presently a re-employed annuitant and a Chemical Process Engineer with the U.S. Army Corps of Engineers in Omaha, NE.

Bill was previously employed by the U.S. Army at Picatinny Arsenal, N.J. in the Production Base Modernization Agency, RDX\HMX Expansion Branch. In addition, he managed construction projects, and operation and maintenance of various chemical\explosives manufacturing facilities while employed by E.I. du Pont & Nemours &Company.

Education:

BS in Chemical Engineering from Oregon State University

Affiliations:

Member of the American Institute of Chemical Engineers
Licensed Professional Engineer – State of New York

Special Knowledge and Skills:

Thermal Treatment, Corrosion Control, Air Stripping Systems, Air Pollution Control, Chemical Oxidation, Explosives Contamination, and Landfill Off-gas Treatment.

Publications:

EM 1110-4008 Liquid Process Piping
EM 1110-1-4016 Landfill Gas Collection and Treatment Systems

James M. Harbert
U.S. Army Corps of Engineers, Baltimore District
Northeast Resident Office
Work: 570-895-7052
Mobile: 570-840-2929
Jim.Harbert@usace.army.mil

Summary

As Team Leader for the Hazardous, Environmental, and Toxic Waste section of a Resident Office, I manage a team of Project Engineers and Construction Representatives responsible for the administration of Superfund and other environmental cleanup projects throughout Eastern Pennsylvania. I analyze future workloads and prepare budgets to assure my team is properly manpowered to meet future needs. I direct the review and analysis of administrative and technical contractor submittals, technical problem resolution, modification analysis and scope of work development, and contract progress evaluation. I review and interpret the requirements of plans and specifications for subordinate personnel direct surveillance of construction contracts and maintain liaison with participants in discussion with regulatory and customer agencies. The environmental field has required my team to be proficient in innovative technologies, nonstandard contractual mechanisms and to be attentive to public relationship concerns associated with high profile projects. (Supervisor's Name: James P. Moore. Phone 570-895-7052.)

Temporary assignments: I was the Resident Engineer and Contracting Officer Representative for the Northeastern Resident Office three times over the past 10 years. I exercised delegated responsibility for contract enforcement. Required skills included engineering, contract administration, construction inspection, office administration, personnel management, safety management and various government regulations, policies, and procedures applicable to the work. Types of projects included construction and rehabilitation of a wide variety of specialized and conventional structures and facilities with a focus on environmental cleanup, military construction, family housing renovation, and civil works such as the Wyoming Valley Levee raising project. (Supervisor's Name: Denis duBreuil. Phone 717-770-7312.)

Major Accomplishments

Lackawanna Refuse Superfund: The work involved the remediation of a hazardous waste landfill including a multilayer geosynthetic cap system, waste excavation/relocation, buried drum removal/disposal and a leachate collection system. All drums (8,000) and highly contaminated solid waste (40,000 cubic yards) disposed off-site.

Moyer Landfill Superfund: The work consists of the remediation of a 65 acres hazardous waste landfill including a multilayer geosynthetic cap system, waste excavation/ relocation, and a leachate collection.

Austin Avenue Radiation Superfund: This project consists of the reconstruction and/or remediation of twenty-one properties contaminated with radioactive materials that were located in five municipalities in Delaware County, PA. The warehouse property required excavation of radioactive contaminated soil up to 20 feet deep.

Strasburg Landfill Superfund: The work consists of the remediation of a that includes a multilayer cap over a hazardous waste landfill approximately 32 acres in area, waste excavation and relocation, leachate collection and treatment system, and a gas control and flare treatment system.

Havertown Superfund: This project involved a groundwater treatment plant construction under a design-build/cost-plus-fixed fee contract. The wastes were primarily oil contaminated with pentachlorophenol (PCP).

Education

BS, Civil Engineering, The Pennsylvania State University, University Park, PA

Registrations

Commonwealth of Pennsylvania Department of Bureau of Professional and Occupational Affairs, Professional Engineer

Kenneth E. Maas, Environmental Engineer
U.S. Army Corps of Engineers
Environmental Engineering Branch CENWK-EC-ED
Kansas City District
Kansas City, MO 64106
(402) 697-2658
kenneth.e.maas@nwk02.usace.army.mil

Employment History

2001 to Present: U.S. Army Corps of Engineers, Kansas City District
1992 to 2001: State of Nebraska, Department of Environmental Quality
1989 to 1992: City of Los Angeles, Department of Public Works

Education

B.S. Civil Engineering, Northern Arizona University, Flagstaff, Arizona, 1989

Experience (Environmental work)

Have working knowledge of and practical experience with hazardous waste remediation projects and environmental engineering and construction project management.

Responsible for overall direction and execution of a broad range of hazardous waste engineering and construction work including Preliminary Assessments / Site Investigations, Remedial Investigations / Feasibility Studies, Remedial Designs, and Remedial Actions.

Have knowledge and experience with cost-reimbursable and fixed-price contract administration, determining procurement requirements and options, scopes of work, developing RFP packages, contractor selection boards, cost estimates and negotiating cost proposals.

Internal District Auditor for ISO 9000, Business Quality Procedures

Project Assignments

Project Engineer / Manager on numerous HTRW projects associated with Formerly Used Defense Sites, Formerly Utilized Site Remedial Action Program, and EPA's Superfund program.

Recent EPA Region 2 Superfund assignments include Maywood FUSRAP Superfund site, Maywood, NJ; Wayne FUSRAP Superfund Site, Wayne, NJ; Li Tungsten Superfund Site, Captain's Cove, NY; New Brunswick FUSRAP Site, New Brunswick, NJ; Rockaway Borough Superfund Site, Rockaway, NJ; and the Cornell Dubilier Electronics Superfund Site, South Plainfield, NJ.

Serve as a member of the Kansas City District's ISO 9000 BQP Audit Team. Conduct audits of District's programs to ensure conformance with the current standards.

Licenses and Certification

Certified Professional Project Manager, 2007 (Project Management Institution)

Gregory J. Mellema, Geotechnical Engineer
Geoenvironmental and Process Engineering Branch CENWO-HX-E
HTRW Center of Expertise
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Professional Experience

1994 to Present: U.S. Army Corps of Engineers HTRW Center of Expertise, Omaha, NE.
1989 to 1994: U.S. Army Corps of Engineers, Omaha District, Geotechnical Branch, HTRW Design Section.
1984 to 1989: U.S. Army Corps of Engineers, Omaha District, Operations Division

Education

B.S. Civil Engineering, University of Nebraska - Lincoln, 1984

Special Knowledge and Skills (as it relates to environmental work)

Working knowledge of and practical experience with design of containment systems for landfills, groundwater cutoff walls, collection trenches, and other geotechnical aspects of HTW design.
Internal Auditor for ISO 14001 Environmental Management Systems
Write technical guidance and design specifications for HTRW containment systems.
Registered Professional Engineer NE-6680, February 1989 to present

Projects

I am the national coordinator for a HQ-EPA/HQ-USACE for CERCLA Five-Year Reviews. Schedule and budget for reviews, provide training and quality assurance reviews of final products, since 1998.

Member of HQUSACE ISO 14001 EMS Audit Team. Have conducted audits of Corps of Engineers Civil Works Facilities to ensure conformance with the current standard.

Participate in numerous technical assistance projects for EPA, including Rhone-Poulenc, WA; WDI, CA; Rocky Mountain Arsenal, CO; Marion Pressure Treating Site, LA; and many others.

Affiliations

Registered Professional Engineer, Nebraska E-5616, 1983
EPA Engineer Forum
Interstate Technology Regulatory Council

Publications

ETL 1110-1-162, Hazardous Waste Landfill Cover Design
ETL 1110-1-163, Vertical Barrier Walls
UFGS 2262, Slurry Walls

Trainer/Speaker:

USACE PROSPECT Instructor since 1992 for environmental site remediation, construction, and ecological reuse.
Speaker at numerous national conferences as a panelist, moderator, or presenter.

Patrick C. Nejand
Civil Engineer
U.S. Army Corps of Engineers
NYD Environmental Residency
214 State Route 18
East Brunswick, NJ 08816
Phone No. 732-846-5830

Experience:

1) **Civil Engineer** (09/98 - Present) US Army Corps of Engineers, New York District, Environmental Residency, East Brunswick, NJ. Provide engineering supervision, contracting officer representative duties, review and sign hazardous waste manifests on behalf of USACE and/or USEPA, quality assurance, contract management/administration and job safety supervision on construction projects. Provide technical recommendations for construction and remediation projects in conformance with state/federal Superfund laws. Plan and conduct field studies, investigation, and five-year reviews of superfund projects. Prepare and review technical reports.

2) **Civil Engineer** (12/91 – 08/98) US Army Corps of Engineers, New York District, Operations Division, CENAN-CO-R, New York, NY. Recommend approval or denial of projects, reviewed specifications, completed environmental impact statements, completed inspections for projects in Waters of the United States.

Education:

B.S. Civil Engineering, 1990, Virginia Tech University, Virginia, USA

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Summary

Registered geologist with over 20 years experience in environmental, geotechnical and seismic investigations. Prepares work plans, scopes of work, PA reports, SI reports, RI reports, cost estimates, proposals, design documents and public presentations for both government and private sector projects. Has directed multi-rig drilling efforts, performed trenching, borehole logging (including downhole), sampling (all media), aquifer testing, installation and development of water production and monitoring wells, groundwater modeling and contaminant fate and transport studies. He is an expert in the field of trench logging for both fault and forensic environmental investigations. Project Manager or Team Lead of several base wide environmental programs and brings experience in managing multiple contractor teams and Corps staff toward the goal of site closure and NPL delisting.

Major Accomplishments

- Coauthored, prepared and presented installation work plans and budgets to DA personnel in Maryland for BRAC & IRP installations.
- Implemented forensic environmental investigations to determine responsible parties along a petroleum pipe line corridor involving 4 pipelines and 5 RPs.
- Audited contractor efforts in the construction of UV-ox waste water treatment plant, 100-foot deep hydropunch operations, cleanup of pesticide contaminated infrastructure for a carnation farm.
- Managed and completed performance of 21 Preliminary Assessments in 30 days to meet customer deadline.
- Created standard internal government estimate format used by more than 20% of current Sacramento Project Management Staff in the HTRW PPMD group.
- Completed mathematical analysis of two different risk assessment methodologies to identify which was more conservative depending on the types of analytes assessed.
- Fault investigations at every major fault system. Identified (within 100 feet) the location of the northern split of the Tule Pond Splay on the Hayward fault.
- Earthquake assessments of residential and commercial structures for damage to foundations and structural walls. Currently a member of the USACE Structural Safety Assessment Team.
- Installed over 100 wells in a wide variety of depositional environments.
- Experienced in negotiation on HTRW actions with federal state and local regulatory agencies, including EPA Region 8 and Region 9, Utah-DEQ, California-CalEPA, -DTSC, -Fish and Game, -RWQCB (all regions), the regional program for Santa Clara Valley Water District.
- Current member of USACE Center of Expertise Value Engineering Team for EPA Superfund Program.

Education

B.S. Earth Sciences (Geology) at the University of California at Santa Cruz

Ctr. for Army Leadership LEAD Class – Reno, NV

USACE Leadership Development Program II

Registrations

California State Registered Professional Geologist No. 5608

California Registered Environmental Assessor I No. 193

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Summary

Fifteen years of providing technical support and project management with the US Army Corps of Engineers. Experience includes contaminated site characterization and remediation, geotechnical sampling, geotechnical design, drainage design and erosion control, and environment restoration including disturbed lands, wetlands and streams. Experience in writing investigation and removal action work plans, design documents and investigation reports. Knowledge of RCRA, CERCLA, SARA, TSCA, and Clean Water Act to ensure projects are designed and executed with full regulatory compliance.

- Project Manager with responsibility for business development, project scoping, estimating, design review and acceptance, contract negotiation and management. Identify the most efficient contract mechanism for the project and prepare project acceptance documentation. Coordinate with customer, contractors, regulatory agencies, regional Corps of Engineers districts and private concerns to preclude conflict of interests or jurisdictional disputes and to maintain effective public relations.
- Field Construction Manager with responsibility for review and approval of work plans and design packages. Provide technical assistance to ensure the most efficient method of implementing site remediation. Provide constructability and value engineering reviews of plans. In coordination with the contractor modify conceptual design and execution plan in the field as needed during execution of design-build projects to accommodate changing site conditions.

Major Accomplishments

- Project and Field Management of disturbed land projects for U.S. Park Service including estuary restoration.
- Performed contaminated wetland characterization and remediation, and landfill capping, at several sites for USFWS.
- Project Manager and geologist at Pemaco Superfund Site, CA. Investigation Utilized extensive direct push sampling and real time analysis, including the use of a membrane interface probe, to continuously log solvent contamination in the soil.
- Project and Field Manager for design and construction of on-site repositories for mine waste site. Perform the regulatory review and design justification..
- Project and Field Manager for design and construction at two large FEMA group home two sites in support hurricane relief efforts.
- Project Manager for in-house design of Rocky Mountain Arsenal Hazardous Waste Landfill. Developed a soil/water contaminant partitioning model to estimate leachate generated in RMA landfill for use in material testing.
- Project Manager for Rocky Mountain Arsenal Basin F and Submerged Quench Incinerator closure.
- Performed 2-d modeling in support of pump-and-treat, bioremediation, and soil-vapor-extraction remedial designs.

Education

Ph.D. Candidate in Geochemistry at University Of Texas at Austin
M.S. in Geology at University Of New Orleans
B.S. in Geology at University Of Nebraska at Omaha