TETRA TECH

September 16, 2016

Ms. Erin McCoy
Remedial Project Manager
U.S. Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

Subject: Cost Estimate for Building Demolition, Addendum
Des Moines TCE Site, Des Moines, Iowa
EPA Region 7, START 4, Contract No. EP-S7-13-06, Task Order No. 0144
Task Monitor: Erin McCoy, Remedial Project Manager

Dear Ms. McCoy:

Tetra Tech, Inc. (Tetra Tech) is submitting the attached addendum to the cost estimate for demolition and removal of buildings at the Des Moines TCE site. This addendum updates the contingency costs for removal of hazardous waste assuming all building materials, rather than a smaller percentage, will have to be classified as hazardous waste. This assumption is based on analytical data obtained from sampling activities at the site in June 2016. Furthermore, actual disposal costs from one licensed facility are included in this addendum.

If you have any questions or comments regarding this submittal, please feel free to call me at (816) 412-1767.

Sincerely,

Michael Williams
START Project Manager

Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Debra Dorsey, START Project Officer (cover letter only)

X09025.16.0144.000

415 Oak Street, Kansas City, MO 64106
Tel 816.412.1741 Fax 816.410.1748 www.tetratech.com

ADDENDUM A

COST ESTIMATE FOR BUILDING DEMOLITION
DES MOINES TCE SITE

Superfund Technical Assessment and Response Team (START) 4

Contract No. EP-S7-13-06, Task Order No. 0144

Prepared For:

U.S. Environmental Protection Agency
Region 7
11201 Renner Blvd.
Lenexa, Kansas 66219

September 16, 2016

Prepared By:

Tetra Tech, Inc.
415 Oak Street
Kansas City, Missouri 64106
(816) 412-1741

1.0 INTRODUCTION

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to assist with developing an updated cost estimate for demolition of buildings remaining on the Des Moines Trichloroethene (TCE) site (site) in Des Moines, Iowa (Figures 1 and 2, Appendix A). An updated cost estimate was submitted to EPA on May 18, 2016, which included costs for demolition of buildings and slabs on site as well as a cost contingency for waste classifications to cover unknowns, unforeseen circumstances, and/or unanticipated conditions not possible to evaluate based on data available during preparation of the cost estimate. The contingency included the following:

- Polychlorinated biphenyls (PCB)-containing insulation would be treated as PCB Remediation Waste, requiring disposal as a hazardous waste.
- Pesticide-impacted building debris would be classified as hazardous waste assuming: (1) segregation of building materials during demolition and (2) ensuing disposal of 50 percent (%) of these materials as non-hazardous waste and the remaining 50% as hazardous waste.
- Dioxin-impacted building debris, related to the western portion of the slab at Building 2, would be classified as hazardous waste.

Subsequently, sampling activities were conducted at the site in June 2016 and included sampling of building materials and slabs for pesticides, PCBs, and dioxins. Results of this investigation found these chemicals present in several building materials across the site. The purpose of this addendum is to update the cost contingencies assumed above to account for the newly available analytical data.

2.0 METHODOLOGY

Cost estimates were prepared by applying selected functions of Remedial Action Cost Engineering and Requirements (RACER®) Version 11.2 (2013) software and obtaining disposal cost quotes from licensed facilities (Appendix B). Tetra Tech requested cost estimates from four licensed facilities; however, only one responded in time. Although contingency costs are based upon one actual quote, other site-specific conditions were assumed and best engineering judgment was applied (refer to Cost Estimate for Building Demolition Des Moines TCE Site, May 18, 2016). Furthermore, RACER cost estimates may vary significantly from actual costs.

3.0 CONTINGENCY ALLOWANCES

The analytical data obtained from sampling activities conducted in June 2016 indicate the presence of pesticides, PCBs, and dioxins in building materials at several sampling locations. The following pesticides that were detected at the site are listed wastes: aldrin (P004), dieldrin (P037), endrin (P051), heptachlor (P059), alpha- and gamma-chlordane (U036), P,P'-dichlorodiphenyldichloroethane (DDD) (U060), P,P'-dichlorodiphenyltrichloroethane (DDT) (U061), lindane (U129), and methoxychlor (U247) (refer to 40 CFR §261.33). Since the source of contamination at the site is known, these pesticides must be treated as listed wastes and therefore disposed of as hazardous waste as stated in the *Management of Remediation Waste Under RCRA* (EPA 1998). Trainings for RCRA Corrective Action that further discuss managing remediation waste are available online at https://www.epa.gov/hwcorrectiveactionsites/resource-conservation-and-recovery-act-rcra-corrective-action-training (Module 9, EPA 2009).

4.0 COST ASSUMPTIONS

Cost assumptions are listed below for contingencies for waste classifications. These assumptions are based on analytical data from the June 2016 sampling activities and one quote received from a licensed disposal facility (Appendix B):

1. It is assumed that the Walkway between Buildings 2 and 3 and the Office Building have no contamination and therefore can be disposed of as non-hazardous waste.

2. Pesticides are present at concentrations up to 860 parts per million (ppm) at the site. Pesticides were found in building materials at the Production Building, Maintenance Building, and Buildings 1, 2, 3, 4, and 5.

3. PCBs are present in building materials at the Production Building and Buildings 1, 2, and 3. One sample (BMS-04 at Building 3–Center East Wall Coating) contained PCB at 58 ppm. All other PCB detections were below 50 ppm.

4. Dioxins are present at concentrations up to 0.072 ppm at the site. Dioxins were found in building materials at the Production Building, Maintenance Building, and Buildings 1, 2, 3, 4, and 5.

5. It is assumed that demolition debris from the Production Building, Maintenance Building, and Buildings 1, 2, 3, 4, and 5 will be disposed of as hazardous waste as building materials are known to contain listed wastes.

6. Disposal of pesticide, PCB, and dioxin-impacted building debris will occur at a Toxic Substance Control Act (TSCA) approved and RCRA Subtitle C landfill in Utah. Transportation and disposal charges are assumed as $265.00 per ton.

7. The volume to weight conversion factor is assumed to be 0.625 tons per cubic yard based on the Kansas Department of Health and Environment (KDHE) *Bureau of Waste Management Policy 10-01* (KDHE 2010). An Iowa-specific weight conversion was not found.

5.0 RESULTS AND RECOMMENDATIONS

Table 1 summarizes costs for each scenario as previously provided and updated costs for contingencies for waste classifications. If the assumptions in Section 4.0 are true, Tetra Tech estimates that hazardous waste transportation and disposal would increase the cost of the project by $9,994,421 with slab removal and by $9,217,318 without slab removal. Although it was determined that listed wastes are present in building materials, EPA has the authority to make a "contained-out" determination if it finds that the concentrations of hazardous constituents from the associated listed wastes identified above do not exceed a reasonable maximum exposure scenario and use of conservative, health-based standards. A "contained-out" determination would likely require remediation efforts prior to disposal. This could include washing of buildings to remove contaminants or reduce concentrations below cleanup goals. Tetra Tech recommends that a "contained-out" determination be further investigated, potentially reducing the estimated cost for disposal of contaminated materials.

Another alternative would be to segregate building materials during demolition known to contain high concentrations of contaminants based on the June 2016 sampling activities. Representative samples could then be collected from the stockpiles to determine appropriate disposal methods. This alternative should also be investigated.

TABLE 1

BUILDING DEMOLITION COST SUMMARY

Item	Scenario 1 No Action	Scenario 2 Demolition with Slab Removal	Scenario 3 Demolition without Slab Removal	Contingencies for Waste Classifications (with Slab Removal)	Contingencies for Waste Classifications (without Slab Removal)
Office Building					
Building Demolition	--	$338,568	$338,568	--	--
Slab Demolition	--	$49,357	--	--	--
Asbestos Removal	--	$108,420	$108,420	--	--
Pesticide, PCB, and Dioxin Removal as Hazardous Waste	--	--	--	--	--
Production Building					
Building Demolition	--	$2,278,381	$2,278,381	--	--
Slab Demolition	--	$404,708	--	--	--
Asbestos Removal	--	$209,716	$209,716	--	--
Pesticide, PCB, and Dioxin Removal as Hazardous Waste	--	--	--	$6,865,141	$6,489,110
Building 1					
Building Demolition	--	$67,543	$67,543	--	--
Slab Demolition	--	$11,211	--	--	--
Asbestos Removal	--	$56,573	$56,573	--	--
Pesticide, PCB, and Dioxin Removal as Hazardous Waste	--	--	--	$172,060	$164,095
Building 2					
Building Demolition	--	$579,745	$579,745	--	--
Slab Demolition	--	$94,020	--	--	--
Asbestos Removal	--	$257,679	$257,679	--	--
Pesticide, PCB, and Dioxin Removal as Hazardous Waste	--	--	--	$1,705,230	$1,613,385

Item	Scenario 1 No Action	Scenario 2 Demolition with Slab Removal	Scenario 3 Demolition without Slab Removal	Contingencies for Waste Classifications (with Slab Removal)	Contingencies for Waste Classifications (without Slab Removal)
Building 3					
Building Demolition	--	$305,450	$305,450	--	--
Slab Demolition	--	$55,952	--	--	--
Asbestos Removal	--	$116,854	$116,854	--	--
Pesticide, PCB, and Dioxin Removal as Hazardous Waste	--	--	--	$992,370	$950,728
Maintenance Building					
Building Demolition	--	--	--	--	--
Slab Demolition	--	$33,836	--	--	--
Asbestos Removal	--	--	--	--	--
Pesticide, PCB, and Dioxin Removal as Hazardous Waste	--	--	--	$24,787	--
Buildings 4 and 5					
Building Demolition	--	--	--	--	--
Slab Demolition	--	$252,672	--	--	--
Asbestos Removal	--	--	--	--	--
Pesticide, PCB, and Dioxin Removal as Hazardous Waste	--	--	--	$234,833	--
Walkway between Buildings 2 and 3					
Building Demolition	--	$12,207	$12,207	--	--
Slab Demolition	--	--	--	--	--
Asbestos Removal	--	--	--	--	--
Pesticide, PCB, and Dioxin Removal as Hazardous Waste	--	--	--	--	--
Other Costs					
Asbestos Survey	--	$13,509	$13,509	--	--
Equipment Decontamination	--	$94,941	$94,941	--	--
Total Cost =	**$0**	**$5,341,342**	**$4,439,586**	**$9,994,421 (additional cost)**	**$9,217,318 (additional cost)**

6.0 REFERENCES

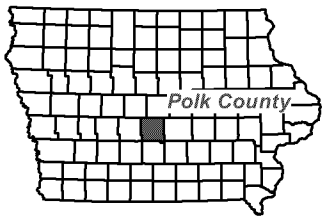
Kansas Department of Health and Environment (KDHE). 2010. Bureau of Waste Management Policy 10-02 related to Construction and Demolition Waste: Volume to Weight Conversion Factor. April.

U.S. Environmental Protection Agency (EPA). 1998. Management of Remediation Waste Under RCRA. EPA 530-F-98-026. October

EPA. 2009. Resource Conservation and Recovery Act (RCRA) Corrective Action Training: Strategies for Meeting the 2020 Vision. Training Modules. Accessed September 13, 2016. https://www.epa.gov/hwcorrectiveactionsites/resource-conservation-and-recovery-act-rcra-corrective-action-training.

APPENDIX A

FIGURES



N

0 1,000 2,000

Feet

Source: USGS Des Moines SW, IA 7.5 Minute Topo Quad, 1956
USGS Des Moines SE, IA 7.5 Minute Topo Quad, 1956

Des Moines TCE Site
Des Moines, Iowa

Figure 1
Site Location Map

TETRA TECH

Date: 5/5/2016 Drawn By: Clayton Hayes Project No: X9025.16.0144.000

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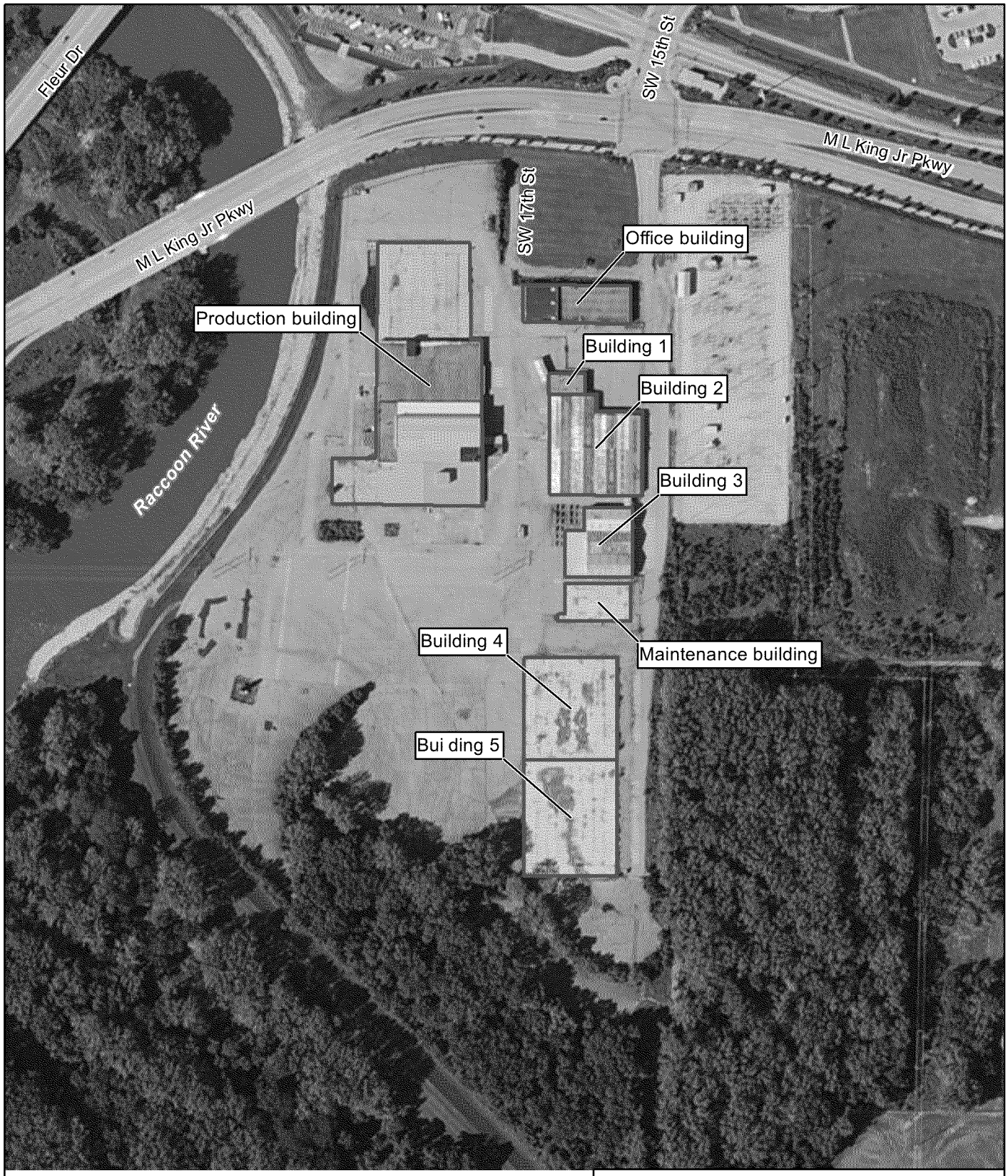

Legend

Building location

N

0 150 300

Feet

Source: ESRI, ArcGIS Online Maps, World Imagery, 2014

Des Moines TCE Site
Des Moines, Iowa

Figure 2
Site Layout Map

TETRA TECH

Date: 5/5/2016 Drawn By: Clayton Hayes Project No: X9025.16.0144.000

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APPENDIX B

DISPOSAL COST QUOTES

Gibson, Danielle

From: Hextell, Michael <Hextell.Michael@cleanharbors.com>
Sent: Thursday, September 15, 2016 9:26 AM
To: Gibson, Danielle; Kauffmann, Gil
Subject: RE: Des Moins, Iowa disposal
Attachments: FINAL_Lone_Mt_OK_Facility_FS_010507[1].pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Danielle,

We have two landfill options that are both rail served. Grassy Mountain that is a TSCA approved, Sub C landfill and if the PCB is considered "remediation waste" under the Mega-rule, we can also utilize our Lone Mountain Facility, which is also a Sub C RCRA facility that can accept Mega Rule waste. From Des Moines Iowa to:

Grassy Mountain: $265.00/ton Transportation and Disposal, 100 ton minimum per gondola car

Lone Mountain: $230.00/ton Transportation and Disposal, 100 ton minimum per gondola car

I have included an information sheet for Lone Mountain for your file. I will send you a copy of the Grassy Mountain Facility under a separate e-mail. These prices are budgetary only at this point, we would need a completed profile to generate a price specific cost proposal.

Best Regards,

Mike Hextell

-----Original Message-----
From: Gibson, Danielle [mailto:Danielle.Gibson@tetratech.com]
Sent: Thursday, September 15, 2016 8:55 AM
To: Hextell, Michael <Hextell.Michael@cleanharbors.com>; Kauffmann, Gil <Kauffmann.Gil@cleanharbors.com>
Cc: Reeves, Michael L <reeves.michael@cleanharbors.com>
Subject: RE: Des Moins, Iowa disposal

Hi Mike and Gil,

Could you give me an idea of when you might have a cost estimate ready, as requested below? Please let me know if I can provide any additional information.

Thank you!
Danielle

Danielle Gibson | Environmental Engineer

415 Oak Street | Kansas City, Missouri 64106 | www.tetratech.com
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-----Original Message-----
From: Hextell, Michael [mailto:Hextell.Michael@cleanharbors.com]
Sent: Wednesday, September 14, 2016 8:29 AM
To: Gibson, Danielle <Danielle.Gibson@tetratech.com>; Kauffmann, Gil <Kauffmann.Gil@cleanharbors.com>
Cc: Reeves, Michael L <reeves.michael@cleanharbors.com>
Subject: RE: Des Moins, Iowa disposal

Danielle,

Do you know if the site has any Rail Access? It is more economical to ship via 100 ton gondola cars for these larger quantities. If there is no rail access on-site, then if you can provide a site address, we can locate a rail spur close to the site to set up our transload ramp. We can transfer the end dumps into the rail cars. I included a copy of our transloading ramp information for your files.

Best Regards,

Mike Hextell

-----Original Message-----
From: Gibson, Danielle [mailto:Danielle.Gibson@tetratech.com]
Sent: Tuesday, September 13, 2016 5:59 PM
To: Kauffmann, Gil <Kauffmann.Gil@cleanharbors.com>
Cc: Reeves, Michael L <reeves.michael@cleanharbors.com>; Hextell, Michael <Hextell.Michael@cleanharbors.com>
Subject: RE: Des Moins, Iowa disposal

Hi Gil,

Thank you for taking the time to speak with me yesterday regarding the potential Des Moines, Iowa site. I initially thought we would only need to dispose of a small fraction of the total debris materials; however, we have determined that several listed wastes are present and will need to be treated as such.

Building materials at the site are contaminated with pesticides, PCBs, and dioxins. Applicable hazardous waste codes are P004, P037, P051, P059, U036, U060, U061, U129, and U247. Please find the analytical tables attached. PCB was detected in one sample at greater than 50 ppm; however, this can likely be segregated from the other debris materials.

The total volume of debris material that will need to be disposed of is approximately 83,600 cubic yards. Approximately 76,300 cubic yards of this includes building materials contaminated with pesticides (up to 860 ppm), PCBs (<50 ppm), and dioxins (up to 0.072 ppm). Approximately 1,000 cubic yards of building material is contaminated with PCBs greater than 50 ppm. All remaining waste is assumed to be non-hazardous.

Please let me know if you have any questions or if you need additional information.

Thank you!
Danielle

Danielle Gibson | Environmental Engineer

415 Oak Street | Kansas City, Missouri 64106 | www.tetratech.com
Direct: 816.412.1768 | Main: 816.412.1741 | Fax: 816.410.1748

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If you are not the intended recipient, please notify the sender by replying to this message and then delete it from your system.

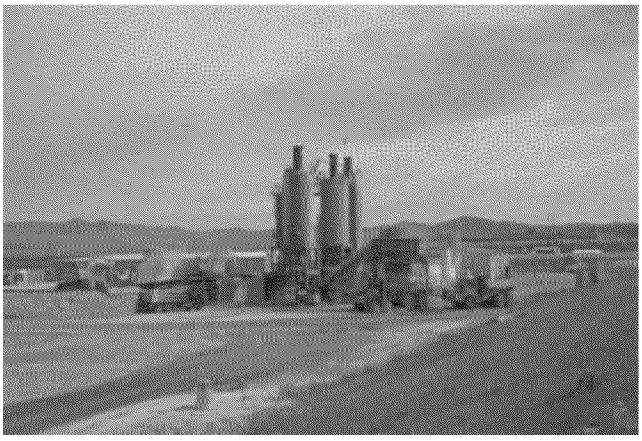
-----Original Message-----
From: Kauffmann, Gil [mailto:Kauffmann.Gil@cleanharbors.com]
Sent: Thursday, September 08, 2016 8:55 PM
To: Gibson, Danielle <Danielle.Gibson@tetratech.com>
Cc: Reeves, Michael L <reeves.michael@cleanharbors.com>
Subject: Des Moins, Iowa disposal

Danielle, I got info that you need some disposal pricing. Can you send analytical to me. Please reply to all so that mike reeves gets it also. I am on vacation but will work with mike to get you pricing.

Gil Kauffmann
Vertical Account Manager
Engineering & Consulting
Clean Harbors Environmental Services
636-248-9749
Kauffmann.gil@cleanharbors.com
www.cleanharbors.com

Transportation & Disposal

Grassy Mountain, Utah Facility Facts



The Grassy Mountain landfill facility is located in Utah's Great Salt Lake Desert, about 75 miles west of Salt Lake City. This facility provides landfill services for RCRA and TSCA (PCB) wastes as well as solidification and metals fixation for RCRA material.

Permits

- RCRA Part B Permit UTD991301748
- TSCA Commercial PCB Storage and Landfill Approvals
- Utah Air Approval Order No. DAQE 889-96
- BLM Permit to Move Soil No. S-60748

Facility Description & General Information

Start-up Date: 1982

Facility Size: 1 square mile with a half-mile buffer zone on each side

Services Provided:

- Truck and Rail Logistics
- Drain and Flush for PCB Transformers
- Solidification
- Stabilization
- Repackaging

Typical Customers: incinerators, governmental agencies, mines, automobile manufacturers and utilities.

Typical Waste Streams: PCB contaminated soils, PCB electrical equipment, PCB contaminated debris, etc., non-hazardous soils and other non-hazardous industrial wastes, asbestos wastes, hazardous waste for treatment of metals, plating wastes, acidic wastes, caustic wastes, hazardous debris and non PCB liquid wastes for solidification and landfill.

Treatment, Storage and Disposal Capabilities

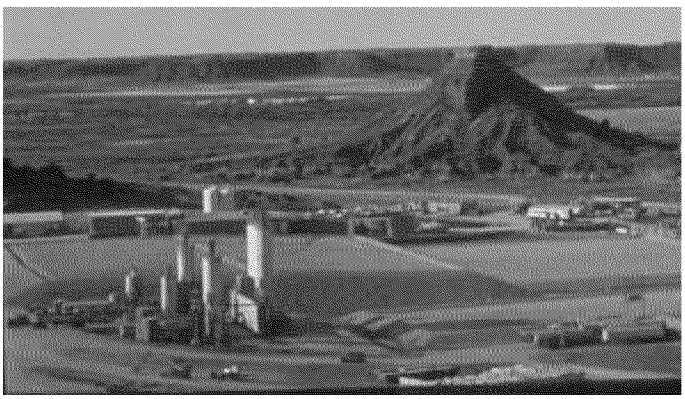
- RCRA Drum Storage: 2,217 55-gallon containers
- PCB Drum Storage: 350 55-gallon equivalent containers and two 3,000 gallon tanks
- RCRA Landfill Capacity: 710,768 cubic yards
- TSCA Landfill Capacity: 773,712 cubic yards
- Bulk Solids Container Capacity: 100 20-cubic yard equivalent containers
- Wide range of permitted waste codes
- PCB liquid storage for 63,982 gallons

CleanHarbors ENVIRONMENTAL SERVICES®

Clean Harbors Grassy Mountain, LLC • Exit 41 Off I-80, 3 miles East, 7 miles North of Knolls • Grassy Mountain, UT 84029 • 801.323.8900 • www.cleanharbors.com

Transportation & Disposal

Lone Mountain (Waynoka), Oklahoma Facility Facts



The Lone Mountain landfill facility is rail served and is fully permitted to manage a wide variety of regulated materials including RCRA hazardous waste, Mega Rule PCBs, and non-regulated waste materials. This facility also operates an on-site wastewater treatment unit for processing landfill leachate and customer wastewaters.

Permits

- US EPA ID No. OKD065438376
- RCRA/HSWA Operating Permit No. 3547005
- RCRA Post Closure Permit No.OKD065438376-PC
- Stormwater General Permit No. OKR100421
- Air Quality Permit No. 96-517-O
- APHIS Soil Permit No.S-51324

Facility Description & General Information

Start-up Date: 1978

Facility Size: 560 acres

Avard Transfer Facility: 35 acres

Services Provided:

- Waste Treatment and Storage
- RCRA Hazardous Landfill Operations
- Waste Water Treatment
- Rail Transfer Operations

Typical Customers: manufacturing, R&D facilities, military & government facilities, pharmaceutical companies, chemical facilities, private and governmental clean-up activities.

Typical Waste Streams: PCB soil and debris (Mega Rule), non-hazardous soil, hazardous soil for direct landfill, hazardous soil for treatment of metals and organics on a case-by-case basis, debris for microencapsulation or macroencapsulation, plating waste, acidic waste, caustic waste, cyanide and sulfide bearing waste, and hazardous and non-hazardous liquid.

Treatment, Storage and Disposal Capabilities

- Drum Storage Capacity: 207,295 gallons (3,769 drums)
- Hazardous Waste Storage Tank Capacity: 2,322,515 gallons
- Waste Water Treatment permitted throughput: 130,000 gallons/day
- All current hazardous waste codes

CleanHarbors
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