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Technical Memorandum

Date	10 August 2011
To	Bob Brock (USACE)
From	Terry Heikkila, PE, PMP
CC	Joe Malen (DPW)
Subject	**Final Taku DDT Hotspot Investigation After-Action Report**

Introduction

In April 2010, Jacobs Engineering Group Inc. (Jacobs) conducted an investigation on Fort Wainwright, Alaska at the Taku Gardens site, north of Buildings 15, 17, and 19 (Figure 1) to determine the extent of soil contaminated with the pesticides DDT, DDD, and DDE. The objectives of this action were as follows:

- Determine the extent and type of contamination by excavating test pits for a limited DDT-contaminated hotspot (concentrations up to 46.5 milligrams per kilogram [mg/kg]).
- Excavate step out test pits to determine the extent of contamination.
- Conduct soil sampling after remedial excavation to ensure that all contamination above cleanup levels had been removed.
- Backfill and restore the site to standards set by the U.S. Army Corps of Engineers (USACE), Alaska District.

The purpose of this Investigation After-Action Report is to document the work performed and distribute the results of the investigation/excavation at the DDT hotspot.

Work Plan Deviations

All work at the DDT hotspot was performed in accordance with the approved *Work Plan Addendum* (USACE 2010) and the *2008 Work Plan, Former Communications Site Drum and Debris Remedial Investigations* (USACE 2008a) with the following deviations:

- The Work Plan Addendum stated that a global positioning system (GPS) would be used to relocate the coordinates of the DDT hotspot found in 2009. The hotspot was originally located using swing ties and then corrected approximately 6 feet to the northwest using survey equipment.
- The excavation area was extended beyond the area originally specified in the Work Plan Addendum. Excavation continued 5 feet in all directions from the center point to ensure that the extent of contamination was delineated.

- The Work Plan Addendum stated that the pesticide analysis method was SW8081A, but the samples were analyzed by method SW8081B. Method SW8081B is a U.S. Environmental Protection Agency (EPA) test method that is approved by Alaska Department of Environmental Conservation (ADEC) for contaminated site analysis.

Fieldwork

Jacobs mobilized to the project area on 29 March 2010. Investigation activities began on 31 March 2010. Swing ties were used to locate the DDT hotspot discovered in 2009. Snow cover had to be removed from the surrounding work area and the ground had to be thawed before excavation could take place. Between ground thaws, approximately one vertical foot of soil was removed before frozen ground was encountered and ground heat re-applied. Prior to and during each excavation activity, the area was monitored for munitions and explosives of concern (MEC) by a certified Unexploded Ordnance (UXO) technician who visually observed the site during all operations and verified the absence of metal using a Schonstedt® Model GA 52CX magnetic locator.

Field screening occurred at a frequency in accordance with ADEC Division of Spill Prevention and Response Contaminated Sites Program's *Field Sampling Guidance* (ADEC 2010) and CH2M Hill's *Remedial Investigation/Feasibility Study Management Plan* (USACE 2008b). A photoionization detector was also used to conduct field screening activities for volatile organic compounds (VOC). Field screening results did not reveal any VOC contamination for the duration of the excavation. Visual screening did not detect stained soil or containers of hazardous material.

Initial investigation/excavation of the site removed approximately 39 cubic yards of contaminated soil. On 2 April 2010, seven soil samples were collected from the sidewalls and floor of the excavation pit (Figure 2). Samples were analyzed for pesticides by laboratory method SW8081B. Analytical results from one sample location (EXBLD15-101) indicated DDD and DDT concentrations of 4.48 mg/kg and 2.39 mg/kg, respectively, both above the project screening levels (PSL), of 3 mg/kg and 2.1 mg/kg, respectively.

Excavation continued, extending 5 feet east of the original excavation sidewall near sample EXDLB15-101. An additional 12 cubic yards of soil were removed as part of the continued effort. Five additional soil samples were collected on 8 April 2010 from the new excavation area. Results were compared to PSLs, EPA, and ADEC screening criteria.

Results from the 8 April 2010 sample analysis are as follows:

- No samples exceeded ADEC cleanup criteria for DDD (7.2 mg/kg), DDE (5.1 mg/kg), or DDT (7.3 mg/kg).
- One sample (EXBLD15-109) indicated concentrations of DDT (2.22 mg/kg) that exceeded the PSL (2.1 mg/kg).
- Several samples exceeded EPA protection of groundwater criteria for DDD (0.66 mg/kg) DDE (0.47 mg/kg), and DDT (0.67 mg/kg). Table 1 compares analytical results to the PSLs.

After discussions with CH2M Hill risk assessors, USACE directed that the remedial excavation be considered complete and no further excavation was conducted.

All samples were collected in accordance with the *2008 Work Plan* (USACE 2008a). The summary of analytical results is provided in Table 1. A Laboratory Data Quality Evaluation was performed by CH2M Hill and is provided in Attachment 1.

Waste Management

Approximately 51 cubic yards of excavated soil was containerized in 51 Super Sacks®. Soil samples were collected from three random Super Sacks® for waste characterization analyses. Samples were collected from the interior of the Super Sack® contents, approximately 12 inches below the surface. The samples were submitted to SGS Environmental Services to analyze for VOCs (SW8260B), semivolatile organic compounds (SW8270C), Resource Conservation and Recovery Act metals (SW6020, 7471A), polychlorinated biphenyls (SW8082), pesticides (SW8081B), ignitibility (SW1020A), reactivity (SW846 7.3), and herbicides (8151A).

On 20 April 2010, ChemTrack transported approximately 30 cubic yards of clean backfill to the site to fill the excavation pit. The backfill was then compacted and graded to USACE standards, and the work on the site was considered done.

The Super Sacks® were covered and stored on liners until August 2010 when the waste subcontractor removed and disposed of them. Refer to Attachment 3 for the disposal certificates and waste manifests.

Conclusions and Recommendations

A total of 51 cubic yards of contaminated soil were removed as part of this remedial action. Analytical results from a soil sample (Exbld15-109) collected from the eastern sidewall of the excavation pit indicated concentrations of DDT (2.22 mg/kg) slightly exceeding the PSL of 2.1 mg/kg, but well below the ADEC Method Two cleanup criteria of 7.3 mg/kg. This slight exceedance did not affect the Human Health Risk Assessment. All other confirmation sample results were below PSLs for the site. After discussions with the CH2M Hill risk assessors, USACE directed that excavation would not continue and the site be considered clean.

Based on this data, it is recommended that the DDT hotspot north of Buildings 15, 17, and 19 be considered clean and therefore released back to the Army for scheduled projects.

References

ADEC (Alaska Department of Environmental Conservation). 2010 (January). *Field Sampling Guidance.*

ADEC. 2008 (October 9). 18 AAC 75. *Oil and Other Hazardous Substances Pollution Control*.

USACE (U.S. Army Corps of Engineers, Alaska District), 2010 (March). *Work Plan Addendum Technical Memorandum: Taku Gardens DDT Hot Spot Investigation and Delineation.* Prepared by Jacobs Engineering Group Inc.

USACE. 2008a (August). *2008 Work Plan, Former Communications Site Drum and Debris Remedial Investigation.* Final. Prepared by Jacobs Engineering Group Inc.

USACE. 2008b. Quality Assurance Program Plan, Former Communications Site RI/FS. Fort Wainwright, Alaska. Prepared by CH2M Hill.

Tables

Figures

Attachments

TABLES

Table 1
Soil Analytical Results at Building 15
2010 Spring DDT

				Location	EXBLD15-100	EXBLD15-101	EXBLD15-102	EXBLD15-103	EXBLD15-104
				Sample ID	10-FW-A-EXBLD15-100_03	10-FW-A-EXBLD15-101_1_5	10-FW-A-EXBLD15-102_03	10-FW-A-EXBLD15-103_1_5	10-FW-A-EXBLD15-104_03
				Sample Depth (feet)	3 - 3	1.5 - 1.5	3 - 3	1.5 - 1.5	3 - 3
				Sample Date	4/2/2010	4/2/2010	4/2/2010	4/2/2010	4/2/2010
Analyte	PESTICIDES	Screening Level (mg/kg)	Screening Level Source						
	4,4'-DDD	3	2010 SOIL PSL		< 0.00257	**4.48**	< 0.0026	**0.0172**	< 0.00254
	4,4'-DDE	2.1	2010 SOIL PSL		< 0.00257	**0.806**	< 0.0026	**0.0218**	< 0.00254
	4,4'-DDT	2.1	2010 SOIL PSL		< 0.00257	**2.39**	< 0.0026	**0.0764**	**0.0013 J**
	GEN CHEM (percent)								
	Total Solids	--			**77.2**	**86.9**	**76.3**	**80.1**	**77.5**

Notes:

NA = Not analyzed

J = Analyte was present but the reported value may not be accurate or precise.

U = Analyte was analyzed for but not detected at the specified detection limit.

mg/kg = milligrams per kilogram

Bold indicates that the analyte was detected.

Shading indicates the result exceeded screening criteria.

Table 1
Soil Analytical Results at Building 15
2010 Spring DDT

			Location	EXBLD15-105	EXBLD15-106	EXBLD15-107		EXBLD15-108
			Sample ID	10-FW-A-EXBLD15-105_1_5	10-FW-A-EXBLD15-106_1_5	10-FW-A-EXBLD15-107-1_5 B	10-FW-A-EXBLD15-107-1_5	10-FW-A-EXBLD15-108-1_5
			Sample Depth (feet)	1.5 - 1.5	1.5 - 1.5	1.5 - 1.5	1.5 - 1.5	1.5 - 1.5
			Sample Date	4/2/2010	4/2/2010	4/8/2010	4/8/2010	4/8/2010
Analyte	PESTICIDES	Screening Level (mg/kg)	Screening Level Source					
	4,4'-DDD	3	2010 SOIL PSL	**0.0121**	**0.0105**	**2.03**	**2.36**	**0.778**
	4,4'-DDE	2.1	2010 SOIL PSL	**0.0457**	**0.0312**	**0.332 J**	**0.404 J**	**0.186 J**
	4,4'-DDT	2.1	2010 SOIL PSL	**0.299**	**0.194**	**1.18**	**1.52**	**0.41**
	GEN CHEM (percent)							
	Total Solids	--		**87.1**	**83.6**	**87.7**	**88.2**	**87**

Notes:

NA = Not analyzed

J = Analyte was present but the reported value may not be accurate or precise.

U = Analyte was analyzed for but not detected at the specified detection limit.

mg/kg = milligrams per kilogram

Bold indicates that the analyte was detected.

Shading indicates the result exceeded screening criteria.

Table 1
Soil Analytical Results at Building 15
2010 Spring DDT

				Location	EXBLD15-109	EXBLD15-110	EXBLD15-111	EXBLD15-99	
				Sample ID	10-FW-A-EXBLD15-109-1_5	10-FW-A-EXBLD15-110-03	10-FW-A-EXBLD15-111-03	10-FW-A-EXBLD15-99_03 B	10-FW-A-EXBLD15-99_03
				Sample Depth (feet)	1.5 - 1.5	3 - 3	3 - 3	3 - 3	3 - 3
				Sample Date	4/8/2010	4/8/2010	4/8/2010	4/2/2010	4/2/2010
Analyte	PESTICIDES	Screening Level (mg/kg)	Screening Level Source						
	4,4'-DDD	3	2010 SOIL PSL		**2.12**	**0.00137 J**	< 0.00236	< 0.00258	< 0.00253
	4,4'-DDE	2.1	2010 SOIL PSL		**0.488**	< 0.00228	< 0.00236	< 0.00258	< 0.00253
	4,4'-DDT	2.1	2010 SOIL PSL		**2.22**	**0.00152 J**	**0.0012 J**	< 0.00258	< 0.00253
	GEN CHEM (percent)								
	Total Solids	--			**85.6**	**87.7**	**84.1**	**77.1**	**77.7**

Notes:

NA = Not analyzed

J = Analyte was present but the reported value may not be accurate or precise.

U = Analyte was analyzed for but not detected at the specified detection limit.

mg/kg = milligrams per kilogram

Bold indicates that the analyte was detected.

Shading indicates the result exceeded screening criteria.

Table 2
Waste Analytical Results at Building 15
2010 Spring DDT

			Location ID	B15DDTWS01	B15DDTWS01	B15DDTWS02	B15DDTWS02	B15DDTWS03	B15DDTWS03	TB001
			Sample ID	10 FCS RISO B15WS01	10 FCS RISO B15WS01	10 FCS RISO B15WS02	10 FCS RISO B15WS02	10 FCS RISO B15WS03	10 FCS RISO B15WS03	10 FCS TB001
			Lab Sample ID	1101922001	K100388301	1101922002	K100388302	1101922003	K100388303	1101922004
			Matrix	SO	SO	SO	SO	SO	SO	SO
			Sample Date	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010
			Laboratory	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA
Method	**Analyte**	**Units**	**20 × TCLP RCRA Level (mg/kg)[1]**							
SW6020	Arsenic	mg/kg	100	8.75 [1.02]		9 [1.09]		10.4 [1.05]		
SW6020	Barium	mg/kg	2000	97.7 [0.306]		112 [0.327]		114 [0.314]		
SW6020	Cadmium	mg/kg	20	0.263 [0.204]		0.245 [0.218]		0.253 [0.21]		
SW6020	Chromium	mg/kg	100	14.9 [0.408]		16.6 [0.436]		16.9 [0.419]		
SW6020	Lead	mg/kg	100	10.9 [0.204]		11.5 [0.218]		18 [0.21]		
SW6020	Selenium	mg/kg	20	ND [0.51]		ND [0.545]		ND [0.524]		
SW6020	Silver	mg/kg	100	0.0712 [0.102] J		0.0906 [0.109] J		0.095 [0.105] J		
SW7471B	Mercury	mg/kg	4	0.0264 [0.0444] J		0.0357 [0.0449] J		0.0266 [0.0453] J		
SW8081B	4,4'-DDD	mg/kg		0.039 [0.0222]		0.1 [0.0564]		0.387 [0.056]		
SW8081B	4,4'-DDE	mg/kg		0.0317 [0.0222]		0.0457 [0.0564] J		0.0832 [0.056]		
SW8081B	4,4'-DDT	mg/kg		0.413 [0.0556]		0.559 [0.564] J		0.577 [0.056]		
SW8081B	Aldrin	mg/kg		ND [0.0167]		ND [0.0423]		ND [0.042]		
SW8081B	alpha-BHC	mg/kg		ND [0.0167]		ND [0.0423]		ND [0.042]		
SW8081B	alpha-Chlordane	mg/kg		ND [0.0167]		ND [0.0423]		ND [0.042]		
SW8081B	beta-BHC	mg/kg		ND [0.0167]		ND [0.0423]		ND [0.042]		
SW8081B	delta-BHC	mg/kg		ND [0.0167]		ND [0.0423]		ND [0.042]		
SW8081B	Dieldrin	mg/kg		ND [0.0222]		ND [0.0564]		ND [0.056]		
SW8081B	Endosulfan I	mg/kg		ND [0.0167]		ND [0.0423]		ND [0.042]		
SW8081B	Endosulfan II	mg/kg		ND [0.0222]		ND [0.0564]		ND [0.056]		
SW8081B	Endosulfan sulfate	mg/kg		ND [0.0222]		ND [0.0564]		ND [0.056]		
SW8081B	Endrin	mg/kg	0.4	ND [0.0222]		ND [0.0564]		ND [0.056]		
SW8081B	Endrin aldehyde	mg/kg		ND [0.0222]		ND [0.0564]		ND [0.056]		
SW8081B	Endrin ketone	mg/kg		ND [0.0556]		ND [0.141]		ND [0.14]		
SW8081B	gamma-BHC (Lindane)	mg/kg	8	ND [0.0167]		ND [0.0423]		ND [0.042]		
SW8081B	gamma-Chlordane	mg/kg		ND [0.0167]		ND [0.0423]		ND [0.042]		
SW8081B	Heptachlor	mg/kg		ND [0.0222]		ND [0.0564]		ND [0.056]		
SW8081B	Heptachlor epoxide	mg/kg		ND [0.0222]		ND [0.0564]		ND [0.056]		
SW8081B	Methoxychlor	mg/kg	200	ND [0.0222]		ND [0.0564]		ND [0.056]		
SW8081B	Toxaphene	mg/kg	10	ND [0.556]		ND [1.41]		ND [1.4]		
SW8082A	PCB-1016 (Aroclor 1016)	mg/kg		ND [0.00556]		ND [0.00564]		ND [0.0056]		
SW8082A	PCB-1221 (Aroclor 1221)	mg/kg		ND [0.00556]		ND [0.00564]		ND [0.0056]		
SW8082A	PCB-1232 (Aroclor 1232)	mg/kg		ND [0.00556]		ND [0.00564]		ND [0.0056]		
SW8082A	PCB-1242 (Aroclor 1242)	mg/kg		ND [0.00556]		ND [0.00564]		ND [0.0056]		
SW8082A	PCB-1248 (Aroclor 1248)	mg/kg		ND [0.00556]		ND [0.00564]		ND [0.0056]		
SW8082A	PCB-1254 (Aroclor 1254)	mg/kg		ND [0.00556]		ND [0.00564]		ND [0.0056]		
SW8082A	PCB-1260 (Aroclor 1260)	mg/kg		ND [0.00556]		ND [0.00564]		ND [0.0056]		
SW8082A	PCB-1262 (Aroclor 1262)	mg/kg		ND [0.00556]		ND [0.00564]		ND [0.0056]		
SW8082A	PCB-1268 (Aroclor 1268)	mg/kg		ND [0.00556]		ND [0.00564]		ND [0.0056]		
SW8151A	2,4,5-T	mg/kg			ND [0.034]		ND [0.034]		ND [0.034]	
SW8151A	2,4,5-TP (Silvex)	mg/kg	20		ND [0.034]		ND [0.034]		ND [0.034]	

Table 2
Waste Analytical Results at Building 15
2010 Spring DDT

			Location ID	B15DDTWS01	B15DDTWS01	B15DDTWS02	B15DDTWS02	B15DDTWS03	B15DDTWS03	TB001
			Sample ID	10 FCS RISO B15WS01	10 FCS RISO B15WS01	10 FCS RISO B15WS02	10 FCS RISO B15WS02	10 FCS RISO B15WS03	10 FCS RISO B15WS03	10 FCS TB001
			Lab Sample ID	1101922001	K100388301	1101922002	K100388302	1101922003	K100388303	1101922004
			Matrix	SO	SO	SO	SO	SO	SO	SO
			Sample Date	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010
			Laboratory	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA
Method	**Analyte**	**Units**	**20 × TCLP RCRA Level (mg/kg)[1]**							
SW8151A	2,4-D	mg/kg	200		ND [0.034]		ND [0.034]		ND [0.034]	
SW8151A	2,4-DB	mg/kg			ND [0.034]		ND [0.034]		ND [0.034]	
SW8151A	Dalapon	mg/kg			ND [0.034]		ND [0.034]		ND [0.034]	
SW8151A	Dicamba	mg/kg			ND [0.034]		ND [0.034]		ND [0.034]	
SW8151A	Dichlorprop	mg/kg			ND [0.034]		ND [0.034]		ND [0.034]	
SW8151A	Dinoseb	mg/kg			ND [0.034]		ND [0.034]		ND [0.034]	
SW8151A	MCPA (2-Methyl-4-chlorophenoxy acetic acid)	mg/kg			ND [6.8]		ND [6.8]		ND [6.8]	
SW8151A	MCPP (2-(2-methyl-4-chlorophenoxy) propanoic acid)	mg/kg			ND [6.8]		ND [6.8]		ND [6.8]	
SW8260B	1,1,1,2-Tetrachloroethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,1,1-Trichloroethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,1,2,2-Tetrachloroethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,1,2-Trichloroethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,1-Dichloroethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,1-Dichloroethene	mg/kg	14	ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,1-Dichloropropene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,2,3-Trichlorobenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,2,3-Trichloropropane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,2,4-Trichlorobenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,2,4-Trimethylbenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,2-Dibromo-3-chloropropane	mg/kg		ND [0.254]		ND [0.253]		ND [0.248]		ND [0.101]
SW8260B	1,2-Dibromoethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,2-Dichlorobenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,2-Dichloroethane	mg/kg	10	ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,2-Dichloropropane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,3,5-Trimethylbenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,3-Dichlorobenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,3-Dichloropropane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	1,4-Dichlorobenzene	mg/kg	150	ND [0.0636]		ND [0.0632]		ND [0.0619]		0.0503 [0.0253]
SW8260B	2,2-Dichloropropane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	2-Butanone	mg/kg	4000	ND [0.636]		ND [0.632]		ND [0.619]		ND [0.253]
SW8260B	2-Chlorotoluene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	2-Hexanone	mg/kg		ND [0.636]		ND [0.632]		ND [0.619]		ND [0.253]
SW8260B	4-Chlorotoluene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	4-Isopropyltoluene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	4-Methyl-2-pentanone	mg/kg		ND [0.636]		ND [0.632]		ND [0.619]		ND [0.253]
SW8260B	Acetone	mg/kg		ND [0.636]		ND [0.632]		ND [0.619]		ND [0.253]
SW8260B	Benzene	mg/kg	10	ND [0.0318]		ND [0.0316]		ND [0.031]		ND [0.0126]

Table 2
Waste Analytical Results at Building 15
2010 Spring DDT

			Location ID	B15DDTWS01	B15DDTWS01	B15DDTWS02	B15DDTWS02	B15DDTWS03	B15DDTWS03	TB001
			Sample ID	10 FCS RISO B15WS01	10 FCS RISO B15WS01	10 FCS RISO B15WS02	10 FCS RISO B15WS02	10 FCS RISO B15WS03	10 FCS RISO B15WS03	10 FCS TB001
			Lab Sample ID	1101922001	K100388301	1101922002	K100388302	1101922003	K100388303	1101922004
			Matrix	SO	SO	SO	SO	SO	SO	SO
			Sample Date	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010
			Laboratory	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA
Method	**Analyte**	**Units**	**20 × TCLP RCRA Level (mg/kg)[1]**							
SW8260B	Bromobenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Bromochloromethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Bromodichloromethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Bromoform	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Bromomethane	mg/kg		ND [0.509]		ND [0.506]		ND [0.495]		ND [0.202]
SW8260B	Carbon disulfide	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Carbon tetrachloride	mg/kg	10	ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Chlorobenzene	mg/kg	2000	ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Chloroethane	mg/kg		ND [0.509]		ND [0.506]		ND [0.495]		ND [0.202]
SW8260B	Chloroform	mg/kg	120	ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Chloromethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	cis-1,2-Dichloroethene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	cis-1,3-Dichloropropene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Dibromochloromethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Dibromomethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Dichlorodifluoromethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Ethylbenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Hexachlorobutadiene	mg/kg	10	ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Isopropylbenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Methylene chloride	mg/kg		ND [0.254]		ND [0.253]		ND [0.248]		ND [0.101]
SW8260B	Methyl-tert-butyl ether (MTBE)	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Naphthalene	mg/kg		ND [0.127]		ND [0.126]		ND [0.124]		ND [0.0505]
SW8260B	n-Butylbenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	n-Propylbenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	o-Xylene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	sec-Butylbenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Styrene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	tert-Butylbenzene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Tetrachloroethene (PCE)	mg/kg	14	ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Toluene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	trans-1,2-Dichloroethene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	trans-1,3-Dichloropropene	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Trichloroethene (TCE)	mg/kg	10	ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Trichlorofluoromethane	mg/kg		ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Vinyl chloride	mg/kg	4	ND [0.0636]		ND [0.0632]		ND [0.0619]		ND [0.0253]
SW8260B	Xylene, Isomers m & p	mg/kg		ND [0.127]		ND [0.126]		ND [0.124]		ND [0.0505]
SW8260B	Xylenes	mg/kg		ND [0.191]		ND [0.19]		ND [0.186]		ND [0.0758]
SW8270D	1,2,4-Trichlorobenzene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	1,2-Dichlorobenzene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		

Table 2
Waste Analytical Results at Building 15
2010 Spring DDT

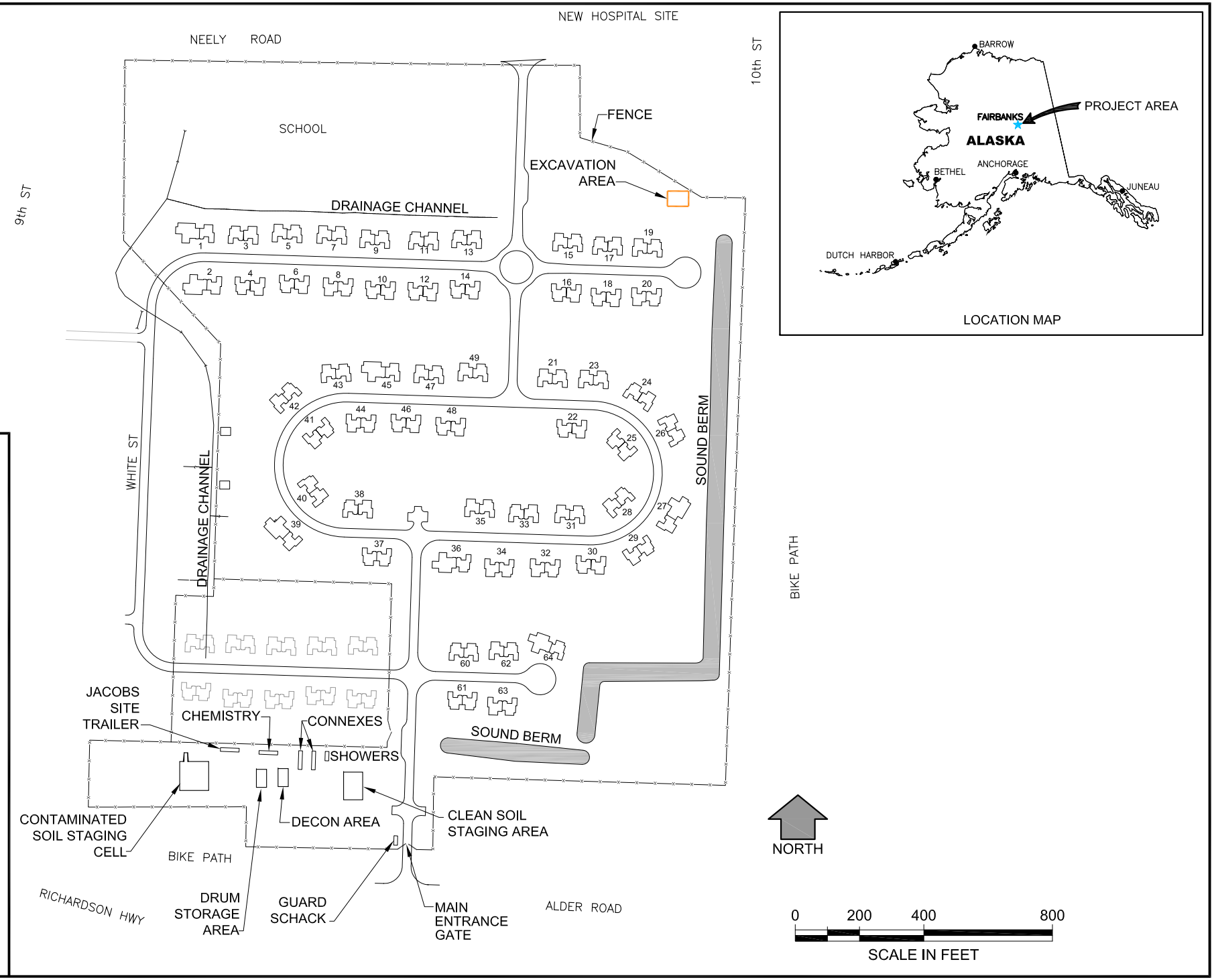
			Location ID	B15DDTWS01	B15DDTWS01	B15DDTWS02	B15DDTWS02	B15DDTWS03	B15DDTWS03	TB001
			Sample ID	10 FCS RISO B15WS01	10 FCS RISO B15WS01	10 FCS RISO B15WS02	10 FCS RISO B15WS02	10 FCS RISO B15WS03	10 FCS RISO B15WS03	10 FCS TB001
			Lab Sample ID	1101922001	K100388301	1101922002	K100388302	1101922003	K100388303	1101922004
			Matrix	SO	SO	SO	SO	SO	SO	SO
			Sample Date	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010
			Laboratory	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA
Method	**Analyte**	**Units**	**20 × TCLP RCRA Level (mg/kg)[1]**							
SW8270D	1,3-Dichlorobenzene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	1,4-Dichlorobenzene	mg/kg	150	ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2,4,5-Trichlorophenol	mg/kg	8000	ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2,4,6-Trichlorophenol	mg/kg	40	ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2,4-Dichlorophenol	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2,4-Dimethylphenol	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2,4-Dinitrophenol	mg/kg		ND [3.34]		ND [3.4]		ND [16.9]		
SW8270D	2,4-Dinitrotoluene	mg/kg	2.6	ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2,6-Dinitrotoluene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2-Chloronaphthalene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2-Chlorophenol	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2-Methyl-4,6-dinitrophenol	mg/kg		ND [2.23]		ND [2.26]		ND [11.3]		
SW8270D	2-Methylnaphthalene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2-Methylphenol (o-Cresol)	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2-Nitroaniline	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	2-Nitrophenol	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	3,3'-Dichlorobenzidine	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	3-Methylphenol/4-Methylphenol Coelution	mg/kg		ND [1.11]		ND [1.13]		ND [5.65]		
SW8270D	3-Nitroaniline	mg/kg		ND [0.557]		ND [0.566]		ND [2.82]		
SW8270D	4-Bromophenyl phenyl ether	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	4-Chloro-3-methylphenol	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	4-Chloroaniline	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	4-Chlorophenyl phenyl ether	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	4-Nitroaniline	mg/kg		ND [3.34]		ND [3.4]		ND [16.9]		
SW8270D	4-Nitrophenol	mg/kg		ND [1.11]		ND [1.13]		ND [5.65]		
SW8270D	Acenaphthene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Acenaphthylene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Anthracene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Azobenzene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Benzo(a)anthracene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Benzo(a)pyrene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Benzo(b)fluoranthene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Benzo(g,h,i)perylene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Benzo(k)fluoranthene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Benzoic acid	mg/kg		ND [1.67]		ND [1.7]		ND [8.47]		
SW8270D	Benzyl alcohol	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Benzyl butyl phthalate	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		

Table 2
Waste Analytical Results at Building 15
2010 Spring DDT

			Location ID	B15DDTWS01	B15DDTWS01	B15DDTWS02	B15DDTWS02	B15DDTWS03	B15DDTWS03	TB001
			Sample ID	10 FCS RISO B15WS01	10 FCS RISO B15WS01	10 FCS RISO B15WS02	10 FCS RISO B15WS02	10 FCS RISO B15WS03	10 FCS RISO B15WS03	10 FCS TB001
			Lab Sample ID	1101922001	K100388301	1101922002	K100388302	1101922003	K100388303	1101922004
			Matrix	SO	SO	SO	SO	SO	SO	SO
			Sample Date	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010	4/22/2010	4/21/2010
			Laboratory	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA	SGSA
Method	**Analyte**	**Units**	**20 × TCLP RCRA Level (mg/kg)[1]**							
SW8270D	bis-(2-Chloroethoxy)methane	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	bis-(2-Chloroethyl)ether	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	bis(2-Chloroisopropyl)ether	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	bis-(2-Ethylhexyl)phthalate	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Carbazole	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Chrysene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	o-Xylene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Dibenzofuran	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Diethyl phthalate	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Dimethyl phthalate	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Di-n-butyl phthalate	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Di-n-octyl phthalate	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Fluoranthene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Fluorene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Hexachlorobenzene	mg/kg	2.6	ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Hexachlorobutadiene	mg/kg	10	ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Hexachloroethane	mg/kg	60	ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Indeno(1,2,3-cd)pyrene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Isophorone	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Naphthalene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Nitrobenzene	mg/kg	40	ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	n-Nitrosodimethylamine	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	n-Nitrosodi-n-propylamine	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	n-Nitrosodiphenylamine	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Pentachlorophenol	mg/kg	2000	ND [2.23]		ND [2.26]		ND [11.3]		
SW8270D	Phenanthrene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Phenol	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		
SW8270D	Pyrene	mg/kg		ND [0.278]		ND [0.283]		ND [1.41]		

Notes:
[1] = 40 CFR 261.24 Table 1 (McCoy 2009)
J = Analyte was present but the reported value may not be accurate or precise.
[ ] = Limit of Quantitation
mg/kg = milligram per kilogram

FIGURES



JACOBS

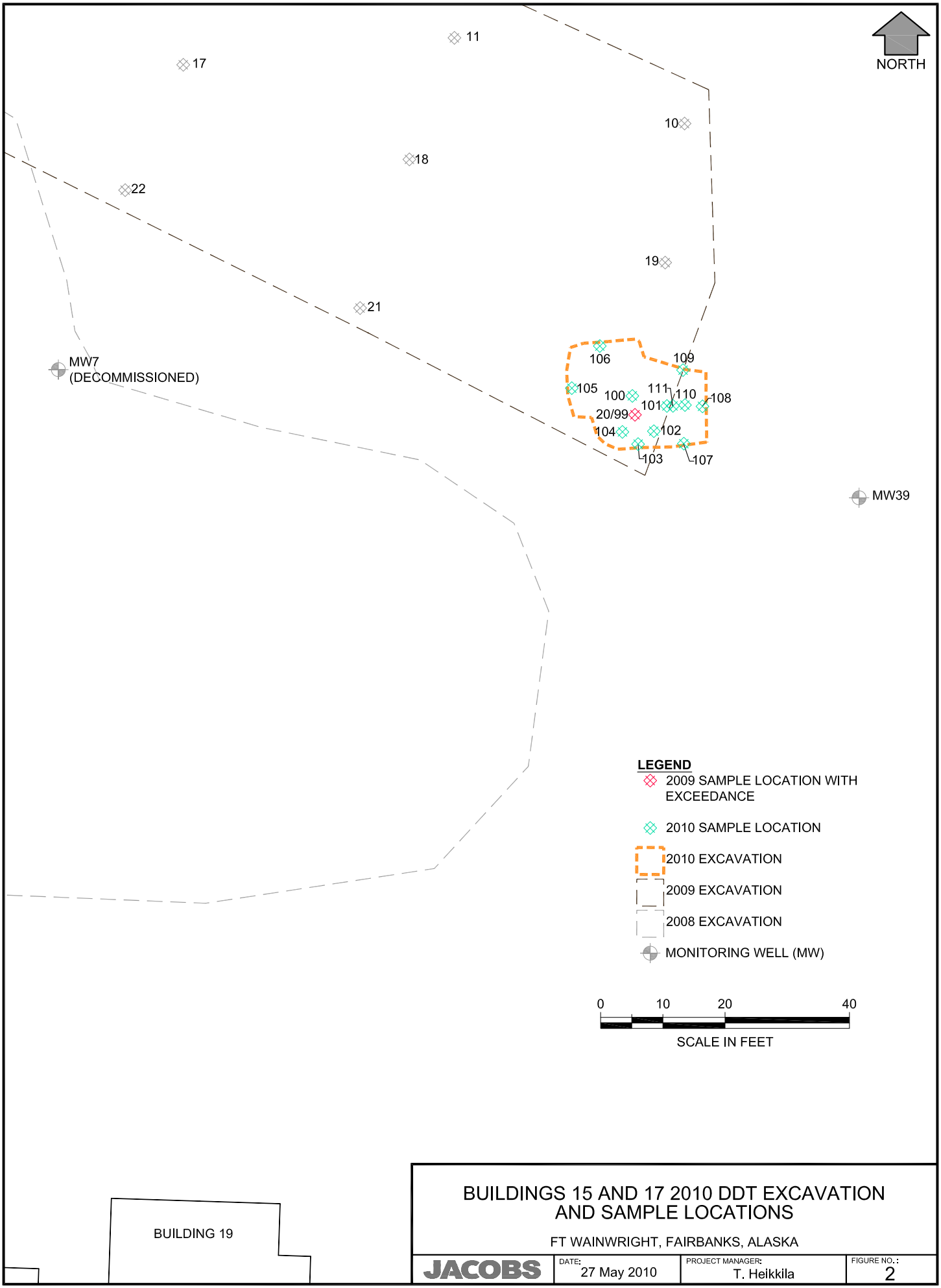
DATE: 28 May 2010

PROJECT MANAGER: S. Belway

FIGURE NO.: 1

BUILDINGS 15 AND 17 LOCATION AND VICINITY MAPS

FORMER COMMUNICATIONS SITE, FAIRBANKS, ALASKA



BUILDINGS 15 AND 17 2010 DDT EXCAVATION AND SAMPLE LOCATIONS

FT WAINWRIGHT, FAIRBANKS, ALASKA

JACOBS	DATE: 27 May 2010	PROJECT MANAGER: T. Heikkila	FIGURE NO.: 2

G:\Autocad\ERS-URV\05F50701\2010 Taku\2010 B15_17 DDT TM\Fig 2 Bldg 15_17-2010.dwg Jun 10,2010 - willisms

ATTACHMENT 1

Data Quality Evaluation

Fort Wainwright, Taku Gardens
Building 15 Pesticide Confirmation Sampling 2010
Data Quality Evaluation Report

Introduction

The objective of this Data Quality Evaluation (DQE) report is to assess the data quality of analytical results for soil samples collected from the Building 15 site at the Taku Gardens housing development at Fort Wainwright, Alaska. Samples were collected in support of the Fort Wainwright Remedial Investigation at the Taku Gardens Former Communications Site. Individual method requirements and guidelines from the *Quality Assurance Program Plan, Taku Gardens Former Communications Site, Fort Wainwright, Alaska*, July 2007 (Taku QAPP) were used in this assessment.

This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers 13 normal samples and two field duplicate (FD) samples. Samples were collected between April 2 and April 8, 2010. A list of samples associated with this DQE is included at the end of this DQE. The confirmation and waste sample results were reported as three sample delivery groups (SDG) presented in Table 1. Samples for waste disposal purposes are not included in this DQE but a data review has been completed and presented in the ADEC checklists. The analyses were performed by SGS North American Inc. in Anchorage, Alaska (SGS). Samples were collected and hand-delivered to an SGS packaging office in Fairbanks, Alaska for overnight shipment to SGS in Anchorage, Alaska.

Table 1
Sample Delivery Groups

SDG (Confirmation Samples)
1100899
1101381
SDG (Waste Samples)
1101922

One method, SW8081B, was used to analyze the environmental samples. All samples were analyzed for the following analytes/method presented in Table 2:

Table 2
Analytical Parameters

Parameter	Method
Pesticides (DDT, DDD and DDE only)	SW8081B

All of the data were validated per Level III data validation requirements, which includes a review of: (1) the chain-of-custody documentation; (2) holding-time compliance; (3) the required quality control (QC) samples at the specified frequencies; (4) method blanks; (5) laboratory control samples (LCS); (6) surrogate spike recoveries for organic analyses; (7) matrix spike/matrix spike duplicate (MS/MSD) samples; and (8) initial and continuing calibration information and other method-specific criteria as defined by the Taku QAPP.

Field samples were also reviewed to ascertain field compliance and data quality issues. This included a review of FD samples.

Data flags were assigned according to the Taku QAPP. These flags, as well as the reason for each flag, are entered into the electronic database. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will be only one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are those listed in the Taku QAPP and are defined below:

- J = Analyte was present but the reported value may not be accurate or precise.
- J+ = Analyte was present but the reported value may be biased high.
- J- = Analyte was present but the reported value may be biased low.
- R = The result was rejected due to deficiencies in the ability to analyze the sample and meet QC criteria.
- U = Analyte was analyzed for but not detected at the specified detection limit.
- UJ = Analyte was not detected. However, the reported detection limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

The overall summaries of the data validation findings are contained in the following sections. No data required qualification due to this assessment.

Also included as documentation of data validation findings are the Alaska Department of Environmental Conservation Laboratory Data Review Checklists. A checklist is provided for each laboratory SDG. The checklists can be found in Exhibit 2 to this Appendix.

Holding Times

All holding-time criteria were met.

Calibration

All initial and continuing calibration criteria were met.

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination.

Field Blanks

Field blanks were not collected with this event.

Field Duplicates

Two FD sets were collected. Precision was acceptable.

Matrix Spike Samples

The results of MS/MSD analyses provide information about the possible influence of the matrix on either accuracy or precision of the measurements. The field crew designated samples for MS/MSD analysis.

Spiked analytes were not recovered in the MS/MSD of sample 10-FW-A-EXBLDI 5-1 07-1.5 due to sample dilution. No data were qualified.

Surrogates

Surrogates were added to all samples and laboratory QC samples. All surrogate recoveries met criteria for undiluted samples.

Several samples were analyzed diluted and surrogates were not recovered; no data were qualified. Surrogates were not recovered in samples 10-FW-A-EXBLDI 5-1 07-1.5, 10-FW-A-EXBLDI 5-1 07-1.5 B, 10-FW-A-EXBLDI 5-1 08-1.5 and 10-FW-A-EXBLDI 5-1 09-1.5 due to sample dilution.

Laboratory Control Samples

LCSs were analyzed and all acceptance criteria were met.

Chain of Custody

No discrepancies noted.

Overall Assessment

The final activity in the DQE was an assessment of whether the data meet the data quality objectives. The goal of this assessment was to demonstrate that a sufficient number of representative samples were collected and prove that the resulting analytical data can be used to support the decision making process. The precision, accuracy, representativeness,

completeness and comparability were addressed in the Taku QAPP. The following summary highlights the data evaluation findings for the above defined events:

1. The completeness goal for this event is 90 percent per matrix/method/analyte combination. Completeness for each matrix/method/analyte combination was met.
2. No data were qualified.
3. Overall precision and accuracy of the data, as measured by field and laboratory QC indicators, suggest that data are usable for project objectives.

EXHIBIT 1

Samples Associated with DQE

Table E1 – Samples Associated with the DQE

Sample ID	Sample Type	Collection Date
10-FW-A-EXBLD15-99_03 B	FD	02-Apr-10
10-FW-A-EXBLD15-107-1.5 B	FD	08-Apr-10
10-FW-A-EXBLD15-99_03	N	02-Apr-10
10-FW-A-EXBLD15-106_1.5	N	02-Apr-10
10-FW-A-EXBLD15-105_1.5	N	02-Apr-10
10-FW-A-EXBLD15-104_03	N	02-Apr-10
10-FW-A-EXBLD15-103_1.5	N	02-Apr-10
10-FW-A-EXBLD15-102_03	N	02-Apr-10
10-FW-A-EXBLD15-101_1.5	N	02-Apr-10
10-FW-A-EXBLD15-100_03	N	02-Apr-10
10-FW-A-EXBLD15-111-03	N	08-Apr-10
10-FW-A-EXBLD15-110-03	N	08-Apr-10
10-FW-A-EXBLD15-109-1.5	N	08-Apr-10
10-FW-A-EXBLD15-108-1.5	N	08-Apr-10
10-FW-A-EXBLD15-107-1.5	N	08-Apr-10

Notes:
FD= Field duplicate
N = Normal sample

EXHIBIT 2

ADEC Checklists

Laboratory Data Review Checklist

Completed by:	Jamie Beckett
Title:	Staff Scientist
Date:	May 07, 2010
CS Report Name:	
Report Date:	May 01, 2010
Consultant Firm:	CH2M Hill
Laboratory Name:	SGS North America Inc. – Alaska Division
Laboratory Report Number:	1100899
ADEC File Number:	
ADEC RecKey Number:	

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ☑ Yes ☐ No Comments:

   SGS North America Inc. – Alaska Division

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ☑ Yes ☐ No Comments:

   NA

2. Chain of Custody (COC)

   a. COC information completed, signed, and dated (including released/received by)?

   ☑ Yes ☐ No Comments:

   b. Correct analyses requested?

   ☑ Yes ☐ No Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

☑ Yes ☐ No Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

☑ Yes ☐ No Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

☑ Yes ☐ No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

☑ Yes ☐ No Comments:

e. Data quality or usability affected? Explain.

Comments:

All data are usable.

4. Case Narrative

a. Present and understandable?

☑ Yes ☐ No Comments:

b. Discrepancies, errors or QC failures identified by the lab?

☑ Yes ☐ No Comments:

Elevated reporting limits due to high target analyte concentrations requiring dilution for method SW8081A.
Samples 10-FW-A-EXBLDI 5-1 07-1.5, 10-FW-A-EXBLDI 5-1 07-1.5MS, 10-FW-A-EXBLDI 5-1 07-1.5MSD, 10-FW-A-EXBLDI 5-1 07-1.5 B, and 10-FW-A-EXBLDI 5-1 08-1.5 decachlorobiphenyl and tetrachloro-m-xylene (surrogates) recoveries do not meet QC criteria due to sample dilution.
10-FW-A-EXBLDI 5-1 09-1.5, decachlorobiphenyl (surrogate) recovery does not meet QC criteria due to sample dilution.
Samples 10-FW-A-EXBLDI 5-1 07-1.5MS and 10-FW-A-EXBLDI 5-1 07-1.5MSD, MS/MSD recoveries do not meet QC criteria due to sample dilution.

c. Were all corrective actions documented?

☑ Yes ☐ No Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

All data are usable.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

☑ Yes ☐ No Comments:

b. All applicable holding times met?

☑ Yes ☐ No Comments:

c. All soils reported on a dry weight basis?

☑ Yes ☐ No Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

☑ Yes ☐ No Comments:

e. Data quality or usability affected?

Comments:

All data are usable.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☑ Yes ☐ No Comments:

ii. All method blank results less than PQL?

☑ Yes ☐ No Comments:

iii. If above PQL, what samples are affected?

Comments:

NA

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No Comments:

NA

v. Data quality or usability affected? Explain.

Comments:

All data are usable.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

☑ Yes ☐ No Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐ Yes ☐ No Comments:

NA

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☑ Yes ☐ No Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☑ Yes ☐ No Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No Comments:

NA

vii. Data quality or usability affected? (Use comment box to explain)

Comments:

All data are usable.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

☑ Yes ☐ No Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☑ Yes ☐ No Comments:

Samples 10-FW-A-EXBLDI 5-1 07-1.5, 10-FW-A-EXBLDI 5-1 07-1.5 B, and 10-FW-A-EXBLDI 5-1 08-1.5 decachlorobiphenyl and tetrachloro-m-xylene (surrogates) recoveries do not meet QC criteria due to sample dilution. 10-FW-A-EXBLDI 5-1 09-1.5, decachlorobiphenyl (surrogate) recovery does not meet QC criteria due to sample dilution.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No Comments:

No data required qualification.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

All data are usable.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (if not, enter explanation below.)

☐ Yes ☐ No Comments:

NA

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☐ Yes ☐ No Comments:

NA

iii. All results less than PQL?

☐ Yes ☐ No Comments:

NA

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? Explain.

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☑ Yes ☐ No Comments:

ii. Submitted blind to lab?

☑ Yes ☐ No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☑ Yes ☐ No Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

All data are usable.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below.)

☐ Yes ☐ No ☒ Not Applicable

i. All results less than PQL?

☐ Yes ☐ No Comments:

NA

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? Explain.

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☒ Yes ☐ No Comments:

Samples 10-FW-A-EXBLDI 5-1 07-1.5MS and 10-FW-A-EXBLDI 5-1 07-1.5MSD, MS/MSD recoveries did not meet QC criteria due to sample dilution. No data were qualified.

Laboratory Data Review Checklist

Completed by:	Jamie Beckett		
Title:	Staff Scientist	Date:	May 07, 2010
CS Report Name:		Report Date:	May 01, 2010
Consultant Firm:	CH2M HILL		
Laboratory Name:	SGS North America Inc. – Alaska Division	Laboratory Report Number:	1101381
ADEC File Number:		ADEC RecKey Number:	

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

SGS North America Inc. – Alaska Division

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

( ) Yes ( ) No ( ) NA (Please explain) Comments:

No samples were subcontracted.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Correct analyses requested?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No ( ) NA (Please explain) Comments:

No discrepancies.

e. Data quality or usability affected? (Please explain)

Comments:

All data are usable.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

SW8081A CCV recovery is biased high for 4,4'-DDD and 4,4'-DDT. Associated samples are not detected above the LOQ for this analyte. Therefore, data is not qualified or affected.

c. Were all corrective actions documented?

( ) Yes ( ) No ( ) NA (Please explain) Comments:

None required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

All data are usable

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. All applicable holding times met?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. All soils reported on a dry weight basis?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Elevated reporting limits due to dark extracts requiring dilution for method SW8081A. Data not affected

e. Data quality or usability affected? (Please explain)

Comments:

All data are usable.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

( ) Yes ( ) No ( ) NA (Please explain) Comments:

Yes

ii. All method blank results less than PQL?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

iii. If above PQL, what samples are affected? Comments:

NA

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ○ NA (Please explain) Comments:

No affected samples.

v. Data quality or usability affected? (Please explain) Comments:

All data are usable.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples?

○ Yes ○ No ○ NA (Please explain) Comments:

No metals analyzed.

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ○ NA (Please explain) Comments:

No affected data.

vii. Data quality or usability affected? (Please explain) Comments:

All data are usable.

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ○ NA (Please explain) Comments:

No failed surrogates.

iv. Data quality or usability affected? (Use the comment box to explain.). Comments:

All data are usable.

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

○ Yes ○ No ◉ NA (Please explain.) Comments:

No volatiles collected.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

○ Yes ○ No ◉ NA (Please explain.) Comments:

iii. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Submitted blind to lab?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ○ No ○ NA (Please explain) Comments:

No data affected.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ○ NA (Please explain) Comments:

No

i. All results less than PQL?

○ Yes ○ No ○ NA (Please explain) Comments:

No equipment blank collected.

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

○ Yes ○ No ○ NA (Please explain) Comments:

Reset Form

Laboratory Data Review Checklist

Completed by: Angela Elmore

Title: Project Chemist – Jacobs Engineering Date: 10/13/10

CS Report Name: Taku Gardens DDT Hotspot Report Date: October 2010

Consultant Firm: Jacobs Engineering

Laboratory Name: SGS Laboratory Report Number: 1101922

ADEC File Number: ADEC RecKey Number:

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      ●Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No ●NA (Please explain.) Comments:

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ●Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      ●Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ●Yes □ No □NA (Please explain.) Comments:

      Temperatures are documented on the cooler receipt forms and were within temperature requirements.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

●Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

●Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition according to the cooler receipt forms.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

□Yes □ No ●NA (Please explain.) Comments:

There were no discrepancies according to the cooler receipt and case narrative.

e. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability was not affected.

4. Case Narrative

a. Present and understandable?

●Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

●Yes □ No □NA (Please explain.) Comments:

There were several SW8260 analytes that were biased high in the ICV
There were several SW8270 analytes that were biased high in the CCV
Heptachlor method SW8081 was biased high in 2 CCVs.
In all cases above, samples were nondetect for these analytes.
Please see below for the remainder of the items listed in the case narrative.

c. Were all corrective actions documented?

□Yes □ No ●NA (Please explain.) Comments:

Corrective actions were not necessary

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data was not affected for the high biased QC since all associated samples were nondetect for these analytes.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      ●Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      ●Yes □ No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      ●Yes □ No □NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      ●Yes □ No □NA (Please explain.) Comments:

SW8081 LOQs are elevated due to dilutions required for high concentrations of 4,4'-DDT. SW8270 LOQs are elevated for sample 10FCS RISO B15WS03 due to dilutions required for dark extracts. Detection limits are below 20 times RCRA criteria.

   e. Data quality or usability affected?
      Comments:

Data quality and usability is not affected.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      ●Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      ●Yes □ No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

NA

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      □Yes □ No ●NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability was not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

●Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

●Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

●Yes □ No □NA (Please explain.) Comments:

All LCS recoveries were within DoD QSM limits. There were several SW8081 MS/MSD recoveries outside criteria but these samples required dilutions greater than five due high levels of DDT. Therefore the data is not qualified. All other MS/D recoveries were within DoD criteria.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

●Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No samples were affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

□Yes □ No ●NA (Please explain.) Comments:

The SW8081 MS/D parent sample was not qualified because the dilution factors were greater than five and the spike concentrations were diluted out.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Data quality and usability was not affected.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
●Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
●Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No ●NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Data quality and usability was not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
●Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
●Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?
□Yes ● No □NA (Please explain.) Comments:

1,4-Dichlorobenzene had a detection in trip blank 10 FCS TB001.

iv. If above PQL, what samples are affected?

Comments:

All associated samples are nondetect for 1,4-Dichlorobenzene.

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability was not affected.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

□Yes ● No □NA (Please explain.) Comments:

A duplicate was not submitted with the waste samples.

ii. Submitted blind to lab?

□Yes □ No ●NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes □ No ●NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality is minimally affected since the data is for waste purposes.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No ●NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No ●NA (Please explain.) Comments:

ii. If above PQL, what samples are affected?

Comments:

iii. Data quality or usability affected? (Please explain.)

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      ●Yes □ No □NA (Please explain.) Comments:

EXHIBIT 3

Laboratory Deliverables (on CD only)

ATTACHMENT 2

Logbooks

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

ALL-WEATHER
ENVIRONMENTAL FIELD BOOK

Name Jacobs

Address

Phone 907-356-1280

Project Taku Gardens

This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

Specifications for this book:

Page Pattern		Cover Options	
Left Page	Right Page	Polydura Cover	Fabrikoid Cover
Columnar	1/4" Grid	Item No. 550	Item No. 550F

CONTENTS

Reference Page Index

CONTENTS

PAGE	REFERENCE	DATE

Location _____ Date _____

Project / Client _____

Location _____ Date _____

Project / Client _____

Location Taku BLD 15 Date 3-30-10

Project / Client Taku DOT Hotspot / USACE

8:00 Chemtrack mobilized to the site. They are to continue mobilizing equipment to the site [loader, heaters]

1:00 Safety Orientation - 3 @ Chemtrack 3 @ Jacobs.

2:00 ~~Began~~ Marked DOT hotspot location using both swing ties and garmin hand held GPS.

Began snow removal @ DOT hotspot and area surrounding it for staging.

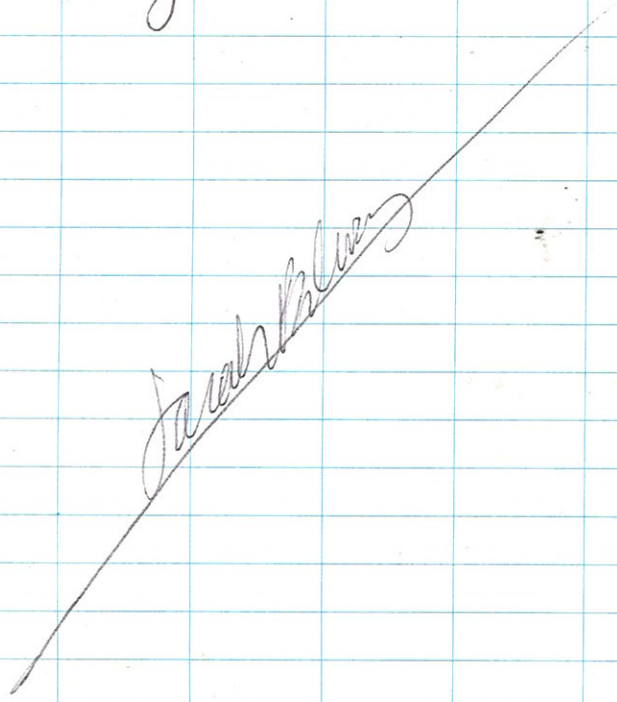
Kah

Location Taku BLD 15 Date 3/31/10

Project / Client Taku DOT Hotspot. / USACE

430 Began placing glycol filled poly lines in ground ≈ 15'x15'. Covered w/ heat blankets. [Conund E1100 Heater]

610 Crew stopped for the day.



Location Taku BLD 15 Date 3-31-10

Project / Client Taku DOT Hotspot / USACE

8:00 Tailgate meeting w/ Chemtrack (3) and Jacobs (3)

Crew set up area w/ 10 mil HDPE Liner and prepared to fill supersacks

- Removed ground heat

9:55 Calibrated PID (MiniRae 2000) 0.0/101ppm

1000 Started excavating in North side of 10x10 spot w/ Hitachi 160 Exc.

10:15	FS #1 (≈6")	.1 ppm
10:25	FS #2 (≈6")	0.1 ppm
10:40	FS #3 (≈6")	0.4 ppm

- Smell fuel fumes from equipment (ambient air ≈ 0.2 ppm)

10:30 2-55 (Super Sack)

10:38 ~~3/31~~ 3.155

Location Taku BLD15 Date 3/31/10

Project / Client Taku DDT Hotspot / USACE

10:50 Hit frozen ground at 6"

– 1 SS filled

= Total 4 Super Sacks

10:50 Excavated 11" × 12' × 6"

11:00 Re-applied heat to ground

11:15 Went back to office

≈15:15 Removed heat (blanket & hoses)

15:27 Begin excavating again

15:28 FS #4 (≈12") 0.0 ppm

15:43 FS #5 (≈12") 0.0 ppm

15:35 1 Super Sac Filled ~~15:~~ KAK 4/6/10

Location Taku BLD15 Date 3/31/10

Project / Client Taku DDT Hotspot / USACE

15:40 1 Super Sack Filled

15:47 1 Super Sack Filled

15:47 Below included morning excav

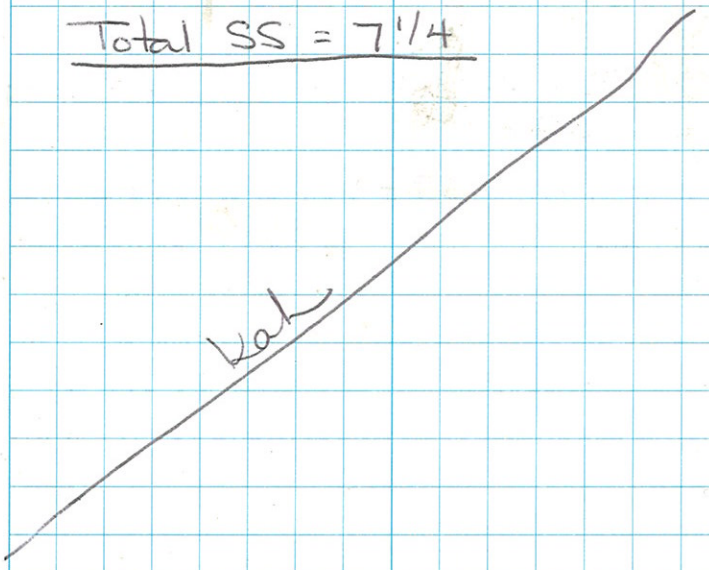
Total Excav 11' × 12' × 13"

16:04 1/4 Super Sack Filled

16:20 Re-applied heat to ground

Went back to office

Total SS = 7 1/4



Location Taku BLD 15 Date 3/31/10 4/01/10

Project / Client Taku DOT Hotspot / USACE

0800 Tailgate Meeting - 3 Cherokee 3 Tacobs

0820 Calibrated PID, MiniRae 2000
ambient air = 0.0 ppm
isobutylene = 100 ppm

0830 Removed heating from excavation ground.

0845 Pete scans site (Magnetometer)

0850 Begin Excavation

0855 FS # 1 (≈24") 0.0 ppm

0910 FS # 2 (≈24") 0.0 ppm

0920 FS # 3 (≈24") 0.1 ppm

0930 FS # 4 (≈24") 0.1 ppm

0935 Excavated 11' × 12' × 24" (2')
3/4 SS filled (1/4 from 3/31/10
4 SS filled
1 SS filled
1/2 SS filled

Total SS (day) 6 1/4

Total SS (2day) 13 1/4

Location Taku BLD 15 Date 4/01/10

Project / Client Taku DOT Hotspot / USACE

≈09:45 Re-applied heat to ground

	Labeled Super Sacks	Date	Depth
1)	SS 10 FCS BLD 15 SS01	3/31/10	0-6"
2)	02		0-6"
3)	03		6-12"
4)	04		6-12"
5)	05		0-6"
6)	06		0-6"
7)	07	3/31/10	6-12"
8)	08	4/01/10	1-2'
9)	09		1-2'
10)	10		1-2'
11)	11		1-2'
12)	12	3/31/10	1-2'
13)	13	4/01/10	1-2'
14)	14	4/01/10	2-2½'
15)	15	4/01/10	2-2½'
16)	16		2-2½'
17)	17		2-2½'
18)	18	4/01/10	2-2½'
19)	19	4/02/10	2½-3'
20)	20		
21)	21		

Cont on pg 15

Location Taku BLD 15 Date 4/01/10

Project / Client Taku DOT Hotspot / USACE

1525 Began Excavation

1529 FS#5 (≈30") 0.0ppm

1540 FS#6 (≈30") 0.0ppm

1550 FS#7 (≈30") 0.0ppm

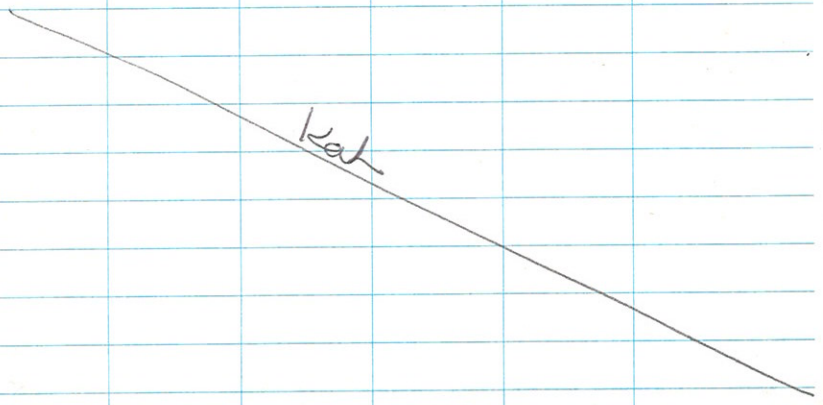
Filled 4 3/4 Super Sacks

* #17 (prev page) was filled 3/4 full on 4/01/10 2-2½'

Total SS = 17 3/4

1600 Finished excavation (for the day)
Excavated 11' x 12' x 30" (2.5 ft)

1605 Re-applying heat to ground



Location Taku BLD 15 Date 04/02/10

Project / Client Taku DOT Hotspot / USACE

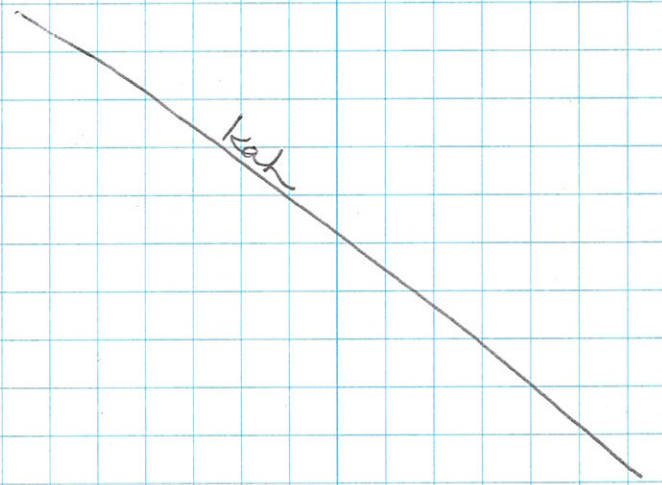
0715 K.BLOOM + K.MCGOVERN ARRIVE ONSITE AND RECEIVE SITE ORIENTATION

0730 SET-IN BASE STATION SETUP

HI = 123.6 cm

HI = 4.05 ft

0900 BASE STATION RUNNING @ TAKU 1. SET-UP ROVER.



Location Taku - BLD15 Date 4/02/10

Project / Client USACE

0800 Tailgate Meeting / Safety
Kelly McGovern & Katie Bloom arrived to survey & sample.

0815 Calibrated PID MiniRae 2000
0.0/100 ppm

≈0850 Began Excavation

0855 FS #1 (≈3') 0.0 ppm
0905 FS #2 (≈3') 0.0 ppm
0915 FS #3 (≈3') 0.0 ppm

Filled Super Sack #T18 kal 4/02/10
(pg 11) partially 3/4 filled on 4/01/10

0905 Filled Super Sack (19)

0911 Filled Super Sack (20)

0915 Filled Super Sack (21)

Location Taku - Bld 15 Date 4/02/10

Project / Client USACE

cont from page 11

	Labeled Super Sacks	Date	Depth
4/02/10 kal			
22)	10 FCSBLD15SS22	4/02/10	2½-3'
23)	↓ 23	↓	↓

continued on page 21

10 FCSBLD15SS23 Contains plastic protective grocery cover.

0925 Finished Excavation to a depth of 3'

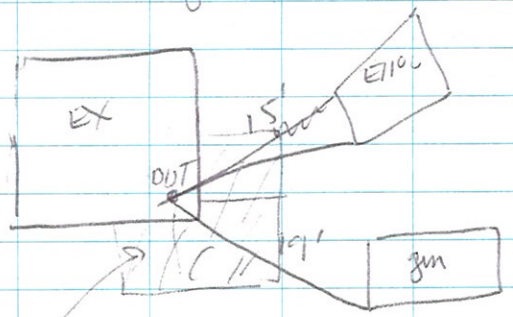
11' x 12' x 36" (3')

0945 Survey crew on-site located DDT hotspot. Surveyed location is off of our swing the location. It is located w/in the SE corner of our excavation

Location Taku BLD 15 Date 4/02/10

Project / Client DDT Hotspot / USACE

Collected measurements from equipment.



0955 Begin excavating ~~no~~ Real 4/02/10 re-calculated excavation point (area)

1130 Excavated (frozen) soil to 3 feet and started filling supersacks

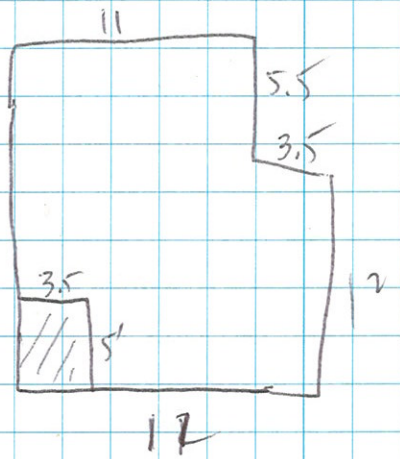
Location Taku BLD 15 Date 4/02/10

Project / Client DDT Hotspot / USACE

1300 Filled supersacks 10FCS BLD 15 SS 24 - 37

1330 Collected field screens from supersacks (0-3')

FS	#4	0.0 PPM
	#5	0.1 PPM
	#6	0.0 PPM



1430 excavated a few inches from the south side & filled 1 supersack (38)

Location Taku BLD15 Date 4/02/10

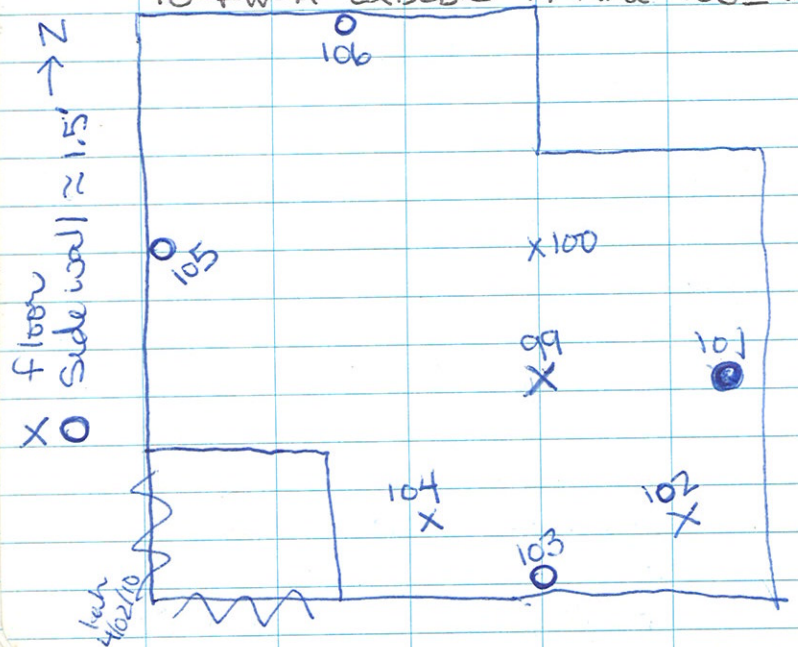
Project / Client DDT Hotspot / USACE

1500 Prepare for Analytical Sampling

Samplers: Katie Bloom
Kelly McGovern
Kari Hagen

1510 Kelly verifies sample location (09-FWA-EXBLD15-20_1)

Appox. Sampling Locations
10-FW-A-EXBLD15-99 thru -106_XX



Location Taku BLD15 Date 4/02/10

Project / Client DDT Hotspot / USACE

time Sample ID (drawing on prev page)

1520 10-FW-A-EXBLD15-99-03 MS/MSD 2-4oz GA
- location same as 2009 sample 09-FWA-EXBLD15-20_1

1520 10-FW-A-EXBLD15-99_03B
- field duplicate (same location as above. 1x4oz GA
* brown sand, no odor, soil is slightly frozen

1530 10-FW-A-EXBLD15-100_03
* brown sand, no oder, slightly frozen 1x4oz GA

1540 10 FWA-A-EXBLD15-101_1.5 kari 4/02/10
* brown sand, no odor, frozen 1x4oz GA

1546 10-FW-A-EXBLD15-102_03
* brown sand, no odor, slightly frozen 1x4oz GA

1550 COLLECT SAMPLE 10-FW-A-EXBLD15-103_1.5
* BROWN SAND, NO ODOR, FROZEN
COLLECT 1x4oz AMBER
ANALYSIS SW8081A (DDT, DDE, DDD ONLY)

Location Taku BLD15 Date 4/02/10

Project / Client DDT Hotspot / USACE

1558 COLLECT SAMPLE 10-FW-A-EXBLD15-104-3

* BROWN SAND, NO ODOR, FROZEN

COLLECT 1 X 4 oz AMBER

ANALYSIS SW8081A (DDT, DDE, DDD)

1604 COLLECT SAMPLE 10-FW-A-EXBLD15-105-1.5

* BROWN SAND, NO ODOR, DRY

COLLECT 1 X 4 oz AMBER

SW8081A (DDT, DDE, DDD)

1606 COLLECT SAMPLE 10-FW-A-EXBLD15-106-1.5

* BROWN SAND, NO ODOR, DRY

COLLECT 1 x 4 oz AMBER

SW8081A (DDT, DDE, DDD)

1610 COLLECT SURVEY DATA FOR 8 SAMPLE LOCATIONS. & cleaned up site.

16:35 arrived back at trailer to prepare cooler for shipment.

Location Taku BLD15 Date 4/02/10

Project / Client DDT Hotspot / USACE

COC # 2010FCSRI001

17 20 Cooler ID: Go Crazy was taken to AK Air with Kelly McGovern & Katie Bloom going to Anchorage for delivery to SGS on Monday 4/05/10. Kelly may deliver Cooler on Sat. 4/03/10.

continued from pg 15

(Continued excavation of frozen soil after survey correction)

Labeled Super Sacks	Date	Depth
24) 10FCSBLD15SS24	4/02/10	0-3'
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		

Location Taku BLD15 Date 4/02/10

Project / Client DOT Hotspot / USACE

	Labeled SuperSack	Date	Depth
39)	10FCSBLD15SS39	4/02/10	0-3'

4/07/10 below

40)	10FCSBLD15SS40	41	4/07/10	0-1'
41)	↓	42	↓	↓
42)				

4/08/10 below

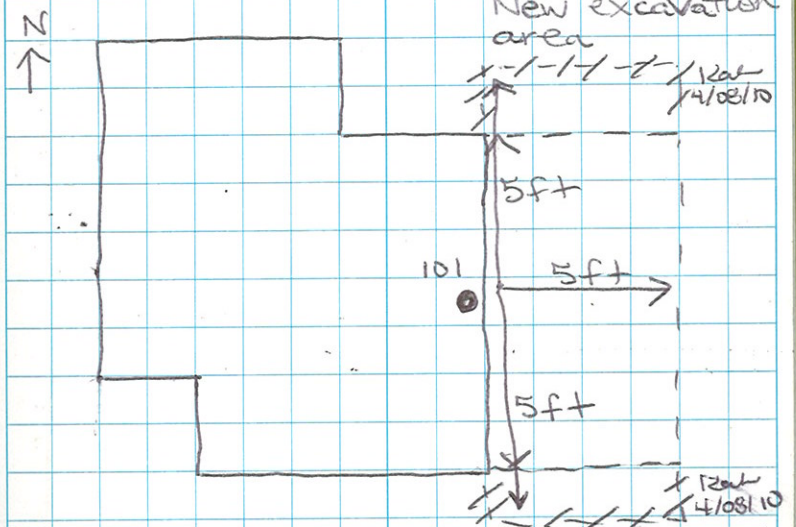
43)	10FCSBLD15SS43	44	4/08/10	1-2'
44)	↓	45	↓	↓
45)		46		
46)		47		2-3'
47)		48		
48)		49		
49)		50		
50)		51		
51)				

Location Taku BLD15 Date 4/07/10

Project / Client DOT Hotspot / USACE

0800 Tailgate meeting - 3 Chemtrak
3 Jacobs

0815 Chemtrak is at site applying heat to ground on east side of excavation



Sample 10FWA-EXBLD15-101_1.5 results above project screening level (PSL) for 8081B DDT (2.88 39 mg/kg) PSL 2.1 mg/kg
DDD (4.48 mg/kg) PSL 3.0 mg/kg

Location Taku BLD 15 Date 4/07/10

Project / Client DOT Hotspot / USACE

1555 Calibrated PID MiniRae 2000
0.00 / 100 ppm

1600 Removed blankets & heat from ground

1610 Pete scans ground for UXO with Magnetic locator Schonstedt Model GA 52 CX

1620 Began Excavation

Super Sack entries on page 22

1625 FS #1 (= 12") 0.0 ppm
FS #2 (= 12") 0.0 ppm

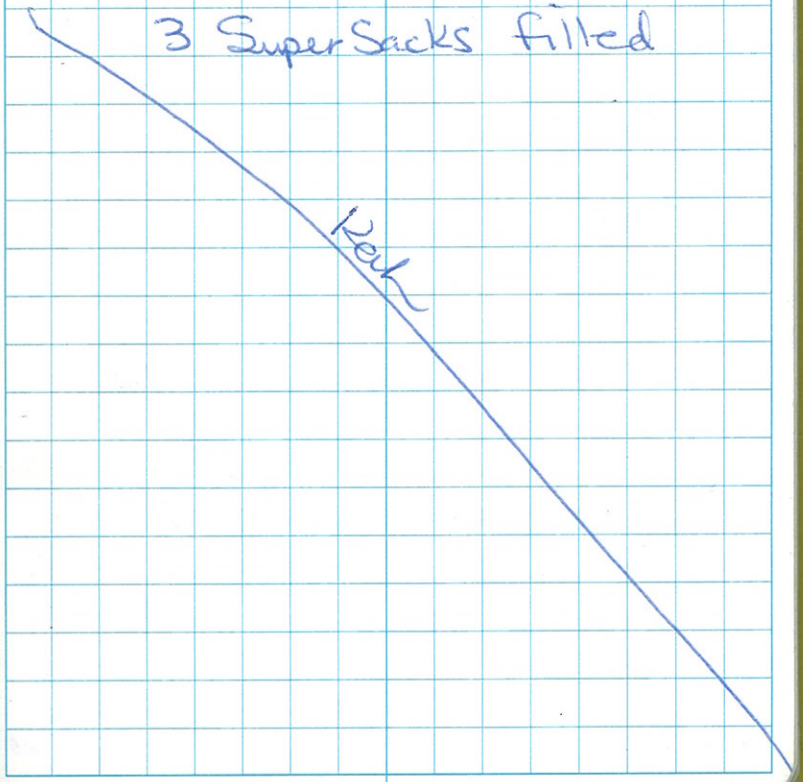
Location Taku BLD 15 Date 4/07/10

Project / Client DOT Hotspot / USACE

1655 Finish Excavation
excavated = 1 foot, 12"

1700 Re-applied heat to the ground. Covered excavation hole with tarp in case of snow or rain

3 Super Sacks filled



Location Taku BLD15 Date 4/08/10

Project / Client DDT Hotspot / USACE

0750 Tailgate meeting
4 Jacobs 3 Chemtrak
Meagan DeRapps joined
us today.

0800 Calibrated PID MiniRae 2000
0.0/102 ppm

0805 Chemtrak crew went
to site to remove
tarp

9
0840 Pete is scanning for
kw
4/08/10 metal

snowing & windy

0947 Uncovered some organic
material that had a
strong order. Took a
sample directly from
excavation pit @ 12"
FS#1

Location Taku BLD15 Date 4/08/10

Project / Client DDT Hotspot / USACE

0947 FS#1 (12") 0.4 ppm

09:55 FS#2 (18" sandy soil) 0.0 ppm

Super Sack info on page
22

10:15 Finished excavating
excavated 1-2'

1020 Re-applied heat to
the ground & covered
excavation pit

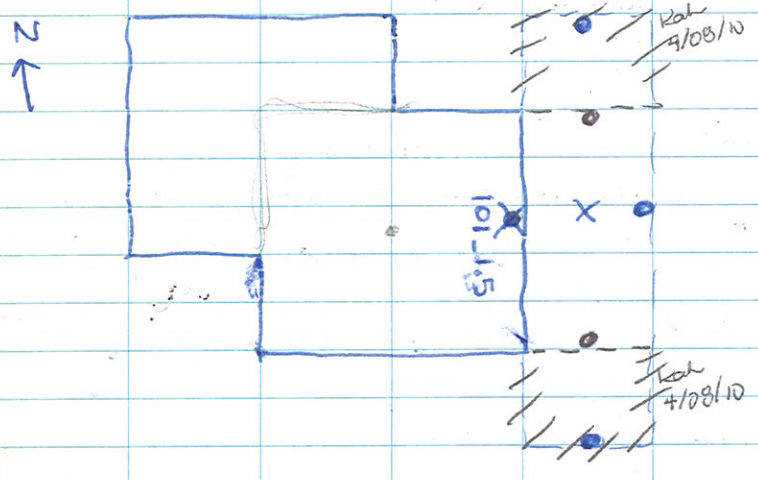
4 Super Sacks filed

1030 Arrived back at trailer
to prepare for Sampling
second set of samples.

Location Taku BLD 15 Date 4/08/10

Project / Client DDT Hotspot / USACE

Sampling locations for 2nd sample set.



x floor 3'

● Side wall 1.5'

1500 Sunny & windy

≈1500 Removed heat from ground.

1515 Pete scanned for metal

Location Taku BLD 15 Date 4/08/10

Project / Client DDT Hotspot / USACE

1530 Began excavation

1533 FS ≈ 3 (≈ 30") 0.1 ppm

1545 FS ≈ 4 (≈ 30") 0.2 ppm

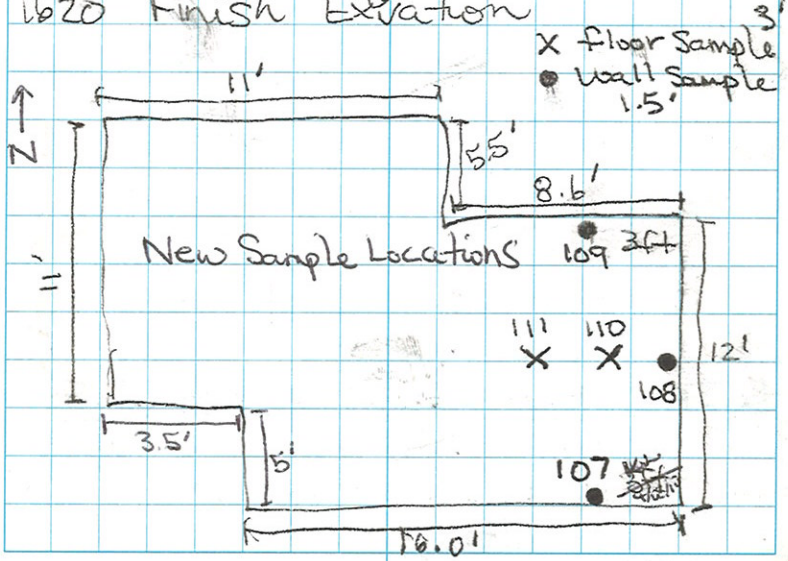
1605 FS ≈ 5 (≈ ~~30~~ 36") 0.4 ppm
Kal 4/08/10

Filled 5 SuperSacks

Supersack info on page 22

Total SuperSacks/Day = ~~5~~ 9
4/08/10 Kal

1620 Finish Excavation



Location Taku BLD15 Date 4/08/10

Project / Client DOT Hotspot / USACE

1630 Prepare for analytical sampling Sarah Belway Meagan DePaepe Kari Hagen

Map of sample locations on previous page (pg 29)

1640 10FWAEXBLD15-107_1.5
MS/MSD 2 x 4oz GA
organic odor, slightly frozen silty Sand some gravel lenses of pebbles

1640 10 FW-A-EXBLD15-107_1.5_B
Field Dup 1 x 4oz GA
organic odor slightly frozen Silty Sand w/ lenses of pebbles

1655 10-FW-A-EXBLD15-108_1.5
silty sand w/ lenses of pebbles 1 x 4oz GA
very frozen

16:59 10-FW-A-EXBLD15-109_1.5
Silty sand w/ lenses of pebbles 1 x 4oz GA
slightly frozen some organics.

Location Taku BLD15 Date 4/08/10

Project / Client DOT Hotspot / USACE

17:04 10-FW-A-EXBLD15-110_03
4/08/10 KH
Sandy soil, little very little gravel slightly frozen

17:09 10-FW-AEXBLD15-111_03
Sandy soil very little gravel ~~slightly~~ frozen
4/08/10 KH

1735 Arrived back at trailer Samples will be kept on ice over night and taken to SGS on Friday morning 4/09/10
Cooler ID: Wind Blown
COC: 2010FCSR1002

Kari

Location Taku BLD 15 Date 4/19/10

Project / Client DDT Hotspot / USACE

Waste Sampling

Total excavation 51 yd^3 – 3 waste samples will be taken. Meagan DeRapps, Kari Hagen & Sarah Belway sampled.

Opened Super Sacks - took sample at 12" below surface

13:15 10FCSRISOB15WS01
from SS # 9 (10FCSBLD15SS09)
- weighed 25.2 g soil (8260) into 126.29g tared GA w/ Septum jar added MeOH
- tln a pie pan (aluminum) homogenized ≈ 32 g/oz (calc 4/19/10) & placed in 2 - 1/16 8oz GA jars.

13:35 10FCSRISOB15WS02
from SS # 25 (10FCSBLD15SS25)
- weighed 25.4g Soil (8260) added MeOH tare jar 126.66g
- Same as above 2-8oz GA jars

Location Taku BLD 15 Date 4/19/10

Project / Client DDT Hotspot / USACE

13:50 10FCSRISOB15WS03
from SS # 45 (10FCSBLD15SS45)
- weighed 25.3g Soil added 2 MeOH (calc 4/19/10) tare jar 126.61
- same as pg 32 - 2-8oz GA jars

14:00 Re-sealed Super Sacs all PE & sampling materials were placed in Super Sacks.

Analyses: 8260, 8270, 6020 RCRA 8, 7471, 8081, 8082, 1010 or 1020, 8151

Samples dropped off at SGS Fairbanks at ≈ 16:00 (actual time 16:05)

Cooler Name: Mud Pie
COC: 2010FCSR1003

Location Taku BLD 15 Date 4/20/10

Project / Client DOT Hotspot / USACE

0750 Chemtrak arrived to backfill excavation
- Tailgate meeting
Chemtrak: Dale Hirsch, Brian Feldman, Bill Adrian
Jacobs: Sarah Belway, Meagan DeRaps, Kari Hagen

08:30 Prepare to measure swing ties to sample points from second sampling (pg 30)

Samples:
10FWAEXBLD15-107_1.5
- 108_1.5
- 109_1.5
- 110_3.0
- 111_3.0

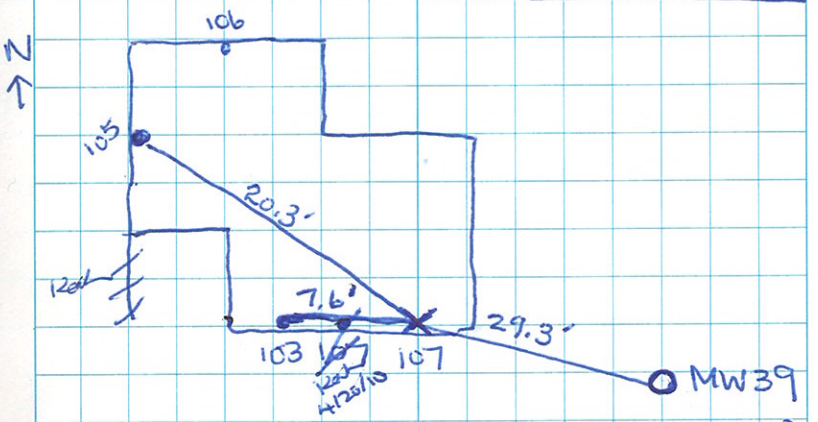
taken by Meagan DeRaps & Kari Hagen

All measurements were taken from sample pts. 10FWAEXBLD15-103, 10FWAEXBLD15-105, & monitoring well 39 (MW39)

Location Taku BLD 15 Date 4/20/10

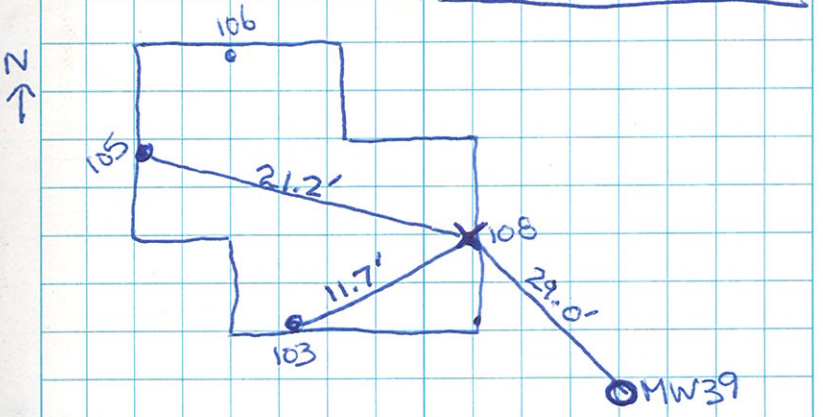
Project / Client DOT Hotspot / USACE

Measurement to 10FWAEXBLD15-107_1.5



*measurements taken in tenths (feet)

Measurements to 10FWAEXBLD15-108_1.5

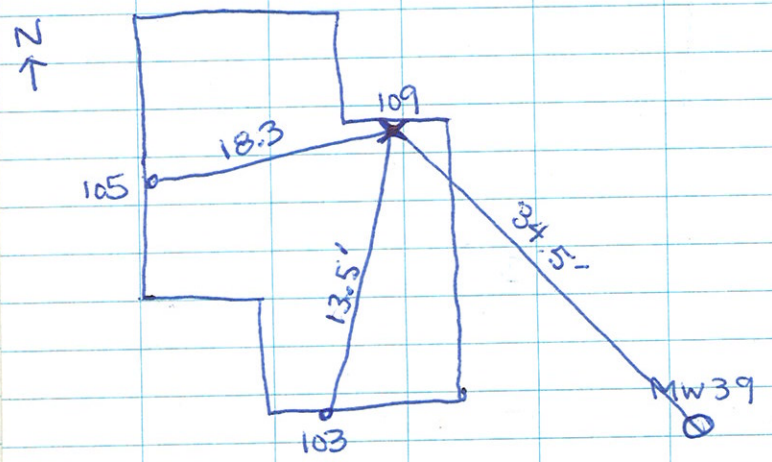


*measurements taken in tenths (feet

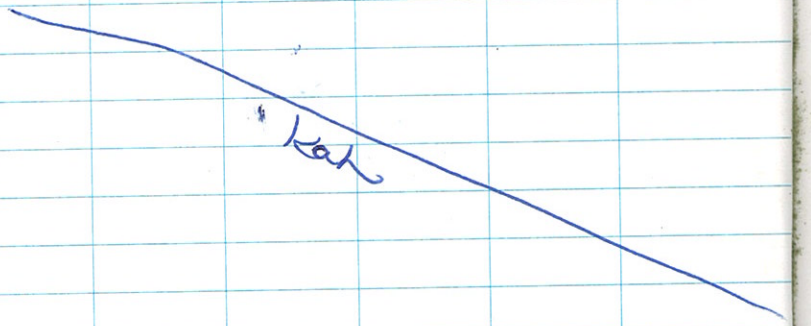
Location Taku BLD15 Date 4/20/10

Project / Client DOT Hotspot / USACE

Measurements to 10FWAEXBLD15-109_1.5



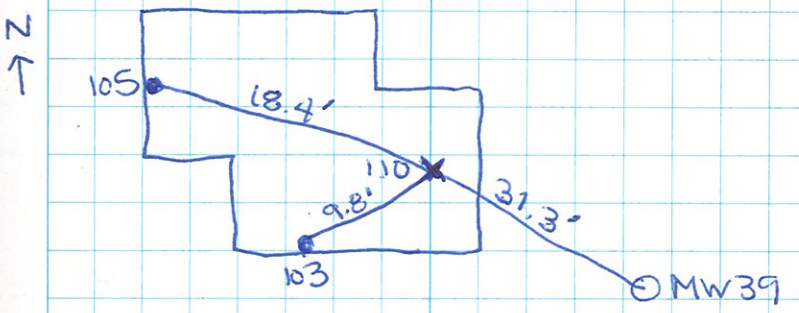
* measurements taken in tenths (feet)



Location Taku BLD15 Date 4/20/10

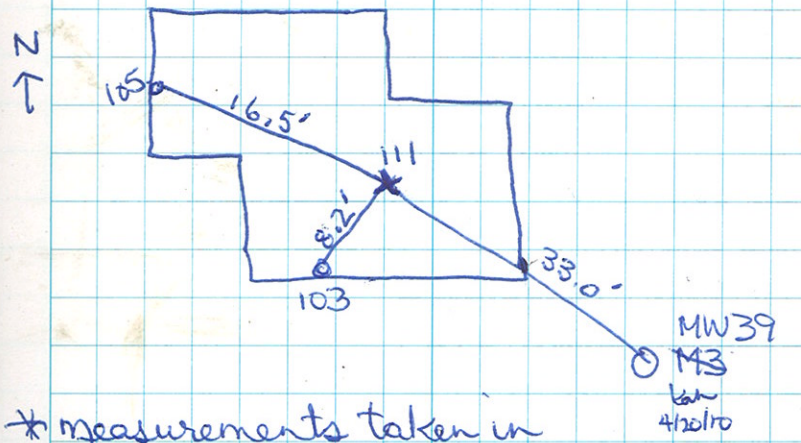
Project / Client DOT Hotspot / USACE

Measurements to 10FWAEXBLD15-110_03



* Measurements taken in tenths (feet)

Measurements to 10FWAEXBLD15-111_03



* measurements taken in tenths (feet)

ATTACHMENT 3

Waste Documentation

WASTE MANAGEMENT

COLUMBIA RIDGE LANDFILL & RECYCLING
18177 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2030
(541) 454-3312 Fax

September 22, 2010

Emerald Petroleum Services, Inc.
425 Outer Springer Loop
Palmer, AK 99645

CERTIFICATE OF DISPOSAL

Waste Management, Inc. dba Columbia Ridge Landfill has received NON HAZARDOUS Waste material from Emerald Alaska, Inc.

Generator:	PW Environmental Resources
Date Disposed:	September 21, 2010
Profile #:	100043AK
Manifest#:	12555C
Container#:	WMXU6189
Weight Disposed:	33800 lbs.
Waste Description:	PCS w/Pesticides

I certify, on behalf of the above listed facility, that the above-described non hazardous waste was managed in compliance with all applicable laws.

Sarah Mastriona

Sarah Mastriona
Special Waste Billing Dept.

185506

?58h WM Columbia Ridge Landfill
18177 Cedar Springs Lane
Arlington, OR 97812
(541)-454-2030

TICKET: 700418
DATE: 10/01/2010
TIME: 11:41 - 11:41
LOAD DATE: 09/20/2010
TIP DATE: 09/21/2010

CUSTOMER: EMERALD ALASKA
PROFILE: 100043AK / EMERALD ALASKA/
TRUCK: 721209 TRAILER: 6189
ORIGIN: FTWAIN / FT. WAINWRIGHT CONTAINER: 6189
COMMENT: .Rental 9/1-9/20= 19 days

P.O.: 721209
GROSS: 75940 LBS
TARE: 42140 LBS
NET: 33800 LBS
MANIFEST: 12555C

WASTE	NET/TONS	UNIT
BARGE-SPW / BARGE TRANSPORTATION -	1.00	U
ECPCSP / ENV CLEANUP PCS -SPW (PCP)	16.90	T
UNLOAD-SPW / UNLOADING FEE - SPECIA	1.00	U
TRANSUSPW / TRANS BY UNIT SPW (ST	1.00	U
RENTSPW / CONTAINER RENTAL SPW (STF	19.00	U
DELSPW / DELIVERY SPECIAL WASTE (ST	1.00	U
LINERSPW / LINER SPW (STF)	1.00	U

Driver: _____
IN: SARAH MASTRIONA B: ORARLI01PC

Weighmaster: _____
OUT: SARAH MASTRIONA B: ORARLI01PC

Oregon Waste Systems
A Waste Management Company
18177 Cedar Springs Lane
Arlington, Oregon 97812
(541) 454-2030

№721209

'10 SEP 21 PM 3:47

DATE:/TIME:

LOAD DATE:

CUSTOMER: Emerald Alaska/PWI Env.

PROFILE NUMBER: 100043AK

TRUCK NUMBER: 709176

TRAILER/CONTAINER NUMBER: 6189

SEAL NUMBER:

CUSTOMER INVOICE NO.: 12555c

GROSS WEIGHT: 75940

TARE WEIGHT-TRACTOR:

TARE WGT.-TRAILER/CONTAINER: 42140

NET WEIGHT: 33800

GATEHOUSE: Dan

DRIVER: Mark

TRAIN ID: USEGL 19 ORIGIN: OX951

WASTE TYPE: PCS w/ Pesticides

DISPOSAL: (CM) DC BU GRID SEGREGATE

REMARKS:

Rental 9/1 - 9/20 = 19 days

HAULER:

902-ARLINGTON

WASTE MANAGEMENT

COLUMBIA RIDGE LANDFILL & RECYCLING
18177 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2030
(541) 454-3312 Fax

September 22, 2010

Emerald Petroleum Services, Inc.
425 Outer Springer Loop
Palmer, AK 99645

CERTIFICATE OF DISPOSAL

Waste Management, Inc. dba Columbia Ridge Landfill has received NON HAZARDOUS Waste material from Emerald Alaska, Inc.

Generator:	PW Environmental Resources
Date Disposed:	September 21, 2010
Profile #:	100043AK
Manifest#:	12555A
Container#:	WMXU6397
Weight Disposed:	31000 lbs.
Waste Description:	PCS w/Pesticides

I certify, on behalf of the above listed facility, that the above-described non hazardous waste was managed in compliance with all applicable laws.

Sarah Mastriona

Sarah Mastriona
Special Waste Billing Dept.

185507

958h WM Columbia Ridge Landfill
18177 Cedar Springs Lane
Arlington, OR 97812
(541)-454-2030

TICKET: 700420
DATE: 10/01/2010
TIME: 11:42 - 11:42
LOAD DATE: 09/20/2010
TIP DATE: 09/21/2010

CUSTOMER: EMERALD ALASKA
PROFILE: 100043AK / EMERALD ALASKA/
TRUCK: 721210 TRAILER: 6397
ORIGIN: FTWAIN / FT. WAINWRIGHT CONTAINER: 6397
COMMENT: .Rental 9/1-9/20= 19 days

P.O.: 721210
GROSS: 73700 LBS
TARE: 42700 LBS
NET: 31000 LBS
MANIFEST: 12555A

WASTE	NET/TONS	UNIT
UNLOAD-SPW / UNLOADING FEE - SPECIA	1.00	U
TRANSUSPW / TRANS BY UNIT SPW (ST	1.00	U
RENTSPW / CONTAINER RENTAL SPW (STF	19.00	U
LINERSPW / LINER SPW (STF)	1.00	U
ECPCSP / ENV CLEANUP PCS -SPW (PCP)	15.50	T
DELSPW / DELIVERY SPECIAL WASTE (ST	1.00	U
BARGE-SPW / BARGE TRANSPORTATION -	1.00	U

Driver: _____
IN: SARAH MASTRIONA B: ORARLI01PC

Weighmaster: _____
OUT: SARAH MASTRIONA B: ORARLI01PC

WASTE MANAGEMENT

Oregon Waste Systems
A Waste Management Company
18177 Cedar Springs Lane
Arlington, Oregon 97812
(541) 454-2030

No. 721210

'10 SEP 21 PM3:41

DATE:/TIME:
LOAD DATE:
CUSTOMER: Emerald Alaska/PW Env.
PROFILE NUMBER: 100043AK
TRUCK NUMBER: 644531
TRAILER/CONTAINER NUMBER: 6397
SEAL NUMBER:
CUSTOMER INVOICE NO.: 12555A

GROSS WEIGHT: 73700
TARE WEIGHT-TRACTOR:
TARE WGT.-TRAILER/CONTAINER: 42700
NET WEIGHT: 31000

GATEHOUSE: Lon
DRIVER: Lucan
TRAIN ID: USEGL 19 ORIGIN: OX951
WASTE TYPE: PCS w/ Pesticides
DISPOSAL: (CM) DC BU GRID SEGREGATE
REMARKS: Rental 9/1 - 9/20 = 19 days

HAULER:

902-ARLINGTON

*** IN CASE OF EMERGENCY CALL 206-832-3000 *** 95-919-AK12555

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. AK6210022426	Manifest Document No. 125554	2. Page 1 of
3. Generator's Name and Mailing Address PW ENVIRONMENTAL RESOURCES BLDG. 1053 GAFFNEY ROAD FT. WAINWRIGHT, AK 99703	Site Address PW ENVIRONMENTAL RESOURCES BLDG. 1053 GAFFNEY ~~ROAD~~ FT. WAINWRIGHT, AK 99703		
4. Generator's Phone ((907) 361-9040			
5. Transporter 1 Company Name EMERALD SERVICES, INC.	6. US EPA ID Number WAD058364647	A. State Transporter's ID	
		B. Transporter 1 Phone (206) 832-3000	
7. Transporter 2 Company Name WEAVER BROTHERS	8. US EPA ID Number AK0002848372	C. State Transporter's ID	
		D. Transporter 2 Phone (907) 278-4526	
9. Designated Facility Name and Site Address COLUMBIA RIDGE RECY. & LNDFL. 18177 CEDAR SPRINGS LANE ARLINGTON, OR 97812	10. US EPA ID Number ORD987173457	E. State Facility's ID	
		F. Facility's Phone (541) 454-2030	

11. WASTE DESCRIPTION	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. MATERIAL NOT REGULATED BY D.O.T.	1	CM	44000	P
b.				
c.				
d.				

G. Additional Descriptions of Materials Listed Above

a)100043AK Non-RCRA Contaminated Soil

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

CONTAINER NUMBER CRXU6347

TRAILER NUMBER TTC237186   05#50701 87011200

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
[illegible]	[signature]	9	2	10

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
Ian [illegible]	[signature]	09	2	10

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
GINA L. EATON	[signature]	9	3	10

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year
Sarah Mastriona	Sarah Mastriona	09	28	10

GENERATOR / TRANSPORTER / FACILITY

NON-HAZARDOUS WASTE

To Reorder Call - Pro's Choice Printing - 888-801-1515 - Item #WM 500

95-919-AK12555

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: AK6210022426

22. Page: 2 of 4

23. Manifest Tracking Number: 12555A

24. Generator's Name: PW ENVIRONMENTAL RESOURCES
BLDG. 1053 GAFFNEY ROAD
FT. WAINWRIGHT, AK 99703
(907) 361-3949

25. Transporter 3 Company Name: ALASKA RAILROAD CORPORATION — MAT USE ONLY — U.S. EPA ID Number: AKD981767403

26. Transporter 4 Company Name: SUPPER BROTHERS — U.S. EPA ID Number: AKD002846372

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

95-919-AK12555

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
AK6210022426	3 / 4	12555A

24. Generator's Name: PW ENVIRONMENTAL RESOURCES
BLDG. 1053 GAFFNEY ROAD
(907) 361-9949 FT. WAINWRIGHT, AK 99703

25. Transporter 3 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

26. Transporter 4 Company Name: UNION PACIFIC — U.S. EPA ID Number: NBD001792910

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name: R. Nixon — Signature — Month 9 Day 8 Year 10

34. Transporter 4 Acknowledgment of Receipt of Materials
Printed/Typed Name: L. Sorlien — Signature — Month 9 Day 17 Year 10

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

95-919-AK12555

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: AK6210022426

22. Page: 1 of 1

23. Manifest Tracking Number: 12555A

24. Generator's Name: PW ENVIRONMENTAL RESOURCES
BLDG. 1053 CAFFNEY ROAD
(907) 361-9949 FT. WAINWRIGHT, AK 99703

25. Transporter 1 Company Name: COLUMBIA RIDGE LANDFILL — U.S. EPA ID Number: ORD987173457

26. Transporter 2 Company Name — U.S. EPA ID Number:

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit WL/Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

GENERATOR

33. Transporter 1 Acknowledgment of Receipt of Materials
Printed/Typed Name: Angela Immerman — Signature: Angela Immerman — Month: 9 — Day: 21 — Year: 10

34. Transporter 2 Acknowledgment of Receipt of Materials
Printed/Typed Name — Signature — Month — Day — Year

TRANSPORTER

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

DESIGNATED FACILITY

WASTE MANAGEMENT

COLUMBIA RIDGE LANDFILL & RECYCLING
18177 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2030
(541) 454-3312 Fax

September 23, 2010

Emerald Petroleum Services, Inc.
425 Outer Springer Loop
Palmer, AK 99645

CERTIFICATE OF DISPOSAL

Waste Management, Inc. dba Columbia Ridge Landfill has received NON HAZARDOUS Waste material from Emerald Alaska, Inc.

Generator:	PW Environmental Resources
Date Disposed:	September 22, 2010
Profile #:	100043AK
Manifest#:	12555B
Container#:	WMXU6156
Weight Disposed:	30280 lbs.
Waste Description:	PCS w/Pesticides

I certify, on behalf of the above listed facility, that the above-described non hazardous waste was managed in compliance with all applicable laws.

Sarah Mastriona

Sarah Mastriona
Special Waste Billing Dept.

185508

?58h WM Columbia Ridge Landfill
18177 Cedar Springs Lane
Arlington, OR 97812
(541)-454-2030

TICKET: 700421
DATE: 10/01/2010
TIME: 11:43 - 11:43
LOAD DATE: 09/18/2010
TIP DATE: 09/22/2010

CUSTOMER: EMERALD ALASKA
PROFILE: 100043AK / EMERALD ALASKA/
TRUCK: 721149 TRAILER: 6156
ORIGIN: FTWAIN / FT. WAINWRIGHT CONTAINER: 6156
COMMENT: .Rental 9/1-9/18= 17 days

P.O.: 721149
GROSS: 72700 LBS
TARE: 42420 LBS
NET: 30280 LBS
MANIFEST: 12555B

WASTE	NET/TONS	UNIT
UNLOAD-SPW / UNLOADING FEE - SPECIA	1.00	U
TRANSUSPW / TRANS BY UNIT SPW (ST	1.00	U
RENTSPW / CONTAINER RENTAL SPW (STF	17.00	U
LINERSPW / LINER SPW (STF)	1.00	U
ECPCSP / ENV CLEANUP PCS -SPW (PCP)	15.14	T
DELSPW / DELIVERY SPECIAL WASTE (ST	1.00	U
BARGE-SPW / BARGE TRANSPORTATION -	1.00	U

Driver: _____
IN: SARAH MASTRIONA B: ORARLI01PC

Weighmaster: _____
OUT: SARAH MASTRIONA B: ORARLI01PC

Oregon Waste Systems
A Waste Management Company
18177 Cedar Springs Lane
Arlington, Oregon 97812
(541) 454-2030

N°721149

'10 SEP 22 AM11:49

DATE:/TIME:

LOAD DATE:

CUSTOMER: Emerald Alaska/PW Enrs

PROFILE NUMBER: 1000439K

TRUCK NUMBER: 814584

TRAILER/CONTAINER NUMBER: 6156

SEAL NUMBER:

CUSTOMER INVOICE NO.: 12555D

GROSS WEIGHT: 72700

TARE WEIGHT-TRACTOR:

TARE WGT.-TRAILER/CONTAINER: 42420

NET WEIGHT: 30280

GATEHOUSE: Lon

DRIVER: Am

TRAIN ID: Useyle 17 ORIGIN: OX951

WASTE TYPE: PCBs w/Pesticides

DISPOSAL: (CM) DC BU GRID SEGREGATE

REMARKS: Rental 9/4 - 9/18 = 17 days

HAULER:

902-ARLINGTON

IN CASE OF EMERGENCY CALL 206-832-3000 95-919-AK12553

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE

GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. AKR000100242 6	Manifest Document No. 125559	2. Page 1 of

3. Generator's Name and Mailing Address
PW ENVIRONMENTAL RESOURCES
BLDG. 3053 GAFFNEY ROAD
FT. WAINWRIGHT, AK 99703

Site Address
PW ENVIRONMENTAL RESOURCES
BLDG. 3053 GAFFNEY ROAD
FT. WAINWRIGHT, AK 99703

4. Generator's Phone (907) 361-3648

5. Transporter 1 Company Name	6. US EPA ID Number	A. State Transporter's ID
EMERALD SERVICES, INC.	WAD059364663	B. Transporter 1 Phone (206) 433-2200
7. Transporter 2 Company Name	**6. US EPA ID Number**	**C. State Transporter's ID**
WEAVER BROTHERS	AKD022845372	D. Transporter 2 Phone (907) 278-4535

9. Designated Facility Name and Site Address	10. US EPA ID Number	E. State Facility's ID
COLUMBIA RIDGE RECY. & LNDFL. 18177 CEDAR SPRINGS LANE ARLINGTON, OR 97812	ORD057173457	F. Facility's Phone (541) 454-2030

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. MATERIAL NOT REGULATED BY D.O.T.	1	CM	44.00	P
b.				
c.				
d.				

G. Additional Descriptions of Materials Listed Above
a) 1000 BAR non-RCRA Contaminated soil

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
CONTAINER NUMBER(S): 8156
TRAILER NUMBER(S): 7202, 32466
05m50701 670113HLO

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
[illegible]	[signature]	9	15	10

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
Ian C. Lis	[signature]	09	22	10

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
Fred Pinchin	[signature]	9	3	10

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year
Sarah Mastriona	Sarah Mastriona	09	22	10

95-919-AK12555

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number	22. Page	23. Manifest Tracking Number
AK6210022426	4 / 4	125555

24. Generator's Name: PW ENVIRONMENTAL RESOURCES
BLDG. 1053 GAFFNEY ROAD
(907) 361-2949 FT. WAINWRIGHT, AK 99703

25. Transporter Company Name: COLUMBIA RIDGE LANDFILL — U.S. EPA ID Number: ORD987173457

26. Transporter Company Name — U.S. EPA ID Number:

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter Acknowledgment of Receipt of Materials
Printed/Typed Name: Cindy Crapo — Signature: Cindy Crapo — Month: 9 Day: 10 Year: 10

34. Transporter Acknowledgment of Receipt of Materials
Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

ATTACHMENT 4

ADEC Review Comment Responses

REVIEW COMMENTS

PROJECT: ERS-UR TO07 Taku Gardens RA

DOCUMENT: Technical Memorandum, Draft Taku Building 15/17 DDT Hotspot Investigation After-Action Report, 8 December 2010

LOCATION: Fort Wainwright, Alaska

U.S. ARMY CORPS OF ENGINEERS CEPOA-EN-EE-TE	**DATE:** 12/21/10 **REVIEWER:** Deb Caillouet **PHONE:** (907) 269-0298	**Action taken on comment by:**

Item No.	Drawing Sht. No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	JACOBS RESPONSE	USAED RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
		From Deb Caillouet, ADEC			
1	MISSING	Lab Checklists for SDG 1100899 & 1101381. The one included is for 1101922 and is only for waste analysis and is not filled out except item 1.	A	Agreed. The ADEC checklists will be completed and submitted. The following statement will also be added to the DQE, "Samples for waste disposal purposes are not included in this DQE but a data review has been completed and presented in the ADEC checklists."	
2	DQE	SDG 1100899 did not meet critieria for matrix spike and matrix spike duplicate. **11 00899002 BMS 10-FW-A-EXBLDI 5-1 07-1.5 MS** 8081 B - Decachlorobiphenyl and tetrachloro-m-xylene (surrogates) recoveries do not meet QC criteria due to sample dilution. 8081 B - BMSIBMSD does not meet QC criteria due to sample dilution. See the LCS for accuracy. 8081 ***6*** - Elevated LOQs due to high DDT concentrations. **11 00899003 BMSD 10-FW-A-EXBLDI 5-1 07-1.5 MSD** 8081 B - Decachlorobiphenyl and tetrachloro-m-xylene (surrogates) recoveries do not meet QC criteria due to sample dilution. 8081 B - BMSIBMSD does not meet QC criteria due to sample dilution. See the LCS for accuracy. 8081 B - Elevated LOQs due to high DDT concentrations.	A	Agreed. Information has been incorporated into the ADEC checklists and DQE. The non-recovery of surrogates in the MS/MSD was not added to the surrogate section in either the DQE or the checklist surrogate section because we do not qualify QC samples.	

REVIEW COMMENTS

PROJECT: ERS-UR TO07 Taku Gardens RA

DOCUMENT: Technical Memorandum, Draft Taku Building 15/17 DDT Hotspot Investigation After-Action Report, 8 December 2010

LOCATION: Fort Wainwright, Alaska

U.S. ARMY CORPS OF ENGINEERS CEPOA-EN-EE-TE	**DATE:** 12/21/10 **REVIEWER:** Deb Caillouet **PHONE:** (907) 269-0298	**Action taken on comment by:**			
Item No.	**Drawing Sht. No., Spec. Para.**	**COMMENTS**	**REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)**	**JACOBS RESPONSE**	**USAED RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)**
3	DQE	SDG 1100899 did not meet surrage recovery **11 00899001 PS 10-FW-A-EXBLDI 5-1 07-1.5** 8081 B - Decachlorobiphenyl and tetrachloro-m-xylene (surrogates) recoveries do not meet QC criteria due to sample dilution. 8081 B - Elevated LOQs due to high DDT concentrations. **11 00899004 PS 10-FW-A-EXBLDI 5-1 07-1.5 B** 8081 B - Decachlorobiphenyl and tetrachloro-m-xylene (surrogates) recoveries do not meet QC criteria due to sample dilution. 8081 B - Elevated LOQs due to high DDT concentrations. **11 00899005PS 10-FW-A-EXBLDI 5-1 08-1.5** 8081 B - Decachlorobiphenyl and tetrachloro-m-xylene (surrogates) recoveries do not meet QC criteria due to sample dilution. **11 00899006 PS 10-FW-A-EXBLDI 5-1 09-1.5** 8081 B - Decachlorobiphenyl (surrogate) recovery does not meet QC criteria due to sample dilution	A	Agreed. Information has been incorporated into the ADEC checklists and DQE.	