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SEP 07 2017



Dear Mr. Kieling

Attached please find the *Well Abandonment Report for Extraction Well KAFB-106157, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-111, Kirtland Air Force Base, New Mexico, dated August 2017*. This Report describes abandonment activities performed from July 17 to August 31, 2017 for extraction well KAFB-106157. The abandonment consisted of pressure grouting the entire well screen and casing, followed by removal of surface features (i.e. bollards, protective casing, well casing, and curb stop). A groundwater sample was collected and analyzed for contaminants of concern and other relevant field and laboratory parameters prior to final abandonment. All work was performed in conformance with permits issued by the New Mexico Office of the State Engineer.

If you have any questions or concerns, please contact Ms. Holly O'Grady at (505) 853-3484 or [holly.ograde@us.af.mil](mailto:holly.ograde@us.af.mil) or Mr. Scott Clark at (505) 846-9017 or at [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil).

Sincerely

  
DAWN A. NICKELL, Colonel, USAF  
Installation Vice Commander

Attachment:

Well Abandonment Report for Extraction Well KAFB-106157, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-111, Kirtland Air Force Base, New Mexico, dated August 2017; 2 Hard Copies/2 CDs

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NMED (Borrego) letter  
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KAFB4602



**KIRTLAND AIR FORCE BASE  
ALBUQUERQUE, NEW MEXICO**

**WELL ABANDONMENT REPORT FOR  
EXTRACTION WELL KAFB-106157  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE, NEW MEXICO**

**AUGUST 2017**



**377 MSG/CEI  
2050 Wyoming Boulevard SE  
Kirtland Air Force Base, New Mexico 87117-5270**

**KIRTLAND AIR FORCE BASE  
ALBUQUERQUE, NEW MEXICO**

**Well Abandonment Report for  
Extraction Well KAFB-106157  
Bulk Fuels Facility  
Solid Waste Management Unit ST-106/SS-111**

**Revision 0**

**August 2017**

***Prepared for***

U.S. Army Corps of Engineers  
Albuquerque District  
4101 Jefferson Plaza NE  
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***Prepared by***

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Contract No. W912DR-12-D-0006-DM01

## **NOTICE**

This report was prepared for the U.S. Army Corps of Engineers by EA Engineering, Science, and Technology, Inc., PBC for the purpose of documenting the abandonment of extraction well KAFB-106157 by the U.S. Air Force Environmental Restoration Program (ERP) at Kirtland Air Force Base.

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<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT</b> This Well Abandonment Report describes abandonment activities performed from July 17 to August 31, 2017 for extraction well KAFB-106157 at Solid Waste Management Unit ST-106/SS-111, the Bulk Fuels Facility site, at Kirtland Air Force Base, New Mexico. A groundwater sample was collected and analyzed for contaminants of concern and other relevant field and laboratory parameters prior to final abandonment. The abandonment consisted of pressure grouting the entire well screen and casing, followed by removal of surface features (i.e. bollards, protective casing, well casing, and curb stop). The concrete voids were patched, equipment was then demobilized, and the site was returned to the Veteran Administration. All work was performed in conformance with permits issued by the New Mexico Office of the State Engineer.					
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\_\_\_\_\_  
DAWN A. NICKELL, Colonel, U.S. Air Force  
Commander, 377th Air Base Wing

7 Sep 17  
Date

This document has been approved for public release.

  
\_\_\_\_\_  
KIRTLAND AIR FORCE BASE  
377th Air Base Wing Public Affairs

7 SEP 17  
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D	New Mexico Office of the State Engineer Well Plugging Record

## ACRONYMS AND ABBREVIATIONS

µg/L	microgram(s) per liter
AFB	Air Force Base
BFF	Bulk Fuels Facility
bgs	below ground surface
Cascade	Cascade Drilling L.P.
EA	EA Engineering, Science, and Technology, Inc., PBC
EDB	ethylene dibromide
ELLE	Eurofins Lancaster Laboratories Environmental, LLC
EPA	U.S. Environmental Protection Agency
GWTS	groundwater treatment system
IDW	investigation-derived waste
MCL	maximum contaminant level
mg/L	milligram(s) per liter
MTBE	methyl tertiary butyl ether
NMED	New Mexico Environment Department
NMOSE	New Mexico Office of the State Engineer
NMWQCC	New Mexico Water Quality Control Commission
PSL	project screening level
VA	Veteran Administration



## 1. INTRODUCTION

This Well Abandonment Report describes the work completed on groundwater extraction well KAFB-106157. The well is located north of Kirtland Air Force Base (AFB) in the Veteran Administration (VA) east parking lot, south of Gibson Boulevard and east of San Pedro Boulevard (Figure 1). This well is located on VA property and is registered as RG-1579 POD 218 with the New Mexico Office of the State Engineer (NMOSE).

Work was completed by EA Engineering, Science, and Technology, Inc., PBC (EA) between July 17 and July 20, 2017, and was carried out according to the NMOSE Approved Well Plugging Plan (Appendix A) for the Work Plan for Extraction Well KAFB-106157 Abandonment and Reporting (EA, 2017a; New Mexico Environment Department [NMED], 2017). Requirements for the protection of health and attaining safety on the job site were addressed in the Accident Prevention Plan for the Kirtland AFB Bulk Fuels Facility (BFF) Expansion of the Dissolved-Phase Plume Groundwater Treatment System (GWTS) (EA, 2017b). The Accident Prevention Plan also incorporated the Site Safety and Health Plan. Personnel supporting this project obtained Occupational Safety and Health Administration 40-hour hazardous waste operations and emergency response training and maintained current annual refresher training.

EA subcontracted with Cascade Drilling L.P. (Cascade) to perform well abandonment activities. Cascade is a New Mexico licensed driller (WD-1210) that is qualified to perform well abandonment in the State.

### 1.1 Scope of Activities

Completed activities included:

- Groundwater sampling of KAFB-106157 on July 17, 2017, prior to the well abandonment activities
- Plugging well with neat cement
- Removal of surface protective casing, aboveground well casing, and four concrete-filled protective bollards
- Repositioning of one parking curb stop
- Demobilization
- Waste management.

## 2. ABANDONMENT ACTIVITIES

### 2.1 Site Security

The location of KAFB-106157 was within a fenced and gated parking structure owned by the VA. Automatic gates open at 0600 daily and close at 1800 hours. A security code/card is necessary to enter the lot once the gates close. The entire parking lot is surrounded by either a masonry/wrought iron wall or chain-link fencing. The well itself was protected with a locking well cap with combination lock. Once work activities started, the well was temporarily covered and with securely taped plastic that would indicate if the well had been tampered with when not attended (photos included on Daily Reports in Appendix B). The parking lot is also patrolled by VA Security Police during routine security rounds.

Work areas were protected from pedestrian and vehicular access through the use of barricades and temporary traffic control measures. The parking lot was barricaded on the east and west ends to prevent automobile or pedestrian traffic into the work area. No unauthorized vehicle traffic was allowed within the Site, and all drinking and eating took place within personal vehicles or otherwise outside of the Site boundary (i.e., Exclusion Zone).

### 2.2 Well Construction

The well construction diagram is provided in Figure 2. The well was constructed with an 8-inch diameter screen and casing. KAFB-106157 was installed via an air rotary casing hammer drilling rig and completed on December 16, 2011 to a depth of 545 feet below ground surface (bgs) in a 13-5/8-inch borehole to 220 feet bgs, and an 11-3/4-inch borehole from 220 to 545 feet bgs. KAFB-106157 included approximately 3-foot stick-up protective casing surrounded by four protective bollards. There was no vault associated with the well. The well was not equipped with any downhole equipment. Photographs of the well and surrounding area before and after well abandonment can be found on the Daily Reports provided in Appendix B.

### 2.3 Groundwater Sampling

Prior to well abandonment, on July 17, 2017 the well was sampled for groundwater quality via a portable low-flow sampling pump approximately 10-15 feet below the water surface (480 feet bgs). The well was purged for approximately two hours, with approximately 40 gallons evacuated from the well. Although field parameter stabilization was achieved within approximately 90 minutes, additional volume was purged to ensure a representative aquifer sample was collected. The groundwater sample was analyzed for volatile organic compounds using U.S. Environmental Protection Agency (EPA) Method SW8260C, ethylene dibromide (EDB) using EPA Method 8011, and dissolved iron and dissolved manganese using EPA Method 6010C. The groundwater purge form, sampling form, and chain-of-custody are included in Appendix B. The sample was analyzed by Eurofins Lancaster Laboratories Environmental, LLC (ELLE) in Lancaster, Pennsylvania. ELLE maintains current Department of Defense Environmental Laboratory Accreditation Program certification.

Groundwater analytical results are compared to the project screening levels (PSLs) for the Kirtland AFB BFF. The PSLs were selected to satisfy the requirements of the Resource Conservation and Recovery Act Permit (NMED, 2010) as the lowest of:

1. New Mexico Water Quality Control Commission (NMWQCC) standards per the New Mexico Administrative Code, Title 20.6.2.3101A, Standards for Ground Water of 10,000 milligrams per

liter (mg/L) Total Dissolved Solids Concentration or Less (New Mexico Administrative Code, 2004). For metals, the NMWQCC standard applies to dissolved metals.

2. EPA National Primary Drinking Water Regulations; maximum contaminant levels (MCLs) and Secondary MCLs; and Title 40 Code of Federal Regulations Part 141, 143.

If no MCL or NMWQCC standard existed for an analyte, the PSL used was the EPA Tapwater Regional Screening Level (EPA, 2017).

Field parameter measurements collected during purging are provided in Table 1. Groundwater analytical data are summarized in Table 2 and the laboratory report is provided in Appendix C. The following analytes were detected from the sample collected from KAFB-106157:

- EDB was detected at 0.058 micrograms per liter ( $\mu\text{g/L}$ ), above the PSL of 0.05  $\mu\text{g/L}$ .
- 1,2-dichloroethane was detected at 4  $\mu\text{g/L}$ , below the PSL of 5  $\mu\text{g/L}$ .
- Isopropylbenzene was estimated at 2  $\mu\text{g/L}$ , below the PSL of 450  $\mu\text{g/L}$ .
- Methyl tertiary butyl ether (MTBE) was estimated at 0.6  $\mu\text{g/L}$ , below the PSL of 140  $\mu\text{g/L}$ .
- Dissolved iron was estimated at 0.256 mg/L, below the PSL of 1.0 mg/L
- Dissolved manganese was detected at 1.24 mg/L, above the PSL of 0.20 mg/L.

## **2.4 Well Abandonment and Surface Feature Removal**

Site activities began with mobilization of the equipment needed to perform the well abandonment. Cascade utilized a well pulling rig with a mast capable of lifting 2-inch tremie pipe in 25 feet sections. Support equipment included a trailer for storage and transport of pipe, compressor, diaphragm pump, mixing hopper, water totes, and power tools.

Plastic sheeting was spread out on the ground around the well and under all working vehicles to capture any fluids from getting on the parking lot. A 4-foot x 4-foot plastic sheet containment berm was constructed adjacent to the well to capture any fluids should an overflow of the well during grouting occurred.

The process utilized to abandon the well was performed as follows:

- 1) Cascade setup the rig mast over the well and deployed the 2-inch tremie pipe to a depth of approximately 525 feet.
- 2) Duke City Redi-Mix delivered 8 cubic yards of neat cement mixed at a ratio of 6 gallons of water/sack (delivery ticket provided in Appendix D).
- 3) Cascade mixed two batches of bentonite, each consisting of five, 50 pound sacks of Baroid Quik-Gel Gold® bentonite and water to make a heavy viscous, yet pumpable mix. The bentonite was then pumped into the cement mixer and mixed with the neat cement on high drum rotation. A total of 500 pounds of (dry) bentonite was added to the neat cement. The ratio of bentonite resulted in a neat cement mix of 3.2% bentonite by weight. Although this is a variation from the approved Work Plan and Well Plugging Plan (Appendix A), which specified a mix of 5% bentonite by weight, this mix is adequate to meet the well plugging objectives and will not result in significant shrinkage of the cement mix. Furthermore, the mix ratio is within the acceptable limits of neat cement according to the NMOSE. This variation was documented on the Well Plugging Record (Appendix D).

- 4) The neat cement/bentonite mix was then poured into a concrete pumping bin and pumped under pressure into the tremie pipe.
- 5) When pumping pressure indicated the tremie pipe had to be raised, 100 feet of tremie pipe was removed from the well and the process was repeated. For the last lift of cement (final 60-70 feet), the tremie pipe was pulled entirely out of the well and the mixture was gravity fed from the surface so that the cement level within the casing could be visualized, and an overflow could be avoided. The cement was filled to 2 feet above ground in the well casing before pumping was terminated.
- 6) The cement stabilized within the well casing after approximately two hours. The final cured level in the well casing was approximately 1 foot above ground level.

Four 4-inch diameter steel bollards filled with concrete were removed from the corners of the well pad. An electric pavement breaker was used to fracture the concrete pad around the bollards to a minimum depth of 6 inches. A sledge hammer was then used to loosen each bollard before it was manually removed. All rebar supports encountered during the concrete removal were retained to provide support for the concrete patch.

The pavement breaker was also used to hammer out the concrete pad from around the protective well casing. The pad was removed to 6 inches below grade and all concrete debris was removed from the void. An oxygen-acetylene torch was used to cut the outer steel protective casing and the 8-inch well casing. A sledge hammer was used to clean break the well and inner cement at the cut level.

The voids from the bollards and well were wetted to ensure no dry dust was present when adding cement. Quikrete® cement was hand mixed at the site and placed in all the bollard and well voids. The concrete was tamped down, smoothed to match existing well pad and wet-brushed for texturing. The curb stop was moved to the north edge of the parking spot to allow for future use. The concrete repairs were allowed to cure overnight before protective traffic barriers were removed and the site returned to the VA for normal use.

## **2.5 Waste Management**

No hazardous or non-hazardous investigation-derived waste (IDW) was generated during the well abandonment. Solid waste collected included plastic sheeting, bags from bentonite and concrete, concrete waste, removed bollards and well casing, and general trash collected during the project. This waste was placed in plastic bags and disposed by Cascade as solid waste.

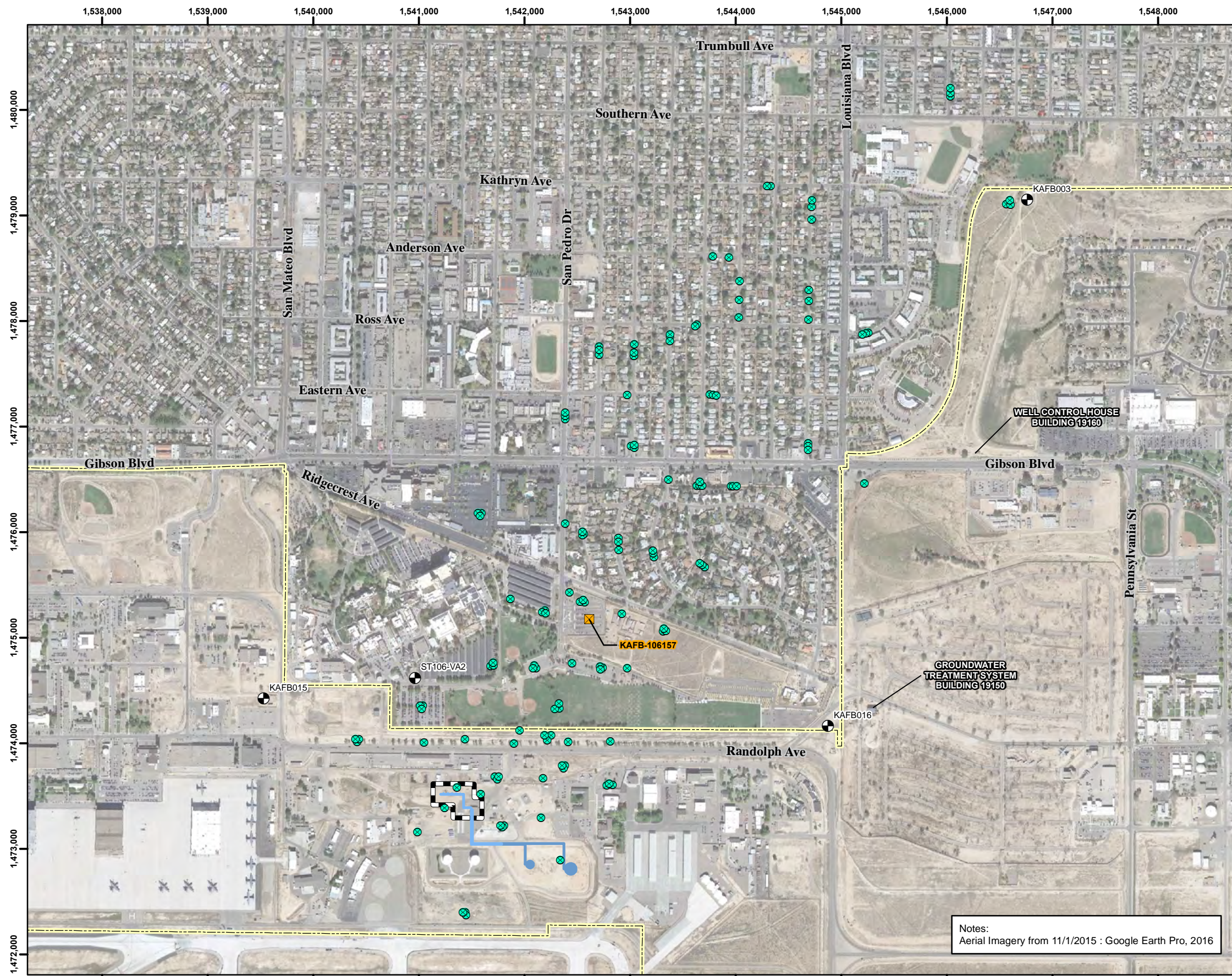
Approximately 40 gallons of non-hazardous waste purge water was collected during the well purging, prior to sample collection. This waste was containerized in a steel 55-gallon drum, labeled accordingly, and staged in the EA IDW yard for pending disposal. Due to the elevated manganese concentration above the GWTS influent limit, this waste water will be evaluated for off-site disposal.

### 3. REFERENCES

- EA Engineering, Science, and Technology, Inc., PBC (EA). 2017a. *Work Plan for Extraction Well KAFB-106157 Abandonment and Reporting, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-111, Revision 0*. Kirtland Air Force Base, New Mexico. June.
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- New Mexico Environment Department (NMED). 2010. Hazardous Waste Treatment Facility Operating Permit, EPA ID No. NM9570024423, Issued to U.S. Air Force for the Open Detonation Unit Located at Kirtland Air Force Base, Bernalillo County, New Mexico, by the New Mexico Environment Department Hazardous Waste Bureau. July.
- NMED. 2017. Correspondence from Juan Carlos Borrego, Deputy Secretary, Environment Department to Colonel Richard W. Gibbs, Base Commander, Kirtland AFB, NM, and Lieutenant Colonel Wayne J. Acosta, Civil Engineer Office, Kirtland AFB, NM, regarding the Work Plan for Extraction Well KAFB-106157 Abandonment and Reporting, Bulk Fuels Facility Solid Waste Management Unit ST-106/SS-111, Kirtland Air Force Base, EPA ID# NM9570024423, HWB-KAFB-MISC. June 20.

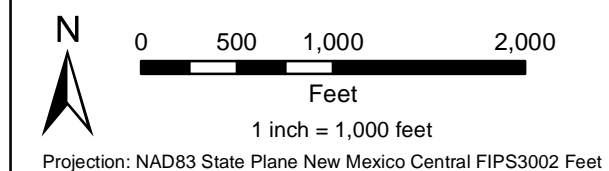
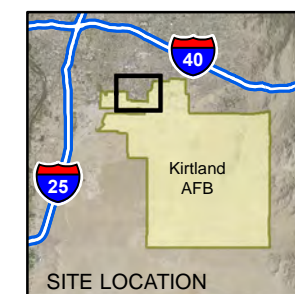
## **FIGURES**





## Legend

- Extraction Well Proposed for Abandonment
- Drinking Water Supply Well
- Groundwater Monitoring Well
- Former Aboveground Storage Tank
- Former Buried Fuel Transfer Line
- Former Aboveground Fuel Transfer Line
- Installation Boundary
- Source Area



LETTER WORK PLAN FOR  
KAFB-106157 ABANDONMENT  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1

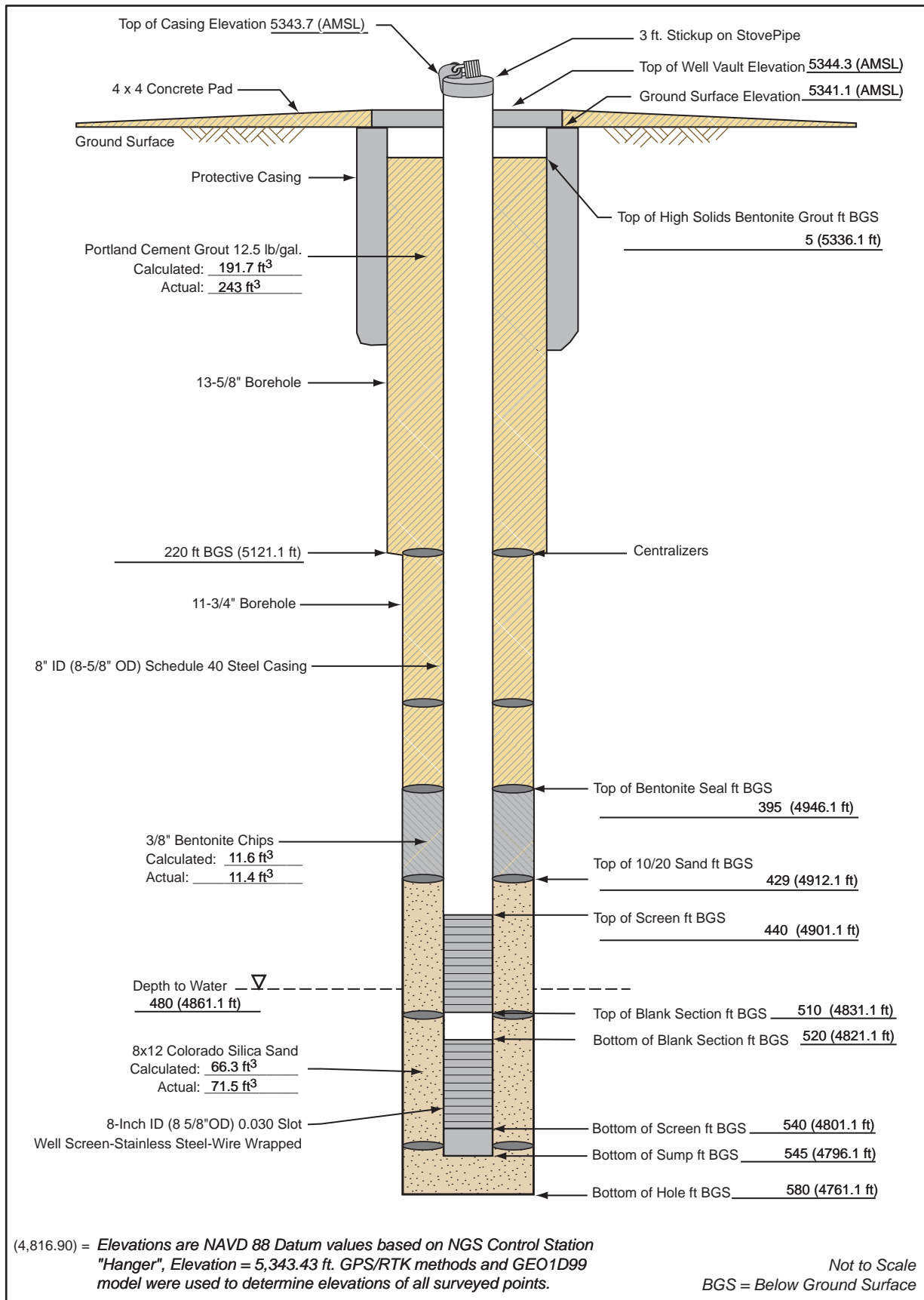
KAFB-106157 EXTRACTION WELL  
LOCATION



**Figure 2. Extraction Well KAFB-106157 Construction Diagram**

Installation Start Date/Time: 12/10/11 @ 0800

Installation End Date/Time: 12/16/11 @ 0900





## TABLES

**Table 1**  
**Groundwater Field Parameter Measurements for KAFB-106157**

Date	Time	Temperature (°C)	pH (S.U.)	Specific Conductivity (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)
7/17/2017	0945	19.7	7.07	719.0	1.40	8.2	12.30
7/17/2017	1000	19.6	7.12	717.0	0.48	-63.5	12.90
7/17/2017	1015	19.6	7.13	715.0	0.47	-68.2	12.70
7/17/2017	1030	19.7	7.14	715.0	0.49	-68.4	14.00
7/17/2017	1045	19.4	7.15	715.0	0.54	-65.8	13.80
7/17/2017	1055	19.5	7.16	715.0	0.61	-63.3	13.00
7/17/2017	1100	19.6	7.16	714.0	0.67	-62.3	13.80
7/17/2017	1115	19.4	7.17	714.0	0.66	-59.2	14.20
7/17/2017	1130	19.5	7.18	714.0	0.65	-59.7	12.60
7/17/2017	1145	19.7	7.20	714.0	0.69	-55.8	13.90
7/17/2017	1150	19.6	7.20	715.0	0.68	-55.8	13.40
7/17/2017	1155	19.6	7.20	714.0	0.72	-55.2	15.30
7/17/2017	1200	19.5	7.21	716.0	0.73	-54.0	13.10

Notes:

<sup>a</sup> DO measurements that were not stabilized within 10% of the three previous readings.

<sup>b</sup> Turbidity measurements (>10 NTU) that were not stabilized within 10% of the three previous readings.

<sup>c</sup> Samples collected via passive sampling methodology

°C = degree Celsius

µS/cm = microSiemens per centimeter

mg/L = milligrams per liter

DO = dissolved oxygen

mV = millivolt

NA = not applicable

NTU = nephelometric turbidity unit

ORP = oxidation reduction potential

S.U. = standard unit

Table 2  
Groundwater Analytical Results for KAFB-106157 (Data Validation Pending)

			Well Location ID:				KAFB-106157		
			Field Sample ID:				GW157-173		
			Sample Date:				7/17/2017		
			Sample Type:				REG		
			Sample Depth (ft bgs):				475		
Parameter	Analytical Method	Analyte	NMAC NMWQCC <sup>a</sup>	EPA MCL <sup>b</sup>	EPA RSL <sup>c</sup>	Project Screening Level <sup>d</sup>	Result	Lab Qual	LOD
EDB	Method SW8011 (µg/L)	1,2-dibromoethane	0.1	0.05	0.075	0.05	0.058	--	0.019
VOCs	Method SW8260C (µg/L)	1,1,1,2-tetrachloroethane	NS	NS	5.7	5.7	ND	U	1
		1,1,1-trichloroethane	60	200	8,000	60	ND	U	1
		1,1,2,2-tetrachloroethane	10	NS	0.76	10	ND	U	1
		1,1,2-trichloroethane	10	5	2.8	5	ND	U	1
		1,1-dichloroethane	25	NS	27	25	ND	U	1
		1,1-dichloroethene	5	7	280	5	ND	U	1
		1,1-dichloropropene	NS	NS	NS	NS	ND	U	2
		1,2,3-trichlorobenzene	NS	NS	7	7	ND	U	2
		1,2,3-trichloropropane	NS	NS	0.0075	5	ND	U	2
		1,2,4-trichlorobenzene	NS	70	11	70	ND	U	2
		1,2,4-trimethylbenzene	NS	NS	56	56	ND	U	2
		1,2-Dibromo-3-chloropropane	NS	0.2	0.0033	5	ND	U	4
		1,2-dibromoethane	0.1	0.05	0.075	0.05	ND	U	1
		1,2-dichlorobenzene	NS	600	300	600	ND	U	2
		1,2-dichloroethane	10	5	1.7	5	4	Z	1
		1,2-dichloropropane	NS	5	1.4	5	ND	U	1
		1,3,5-trimethylbenzene	NS	NS	120	120	ND	U	2
		1,3-dichlorobenzene	NS	600	300	600	ND	U	2
		1,3-dichloropropane	NS	NS	370	370	ND	U	1
		1,4-dichlorobenzene	NS	75	4.8	75	ND	U	2
		2,2-dichloropropane	NS	NS	NS	NS	ND	UZ	1
		2-butanone	NS	NS	5,600	5,600	ND	U	8
		2-chlorotoluene	NS	NS	240	240	ND	U	2
		2-hexanone	NS	NS	38	38	ND	U	8
		4-chlorotoluene	NS	NS	250	250	ND	U	2
		4-Isopropyltoluene	NS	NS	NS	NS	ND	U	2
		4-methyl-2-pentanone	NS	NS	1,200	1,200	ND	U	8
		Acetone	NS	NS	14,000	14,000	ND	U	20
		Acrolein	NS	NS	0.042	100	ND	U	100
		Acrylonitrile	NS	NS	0.52	20	ND	U	10
		Benzene	10	5	4.5	5	ND	U	1
		Bromobenzene	NS	NS	62	62	ND	U	2
		Bromochloromethane	NS	NS	83	83	ND	U	2
		Bromodichloromethane	NS	80	1.3	80	ND	U	1
		Bromoform	NS	80	33	80	ND	UZ	1
		Bromomethane	NS	NS	7.5	7.5	ND	U	1
		Carbon disulfide	NS	NS	810	810	ND	UZ	2
		Carbon tetrachloride	10	5	4.5	5	ND	UZ	1
		Chlorobenzene	NS	100	78	100	ND	U	1
		Chloroethane	NS	NS	21,000	21,000	ND	U	1

Table 2  
Groundwater Analytical Results for KAFB-106157 (Data Validation Pending)

			Well Location ID:				KAFB-106157		
			Field Sample ID:				GW157-173		
			Sample Date:				7/17/2017		
			Sample Type:				REG		
			Sample Depth (ft bgs):				475		
Parameter	Analytical Method	Analyte	NMAC NMWQCC <sup>a</sup>	EPA MCL <sup>b</sup>	EPA RSL <sup>c</sup>	Project Screening Level <sup>d</sup>	Result	Lab Qual	LOD
VOCs	Method SW8260C (µg/L)	Chloroform	100	80	2.2	80	ND	U	1
		Chloromethane	NS	NS	190	190	ND	U	1
		cis-1,2-dichloroethene	NS	70	36	70	ND	U	1
		cis-1,3-dichloropropene	NS	NS	4.7	4.7	ND	U	1
		Dibromochloromethane	NS	80	1.7	80	ND	U	1
		Dibromomethane	NS	NS	8	8	ND	U	1
		Dichlorodifluoromethane	NS	NS	200	200	ND	UZ	1
		Ethylbenzene	750	700	15	700	ND	U	1
		Hexachloro-1,3-butadiene	NS	NS	1.4	5	ND	U	4
		Isopropylbenzene	NS	NS	450	450	2	J	2
		m,p-Xylene	NS	10,000	190	10,000	ND	U	1
		Methyl tert-butyl ether	NS	NS	140	140	0.6	J	1
		Methylene Chloride	100	5	110	5	ND	U	4
		Naphthalene	30	NS	1.7	30	ND	U	2
		n-Butylbenzene	NS	NS	1000	1000	ND	U	2
		N-propylbenzene	NS	NS	660	660	ND	U	2
		o-Xylene	NS	10,000	190	10,000	ND	U	1
		Sec-butylbenzene	NS	NS	2,000	2,000	ND	U	2
		Styrene	NS	100	1,200	100	ND	U	2
		Tert-butylbenzene	NS	NS	690	690	ND	U	2
		Tetrachloroethene	20	5	110	5	ND	U	1
		Toluene	750	1000	1,100	750	ND	U	1
		trans-1,2-dichloroethene	NS	100	360	100	ND	U	1
		trans-1,3-dichloropropene	NS	NS	4.7	4.7	ND	U	1
		Trichloroethene	100	5	4.9	5	ND	U	1
		Trichlorofluoromethane	NS	NS	1,100	1,100	ND	UZ	1
		Vinyl acetate	NS	NS	410	410	ND	U	4
		Vinyl chloride	1	2	0.19	1	ND	U	1
		Xylenes, Total	620	10,000	190	620	ND	U	1
Dissolved Metals	Method SW6010C (mg/L)	Iron, dissolved	1	NS	NS	1	0.256	J	0.200
		Manganese, dissolved	0.2	NS	NS	0.2	1.24	--	0.0050

Table 2  
Groundwater Analytical Results for KAFB-106157 (Data Validation Pending)

<sup>a</sup> NMWQCC numeric standards per the NMAC Title 20.6.2.3103A, Standards for Ground Water of 10,000 mg/L Total Dissolved Solids Concentration or Less (NMAC 2004). For metals, the NMWQCC numeric standard applies to dissolved metals.

<sup>b</sup> EPA National Primary Drinking Water Regulations, MCLs and Secondary MCLs, Title 40CFR Part 141, 143 (May 2009).

<sup>c</sup> EPA Region 6 RSL for Tapwater (June 2017) for hazard index = 1.0 for noncarcinogens and a 10-5 cancer risk level for carcinogens.

<sup>d</sup> The project screening level was selected to satisfy the requirements of the Kirtland AFB Hazardous Waste Permit Number NM9570024423 as the lowest of (1) NMWQCC numeric standard or (2) EPA MCL. If no NMWQCC standard or MCL exists for any analyte, then the project screening level will be the EPA RSL.

µg/L = microgram per liter  
bgs = below-ground surface  
CFR = Code of Federal Regulations  
EDB = ethylene dibromide (1,2-dibromoethane)  
EPA = U.S. Environmental Protection Agency  
ft = foot/feet  
ID = identification  
LOD = limit of detection  
MCL = maximum contaminant level  
mg/L = milligram per liter  
ND = not detected  
NMAC = New Mexico Administrative Code  
NMWQCC = New Mexico Water Quality Control Commission  
NS = not specified  
REG = normal field sample  
RSL = regional screening level  
Val Qual = validation qualifier  
VOC = volatile organic compound  
Shading = detected concentrations above the detection limit  
**Bold/Shading = reported concentrations exceed the project screening level**

Qualifiers:  
Lab Quals based on laboratory data review.  
J = Qualifier denotes the analyte was positively identified, but the associated numerical value is estimated.  
U = Qualifier denotes the analyte was analyzed but not detected above the detection limit. The value associated with the U-qualifier is the LOD.  
Z = The response for a target analyte in the initial calibration verification standard is outside the control limits.  
-- = Qualifier not assigned to the associated numerical value.

## **Appendix A**

### **New Mexico Office of the State Engineer Approved Well Plugging Plan**



**DISTRICT I**

**TOM BLAINE, P.E.**  
STATE ENGINEER

5550 San Antonio NE  
Albuquerque, NM 87109  
(505) 383-4000

November 10, 2016

**FILE: RG-1579 POD 218**

John Pike  
AFCEC/Kirtland AFB 1<sup>st</sup>  
2050 Wyoming Blvd., SE  
Kirtland AFB, NM 87117

Greetings:

Enclosed is the Well Plugging Plan of Operations which has been approved subject to the Conditions of Approval, attached hereto.

Sincerely,

  
Gary Stansifer  
Water Resource Specialist Senior

Enclosures as stated



# WELL PLUGGING PLAN OF OPERATIONS



NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

**I. FILING FEE:** There is no filing fee for this form.

## **II. GENERAL / WELL OWNERSHIP:**

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RG-1579 POD 218 (KAFB-106157)

Name of well owner: Kirtland Air Force Base

Mailing address: AFCEC/Kirtland AFB IST; Bldg 20685; 2050 Wyoming Blvd SE

City: Albuquerque State: New Mexico Zip code: 87117-5270

Phone number: 505-853-3484 E-mail: ludie.bitner@us.af.mil

## **III. WELL DRILLER INFORMATION:**

Well Driller contracted to provide plugging services: National EWP, Inc.

New Mexico Well Driller License No.: WD-1210 Expiration Date: Unknown

## **IV. WELL INFORMATION:**

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan. On file at OSE District I

- 1) GPS Well Location: Latitude: 35 deg, 3 min, 15.00 sec  
Longitude: 106 deg, 34 min, 36.00 sec, NAD 83  
Northing: 1475168.4 Easting: 1542616.1
- 2) Reason(s) for plugging well: Well does not meet the objectives of the groundwater remediation effort.
- 3) Was well used for any type of monitoring program or environmental assessment? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.
- 4) Does the well tap brackish, saline, or otherwise poor quality water? Yes If yes, provide additional detail, including analytical results and/or laboratory report(s): Well completed in the uppermost aquifer containing dissolved phase volatile organic compounds associated with the Kirtland AFB Bulk Fuels Facility release. Analytical laboratory results are provided in Attachment I.
- 5) Static water level: ~465 ft below ground surface (bgs)
- 6) Depth of the well: 545 ft

Trn. No





7) Grout additives requested, and percent by dry weight relative to cement: \_\_\_\_\_  
5-percent bentonite

8) Additional notes and calculations: \_\_\_\_\_  
None

**VII. ADDITIONAL INFORMATION:** List additional information below, or on separate sheet(s):

Upon completion, RG-1579 POD 218 (KAFB-106157) did not meet performance objectives for inclusion in the Kirtland AFB groundwater remediation system.

**VIII. SIGNATURE:**

I, ERIC H. FROEHLICH, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.



Signature of Applicant

COLONEL, USAF, 377 ABW COMMANDER

4 Nov 16

Date

**IX. ACTION OF THE STATE ENGINEER:**

This Well Plugging Plan of Operations is:

☒ Approved subject to the attached conditions.  
☐ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 9th day of NOVEMBER, 2016

Tom Blaine P.E., New Mexico State Engineer

By: Gary Stansifer

STATE ENGINEER'S OFFICE  
NOV - 3 PM 4:30

**TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.**

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			Ground surface
Bottom of proposed interval of grout placement (ft bgl)			545
Theoretical volume of grout required per interval (gallons)			1,423
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			6
Mixed on-site or batch-mixed and delivered?			batch-mixed and delivered
Grout additive 1 requested			bentonite
Additive 1 percent by dry weight relative to cement			5
Grout additive 2 requested			None
Additive 2 percent by dry weight relative to cement			None

2016 NOV -3 PM 4:30

STATE ENGINEERS OFFICE

**TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.**

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

STATE ENGINEERS OFFICE  
ALBUQUERQUE, NEW MEXICO  
2016 NOV -3 PM 4:31

Trn. No



**DISTRICT 1**  
**SCOTT A. VERHINES, P.E.**  
**NEW MEXICO STATE ENGINEER**

Materials submitted by Kirtland Air Force Base identify well RG-1579 POD 218 (8"-diameter, 545' deep), located at Kirtland Air Force Base, Bernalillo County, as scheduled for plugging. National EWP, Inc. (WD-1210) will perform the plugging.

Permittee: Kirtland Air Force Base, RG-1579 POD 218

Location: Kirtland Air Force Base, Bernalillo County, NM

Approximate well coordinates: Latitude: 35° 3' 15.00" N, Longitude: 106° 34' 36.00" W

**Specific Plugging Conditions of Approval for RG-1579 POD 218, Bernalillo County**

1. Water well drilling and well drilling activities, including well plugging, are regulated under 19.27.4 NMAC, which requires any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the New Mexico Office of the State Engineer (NMOSE). Therefore, the firm of a New Mexico licensed Well Driller shall perform the well plugging.
2. Theoretical volume of sealant required for abandonment of the 8"-casing is approximately 2.777 gallons per foot. Total minimum volume of necessary sealant shall be calculated upon sounding the actual pluggable depth of the well.
3. The Well Plugging Plan of Operation submitted indicates a neat cement grout will be used for the plugging. Fundamental water demand for Type I/II Portland neat cement grout is 5.2 gallons per 94 lb/sack cement. Use of mix water increment in excess of this amount results in a thinned mix of cement prone to shrinkage that may disrupt effective sealing and hydraulic separation. AWWA Well Standards allow use of a maximum of 6.0 gallons water per 94 lb/sack cement if necessary for pumpability of neat cement grout.
4. Placement of the grout slurry within the well shall be by pumping through a tremie pipe extended to near well bottom and kept below top of the slurry column as the well is plugged from bottom-upwards in a manner that displaces the standing water column upwards from below (note Condition 6, below). Tremie pipe may be pulled as necessary to retain minimal submergence in the advancing column of sealant.

5. Any open annulus encountered surrounding the 8" casing shall also be sealed by the placement of the approved cement grout mix. Prior to, or upon completion of plugging, the well casing may be cut-off below grade as necessary to allow approved redevelopment or grading onsite, provided a minimum 6-inch thickness of reinforced abandonment grout or concrete completely covers the top of the cut-off casing. More stringent local building codes may apply.
6. Should the NMED, or another regulatory agency sharing jurisdiction of the project authorize, or by regulation require a more stringent well plugging procedure than herein acknowledged, the more-stringent procedure should be followed. This, in part, includes provisions regarding pre-authorization to proceed, contaminant remediation, inspection, pulling/perforating of casing, or prohibition of free discharge of any fluid from the borehole during or related to the plugging process.
7. NMOSE witnessing of the plugging will not be required, but shall be facilitated if a NMOSE observer is onsite. NMOSE witnessing may be requested during normal work hours by calling the District 1 NMOSE Office at 505-383-4000, at least 48-hours in advance. NMOSE inspection will occur dependant on personnel availability.
8. A NMOSE Plugging Record (available at: <http://www.ose.state.nm.us/PDF/WellDrillers/WD-11.pdf> ) itemizing actual abandonment process and materials used shall be filed with the State Engineer (NMOSE, 5550 San Antonio Drive NE, Albuquerque, NM 87109-4127), within 20 days after completion of each well plugging. Please attach a copy of these plugging conditions.

The NMOSE Well Plugging Plan of Operations is hereby approved with the aforesaid conditions applied.

Witness my hand and seal this 9<sup>th</sup> day of November, 2016.

Tom Blaine, P.E. State Engineer

By:   
\_\_\_\_\_  
Gary Stansifer  
Water Resource Specialist

**Appendix B**

**Daily Reports, Groundwater Sampling Field Forms, and  
Chain-of-Custody**

## **Extraction Well 106157 Daily Abandonment Report – Date: 7-17-17**

### **Issues Today:**

-None

### **Resolution of Issues:**

-None

### **Well Abandonment Activity Summary:**

- EA sampled the Well 106157 using the portable Bennett pump system. Samples were collected for EDB, VOC's and dissolved metals.
- Cascade mobilized equipment to the site from Peralta, NM
- Guy Hannigan (Cascade) arrived from Arizona. Guy will be leading this project for Cascade

### **Other Activities Today:**

- VA Security blocked off the entire parking lot row for traffic control. This was more space than requested for this project so EA collapsed in the site barrier on the west side to allow for @ 20 parking slots in the row.

### **Work Planned for Tomorrow: 7-18-17**

- Complete site set up including running tremie pipe down hole, getting water and prepping for receipt of grout.
- If time allows, complete pumping of grout into well. If time/weather prevents grouting, this activity will be performed on Wednesday.

### **IDW Generated to Date**

-None

### **Site Visitors:**

-None

### **Photos Attached:**

-None



## **Extraction Well 106157 Daily Abandonment Report – Date: 7-18-17**

### **Issues Today:**

- Flatbed/water truck alternator and battery went out causing a 2+ hour delay in work progress.
- Two storm cells building up east of the site caused concern of weather and lightening occurring during the well grouting process scheduled for 2:30pm. A stop work requirement due to weather during grouting could put the tremie pipe and well at risk.

### **Resolution of Issues:**

- Cascade repaired the vehicle.
- A decision was made to delay the grouting until tomorrow morning when weather risk will be significantly lower.

### **Well Abandonment Activity Summary:**

- Cascade completed site set up including running tremie pipe to 525' bgs, filling a 275 gallon tote with COA water from a hydrant (for mixing of bentonite) and prepping equipment for grouting activities on Wednesday.
- Cascade used a jack hammer to remove the four bollards at the well pad.

### **Other Activities Today:**

- None

### **Work Planned for Tomorrow: 7-19-17**

- Grouting of the well
- If possible (grouting level allows work on the wellhead), jack hammer around the well protective casing for removal.
- Manually cement the voids left behind from the bollard removal

### **IDW Generated to Date**

- None

### **Site Visitors:**

- Bryan Nydoske (Cascade)

### **Photos Attached:**

- Site Setup
- Removal of protective bollards





## **Extraction Well 106157 Daily Abandonment Report – Date: 7-19-17**

### **Issues Today:**

-None

### **Resolution of Issues:**

-None.

### **Well Abandonment Activity Summary:**

-Well was cemented using a neat cement with 5% bentonite with the tremie pipe initially set at 525' bgs. The well was cemented to two feet above grade in the well casing. By 3:00 pm the cement had settled about 12".

### **Other Activities Today:**

-Cascade cleaned and loaded most of their equipment up for transport back to their home yard.

### **Work Planned for Tomorrow: 7-19-17**

- Hammer out the protective well casing from the well pad
- Cut out the well pipe to 6" below grade
- Cement the well and bollard voids to ground level
- Set the concrete parking stop in the new location
- Clean site and demob all equipment and materials. Collapse site traffic controls except for barricades immediately around the curing cement at the well pad. These barricades will be recovered on Friday.

### **IDW Generated to Date**

-None

### **Site Visitors:**

-None

### **Photos Attached:**

- Secured well from 7-18-17
- Concrete truck
- Cemented well











## **Extraction Well 106157 Daily Abandonment Report – Date: 7-20-17**

**Note:** This will be the final daily report for this project

### **Issues Today:**

-None

### **Resolution of Issues:**

-None.

### **Well Abandonment Activity Summary:**

-The well protective outer casing and eight-inch diameter well pipe were hammered out of the concrete pad and cut six inches below grade. The voids in the pad from the well and four bollards were cemented to grade with hand-mixed Quikrete cement. Rebar exposed in the original pad during the removal of the bollards were retained for concrete strength.

-Traffic control in the parking lot was collapsed to allow parking and traffic flow. Barriers were placed around the well pad to protect the curing cement.

### **Other Activities Today:**

-Cascade swept and pressured washed the parking lot around the work area as part of the site clean-up activities. Cascade demobilized all equipment and material from the site.

-The port-o-potty will be removed from the site by COB.

### **Work Planned for Tomorrow: 7-21-17**

-EA will remove the remaining traffic barriers surrounding the well pad.

### **IDW Generated to Date**

-None

### **Site Visitors:**

-None

### **Photos Attached:**

-Hammering out protective casing

-Hand pouring cement

-Final repaired pad (2)

-Final parking stop

















Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report – Non-Construction

DATE: 7-17-17

1. ONSITE PERSONNEL (including subcontractors and government employees)	
Name	

## Well sampling

Team #1	Team #2	Spare
YSI Professional Plus 15K101398 Wh0003	YSI Professional Plus 15K101396 Wh0001	YSI Professional Plus 15L100541 Wh0002
MiniRAE 3000 592-915778 Wh0005	MiniRAE 3000 592-915790 Wh0004	MiniRAE 3000 592-915579 Wh0006
Hach 2100Q 15100C045034 Wh0008	Hach 2100Q 15100C044633 Wh0009	Hach 2100Q 15100C045025 Wh0007
Solinst Water Level Meter 253054	Solinst Water Level Meter 253053	Solinst Water Level Meter 253056

[illegible]

0730	at EA Yard loading equipment / barriers
0800	at 106157 well cap combo : 6157, setting up parking lot barriers. Moved west barrier in @ 10 slots to allow more parking.

0815 Port-o-Potties arrived ← Sample crew off to get tubing

Well 106157

Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report - Non-Construction

DATE: 7-17-17

4. WORK PERFORMED (Continued)

0845	Sample crew arrives, set up for sampling
0900	E. Morse off site. Dustin Graves with sampling crew.
1200	Sample crew finished
1430	E. Morse back on-site. Waiting for Cascade
1530	Cascade shows up with sem, trailer of equipment Guy Hannigan still 40 minutes out of town.
1600	Guy to pick Chris up. End of day

5. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications above.

Earl Morse  
Name

E. Morse  
Signature

EA Engineering, Science and Technology Inc., PBC

Reviewed by: \_\_\_\_\_

Initials: \_\_\_\_\_

Reviewed date: \_\_\_\_\_



Well 105157

1 of 3

Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report -- Non-ConstructionROLE: Site Supervisor / SSTDDATE: 7-18-17

## WEATHER:

## 1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Paul Morse	EA - Site Manager/Supervisor
Edna Morse	EA - Site Health and Safety Office
Guy Hannigan	> Cascade
Chris Scott	

## 2. OPERATING EQUIPMENT

Team #1	Team #2	Spare
YSI Professional Plus 15K101398 Wh0003 <input type="checkbox"/>	YSI Professional Plus 15K101396 Wh0001 <input type="checkbox"/>	YSI Professional Plus 15L100541 Wh0002 <input type="checkbox"/>
MiniRAE 3000 592-915778 Wh0005 <input type="checkbox"/>	MiniRAE 3000 592-915790 Wh0004 <input type="checkbox"/>	MiniRAE 3000 592-915579 Wh0006 <input type="checkbox"/>
Hach 2100Q 15100C045034 Wh0008 <input type="checkbox"/>	Hach 2100Q 15100C044633 Wh0009 <input type="checkbox"/>	Hach 2100Q 15100C045025 Wh0007 <input type="checkbox"/>
Solinst Water Level Meter 253054 <input type="checkbox"/>	Solinst Water Level Meter 253053 <input type="checkbox"/>	Solinst Water Level Meter 253056 <input type="checkbox"/>

## 3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

0700 Safety brief

## 4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0700 Safety Brief

Play of Day: set up, run tremie, grout, if time/weather allows. Grout scheduled to be here @ 1430.

Reviewed by: \_\_\_\_\_

Initials: \_\_\_\_\_

Reviewed date: \_\_\_\_\_



106157

203

Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report - Non-Construction

DATE: 7/18/17

## 4. WORK PERFORMED (Continued)

0830	Unload of most equipment complete. Ready to run traverse. Running to <del>204</del> <sup>525</sup> 'bgs 25 joints x 21' joint = 525'
	- Got clarification from Devon that Cascade ordering Portland Neat Cement is proper
0840	Running traverse (galvanized), coupled p.p.e 2" @ 20' joints <del>the joints are not</del> Lost count
0945	Driller confirmed we are at 525' bgs (25 joints) Will breakdown mast and run to get water. A total of 7 yd <sup>3</sup> of Neat cement will be brought to the site. <del>2</del> , 5.0-lb bags of bentonite will be mixed in a hopper and pumped into the cement truck. <span style="float: right;">} Estimated</span>
1015	Battery in Flatbed/water truck is dead, having to jump with pulling rig. Cascade asked if they could dump excess water from water truck in VA gravel off parking lot or somewhere else on site. Answer was no surface discharges allowed w/o a permit. Told them to only get what they need.
1030	After changing Flatbed battery 15 min, the engine will still not turn over.
1045	Cascade off site to get larger jumper cables and lunch.
1140	Flatbed finally starts, Cascade off to get water
1225	Flatbed back on site, it had died on the road. They are going to put water in 250 gal tote to feed hopper.
1240	Large thunder storm quickly building to east and moving towards site. Due to truck problems & not yet having water & the brewing storm, it was decided to not risk grouting until the AM.

5. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All  
equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications  
noted  
above

Paul Morse  
Name

Paul Morse  
Signature

EA Engineering, Science and Technology Inc., PBC

DQCR Page 2 of 2

Reviewed by: \_\_\_\_\_

Initials: \_\_\_\_\_

Reviewed date: \_\_\_\_\_

106157

Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report - Non-Construction

303

## 4. WORK PERFORMED (Continued)

DATE: 7/18/17

1245	Weather bug shows lightning @ 15 miles away. We will get water in tote to prep for grouting in AM and will remove concrete for bollard removal today.
1300	Cascade off to fill tote with water, 1322 cascade back on site
1330	Forklift concrete traffic stop off rebar mounts, getting ready to jack hammer out bollards.
1435	All four bollards removed
1515	Setting up mixing trough and diaphragm pump, move water tote in place
1525	Finished site set up, doing clean up
1545	Off-site

5. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications above.

Earl Morse  
Name

Earl Morse  
Signature

EA Engineering, Science and Technology Inc., PBC

DQCR Page 2 of 2

Reviewed by: \_\_\_\_\_

Initials: \_\_\_\_\_

Reviewed date: \_\_\_\_\_

# HEALTH AND SAFETY ACTIVITY REPORT

Site: Well 106157

Location: VA East yard

Weather Cond.: Clear/Hot

Onsite Hours: From 0800 To 1600

Changes in PPE Levels<sup>1</sup>

Work Operations

Reasons for Change

None

Site Safety and Health Plan  
Violations

Corrective Action  
Specified

Corrective Action  
Taken<sup>2</sup> (yes/no)

None

Observations and Comments:

None

Completed by: Earl Morse  
Site Health and Safety Supervisor

Date: 7/18/17

<sup>1</sup>Only SSHO may change PPE levels, using only criteria specified in APP/SSHP.

<sup>2</sup>If a deficiency is noted that cannot be immediately corrected, the SSHO will monitor the progress in correcting the deficiency and will document following:

- Date the deficiency was identified
- Description of the deficiency
- Name of the person responsible for correcting the deficiency
- Projected date of correction
- Actual date of correction.

EA ENGINEERING, SCIENCE AND TECHNOLOGY, INC.  
SAFETY MEETING REPORT

Date: 7-18-17 Time: Duration of meeting: 10 min Project # 62735 DM02

Location: Well 106157 Task: Well Abandonment

Type of meeting: ☒ Daily ☐ Weekly ☐ Monthly ☐ Other:

Items/Issues discussed:

1. Heat Stress
2. Parking Traffic Flow
3. Slip/Trip/Fall
4. Well Potentially hazardous
- 5.

Attach minutes of safety meeting if taken.

Safety questions/issues raised: Actions/Follow-up needed:

1. None

2.

3.

4.

5.

6.

Remarks: None

Meeting conducted by:

Paul Morse 7/18/17



EA Engineering, Science,  
and Technology, Inc.

## DAILY SAFETY INSPECTION CHECKLIST

(TO BE COMPLETED EACH DAY OF CONSTRUCTION OR HTRW SITE ACTIVITIES)

Site: Well 106157  
 Location: VA Parking Lot - East  
 Project No.: 62735 PM02.1020.01  
 Client: USACE

Prepared by SSHO: E. Moisa

Project Manager: Devon Sermonick

Date: 7-18-17

Rating	Y	N	N/A	Comments/Immediate Corrective Action <sup>1</sup>
<b>Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) General Requirements</b>				
Are there new onsite personnel?	✓			New job
<ul style="list-style-type: none"> <li>Did they receive pre-entry briefing and are their names recorded in field logbook or daily log?</li> <li>Was the USACE PM made aware of the new personnel.</li> <li>Required training and medical surveillance documentation received (e.g., 40-hr, 8 hr, etc.)?</li> </ul>	✓			
Did personnel sign in/out of site?	✓			
Daily tailgate safety meetings conducted and documented?	✓			
Were new activities performed today? Were hazards identified, discussed during the daily safety tailgate, and incorporated into revised APP/SSHP?	✓			New job
New materials brought on site? MSDSs available?	✓			
Exclusion (EZ), Contamination Reduction (CRZ), and Support Zones (SZ) delineated and enforced?	✓			
General housekeeping measures in place to prevent hazards?	✓			
<b>Emergency Planning</b>				
Were there any changes to emergency contact names, telephone numbers, or hospital? If so, were site personnel made aware and was information distributed/reposted.		✓		
Adequate safety equipment inventory available?	✓			
Fire extinguisher available (monthly inspection of extinguisher will suffice)	✓			
Eyewash station(s) functioning and in place (weekly inspection of eye wash station will suffice)?	✓			
First aid supplies available (weekly inspection of first aid kit will suffice)?	✓			
Communication equipment readily available for emergencies?	✓			
Any reported accidents/incidents at this site? If so, were accident reporting procedures followed?		✓		
<b>Air Monitoring</b>				
Monitoring equipment specified in SSHP available and in working order? Air monitoring instrumentation for this site includes – check each if required/on site, note deficiencies in comments:			✓	
<ul style="list-style-type: none"> <li>Combustible gas meter</li> <li>Organic vapor analyzer</li> <li>Contaminant specific analyzer for benzene (if total organic vapor concentrations exceed 0.5 ppm)</li> </ul>				
Monitoring equipment calibrated and calibration records			✓	

Y = Satisfactory or Yes; N = Unsatisfactory or No, N/A = Not applicable

SSHO Checklist



Rating	Y	N	N/A	Comments/Immediate Corrective Action <sup>1</sup>
available?			✓	
Environmental and personnel monitoring performed as specified in SSHP?			✓	
<b>PPE</b>				
Proper dermal protection worn by EA and subcontracted employees when handling/ contacting hazardous chemicals or contaminated environmental media?	✓			
Required PPE (hard hats, safety boots / shoes, eye protection with side shields, hearing protection) being worn by EA and subcontracted employees?	✓			
PPE inspection completed by SSHO?	✓			
<b>Drill Rig Operations</b>				
Daily rig inspection completed? Any equipment problems?		✓		
Drill rigs/elevated equipment maintaining minimum 10-ft distance from energized (50 kV) overhead power lines?	✓			
<b>Investigation-derived Waste (IDW)</b>				
Wastes properly staged, secured, and labeled at end of day?			✓	
Additional Comments:				

San L. Moore  
Site Safety and Health Officer's Signature

7/18/17  
Date

<sup>1</sup>If a deficiency is noted that cannot be immediately corrected, the SSHO will monitor the progress in correcting the deficiency and will document following

- Date the deficiency was identified
- Description of the deficiency
- Name of the person responsible for correcting the deficiency
- Projected date of correction
- Actual date of correction.

Y = Satisfactory or Yes; N = Unsatisfactory or No, N/A = Not applicable

SSHO Checklist



Well 106157

1 of 3

Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report -- Non-Construction

ROLE: Site Supervisor/SSHODATE: 7-19-17

## WEATHER:

## 1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Paul Morse	EA - Site Manager/Supervisor
Paul Morse	EA - Site Health and Safety Office
Guy Hannigan	Cascade
Chris Smith	

## 2. OPERATING EQUIPMENT

Team #1	Team #2	Spare
YSI Professional Plus 15K101398 Wh0003 <input type="checkbox"/>	YSI Professional Plus 15K101396 Wh0001 <input type="checkbox"/>	YSI Professional Plus 15L100541 Wh0002 <input type="checkbox"/>
MiniRAE 3000 592-915778 Wh0005 <input type="checkbox"/>	MiniRAE 3000 592-915790 Wh0004 <input type="checkbox"/>	MiniRAE 3000 592-915579 Wh0006 <input type="checkbox"/>
Hach 2100Q 15100C045034 Wh0008 <input type="checkbox"/>	Hach 2100Q 15100C044633 Wh0009 <input type="checkbox"/>	Hach 2100Q 15100C045025 Wh0007 <input type="checkbox"/>
Solinst Water Level Meter 253054 <input type="checkbox"/>	Solinst Water Level Meter 253053 <input type="checkbox"/>	Solinst Water Level Meter 253056 <input type="checkbox"/>

## 3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)


## 4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0700	Safety brief
0715	Cascade starts working on prep to mix bentonite
	I asked Cascade to build a containment structure
	North of well to capture any fluid release.

Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report - Non-Construction

## 4. WORK PERFORMED (Continued)

DATE: 7-19-17

0730	Firing up compressor and diaphragm pump. Got pump circulating properly. Have @ 150 gallons of water in tank. 1 <sup>st</sup> load will be 4-5 bags of bentonite. (1 <sup>st</sup> load, 5 bags)
0800	Cement support vehicle arrives and begins setup
0840	Waiting on cement delivery.
0905	Concrete mixer truck arrives (Duff City) Has 8 yd <sup>3</sup> load. 1 <sup>st</sup> load
0910	Mixing bentonite in hopper (5 sacks). Adding bentonite to concrete mixer
0915	Add water to hopper (15" ~ 150 gallons). Sacks of bentonite added: 4 (5 bags) 2 <sup>nd</sup> hopper load
	Received 8 yds of concrete in truck
0925	Diaphragm pump is loading up. Adding @ 20 gallons of H <sub>2</sub> O and recirculating in the bin. Working better now, pumping into the cement mixer. 0930 2 <sup>nd</sup> hopper load in cement truck.
0945	Pumping grout into well, added @ 2 yd <sup>3</sup> . Tripping out tremie joints: 4 5 joints pulled
1000	Pumping second round of grout into well. Pipe showing some collapse due to concrete loss into well
1008	End pumping 2 <sup>nd</sup> cycle, start tripping out tremie, pulling 5 joints. Well capacity for grout is @ 7.2 yd <sup>3</sup> not accounting for loss in gravel pack. 1015 Five joints pulled, hooking up to pump grout
1025	2 <sup>nd</sup> pumping cycle #3, pulling five joints of tremie
1030	Hook up and starting to pump cycle #4 of Grout
1034	Stopped pumping. Pressure @ hopper indicated they are above the tremie
1035	Pulling tremie: (1) Found grout on second joint pulled

5. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications above.

Eanl Mase  
Name

Eanl Mase  
Signature

EA Engineering, Science and Technology Inc., PBC

DQCR Page 2 of 2

Reviewed by: \_\_\_\_\_ Initials: \_\_\_\_\_

Reviewed date: \_\_\_\_\_

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Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report - Non-Construction

Well 106157

DATE: 7-19-17

4. WORK PERFORMED (Continued)

1040	Due to grout on tremie at this point, all of the remaining tremie will be pulled from the well
1050	All tremie out of hole. Will gravity feed the remaining grout column in the well to prevent over fill.
1100	Grout filled to @ 2' agh. Grout is moving down slowly. Concrete mixer truck and Hopper vehicle in clean up mode. Concrete in hopper being pumped back into mixer
1110	Collapsing pulling rig mast.
1130	Concrete mixer and Hopper truck off-site
1145	Cascade to lunch / 1235 Cascade back on site
1235	Plan to allow the well to set up overnight to ensure it's properly cured prior to cutting the casing down. Will start loading equipment and return undecided equipment to shop. Will do final well cut down and grouting on Thursday AM.
1350	Finished equipment loading, setting up to hammer out concrete around protective well casing.
1400	Moved concrete parking stop into place. Placed rebar anchors in holes, but left as is (not ponded in asphalt)
1420	Backhoe, all mixing tanks, bollards, extra cement all loaded
1445	Hooking up compressor to take off site
1500	Cascade moving equipment back to yard
	EOD

5. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications above.

Earl Morse  
Name

Earl Morse  
Signature

EA Engineering, Science and Technology Inc., PBC

Reviewed by: \_\_\_\_\_ Initials: \_\_\_\_\_

Reviewed date: \_\_\_\_\_

# HEALTH AND SAFETY ACTIVITY REPORT

Site: Well 106157

Location: VA East Lot

Weather Cond.: Sunny, humid, Hot

Onsite Hours: From 0700 To 1500

Changes in PPE Levels<sup>1</sup>

Work Operations

Reasons for Change

None

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Site Safety and Health Plan  
Violations

Corrective Action  
Specified

Corrective Action  
Taken<sup>2</sup> (yes/no)

None

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Observations and Comments:

None

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Completed by: EANL Moran  
Site Health and Safety Supervisor

Date: 7-19-17

<sup>1</sup>Only SSHO may change PPE levels, using only criteria specified in APP/SSHP.

<sup>2</sup>If a deficiency is noted that cannot be immediately corrected, the SSHO will monitor the progress in correcting the deficiency and will document following:

- Date the deficiency was identified
- Description of the deficiency
- Name of the person responsible for correcting the deficiency
- Projected date of correction
- Actual date of correction.





EA Engineering, Science,  
and Technology, Inc.

# DAILY SAFETY INSPECTION CHECKLIST

(TO BE COMPLETED EACH DAY OF CONSTRUCTION OR HTRW SITE ACTIVITIES)

Site: Well 106157  
Location: VA Lot East  
Project No.: 62735 DMO 2  
Client: USACE

Prepared by SSHO: EAL Mason  
Project Manager: Devon Jernovic  
Date: 7-19-17

Rating	Y	N	N/A	Comments/Immediate Corrective Action <sup>1</sup>
<b>Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) General Requirements</b>				
Are there new onsite personnel?				
<ul style="list-style-type: none"> <li>Did they receive pre-entry briefing and are their names recorded in field logbook or daily log?</li> <li>Was the USACE PM made aware of the new personnel.</li> <li>Required training and medical surveillance documentation received (e.g., 40-hr, 8 hr, etc.)?</li> </ul>		✓		
Did personnel sign in/out of site?	✓			
Daily tailgate safety meetings conducted and documented?	✓			
Were new activities performed today? Were hazards identified, discussed during the daily safety tailgate, and incorporated into revised APP/SSHP?		✓		
New materials brought on site? MSDSs available?		✓		
Exclusion (EZ), Contamination Reduction (CRZ), and Support Zones (SZ) delineated and enforced?	✓			
General housekeeping measures in place to prevent hazards?	✓			
<b>Emergency Planning</b>				
Were there any changes to emergency contact names, telephone numbers, or hospital? If so, were site personnel made aware and was information distributed/reposted.		✓		
Adequate safety equipment inventory available?	✓			
Fire extinguisher available (monthly inspection of extinguisher will suffice)	✓			
Eyewash station(s) functioning and in place (weekly inspection of eye wash station will suffice)?	✓			
First aid supplies available (weekly inspection of first aid kit will suffice)?	✓			
Communication equipment readily available for emergencies?	✓			
Any reported accidents/incidents at this site? If so, were accident reporting procedures followed?		✓		
<b>Air Monitoring</b>				
Monitoring equipment specified in SSHP available and in working order? Air monitoring instrumentation for this site includes – check each if required/on site, note deficiencies in comments:				
<ul style="list-style-type: none"> <li>Combustible gas meter</li> <li>Organic vapor analyzer</li> <li>Contaminant specific analyzer for benzene (if total organic vapor concentrations exceed 0.5 ppm)</li> </ul>			✓	
Monitoring equipment calibrated and calibration records				

Y = Satisfactory or Yes; N = Unsatisfactory or No, N/A = Not applicable

SSHO Checklist

Rating	Y	N	N/A	Comments/Immediate Corrective Action <sup>1</sup>
available?				
Environmental and personnel monitoring performed as specified in SSHP?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>PPE</b>				
Proper dermal protection worn by EA and subcontracted employees when handling/ contacting hazardous chemicals or contaminated environmental media?	<input checked="" type="checkbox"/>			
Required PPE (hard hats, safety boots / shoes, eye protection with side shields, hearing protection) being worn by EA and subcontracted employees?	<input checked="" type="checkbox"/>			
PPE inspection completed by SSHO?	<input checked="" type="checkbox"/>			
<b>Drill Rig Operations</b>				
Daily rig inspection completed? Any equipment problems?	<input checked="" type="checkbox"/>			
Drill rigs/elevated equipment maintaining minimum 10-ft distance from energized (50 kV) overhead power lines?	<input checked="" type="checkbox"/>			
<b>Investigation-derived Waste (IDW)</b>				
Wastes properly staged, secured, and labeled at end of day?			<input checked="" type="checkbox"/>	
Additional Comments: <i>None</i>				

Earl Morse  
Site Safety and Health Officer's Signature

7-19-17  
Date

<sup>1</sup>If a deficiency is noted that cannot be immediately corrected, the SSHO will monitor the progress in correcting the deficiency and will document following:

- Date the deficiency was identified
- Description of the deficiency
- Name of the person responsible for correcting the deficiency
- Projected date of correction
- Actual date of correction.

Y = Satisfactory or Yes; N = Unsatisfactory or No, N/A = Not applicable

SSHO Checklist



EA ENGINEERING, SCIENCE AND TECHNOLOGY, INC.  
SAFETY MEETING REPORT

Date: 7-19-17	Time: 0700	Duration of meeting: 10	Project # 62735DM02
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Location: Well 106157 Abandonment	Task: Well Grouting
-----------------------------------	---------------------

Type of meeting: ☒ Daily    ☐ Weekly    ☐ Monthly    ☐ Other: \_\_\_\_\_

Items/Issues discussed:

1. Wet surfaces
2. Heat stress / Fluid intake
3. Working around heavy equipment
4. Slip, trip, Fall

5.

Attach minutes of safety meeting if taken.

Safety questions/issues raised:

Actions/Follow-up needed:

1. None

2.

3.

4.

5.

6.

Remarks:

None

Meeting conducted by:

Paul Morse

Well 106157

1962

Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report - Non-Construction

ROLE: Site Supervisor / SSODATE: 7-20-17

## WEATHER:

## 1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Earl Morse	EA - Site Manager/Supervisor
Earl Morse	EA - Site Health and Safety Office
Guy Hammer	Cascade
Chris Scott	

## 2. OPERATING EQUIPMENT

Team #1	Team #2	Spare
YSI Professional Plus 15K101398 Wh0003 <input type="checkbox"/>	YSI Professional Plus 15K101396 Wh0001 <input type="checkbox"/>	YSI Professional Plus 15L100541 Wh0002 <input type="checkbox"/>
MiniRAE 3000 592-915778 Wh0005 <input type="checkbox"/>	MiniRAE 3000 592-915790 Wh0004 <input type="checkbox"/>	MiniRAE 3000 592-915579 Wh0006 <input type="checkbox"/>
Hach 2100Q 15100C045034 Wh0008 <input type="checkbox"/>	Hach 2100Q 15100C044633 Wh0009 <input type="checkbox"/>	Hach 2100Q 15100C045025 Wh0007 <input type="checkbox"/>
Solinst Water Level Meter 253054 <input type="checkbox"/>	Solinst Water Level Meter 253053 <input type="checkbox"/>	Solinst Water Level Meter 253056 <input type="checkbox"/>

## 3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)


## 4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0645	Safety briefing
0700	Start hammering concrete around well casing
0725	Cleaning out concrete from around protective surface casing. Preparing to remove casing

Reviewed by: \_\_\_\_\_ Initials: \_\_\_\_\_

Reviewed date: \_\_\_\_\_

Well 106157

2 of 2

Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01  
Daily Quality Control Report - Non-Construction

## 4. WORK PERFORMED (Continued)

DATE: 7-20-17

0730	Using Oxy-Acetylene torch to cut casing. 0735 casing cut
0735	<del>try</del> attempted to hammer in rebar to support the parking stop but had rejection. Rebar would not hammer into asphalt. Instructed him to leave rebar lying next to concrete stop.
0745	Protective outer casing removed. Hammering out excess grout from inside well casing.
0748	Start cutting well casing. 0800 well casing removed
0815	Pad cleaned up and water added to each hole to moisten soil prior to grouting.
0830	Mixed one bag Quikrete for well hole, 2 <sup>nd</sup> bag for south two bollard holes, 4 <sup>th</sup> bag for NW bollard hole
0845	All holes filled with concrete, start brushing smooth
0850	All holes brushed and smoothed. Will allow to dry for a while before final smoothing.
0905	Site clean up & loading equipment, set up barricades around well pad
0915	Brushing grouted holes, setting up to pressure wash asphalt to remove some residual cement.
0930	Finished power washing the asphalt. Final sweep on the concrete patches, pics of work taken, barricades in place
0945	Off-site

5. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications above.

Paul Morris  
Name

[Signature]  
Signature

EA Engineering, Science and Technology Inc., PBC

DQCR Page 2 of 2

Reviewed by: \_\_\_\_\_

Initials: \_\_\_\_\_

Reviewed date: \_\_\_\_\_

EA ENGINEERING, SCIENCE AND TECHNOLOGY, INC.  
SAFETY MEETING REPORT

62735DM02

Date: 7-20-17 Time: 0645 Duration of meeting: 10 Project # 6259DM02

Location: Well 106157 Task: Well Abandonment

Type of meeting: ☒ Daily ☐ Weekly ☐ Monthly ☐ Other: \_\_\_\_\_

Items/Issues discussed:

1. Heat Stress
2. Use of Power tools
3. Stinging insects
4. Snakes
- 5.

Attach minutes of safety meeting if taken.

Safety questions/issues raised: Actions/Follow-up needed:

- |         |  |
|---------|--|
| 1. None |  |
| 2.      |  |
| 3.      |  |
| 4.      |  |
| 5.      |  |
| 6.      |  |

Remarks: None

Meeting conducted by:

EAC Morse



EA Engineering, Science,  
and Technology, Inc.

# DAILY SAFETY INSPECTION CHECKLIST

(TO BE COMPLETED EACH DAY OF CONSTRUCTION OR HTRW SITE ACTIVITIES)

Site: Well 106157  
Location: VIA East Lot  
Project No.: 62735DM02  
Client: USACE

Prepared by SSHO: Earl Morse  
Project Manager: Devon Jencanovic  
Date: 7-20-17

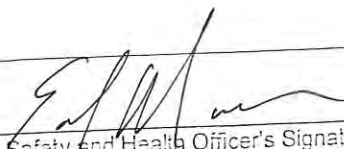
Rating	Y	N	N/A	Comments/Immediate Corrective Action <sup>1</sup>
<b>Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) General Requirements</b>				
Are there new onsite personnel?				
<ul style="list-style-type: none"> <li>Did they receive pre-entry briefing and are their names recorded in field logbook or daily log?</li> <li>Was the USACE PM made aware of the new personnel.</li> <li>Required training and medical surveillance documentation received (e.g., 40-hr, 8 hr, etc.)?</li> </ul>		✓		
Did personnel sign in/out of site?	✓			
Daily tailgate safety meetings conducted and documented?	✓			
Were new activities performed today? Were hazards identified, discussed during the daily safety tailgate, and incorporated into revised APP/SSHP?		✓		
New materials brought on site? MSDSs available?		✓		
Exclusion (EZ), Contamination Reduction (CRZ), and Support Zones (SZ) delineated and enforced?	✓			
General housekeeping measures in place to prevent hazards?	✓			
<b>Emergency Planning</b>				
Were there any changes to emergency contact names, telephone numbers, or hospital? If so, were site personnel made aware and was information distributed/reposted.		✓		
Adequate safety equipment inventory available?	✓			
Fire extinguisher available (monthly inspection of extinguisher will suffice)	✓			
Eyewash station(s) functioning and in place (weekly inspection of eye wash station will suffice)?	✓			
First aid supplies available (weekly inspection of first aid kit will suffice)?	✓			
Communication equipment readily available for emergencies?	✓			
Any reported accidents/incidents at this site? If so, were accident reporting procedures followed?		✓		
<b>Air Monitoring</b>				
Monitoring equipment specified in SSHP available and in working order? Air monitoring instrumentation for this site includes – check each if required/on site, note deficiencies in comments:				
<ul style="list-style-type: none"> <li>Combustible gas meter</li> <li>Organic vapor analyzer</li> <li>Contaminant specific analyzer for benzene (if total organic vapor concentrations exceed 0.5 ppm)</li> </ul>			✓	
Monitoring equipment calibrated and calibration records				

Y = Satisfactory or Yes; N = Unsatisfactory or No, N/A = Not applicable

SSHO Checklist



Rating	Y	N	N/A	Comments/Immediate Corrective Action <sup>1</sup>
available?				
Environmental and personnel monitoring performed as specified in SSHP?			✓	
<b>PPE</b>				
Proper dermal protection worn by EA and subcontracted employees when handling/ contacting hazardous chemicals or contaminated environmental media?	✓			
Required PPE (hard hats, safety boots / shoes, eye protection with side shields, hearing protection) being worn by EA and subcontracted employees?	✓			
PPE inspection completed by SSHO?	✓			
<b>Drill Rig Operations</b>				
Daily rig inspection completed? Any equipment problems?			✓	
Drill rigs/elevated equipment maintaining minimum 10-ft distance from energized (50 kV) overhead power lines?			✓	
<b>Investigation-derived Waste (IDW)</b>				
Wastes properly staged, secured, and labeled at end of day?			✓	
Additional Comments:				

  
Site Safety and Health Officer's Signature

7-20-17  
Date

<sup>1</sup>If a deficiency is noted that cannot be immediately corrected, the SSHO will monitor the progress in correcting the deficiency and will document following:

- Date the deficiency was identified
- Description of the deficiency
- Name of the person responsible for correcting the deficiency
- Projected date of correction
- Actual date of correction.

Y = Satisfactory or Yes; N = Unsatisfactory or No, N/A = Not applicable

SSHO Checklist



# HEALTH AND SAFETY ACTIVITY REPORT

Site: Well 106157

Location: VA Lot-East

Weather Cond.: partly cloudy / HOT

Onsite Hours: From 0645 To 0945

Changes in PPE Levels<sup>1</sup>

Work Operations

Reasons for Change

None

Site Safety and Health Plan  
Violations

Corrective Action  
Specified

Corrective Action  
Taken <sup>2</sup>(yes/no)

None

Observations and Comments:

Completed by: Earl Moore

Site Health and Safety Supervisor

Date: 7-20-17

<sup>1</sup>Only SSHO may change PPE levels, using only criteria specified in APP/SSHP.

<sup>2</sup>If a deficiency is noted that cannot be immediately corrected, the SSHO will monitor the progress in correcting the deficiency and will document following:

- Date the deficiency was identified
- Description of the deficiency
- Name of the person responsible for correcting the deficiency
- Projected date of correction
- Actual date of correction.

## Daily Quality Control Report – Non-Construction

DATE: 7-17-17

1. ONSITE PERSONNEL (including subcontractors and government employees)

## 2. OPERATING EQUIPMENT

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

706726

## Daily Quality Control Report – Non-Construction

7-17-17

0845	back to KAFB-106157 sampled!
1300	back to field trailer
	- made shipping labels/COC's
	- IDW yard (drop barrels)
	- clean truck
1410	going out again for gauging!

CONTRACTOR'S VERIFICATION: See # " " "

SHARMIN SULTANA  
Name

Signature

DQCR Page 2 of 2

Reviewed by: C. Montoya

Initials: CM

Reviewed date: 7-17-17





225 Schilling Circle Suite  
400 Hunt Valley MD  
Tel No: (410) 584-7000  
Fax No: (410) 771-1025

## CHAIN-OF-CUSTODY RECORD

COC NUMBER

600-157-173

PROJECT NAME:  
Kirtland AFB Bulk Fuels  
Facility

PROJECT NUMBER:  
62599DM01

LABORATORY NAME AND CONTACT:  
Eurofins Lancaster Laboratories  
2425 New Holland Pike Lancaster PA 17601

FAX AND MAIL REPORTS/EDD TO: Tara Lamond: tlamond@eaest.com EA  
Amanda Smith: asmith@eaest.com EA  
FAX AND MAIL REPORTS/EDD TO: Pam Moss: pmoss@eaest.com EA

YEAR:  
2017

QUARTER:  
3

PROJECT SITE AND PHASE:  
ST106/SS110

LAB PO NUMBER:  
14800

LAB CONTACT: Natalie Luciano NatalieLuciano@eurofinsUS.com Eurofins 1 (717) 556-7258

ANALYSIS REQUIRED (Specify number of bottles)																	COMMENTS
ITEM	SAMPLE IDENTIFIER	DATE COLLECTED	TIME COLLECTED	Total Number of Bottles	VOCs (8260C)	BTEX (8260C)	BTEXN (8260C)	EDR (8011)	Total As, Pb, Cd, K, Na, Mg (6020A/6010C)	Dissolved Fe, Mn (6010C)	Chloride, bromide, sulfate (300.0)	Nitrate-Nitrite (353.2)	Ammonia (SM4500NH3)	Sulfide (SM4500S2CF)	Alkalinity (SM2320B)		
1	C.M. GW173-157 157-173	7-17-17	1205	6	3	1	2	1	1	*							
2																	
3																	
4																	
5																	
6																	

COMMENTS: \*Dissolved Fe, Mn aliquot was field filtered.

COMMENTS: \*Dissolved Fe, Mn aliquot was field filtered.

SAMPLER(S): S. Bosky

RELINQUISHED BY:

Printed Name and Signature:

Stephen Bosky

Printed Name and Signature:

Carlos Montoya

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

COURIER AND SHIPPING NUMBER:

811156732444

TB173-21

RECEIVED BY:

Printed Name and Signature:

Carlos Montoya

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

DATE

TIME

7-17-17

1330

## **Appendix C**

### **Groundwater Analytical Data Package**

## ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental  
2425 New Holland Pike  
Lancaster, PA 17601

Prepared for:

EA Engineering, Science & Tech  
Building C, Suite 100  
405 State Highway 121 Bypass  
Lewisville TX 75067-8192

Report Date: July 31, 2017

**Project: Kirtland AFB**

Submittal Date: 07/18/2017

Group Number: 1826676

SDG: KR187

PO Number: 14800

State of Sample Origin: NM

Client Sample DescriptionGW216-173 Water  
GW217-173 Water  
GW218-173 Water  
GW223-173 Water  
GW224-173 Water  
GW157-173 Water

Lancaster Labs

(LL) #

9107402  
9107403  
9107404  
9107405  
9107406  
9107407

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To EA Science & Technology  
Electronic Copy To EA Science & Technology  
Electronic Copy To EA Engineering, Science & TechAttn: Amanda Smith  
Attn: Tara Lamond  
Attn: Pamela Moss



Respectfully Submitted,



Kay Hower

(717) 556-7364

---

Project Name: Kirtland AFB  
LL Group #: 1826676

**General Comments:**

All analyses have been performed in accordance with DOD QSM Version 5.0 unless otherwise noted below.

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Trip blank vials were not received by the laboratory for this sample group.

**Analysis Specific Comments:****SW-846 8260C, GC/MS Volatiles**

Sample #s: 9107407

The response for a target analyte(s) in the initial calibration verification standard is outside the QC acceptance limits. The client was contacted and the data reported.

**SW-846 8011, Volatiles by Extraction**

Sample #s: 9107407

volatile compounds have been detected above the LOQ in the sample. Since a field reagent blank (trip blank) was not submitted with this sample any potential contribution of volatiles from the sampling/transport process cannot be assessed.

Batch #: 172010025A (Sample number(s): 9107402-9107407 UNSPK: P95972, P109771)

The recovery(ies) for the following analyte(s) in the MS and/or MSD were below the acceptance window: Ethylene dibromide

Sample Description: GW157-173 Water  
Kirtland AFB Bulk Fuels Facility

LL Sample # WW 9107407  
LL Group # 1826676  
Account # 31675

Project Name: Kirtland AFB

Collected: 07/17/2017 12:05 by SB

EA Engineering, Science & Tech

Submitted: 07/18/2017 09:40

Building C, Suite 100

Reported: 07/31/2017 15:06

405 State Highway 121 Bypass

Lewisville TX 75067-8192

18706 SDG#: KR187-06

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	ug/l	ug/l	
11997	Acetone	67-64-1	20 U	6	20	20	1
11997	Acrolein	107-02-8	100 U	40	100	100	1
11997	Acrylonitrile	107-13-1	10 U	4	10	20	1
11997	Benzene	71-43-2	1 U	0.5	1	1	1
11997	Bromobenzene	108-86-1	2 U	1	2	5	1
11997	Bromochloromethane	74-97-5	2 U	1	2	5	1
11997	Bromodichloromethane	75-27-4	1 U	0.5	1	1	1
11997	Bromoform	75-25-2	1 UZ	0.5	1	4	1
11997	Bromomethane	74-83-9	1 U	0.5	1	1	1
11997	2-Butanone	78-93-3	8 U	3	8	10	1
11997	n-Butylbenzene	104-51-8	2 U	1	2	5	1
11997	sec-Butylbenzene	135-98-8	2 U	1	2	5	1
11997	tert-Butylbenzene	98-06-6	2 U	1	2	5	1
11997	Carbon Disulfide	75-15-0	2 UZ	1	2	5	1
11997	Carbon Tetrachloride	56-23-5	1 UZ	0.5	1	1	1
11997	Chlorobenzene	108-90-7	1 U	0.5	1	1	1
11997	Chloroethane	75-00-3	1 U	0.5	1	1	1
11997	Chloroform	67-66-3	1 U	0.5	1	1	1
11997	Chloromethane	74-87-3	1 U	0.5	1	1	1
11997	2-Chlorotoluene	95-49-8	2 U	1	2	5	1
11997	4-Chlorotoluene	106-43-4	2 U	1	2	5	1
11997	1,2-Dibromo-3-chloropropane	96-12-8	4 U	2	4	5	1
11997	Dibromochloromethane	124-48-1	1 U	0.5	1	1	1
11997	1,2-Dibromoethane	106-93-4	1 U	0.5	1	1	1
11997	Dibromomethane	74-95-3	1 U	0.5	1	1	1
11997	1,2-Dichlorobenzene	95-50-1	2 U	1	2	5	1
11997	1,3-Dichlorobenzene	541-73-1	2 U	1	2	5	1
11997	1,4-Dichlorobenzene	106-46-7	2 U	1	2	5	1
11997	Dichlorodifluoromethane	75-71-8	1 UZ	0.5	1	1	1
11997	1,1-Dichloroethane	75-34-3	1 U	0.5	1	1	1
11997	1,2-Dichloroethane	107-06-2	4 Z	0.5	1	1	1
11997	1,1-Dichloroethene	75-35-4	1 U	0.5	1	1	1
11997	cis-1,2-Dichloroethene	156-59-2	1 U	0.5	1	1	1
11997	trans-1,2-Dichloroethene	156-60-5	1 U	0.5	1	1	1
11997	1,2-Dichloropropane	78-87-5	1 U	0.5	1	1	1
11997	1,3-Dichloropropane	142-28-9	1 U	0.5	1	1	1
11997	2,2-Dichloropropane	594-20-7	1 UZ	0.5	1	1	1
11997	1,1-Dichloropropene	563-58-6	2 U	1	2	5	1
11997	cis-1,3-Dichloropropene	10061-01-5	1 U	0.5	1	1	1
11997	trans-1,3-Dichloropropene	10061-02-6	1 U	0.5	1	1	1
11997	Ethylbenzene	100-41-4	1 U	0.5	1	1	1
11997	Hexachlorobutadiene	87-68-3	4 U	2	4	5	1
11997	2-Hexanone	591-78-6	8 U	3	8	10	1
11997	Isopropylbenzene	98-82-8	2 J	1	2	5	1
11997	p-Isopropyltoluene	99-87-6	2 U	1	2	5	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	0.6 J	0.5	1	1	1
11997	4-Methyl-2-pentanone	108-10-1	8 U	3	8	10	1
11997	Methylene Chloride	75-09-2	4 U	2	4	4	1
11997	Naphthalene	91-20-3	2 U	1	2	5	1
11997	n-Propylbenzene	103-65-1	2 U	1	2	5	1

\*=This limit was used in the evaluation of the final result

**Sample Description:** GW157-173 Water  
Kirtland AFB Bulk Fuels Facility

LL Sample # WW 9107407  
LL Group # 1826676  
Account # 31675

**Project Name:** Kirtland AFB

Collected: 07/17/2017 12:05 by SB

EA Engineering, Science & Tech

Submitted: 07/18/2017 09:40

Building C, Suite 100

Reported: 07/31/2017 15:06

405 State Highway 121 Bypass

Lewisville TX 75067-8192

18706 SDG#: KR187-06

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
GC/MS	Volatiles	SW-846 8260C	ug/l	ug/l	ug/l	ug/l	
11997	Styrene	100-42-5	2 U	1	2	5	1
11997	1,1,1,2-Tetrachloroethane	630-20-6	1 U	0.5	1	1	1
11997	1,1,2,2-Tetrachloroethane	79-34-5	1 U	0.5	1	1	1
11997	Tetrachloroethene	127-18-4	1 U	0.5	1	1	1
11997	Toluene	108-88-3	1 U	0.5	1	1	1
11997	1,2,3-Trichlorobenzene	87-61-6	2 U	1	2	5	1
11997	1,2,4-Trichlorobenzene	120-82-1	2 U	1	2	5	1
11997	1,1,1-Trichloroethane	71-55-6	1 U	0.5	1	1	1
11997	1,1,2-Trichloroethane	79-00-5	1 U	0.5	1	1	1
11997	Trichloroethene	79-01-6	1 U	0.5	1	1	1
11997	Trichlorofluoromethane	75-69-4	1 UZ	0.5	1	1	1
11997	1,2,3-Trichloropropane	96-18-4	2 U	1	2	5	1
11997	1,2,4-Trimethylbenzene	95-63-6	2 U	1	2	5	1
11997	1,3,5-Trimethylbenzene	108-67-8	2 U	1	2	5	1
11997	Vinyl Acetate	108-05-4	4 U	2	4	10	1
11997	Vinyl Chloride	75-01-4	1 U	0.5	1	1	1
11997	m+p-Xylene	179601-23-1	1 U	0.5	1	1	1
11997	o-Xylene	95-47-6	1 U	0.5	1	1	1
11997	Xylene (Total)	1330-20-7	1 U	0.5	1	1	1

The response for a target analyte(s) in the initial calibration verification standard is outside the QC acceptance limits. The client was contacted and the data reported.

Volatiles by Extraction	SW-846 8011	ug/l	ug/l	ug/l	ug/l	
10398 Ethylene dibromide	106-93-4	0.058	0.0095	0.019	0.029	1
Volatile compounds have been detected above the LOQ in the sample. Since a field reagent blank (trip blank) was not submitted with this sample any potential contribution of volatiles from the sampling/transport process cannot be assessed.						

Metals Dissolved	SW-846 6010C	mg/l	mg/l	mg/l	mg/l	
01754 Iron	7439-89-6	0.256 J	0.0805	0.200	0.400	1
07058 Manganese	7439-96-5	1.24	0.0016	0.0050	0.0100	1

## Sample Comments

This sample was field filtered for dissolved metals.  
Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial# Batch#	Analysis Date and Time	Analyst	Dilution Factor
---------	---------------	--------	---------------	------------------------	---------	-----------------

\*=This limit was used in the evaluation of the final result

**Sample Description:** GW157-173 Water  
Kirtland AFB Bulk Fuels Facility

LL Sample # WW 9107407  
LL Group # 1826676  
Account # 31675

**Project Name:** Kirtland AFB

Collected: 07/17/2017 12:05 by SB

EA Engineering, Science & Tech

Submitted: 07/18/2017 09:40

Building C, Suite 100

Reported: 07/31/2017 15:06

405 State Highway 121 Bypass

Lewisville TX 75067-8192

18706 SDG#: KR187-06

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C	SW-846 8260C	1	L172091AA	07/28/2017 11:26	Kevin A Sposito	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	L172091AA	07/28/2017 11:26	Kevin A Sposito	1
10398	EDB 8011 Water	SW-846 8011	1	172010025A	07/22/2017 00:00	Heather M Miller	1
07786	EDB Extraction (8011)	SW-846 8011	1	172010025A	07/21/2017 09:00	Samantha M Metzgar	1
01754	Iron	SW-846 6010C	1	172001063501	07/21/2017 13:26	Patrick J Engle	1
07058	Manganese	SW-846 6010C	1	172001063501	07/21/2017 13:26	Patrick J Engle	1
10635	ICP-WW, 3005A (tot rec) - U4	SW-846 3005A	1	172001063501	07/20/2017 05:35	James L Mertz	1

\*=This limit was used in the evaluation of the final result



## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 07/31/2017 15:06

Group Number: 1826676

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### Method Blank

Analysis Name	Result	DL**	LOD	LOQ
	ug/l	ug/l	ug/l	ug/l
Batch number: L172091AA	Sample number(s): 9107407			
Acetone	20 U	6	20	20
Acrolein	100 U	40	100	100
Acrylonitrile	10 U	4	10	20
Benzene	1 U	0.5	1	1
Bromobenzene	2 U	1	2	5
Bromochloromethane	2 U	1	2	5
Bromodichloromethane	1 U	0.5	1	1
Bromoform	1 U	0.5	1	4
Bromomethane	1 U	0.5	1	1
2-Butanone	8 U	3	8	10
n-Butylbenzene	2 U	1	2	5
sec-Butylbenzene	2 U	1	2	5
tert-Butylbenzene	2 U	1	2	5
Carbon Disulfide	2 U	1	2	5
Carbon Tetrachloride	1 U	0.5	1	1
Chlorobenzene	1 U	0.5	1	1
Chloroethane	1 U	0.5	1	1
Chloroform	1 U	0.5	1	1
Chloromethane	1 U	0.5	1	1
2-Chlorotoluene	2 U	1	2	5
4-Chlorotoluene	2 U	1	2	5
1,2-Dibromo-3-chloropropane	4 U	2	4	5
Dibromochloromethane	1 U	0.5	1	1
1,2-Dibromoethane	1 U	0.5	1	1
Dibromomethane	1 U	0.5	1	1
1,2-Dichlorobenzene	2 U	1	2	5
1,3-Dichlorobenzene	2 U	1	2	5
1,4-Dichlorobenzene	2 U	1	2	5
Dichlorodifluoromethane	1 U	0.5	1	1
1,1-Dichloroethane	1 U	0.5	1	1
1,2-Dichloroethane	1 U	0.5	1	1
1,1-Dichloroethene	1 U	0.5	1	1
cis-1,2-Dichloroethene	1 U	0.5	1	1
trans-1,2-Dichloroethene	1 U	0.5	1	1
1,2-Dichloropropane	1 U	0.5	1	1
1,3-Dichloropropane	1 U	0.5	1	1
2,2-Dichloropropane	1 U	0.5	1	1
1,1-Dichloropropene	2 U	1	2	5
cis-1,3-Dichloropropene	1 U	0.5	1	1
trans-1,3-Dichloropropene	1 U	0.5	1	1

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 07/31/2017 15:06

Group Number: 1826676

### Method Blank (continued)

Analysis Name	Result	DL**	LOD	LOQ
	ug/l	ug/l	ug/l	ug/l
Ethylbenzene	1 U	0.5	1	1
Hexachlorobutadiene	4 U	2	4	5
2-Hexanone	8 U	3	8	10
Isopropylbenzene	2 U	1	2	5
p-Isopropyltoluene	2 U	1	2	5
Methyl Tertiary Butyl Ether	1 U	0.5	1	1
4-Methyl-2-pentanone	8 U	3	8	10
Methylene Chloride	4 U	2	4	4
Naphthalene	2 U	1	2	5
n-Propylbenzene	2 U	1	2	5
Styrene	2 U	1	2	5
1,1,1,2-Tetrachloroethane	1 U	0.5	1	1
1,1,2,2-Tetrachloroethane	1 U	0.5	1	1
Tetrachloroethene	1 U	0.5	1	1
Toluene	1 U	0.5	1	1
1,2,3-Trichlorobenzene	2 U	1	2	5
1,2,4-Trichlorobenzene	2 U	1	2	5
1,1,1-Trichloroethane	1 U	0.5	1	1
1,1,2-Trichloroethane	1 U	0.5	1	1
Trichloroethene	1 U	0.5	1	1
Trichlorofluoromethane	1 U	0.5	1	1
1,2,3-Trichloropropane	2 U	1	2	5
1,2,4-Trimethylbenzene	2 U	1	2	5
1,3,5-Trimethylbenzene	2 U	1	2	5
Vinyl Acetate	4 U	2	4	10
Vinyl Chloride	1 U	0.5	1	1
m+p-Xylene	1 U	0.5	1	1
o-Xylene	1 U	0.5	1	1
Xylene (Total)	1 U	0.5	1	1
Batch number: 172010025A	Sample number(s): 9107402-9107407			
Ethylene dibromide	0.020 U	0.010	0.020	0.030
	mg/l	mg/l	mg/l	mg/l
Batch number: 172001063501	Sample number(s): 9107407			
Iron	0.200 U	0.0805	0.200	0.400
Manganese	0.0050 U	0.0016	0.0050	0.0100

### LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: L172091AA	Sample number(s): 9107407								
Acetone	150	146.85	150	154.12	98	103	39-160	5	20
Acrolein	150	98.38	150	108.09	66	72	39-155	9	20

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 07/31/2017 15:06

Group Number: 1826676

### LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Acrylonitrile	100	93.45	100	91.85	93	92	63-135	2	20
Benzene	20	20.47	20	20.25	102	101	79-120	1	20
Bromobenzene	20	20.12	20	19.76	101	99	80-120	2	20
Bromochloromethane	20	21.8	20	20.88	109	104	78-123	4	20
Bromodichloromethane	20	21.23	20	20.95	106	105	79-125	1	20
Bromoform	20	21.04	20	20.49	105	102	66-130	3	20
Bromomethane	20	19.24	20	18.7	96	93	53-141	3	20
2-Butanone	150	143.14	150	142.99	95	95	56-143	0	20
n-Butylbenzene	20	19.62	20	19.31	98	97	75-128	2	20
sec-Butylbenzene	20	20.19	20	19.79	101	99	77-126	2	20
tert-Butylbenzene	20	18.73	20	18.77	94	94	78-124	0	20
Carbon Disulfide	20	21.99	20	21.75	110	109	64-133	1	20
Carbon Tetrachloride	20	23.7	20	23.09	118	115	72-136	3	20
Chlorobenzene	20	20.45	20	20.25	102	101	82-118	1	20
Chloroethane	20	17.65	20	17.88	88	89	60-138	1	20
Chloroform	20	22	20	22.16	110	111	79-124	1	20
Chloromethane	20	16.51	20	16.4	83	82	50-139	1	20
2-Chlorotoluene	20	19.67	20	19.33	98	97	79-122	2	20
4-Chlorotoluene	20	19.64	20	19.84	98	99	78-122	1	20
1,2-Dibromo-3-chloropropane	20	19.8	20	19.11	99	96	62-128	4	20
Dibromochloromethane	20	20.89	20	20.64	104	103	74-126	1	20
1,2-Dibromoethane	20	20.46	20	19.97	102	100	77-121	2	20
Dibromomethane	20	21.61	20	21.48	108	107	79-123	1	20
1,2-Dichlorobenzene	20	20.31	20	19.76	102	99	80-119	3	20
1,3-Dichlorobenzene	20	19.72	20	19.67	99	98	80-119	0	20
1,4-Dichlorobenzene	20	19.93	20	19.87	100	99	79-118	0	20
Dichlorodifluoromethane	20	17.06	20	17.12	85	86	32-152	0	20
1,1-Dichloroethane	20	20.76	20	20.6	104	103	77-125	1	20
1,2-Dichloroethane	20	23.83	20	23.23	119	116	73-128	3	20
1,1-Dichloroethene	20	22.11	20	21.89	111	109	71-131	1	20
cis-1,2-Dichloroethene	20	21.05	20	21.32	105	107	78-123	1	20
trans-1,2-Dichloroethene	20	21.8	20	21.76	109	109	75-124	0	20
1,2-Dichloropropane	20	19.47	20	19.42	97	97	78-122	0	20
1,3-Dichloropropane	20	19.43	20	19.67	97	98	80-119	1	20
2,2-Dichloropropane	20	24.13	20	24.3	121	121	60-139	1	20
1,1-Dichloropropene	20	20.3	20	20	101	100	79-125	1	20
cis-1,3-Dichloropropene	20	20.35	20	20	102	100	75-124	2	20
trans-1,3-Dichloropropene	20	20.67	20	20.39	103	102	73-127	1	20
Ethylbenzene	20	20.61	20	20.42	103	102	79-121	1	20
Hexachlorobutadiene	20	20.67	20	20.5	103	103	66-134	1	20
2-Hexanone	100	93.46	100	91.64	93	92	57-139	2	20
Isopropylbenzene	20	20.95	20	20.94	105	105	72-131	0	20
p-Isopropyltoluene	20	20.3	20	19.77	102	99	77-127	3	20
Methyl Tertiary Butyl Ether	20	21.96	20	21.48	110	107	71-124	2	20
4-Methyl-2-pentanone	100	95.57	100	93.92	96	94	67-130	2	20
Methylene Chloride	20	20.16	20	20.1	101	100	74-124	0	20
Naphthalene	20	18.7	20	18.52	94	93	61-128	1	20
n-Propylbenzene	20	19.93	20	19.65	100	98	76-126	1	20

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 07/31/2017 15:06

Group Number: 1826676

### LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Styrene	20	21.27	20	20.96	106	105	78-123	1	20
1,1,1,2-Tetrachloroethane	20	21.08	20	21.47	105	107	78-124	2	20
1,1,2,2-Tetrachloroethane	20	19.02	20	18.33	95	92	71-121	4	20
Tetrachloroethene	20	21.09	20	21.03	105	105	74-129	0	20
Toluene	20	20.34	20	20.19	102	101	80-121	1	20
1,2,3-Trichlorobenzene	20	19.84	20	19.91	99	100	69-129	0	20
1,2,4-Trichlorobenzene	20	18.94	20	18.69	95	93	69-130	1	20
1,1,1-Trichloroethane	20	20.88	20	20.66	104	103	74-131	1	20
1,1,2-Trichloroethane	20	20.96	20	20.51	105	103	80-119	2	20
Trichloroethene	20	20.81	20	20.67	104	103	79-123	1	20
Trichlorofluoromethane	20	21.57	20	20.69	108	103	65-141	4	20
1,2,3-Trichloropropane	20	20.83	20	20.43	104	102	73-122	2	20
1,2,4-Trimethylbenzene	20	20.38	20	20.16	102	101	76-124	1	20
1,3,5-Trimethylbenzene	20	20.38	20	20.37	102	102	75-124	0	20
Vinyl Acetate	100	104.73	100	103.96	105	104	54-146	1	20
Vinyl Chloride	20	16.89	20	16.6	84	83	58-137	2	20
m+p-Xylene	40	41.76	40	41	104	102	80-121	2	20
o-Xylene	20	19.76	20	20.04	99	100	78-122	1	20
Xylene (Total)	60	61.52	60	61.03	103	102	79-121	1	20
	ug/l	ug/l	ug/l	ug/l					
Batch number: 172010025A	Sample number(s): 9107402-9107407								
Ethylene dibromide	0.128	0.146	0.128	0.163	114	128	60-140	12	20
	mg/l	mg/l	mg/l	mg/l					
Batch number: 172001063501	Sample number(s): 9107407								
Iron	1.00	1.04			104		87-115		
Manganese	0.500	0.521			104		90-114		

### MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 172010025A	Sample number(s): 9107402-9107407 UNSPK: P109771									
Ethylene dibromide	1.29	0.121	1.17	0.122	1.20	-101 (2)	-74 (2)	60-140	3	20
	mg/l	mg/l	mg/l	mg/l	mg/l					
Batch number: 172001063501	Sample number(s): 9107407 UNSPK: P109771									
Iron	0.437	1.00	1.47	1.00	1.44	104	100	87-115	2	20
Manganese	0.259	0.500	0.761	0.500	0.749	101	98	90-114	2	20

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 07/31/2017 15:06

Group Number: 1826676

### MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc mg/l	MS Spike Added mg/l	MS Conc mg/l	MSD Spike Added mg/l	MSD Conc mg/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
---------------	--------------------------	---------------------------	--------------------	----------------------------	---------------------	------------	-------------	------------------	-----	------------

### Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/l	DUP Conc mg/l	DUP RPD	DUP RPD Max
Batch number: 172001063501	Sample number(s): 9107407 BKG: P109771			
Iron	0.437	0.411	6 (1)	20
Manganese	0.259	0.261	1	20

### Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 5ml Water by 8260C  
Batch number: L172091AA

	Dibromofluoromethane %Rec LOD (ug/l)		1,2-Dichloroethane-d4 %Rec LOD (ug/l)		Toluene-d8 %Rec LOD (ug/l)		4-Bromofluorobenzene %Rec LOD (ug/l)	
9107407	106	1	102	1	95	1	107	1
Blank	107	1	100	1	98	1	99	1
LCS	106	1	103	1	100	1	104	1
LCSD	105	1	100	1	100	1	104	1
Limits:	80-119		81-118		89-112		85-114	

Analysis Name: EDB 8011 Water  
Batch number: 172010025A

	1,1,2,2-Tetrachloroethane %Rec LOD (ug/l)	
9107402	107	0.0067
9107403	110	0.0067
9107404	101	0.0066
9107405	120	0.0066
9107406	119	0.0067
9107407	106	0.0067
Blank	103	0.0070

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 07/31/2017 15:06

Group Number: 1826676

### Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: EDB 8011 Water  
Batch number: 172010025A

		1,1,2,2-Tetrachloroethane %Rec LOD (ug/l)
LCS	106	0.0070
LCSD	112	0.0070
MS	91	0.13 (3)
MSD	125	0.13 (3)
Limits:	46-136	

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank


(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

31675/1826676/9107402-07

		225 Schilling Circle Suite 400 Hunt Valley MD Tel No: (410) 584-7000 Fax No: (410) 771-1625		<h2 style="margin: 0;">CHAIN-OF-CUSTODY RECORD</h2>										COC NUMBER <div style="border: 1px solid black; padding: 2px; display: inline-block;">COC-157-173</div>	
PROJECT NAME: <b>Kirtland AFB Bulk Fuels Facility</b>		PROJECT NUMBER: <b>62599DM01</b>		LABORATORY NAME AND CONTACT: <b>Eurofins Lancaster Laboratories          2425 New Holland Pike Lancaster PA 17601</b>				FAX AND MAIL REPORTS/EDD TO: Tara Lamond: tlamond@eaest.com EA Amanda Smith: asmith@eaest.com EA FAX AND MAIL REPORTS/EDD TO: Pam Moss: pmoss@eaest.com EA				YEAR: <div style="font-size: 1.5em;">2017</div>			
PROJECT SITE AND PHASE: ST106/SS110				LAB PO NUMBER: 14800				LAB CONTACT: Natalie Luciano NatalieLuciano@eurofinsUS.com Eurofins 1 (717) 556-7258				QUARTER: <div style="font-size: 1.5em;">3</div>			

ITEM	SAMPLE IDENTIFIER	DATE COLLECTED	TIME COLLECTED	ANALYSIS REQUIRED (Specify number of bottles)										COMMENTS		
				Total Number of Bottles	VOCs (8260C)	BTEX (8260C)	BTEXN (8260C)	EDB (8011)	Total As, Pb, Ca, K, Na, Mg (6020A/6010C)	Dissolved Fe, Mn (6010C)	Chloride, Bromide, Sulfate (300.0)	Nitrate-Nitrite (353.2)	Ammonia (SM4500NH3)		Sulfide (SM4500SCF)	Alkalinity (SM2320B)
1	<i>cm</i> <del>GW173-157</del> 157-173	7-17-17	1205	6	3	—	2	—	1*	<div style="font-size: 2em; transform: rotate(-45deg); opacity: 0.5;">/</div>						
2																
3																
4																
5																
6																

COMMENTS: \*Dissolved Fe, Mn aliquot was field filtered.

SAMPLER(S): <i>S. Bosky</i>				COURIER AND SHIPPING NUMBER: <i>811156732444</i>				<i>TB173-21</i>	
RELINQUISHED BY:		DATE	TIME	RECEIVED BY:		DATE	TIME		
Printed Name and Signature: <i>Stephen Bosky</i>		7-17-17	1330	Printed Name and Signature: <i>Carlos Montoya</i>		7-17-17	1330		
Printed Name and Signature: <i>Carlos Montoya</i>		7-17-17	1400	Printed Name and Signature:					
Printed Name and Signature:				Printed Name and Signature:					
Printed Name and Signature:				Printed Name and Signature:					
Printed Name and Signature:				Printed Name and Signature:					



225 Schilling Circle Suite  
400 Hunt Valley MD  
Tel No: (410) 584-7000  
Fax No. (410) 771-1625

## CHAIN-OF-CUSTODY RECORD

COC NUMBER

COC-TB173-

PROJECT NAME:  
Kirtland AFB Bulk Fuels  
Facility

PROJECT NUMBER:  
62599DM01

LABORATORY NAME AND CONTACT:  
Eurofins Lancaster Laboratories  
2425 New Holland Pike Lancaster PA 17601

FAX AND MAIL REPORTS/EDD TO: Tara Lamond: tlamond@eaest.com EA  
Amanda Smith: asmith@eaest.com EA  
FAX AND MAIL REPORTS/EDD TO: Pam Moss: pmoss@eaest.com EA

YEAR: 2017

QUARTER: 3

PROJECT SITE AND PHASE:  
ST106/SS110

LAB PO NUMBER:  
14800

LAB CONTACT: Kay Hower KayHower@eurofinsUS.com Eurofins 1 (717) 556-7258

ITEM	SAMPLE IDENTIFIER	DATE COLLECTED	TIME COLLECTED	ANALYSIS REQUIRED (Specify number of bottles)										COMMENTS
				Total Number of Bottles	VOCs (8260C)	BTEX (8260C)	BTEXN (8260C)	EDB (8011)	Total As, Pb, Cd, K, Na, Mg (6020A/6010C)	Dissolved Fe, Mn (6010C)	Chloride, bromide, sulfate (300.0)	Nitrate-Nitrite (353.2)	(SM2320B) Alkalinity (Total, Carbonate, and Bicarbonate)	
1	TB173- 2(	7-17-17	1200	4	2	—	2							
2														
3														
4														
5														

Associated with KAFB -106157 + KAFB-106224

SAMPLER(S): C. Montoya

COURIER AND SHIPPING NUMBER: FedEx 811156732444

RELINQUISHED BY:

DATE

TIME

RECEIVED BY:

DATE

TIME

Printed Name and Signature:

Printed Name and Signature:

Carles Montoya

7-17-17 1400

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

3

1826676

**Kay Hower**

---

**From:** Moss, Pamela <[pmoss@eaest.com](mailto:pmoss@eaest.com)>  
**Sent:** Wednesday, July 19, 2017 10:16 AM  
**To:** Kay Hower  
**Cc:** Graves, Dustin  
**Subject:** RE: Kirtland revised COCs for samples collected 7-17-17  
**Attachments:** rev COCs\_7-17-17.pdf

Here you go thx.

**From:** Kay Hower [<mailto:KayHower@eurofinsus.com>]  
**Sent:** Wednesday, July 19, 2017 7:36 AM  
**To:** Moss, Pamela <[pmoss@eaest.com](mailto:pmoss@eaest.com)>  
**Cc:** Graves, Dustin <[dgraves@eaest.com](mailto:dgraves@eaest.com)>  
**Subject:** RE: Kirtland revised COCs for samples collected 7-17-17

Hi Pam, there wasn't an attachment to the email.

---

**From:** Moss, Pamela [<mailto:pmoss@eaest.com>]  
**Sent:** Tuesday, July 18, 2017 6:23 PM  
**To:** Kay Hower  
**Cc:** Graves, Dustin  
**Subject:** Kirtland revised COCs for samples collected 7-17-17

Hi Kay, plz see attached revised COCs for the 3 trip blanks that were omitted from the shipments. Thx.

Here you go.


*Pam*

**PLZ NOTE NEW ADDRESS BELOW**

Pamela J. Moss  
Senior Scientist  
**EA Engineering, Science, and Technology, Inc., PBC**  
7995 E. Prentice Ave, Suite 206E  
Greenwood Village, CO 80111  
303-590-9143 (office)  
303-810-6903 (cell)  
[pmoss@eaest.com](mailto:pmoss@eaest.com)

1826676

AX Cancel analysis - Sample not included with shipment.  
 Process 7/18/17

 225 Schilling Circle Suite 400 Hurd Valley MD Tel No: (410) 581-7000 Fax No: (410) 771-1625		<b>CHAIN-OF-CUSTODY RECORD</b>										COC NUMBER <b>COC-TB173-21</b>			
PROJECT NAME: Kirtland AFB Bulk Fuels Facility		PROJECT NUMBER: 62599DM01		LABORATORY NAME AND CONTACT: Eurofins Lancaster Laboratories 2425 New Holland Pike Lancaster PA 17601				FAX AND MAIL REPORTS/EDD TO: Tara Lamond, tlamond@eaest.com EA Amanda Smith: asmith@eaest.com EA				YEAR: 2017			
PROJECT SITE AND PHASE: ST105/SS110				LAB PO NUMBER: 14800				FAX AND MAIL REPORTS/EDD TO: Pam Moss: pmoss@eaest.com EA				QUARTER: 3			
PROJECT SITE AND PHASE: ST105/SS110				LAB CONTACT: Kay Hower KayHower@eurofinsUS.com Eurofins 1 (717) 556-7258											
				ANALYSIS REQUIRED (Specify number of bottles)											
ITEM	SAMPLE IDENTIFIER	DATE COLLECTED	TIME COLLECTED	Total Number of Bottles	(6010C) VOCs	(8260C) BTEX	(8260C) BTEXN	(8260C) EDB	(6011) Total As, Pb, Ca, K, Na, Mg	(6020/6010C) Dissolved Fe, Mn	(6010C) Chloride, bromide, sulfate	(300.0) Nitrate-Nitrite	(353.2) Alkalinity (Total, Carbonate, and Bicarbonate)	COMMENTS	
1	TB173-21	7-17-17	1200	4	2	—	2								
2															
3															
4															
5															
Associated with KAFB-106157 + KAFB-106224															
SAMPLER(S): C. Montoya															
RELINQUISHED BY: DATE TIME															
Printed Name and Signature: DATE TIME															
C. Montoya 7-17-17 1400															
COURIER AND SHIPPING NUMBER: FedEx 811156732444															
RECEIVED BY: DATE TIME															
Printed Name and Signature:															
Printed Name and Signature:															
Printed Name and Signature:															
Printed Name and Signature:															





Client: EA

### Delivery and Receipt Information

Delivery Method:	<u>Fed Ex</u>	Arrival Timestamp:	<u>07/18/2017 9:40</u>
Number of Packages:	<u>3</u>	Number of Projects:	<u>1</u>

### Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace $\geq$ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	Yes		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Timothy Cubberley (6520) at 12:19 on 07/18/2017*

### Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	3.4	DT	Wet	Y	Loose	N
2	DT131	0.3	DT	Wet	Y	Loose	N
3	DT131	0.7	DT	Wet	Y	Loose	N

### Missing Sample Details

<u>Sample ID on COC</u>	<u>Comments</u>
TB173-19	
TB173-20	

# Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

<b>BMQL</b>	Below Minimum Quantitation Level	<b>mg</b>	milligram(s)
<b>C</b>	degrees Celsius	<b>mL</b>	milliliter(s)
<b>cfu</b>	colony forming units	<b>MPN</b>	Most Probable Number
<b>CP Units</b>	cobalt-chloroplatinate units	<b>N.D.</b>	non-detect
<b>F</b>	degrees Fahrenheit	<b>ng</b>	nanogram(s)
<b>g</b>	gram(s)	<b>NTU</b>	nephelometric turbidity units
<b>IU</b>	International Units	<b>pg/L</b>	picogram/liter
<b>kg</b>	kilogram(s)	<b>RL</b>	Reporting Limit
<b>L</b>	liter(s)	<b>TNTC</b>	Too Numerous To Count
<b>lb.</b>	pound(s)	<b>µg</b>	microgram(s)
<b>m3</b>	cubic meter(s)	<b>µL</b>	microliter(s)
<b>meq</b>	milliequivalents	<b>umhos/cm</b>	micromhos/cm
<b>&lt;</b>	less than		
<b>&gt;</b>	greater than		
<b>ppm</b>	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
<b>ppb</b>	parts per billion		
<b>Dry weight basis</b>	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

**Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

# Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
E	Concentration exceeds the calibration range
J (or G, I, X)	Estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column $>40\%$ . The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column $>100\%$ . The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.

Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

**Appendix D**

**New Mexico Office of the State Engineer**

**Well Plugging Record**



# PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

## I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: RG-1579 POD 218 (KAFB-106157)

Well owner: Kirtland Air Force Base

Phone No.: 505-853-3484

Mailing address: AFCEC/KirtlandAFB IST; Bldg 20685; 2050 Wyoming Blvd SE

City: Albuquerque

State: New Mexico

Zip code: 87117-5270

## II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Cascade Drilling, L.P.
- 2) New Mexico Well Driller License No.: WD-1210 Expiration Date: 10/31/2017
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Bryan Nydoske
- 4) Date well plugging began: 7/19/2017 Date well plugging concluded: 7/19/2017
- 5) GPS Well Location: Latitude: 35 deg, 3 min, 15.00 sec  
Longitude: 106 deg, 34 min, 36.00 sec, WGS 84 NAD 83
- 6) Depth of well confirmed at initiation of plugging as: 545 ft below ground level (bgl),  
by the following manner: Install tremie pipe and pump grout from bottom of well to top of well
- 7) Static water level measured at initiation of plugging: 465 ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 11/09/2016
- 9) Were all plugging activities consistent with an approved plugging plan? No If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

The percent of bentonite was 3.2% by weight instead of 5% as described in the plugging plan.

STATE ENGINEERS OFFICE  
ALBUQUERQUE  
2017 JUL 24 PM 4:41



- For each interval plugged, describe within the following columns:**

STATE EMPLOYERS OFFICE  
LEPROUS COLONY  
2017 JUL 24 PM 4:41

**III. SIGNATURE:**

Signature of Well Driller

Date \_\_\_\_\_

**DUKE CITY REDI-MIX, LLC**

P.O. Box 250 • Moriarty, NM 87035

(505) 877-5777

7705 Broadway SE • Albuquerque, NM 87105

<b>SOLD TO</b> Cascades Environmental		<b>P.O. #</b> 107	<b>TRUCK/DRIVER</b> DEHERRERA, MIKE	<b>LEAVE PLANT</b>	<b>ARRIVE JOB</b>	<b>BEGIN POUR</b>
<b>DELIVERY ADDRESS</b> 7705 Broadway SE		<b>SLUMP</b> 10	<b>FINISH POUR</b>	<b>LEAVE JOB</b>	<b>ARRIVE PLANT</b>	
<b>INSTRUCTIONS</b> 37 LB 10' length of Gibson east off 10' off 10' off 10' off 10' off			<b>WATER ADDED AT CUSTOMER'S REQUEST</b>			
			<b>FULL LOAD</b> GALS	<b>3/4 LOAD</b> GALS	<b>1/2 LOAD</b> GALS	<b>1/4 LOAD</b> GALS
			<b>CYLINDER TAKEN?</b> <input type="checkbox"/> YES <input type="checkbox"/> NO	<b>% AEA</b>	<b>SLUMP</b>	<b>TEMP</b>
<b>PRODUCT CODE</b>	<b>PRODUCT DESCRIPTION</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>AMOUNT</b>	
21 SACK	21 SACK SLUMP	8.00	CU			
SHORT LOAD						
CHECKOUT our web site at <a href="http://www.dukecityredimix.com">www.dukecityredimix.com</a>						
<b>CAUTION:</b> Freshly mixed cement, mortar, or grout may cause skin injury. Avoid contact with skin whenever possible and wash exposed skin areas promptly with water. If cement or cement mixture gets into the eyes wash immediately with water and get prompt medical attention.			<b>TERMS:</b> C.O.D. NET 10 DAYS AFTER STATEMENT WITH APPROVED CREDIT. TERMS AND CONDITIONS ON BACK OF THIS FORM ARE AGREED TO IN FULL. ALL ACCOUNTS NOT PAID IN ACCORDANCE WITH THE TERMS AND CONDITIONS HEREIN WILL BE CHARGED INTEREST AT A RATE OF 1-1/2% OF THE UNPAID BALANCE PER MONTH (18% PER ANNUM).			<b>SUBTOTAL</b>
<b>Release of Liability:</b> It is the best judgement of our driver that damage to this property or surrounding area may result upon entering. You hereby authorize him to enter and accept full responsibility for said damage.			<b>When you provide a check as payment, you authorize us to use information from your check to make a one-time electronic fund transfer from your account or to process the payment as a check transaction. When we use information from your check to make an electronic fund transfer, funds may be withdrawn from your account as soon as the same day you make your payment, and you will not receive your check back from your financial institution. For inquiries, please call Duke City Redi-Mix Business Office 505-832-6800.</b>			<b>TAX</b>
<b>Additional Terms:</b> You agree to pay Duke City Redi-Mix, LLC reasonable attorney's fees and costs related to any collection efforts.			<input type="checkbox"/> CASH <input type="checkbox"/> CHECK <input type="checkbox"/> CREDIT CARD			<b>TOTAL</b>
<b>CUSTOMER'S SIGNATURE</b> X <i>Harry Hanning</i> Hanning			<b>CONTROL NUMBER</b> D 263680			<b>PREVIOUS BALANCE</b>
						<b>GRAND TOTAL</b>

Any addition of an unauthorized product to this load of concrete voids any warranty, written or implied.

BATCH ID 45302