ENTERED

DEPARTMENT OF THE AIR FORCE
27TH SPECIAL OPERATIONS MISSION SUPPORT GROUP (AFSOC)
CANNON AIR FORCE BASE NEW MEXICO

Colonel Heather L. Buono
Commander
110 E Alison Avenue Suite 1098
Cannon AFB NM 88103

MAY 26 2015

RECEIVED

JUN - 1 2015

Hazardous Waste Bureau

Mr. John E. Kieling
Chief, Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East Bldg 1
Santa Fe NM 87505-6063

Dear Mr. Kieling

Cannon AFB is submitting the *Revised Final 2014 Biennial Groundwater Monitoring and Landfill Inspection Report*. This revised report is in response to your 25 March 2015 Notice of Disapproval. If you have any questions regarding this submittal, please contact Ms. Laura Peters, Restoration Program Manager at (575) 904-6743.

Sincerely

Heather L. Buono
HEATHER L. BUONO, Colonel, USAF

cc:
NMED, Neelam Dhawan
NMED, Naomi Davidson

2014 BIENNIAL GROUNDWATER MONITORING AND ANNUAL LANDFILL INSPECTION REPORT

CANNON AIR FORCE BASE
NEW MEXICO
RCRA PERMIT No. NM7572124454

Performance Based Remediation
Contract Number: FA8903-13-C-0008

Prepared for

AIR FORCE CIVIL ENGINEER CENTER
2261 Hughes Ave., Suite 155
JBSA - Lackland, Texas 78236-9853

May 2015

Prepared by:

FPM Remediations, Inc.
584 Phoenix Drive
Rome, NY 13441

URS **Group, Inc.**
7720 N 16th Street, Suite 100
Phoenix, AZ 85020-4493

RESPONSES TO NMED COMMENTS
2014 BIENNIAL GROUNDWATER MONITORING AND ANNUAL LANDFILL INSPECTION REPORT
DATED DECEMBER 2014
CANNON AFB, NEW MEXICO

Comments by NMED, dated March 25, 2015.

Comment 1. The report states that two water level measuring events were completed in June 2014 and July 2014. Explain why water levels were not measured in 2013, though Section 2.2.1 of the *Facility-Wide Long Term Groundwater Monitoring Plan* dated January 2011 states that water levels will be measure on an annual basis.

> **Response: Due to contracting changes, the annual Landfills and Land Use Control Sites inspections were not completed until mid-December of 2013. FPM/URS completed inspections, but water levels were not measured in the monitoring wells. Water levels were measured at Cannon AFB by the USGS in July 2013. The current project team was not aware of this data until recently due to personnel changeover. The data from these measurements was provided to Cannon AFB and has been incorporated into the text (Section 4.1) and tables (Table 4-1) of the report.**
>
> **Section 4.1 will be revised to state "Water levels were measured by URS during two separate events. The first event was completed on June 17 and 18, 2014 and the second event was completed on July 14 through the 21, 2014, when the wells were sampled. Water level measurements were not collected by URS during the 2013 landfill inspections. However, water level measurements were collected by the USGS in July 2013 and are included in Table 4-1. Well locations are shown on Figure 2-1."**
>
> **The groundwater data is included in the revised electronic copies of the tables for this report.**

Comment 2. Comparing water elevation changes using two different top of casing (TOC) measurements is potentially inaccurate and misleading. The water elevation changes should be calculated using the same TOC measurement, taking into account differences in casing height for wells MW-E, MW-F, MW-G, and MW-H. Add columns to Table 4-1 showing the difference in water level measurements between June and July, and the difference in historical and surveyed TOC elevations. Discuss the differences in the text.

> **Response: Two rounds of groundwater level measurements were collected in 2014. The June 2014 measurements indicate the depth to groundwater based on historic well top-of-casing (TOC) elevations. After water levels were made in June, well maintenance activities resulted in changes in TOC elevations for several wells. FPM/URS resurveyed the TOC at all 18 wells. The July 2014 water levels were measured after well maintenance activities were completed. To avoid potential misleading data, June 2014 water elevations will be calculated using September 2014 TOC elevations and a footnote will be added to the column providing an explanation for the data.**

The difference in groundwater elevation is minor which is likely due to the limited amount of time that passed between the readings. Further, the depth to groundwater at the time the sample was collected is the relevant measurement. A discussion of the survey will be added to Section 3.2 (see response to Comment 4).

Comment 3. The summary table of analytical data for the past four sampling events must be submitted to NMED in Microsoft Excel format, per Section 4.2 of the *Facility-Wide Long Term Groundwater Monitoring Plan* dated January 2011. The included CD only contained a pdf version of the report. Include the data in Excel format.

Response: Agree. The excel document containing the tables provided in the PDF version of the report will be provided to NMED.

Comment 4. Table 1 of the Report, Table 1 (Monitoring Well Construction Summary) in the 2012 Biennial Report, and Table 1 (Well Construction Details) in the *Facility-Wide Long Term Groundwater Monitoring Plan* dated January 2011 contain different and sometimes conflicting data concerning the monitoring wells. Resolve the discrepancies and include well construction logs for all monitoring wells in an appendix of the Report.

Response: Agree. Minor discrepancies were identified in the elevation data contained within the historical reports. URS/FPM was unable to identify the correct survey data through discussions with Cannon AFB. Therefore, the total depth of the wells was measured by URS during the sampling of the monitoring wells. Following the groundwater sampling, the top of casing and ground surface of each monitoring well was surveyed as described in Section 3.2 of the Report. These data were then combined to provide the information included in Table 4-1 of the report. The following text will be added as the final paragraph to Section 3.2 to clarify the issue.

"The total depth of each monitoring well was measured during the collection of the groundwater samples. The purpose of the measurement was to collect data to be utilized in conjunction with the 2014 monitoring well survey data to form a baseline of information that would be utilized for all future groundwater monitoring reports at Cannon AFB. The total depth of the well was calculated using the survey data and information from historical boring logs. This revised information is included in Table 4-1 of this report."

Only the elevations of the ground, TOC, and screen have been altered. The screen length and all data associated with the boring log remains the same.

Comment 5. Explain why Table 1 of the Report shows that top and bottom screening depths of MW-Na are unknown when the screen depths for this well are provided in the 2012 Biennial Report.

Response: Table 4-1 will be revised to indicate a screen interval of "356.90 – 296.90"

Comment 6. Apparently, monitoring wells MW-A through MW-H were constructed with screens far below the water table, such that even with the water table dropping approximately 50 feet in 22 years, the water table during the July 2014 measurement was between 11 and 38 feet above the top of the

screen in all eight wells. Describe the potential effects of sampling groundwater significantly below the water table.

Response: The potential effect of having well screens installed well below the water table is that contamination in that portion of the aquifer above the well screen may remain undetected.

It should be noted that the screened interval of these monitoring wells has been identified as below the depth to water in all prior groundwater monitoring reports. Based on the absence of comments regarding this issue, it was presumed that NMED was aware of the issue and had not historically identified the depth of the screened interval as an issue with regard to the effectiveness of the groundwater sampling at Cannon AFB.

FPM/URS understands that no deep contamination was detected in any of the borings in which groundwater monitoring wells were installed. The wells were installed to provide long term monitoring either at background locations (unaffected by Base activities) or adjacent to or down gradient of sites with known or potential soil contamination. It is presumed the screen depths were selected based on the following:

1. **An average drop in the water table of two to three feet per year.**
2. **The cost of installing wells 250 to 350 feet below ground surface.**
3. **Reluctance to install much longer screens that could serve as a conduit to potential contamination that infiltrated to the subsurface.**

With regard to monitoring wells MW-A through MW-H, it should be noted that groundwater samples will only be collected from monitoring wells MW-C, MW-F, and MW-G for future biennial sampling events. This change will be made in accordance with the approved Work Plan Addendum for Landfills and Institutional Control Sites at Cannon AFB dated June 16, 2014.

In addition to the previous discussion of groundwater monitoring wells at Cannon AFB, it should be noted that the following six monitoring wells were historically installed and sampled: to monitor the upper portions of the aquifer during prior investigations at Cannon AFB. However, due to the steady decrease in groundwater elevations these monitoring wells are currently dry. Five of these wells were associated with SWMU 113 (LF005). One well (MW-K) was associated with SWMU 97 (LF025).

Monitoring Well	Elevation at ground	Ground Water Depth	Year Ground Water was Measured	Bottom of Boring Elevation	Current DTW at the closest MW	Screen Elevations
MW-I	4262.3	3995.8	1992	3957.3	3936.31 (MW-B)	3989 to 3969
MW-J	4262.7	3997.4	1988	3957	3932.77 (MW-S)	4001.7 to 3981.7
MW-K	4274.3	4003.88	1988	3974.3	3963.04 (MW-F)	4007.3 to 3987.3
MW-L	4264.72	3994.4	1992	3972.11	3936.31 (MW-B)	3993.11 to 3973.11
MW-M	4264.29	3994.88	1992	3975.29	3936.31 (MW-B)	4000.29 to 3980.29
MW-Q	4266.89	3990.69/ 3975.07	1996/2003	3969.1	3949.95 (MW-A)	4000.3 to 3970.3

1. **Monitoring wells MW-I, MW-L, and MW-M were sampled in 1992 as documented in the following report:**

   USACE. 2002. Results of Chemical Analysis of Water Samples, Landfill #5, Cannon AFB, Tulsa District. AR 135.

   Monitoring well samples from MW-I, MW-L, and MW-M were analyzed for the following: pH, temperature, turbidity, total organic halogens, total organic carbon, semi-volatile organic compounds, pesticides, PCBs, herbicides, phenols, dioxin/furans, metals, radiometrics, chloride, sulfate, fluoride, cyanide, nitrate, sulfide, and volatile organic compounds. No COCs were identified in excess of MCLs by the groundwater sampling completed.

2. **Monitoring well MW-J was installed in 1988. Historical reports indicated that the well was not sampled due to insufficient groundwater following installation by the private contractor. This information was obtained from the following document:**

USGS. 2006. Ground-Water Hydrology and Water Quality of the Southern High Plains Aquifer, Cannon Air Force Base, Curry County, New Mexico, 1994-2005. AR 995.

Based on the sample results from MW-I, MW-L, and MW-M, the absence of results for MW-J is not considered to represent a significant data gap.

3. **Monitoring well MW-K was sampled in 1991 as documented in the following report:**

   Woodward-Clyde. 1992. Remedial Investigation Report for 18 Solid Waste Management Units, Cannon Air Force Base, Clovis, New Mexico. AR 235.

   Monitoring well samples collected from MW-K were analyzed for Pesticides/PCBs and metals. No pesticides or PCBs were detected in the groundwater samples. Six metals were detected in groundwater samples above the detection limits. All six metals (barium, chromium, copper, lead, vanadium, and zinc) were detected at concentrations below the MCL.

4. **Monitoring well MW-Q was sampled quarterly in 1996 as documented in the following report:**

   Harding Lawson Associates. 1997. Final Assessment Monitoring Quarterly Report, Fourth Quarter 1996, Monitoring Well Q, Landfill No. 5, Cannon Air Force Base, Clovis, New Mexico. January 9. AR 349.

   Monitoring well samples collected from MW-Q were analyzed for the following: volatile organic compounds, semi-volatile organic compounds, dioxins, polynuclear aromatic hydrocarbons, pesticides, PCBs, herbicides, metals, cyanide, sulfide, total organic halogens, and total organic carbon. No COCs were identified in excess of MCLs by the groundwater sampling completed.

   Additional sampling was completed at MW-Q in 2002 and 2003 as documented in the following reports:

   2002. RCRA Ground-Water Monitoring at Sewage Lagoons and at Landfill 5, Analytical Results of the Samples Collected March 18-21 and April 2, 2003. October. AR 1183.

   2003. RCRA Ground-Water Monitoring at Sewage Lagoons and at Landfill 5, Analytical Results of the Samples Collected March 18-21 and April 2, 2003. October. AR 1322.

   Monitoring well samples collected from MW-Q were analyzed for the following: volatile organic compounds, semi-volatile organic compounds, dioxins and furans, polynuclear aromatic hydrocarbons, pesticides, PCBs, herbicides, metals, cyanide,

sulfide, total organic halogens, and total organic carbon. No COCs were identified in excess of MCLs by the groundwater sampling completed.

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List of Acronyms

µg/L	micrograms per liter
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
amsl	above mean sea level
BTOC	below top of casing
CoC	chain of custody
DQCR	Daily Quality Control Report
FPM	FPM Remediations, Inc.
IDW	Investigation-Derived Waste
J	estimated
LOQ	limit of quantification
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MS/MSD	matrix spike/matrix spike duplicate
NMED	New Mexico Environmental Department
NMGWQS	New Mexico Groundwater Quality Standards
No.	number
ORP	oxidation-reduction potential
PBR	Performance Based Remediation
TOC	top of casing
U	nondetect
URS	URS Group, Inc.
USEPA	United States Environmental Protection Agency
WPA	Work Plan Addendum

This document is a Biennial Groundwater Monitoring Well and Annual Landfill Inspection Report for six sites at Cannon Air Force Base (AFB), New Mexico.

1.1 LOCATION

Cannon AFB is in Curry County, New Mexico, approximately 7 miles west of the City of Clovis. Cannon AFB occupies 4,320 acres, consisting primarily of the airfield and associated operations, maintenance, and support facilities that are located northwest of the airfield. Housing facilities are located in the northwestern portion of the Base, west of New Mexico Highway 311 and north of U.S. Highway 60. Additional Cannon AFB support facilities, such as the munitions storage area and current fire department training area, are located south and east of the airfield (**Figure 1-1**).

1.2 AUTHORITY

FPM Remediations, Inc. (FPM) has been awarded a Performance Based Remediation (PBR) contract by the Air Force Civil Engineer Center (AFCEC) under Contract Number (No.) FA8903-13-C-0008 to complete remediation activities at Cannon AFB. URS Group, Inc. (URS), as a subcontractor to FPM, has completed this Biennial Groundwater Monitoring Well and Annual Landfill Inspection Report under the Environmental Restoration Program at Cannon AFB. The sites identified in this report are subject to corrective action requirements under the Cannon AFB Hazardous Waste Facility Permit No. NM7572124454.

1.3 PURPOSE AND SCOPE

This report has been prepared to document field activities completed during June and July 2014 in accordance with the Work Plan Addendum (WPA) at Cannon AFB, New Mexico (FPM/URS 2014a). The WPA includes groundwater monitoring at 18 monitoring wells (MW-A, MW-B, MW-C, MW-D, MW-E, MW-F, MW-G, MW-H, MW-Na, MW-Oa, MW-Pa, MW-Rb, MW-S, MW-T, MW-U, MW-V, MW-W, and MW-X) and inspections at six landfills (LF002, LF003, LF004, LF005, LF025, and SI101), all of which are located on Cannon AFB.

1.4 REPORT ORGANIZATION

This report is organized as follows:

Section 1 describes the authority, purpose and scope, and report organization.

Section 2 summarizes landfill inspection and maintenance activities completed at LF002, LF003, LF004, LF005, LF025, and SI101.

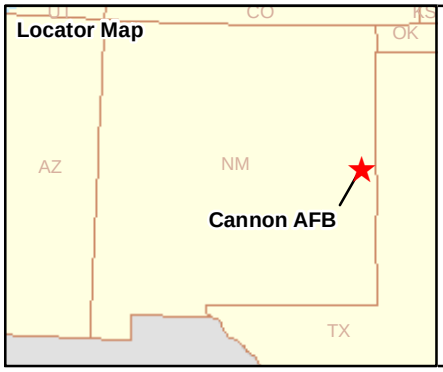
Section 3 summarizes monitoring well maintenance and surveying activities.

Section 4 presents groundwater monitoring procedures, hydrogeology, and groundwater sampling analytical results.

Section 5 describes the laboratory chemical data quality review and analytical result qualification conclusions.

Section 6 presents the conclusions and recommendations of this report.

Section 7 lists the references used to develop this report.



Legend

Base Boundary

N

10,000 5,000 0 10,000 Feet

Map projection: NAD83 State Plane Feet
New Mexico East (FIPS 3001)

Installation Location Map
Cannon Air Force Base, New Mexico

Drawn By:	Date:	Project No.	
DPG	10/29/2014	23446539	Figure 1-1
Checked By:	Revision:		
MS	0		

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This section presents details regarding the inspections and maintenance activities completed at the landfill sites.

2.1 LANDFILL INSPECTIONS

Landfill inspections were completed at six landfills (LF002, LF003, LF004, LF005, LF025, and SI101) at Cannon AFB. The 2013 inspections were completed between December 17, 2013 and December 18, 2013. The 2014 inspections were completed between June 16, 2014 and June 18, 2014. Observations regarding the condition of the landfills were consistent between the 2013 and 2014 inspection events. Daily activities are documented in Daily Quality Control Reports (DQCRs) included in **Appendix A**. Landfill Inspection Sheets presenting the observations during the 2013 and 2014 inspection event are provided in **Appendix B**. **Figure 2-1** provides the location of each landfill, along with monitoring well locations.

A summary of major issues for each landfill is provided below:

- LF003: A 10-foot by 5-foot by approximately 3-foot deep sinkhole was observed within the landfill; likely due to subsidence.
- LF004: Washouts observed on the south side of the landfill were subsequently repaired by Cannon AFB.
- LF005: Multiple areas of fence are in need of repair. Additionally, various debris items were observed within the approximately 30-acre portion of LF005 that is fenced with barbed wire. Debris observed included concrete, telephone pole, scrap metal, and other materials. Several small trees were observed within this fenced portion. The east gate to Cell No. 3 of LF005 did not close properly and a chain and lock were missing from this access gate. An undetermined number of tumble weeds were observed within the larger fenced portion of LF005.
- LF025: The barbed wire perimeter fence surrounding LF0025 was observed to be in need of repairs at some locations. Additionally, a sign at the entrance that identified the site was missing at the time of the inspections. Numerous small to large trees, both dead and living, are present across the site with many located just inside the perimeter fence.
- SI101: Portions of the barbed wire perimeter fence were observed to be in need of repair. Several small trees and shrubs were identified along the west side of the site. Tumble weeds were observed within the landfill.

2.2 LANDFILL MAINTENANCE

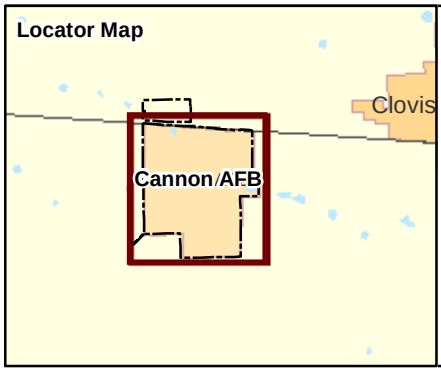
Landfill maintenance activities were completed during site visits to Cannon AFB in June, July, and October 2014. Maintenance activities were completed at LF005, LF025, and SI101, and included:

- Fallen trees and tree limbs were removed from along the fence line at LF005 and LF025 on June 18, 2014.

- Barbed wire fence repairs were completed at LF025 and SI101 on June 19, 2014.
- Four trees were cut down within the LF005 boundary on July 19, 2014.
- New padlocks were placed at the south and northeast entry gate to LF005 and the entry gate at SI101 on July 19, 2014.
- An estimate of the amount of fencing at LF005 in need of repair as well as dimensions for a sign for the entrance to LF005 were measured for replacement purposes on July 19, 2014.
- All remaining trees and bushes were removed from within the boundaries at SI101 and LF005 on October 28 and 29, 2014.
- The east access gate of Cell No. 3, within LF005 was straightened, and a padlock and chain was added to the gate. Additionally, a chain and padlock was added to the north access gate of Cell 3 on October 31, 2014.

The sinkhole previously identified at LF003 was filled in with soil prior to the October 2014 field activities. The sinkhole was reportedly filled by Cannon AFB personnel. The debris observed at LF005 is known to Cannon AFB but is not within the scope of this task order. A request for bids to complete tree removal at LF025 was issued and bids were received. The bids were provided to Cannon AFB and AFCEC to decide a path forward.

Locator Map



Legend

- Monitoring Well Location
- Base Boundary
- Site Boundary

Note:

1) September 11, 2014 survey data by Lydick Engineering, Clovis, New Mexico was used for monitoring well locations.

N

2,000 1,000 0 2,000 Feet

Site Location Map with Groundwater Monitoring Well Locations

Cannon Air Force Base, New Mexico

Drawn By:	Date:	Project No.	
DPG	10/29/2014	23446539	Figure 2-1
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This section presents monitoring well maintenance and surveying activities.

3.1 MONITORING WELL MAINTENANCE ACTIVITIES

Initial monitoring well maintenance activities were completed on June 18 and 19, 2014, and again on October 31, 2014. As part of the well maintenance activities, field personnel:

- Removed all existing dedicated tubing from each monitoring well and dedicated pumps from two wells, MW-Oa and MW-Pa. These pumps were shipped to the manufacturer for refurbishing and reinstalled on October 31, 2014. The dedicated pump and tubing could not be removed from MW-Na.
- Repainted all steel protective well casing and bollards Cannon Brown/Interface Tan.
- Installed new concrete pads at MW-A and MW-B.
- Sealed cracks in concrete pads with concrete crack seal at wells MW-C, MW-D, and MW-F.

Well maintenance activities were also completed on July 18 and 19, 2014. Field personnel:

- Located the correct key to access MW-Rb, and completed an inspection of the well.
- Cut the well riser at four wells such that the riser pipe would fit inside the protective steel casing of each well. Approximately four, nine, one, and six inches of well riser were removed at MW-E, MW-F, MW-G, and MW-H, respectively.
- Installed new locking lids on the steel protective casings at MW-E, MW-F, MW-G, and MW-H, which will allow the wells to be secured with a lock.
- Placed new keyed alike padlocks at all 18 monitoring wells and the access gates to LF005 and SI101. All 18 monitoring wells and the access gates to LF005 and SI101 can be accessed with the same key.
- Installed 4-inch j-plug type well caps at MW-A, MW-E, MW-F, MW-G, MW-H, MW-Oa, and MW-Pa. Currently all 18 wells are sealed with a j-plug.

The maintenance work performed is documented on the DQCRs in **Appendix A**. A summary of monitoring well construction details and comments regarding observed conditions is presented in Table 2 of the Annual Land Use Control Inspections Report (FPM/URS 2014b).

3.2 MONITORING WELL SURVEY

Lydick Engineering of Clovis, New Mexico (licensed surveyor in New Mexico) surveyed the locations and elevations of both the concrete pad and top of casing (TOC) for all 18 monitoring wells. Surveying was completed on September 11, 2014. The survey results are summarized in **Table 3-1**. Horizontal coordinates are reported in New Mexico East State Plan Coordinates, which are referenced to the North American Datum of 1983 to an accuracy of 0.1 feet. Elevations are referenced to the North American Vertical Datum 1988. The surveyor's data submission is included in **Appendix D**.

No major variances were noted between the September 2014 survey data survey and the data reported in the 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013), with four exceptions; the TOC elevations for MW-E, MW-F, MW-G, and MW-H, which were altered during the monitoring well maintenance activities completed in July.

The location of MW-B, which has been historically placed directly adjacent to MW-T, was inaccurate. The September 2014 survey data indicated the location of MW-B is between MW-T and MW-U. Based on observation by field personnel, this is the correct location for MW-B. Figures in this report and future reports will show the location of all monitoring wells based on September 2014 survey data.

The total depth of each monitoring well was measured during the collection of the groundwater samples. The purpose of the measurement was to collect data to be utilized in conjunction with the 2014 monitoring well survey data to form a baseline of information that would be utilized for all future groundwater monitoring reports at Cannon AFB. The total depth of the well was calculated using the survey data and information from historical boring logs. This revised information is included in Table 4-1 of this report.

TABLE 3-1
MONITORING WELL SURVEY DATA - SEPTEMBER 2014
CANNON AFB, NEW MEXICO

Well Identification	Site Association	Northing (NAD 83)	Easting (NAD 83)	Top of Casing Elevation (feet amsl) (NAVD 88)	Concrete Pad Elevation (feet amsl) (NAVD 88)
MW-A	LF005	1228291.09	850513.24	4268.72	4267.01
MW-B	LF005	1226666.34	852296.60	4266.80	4265.19
MW-C	LF005	1226056.10	851789.72	4268.90	4267.00
MW-D	LF005	1226095.85	851123.70	4266.90	4265.20
MW-E	SI101	1235128.43	850881.46	4284.96	4282.92
MW-F	SI101	1234609.98	851885.22	4280.84	4278.09
MW-G	SI101	1233761.42	852082.68	4281.55	4279.65
MW-H	SI101	1233235.68	851638.44	4281.18	4279.18
MW-Na	LF004	1234314.82	854201.76	4270.51	4269.42
MW-Oa	LF003	1232514.40	853895.37	4273.96	4273.29
MW-Pa	LF025	1233526.85	852403.88	4274.73	4274.07
MW-Rb	LF025	1234803.21	852390.66	4277.73	4275.41
MW-S	LF005	1226092.46	852274.85	4265.75	4263.81
MW-T	LF005	1226404.02	852375.33	4265.72	4263.90
MW-U	LF005	1226884.20	852330.10	4267.30	4265.43
MW-V	Background	1240246.97	841913.74	4329.90	4328.27
MW-W	Background	1237389.20	853254.21	4302.22	4300.15
MW-X	Background	1228560.00	844498.66	4269.23	4268.02

Notes:

1) Wells were surveyed on September 11, 2014 by Lydick Engineering, Clovis, New Mexico.

2) Location data are reported in the New Mexico East State Plane coordinate system.

AFB = Air Force Base

amsl = above mean sea level

NAD 83 = North American Horizontal Datum 1983

NAVD 88 = North American Vertical Datum 1988

This section presents the groundwater monitoring activities including water level measurements, potentiometric surface mapping, monitoring well sampling, and analytical results.

4.1 WATER LEVEL MEASUREMENTS

Water levels were measured by URS during two separate events. The first event was completed on June 17 and 18, 2014 and the second event was completed on July 14 through the 21, 2014, when the wells were sampled. Water level measurements were not collected by URS during the 2013 landfill inspections. However, water level measurements were collected by the USGS in July 2013 and are included in **Table 4-1**. Well locations are shown on **Figure 2-1.**

Monitoring wells MW-B and MW-D were not sampled in 2012 due to excessive silt accumulation in the bottom of the wells. It was recommended that those wells be redeveloped and a determination made regarding their integrity and viability as groundwater quality sampling points. This work was to be performed in advance of the October 2014 sampling event. No evidence of siltation was observed by URS at the time the field work was completed. Water levels and groundwater samples were collected without issues during the 2014 sampling event. Water levels measured during the completion of field work are provided in **Table 4-1**.

Water levels were measured at 16 of 18 monitoring wells during the June event. The water level at MW-Na could not be measured because the dedicated pump installed in the well could not be removed and due to an undetermined obstruction at 238 feet below top of casing (BTOC). A water level at MW-Rb was not measured because the key to access the well could not be located.

Water levels were measured at all 18 wells during the July event. At MW-Na, a tubing extension provided by Cannon AFB allowed the dedicated pump in the well to be lowered into the water column such that a water level measurement could be taken. The key for MW-Rb, provided by Cannon AFB, allowed access to the well for a water level measurement. Water level measurements for both events, along with historic TOC elevations for the monitoring wells are provided in **Table 4-1**. Water level measurement activities are documented on the DQCRs in **Appendix A**.

Water levels measured in June ranged from 286.60 to 349.31 feet BTOC, while June groundwater elevations ranged from 3,931.90 feet above mean seal level (amsl) at MW-T to 3,982.60 feet amsl at MW-X. Water levels measured in July ranged from 287.04 to 349.79 feet BTOC, with groundwater elevations ranging from 3,930.12 amsl to 3,982.19 amsl. Water levels dropped between the two events, with a geometric mean decline of 0.83 feet. Historical reports for this area report that local groundwater levels have dropped an average of two to three feet per year due to groundwater extraction for agricultural (primarily irrigation), municipal, and domestic use.

The potentiometric surface for June is presented in **Figure 4-1**. Groundwater elevations for **Figure 4-1** were calculated using the June water level data and monitoring well TOC elevations from the 2012 Biennial Groundwater report (Bhate 2013). Future groundwater elevations will be

calculated using the September 2014 survey data. The September 2014 survey data are also provided in **Table 4-1**.

As shown on **Figure 4-1**, the direction of groundwater flow is to the east in the western part of the Base, near MW-V. In the vicinity of MW-E, groundwater flow changes direction, resulting in a southeast trend towards MW-S. Interpreted groundwater elevations near MW-Oa, MW-Na, and MW-Pa depict a distinct change in groundwater flow to due south.

Figure 1-1 shows the distinct circular patterns associated with center pivot irrigation systems that are abundant around Cannon AFB, with the greatest density of center pivot systems southeast of the Base. This concentration of center pivot systems likely explains the sharp southern turn of groundwater flow direction in the vicinity of MW-Oa.

4.2 GROUNDWATER SAMPLING

In accordance with the WPA (FPM/URS 2014a), groundwater samples were collected at 18 monitoring wells from July 14 to 21, 2014. All 18 groundwater samples were collected from the middle of the screened interval of each well. Additionally, one duplicate sample and one matrix spike/matrix spike duplicate (MS/MSD) sample were collected at MW-Oa and MW-F, respectively. The monitoring well locations are shown on **Figure 2-1**. The DQCRs describing the work completed during the sampling event are provided in **Appendix A.**

4.2.1 Groundwater Sampling Procedures

Well purging and sampling were completed using low flow sampling procedures. Purging and sampling were completed using a Geotech bladder pump at a discharge rate of less than 500 milliliters per minute. Compressed nitrogen supplied in K cylinders was used to operate the bladder pumps. Purging and sampling of well MW-Na were completed using the dedicated bladder pump and tubing that were present in the well.

During purging, groundwater quality parameters were monitored to determine the presence of formation water in the well casing. Monitored groundwater quality parameters included pH, specific conductance, dissolved oxygen, oxidation-reduction potential (ORP), and temperature, and were measured using a YSI-556 multi-parameter probe and flow-through cell. Turbidity was measured using a LaMotte 2020e portable turbidity meter. Purging continued until three stabilized water quality parameters readings were recorded. Once purging was completed, the discharge line was disconnected from the flow through cell and samples were collected from the discharge line.

After purging and sampling activities were complete, the pump and tubing were removed from the well and the tubing was reinstalled for future use. The pump was decontaminated before moving to the next well.

A summary of sample identifications, sampling dates, and laboratory analytical parameters are presented in **Table 4-2.** Groundwater Sample Collection Field Sheets, which document field

water quality parameter measurements, sampling dates and time, sample identification, associated Quality Control/Quality Assurance sampling, sample container types and preservatives, and sampling equipment, are presented in **Appendix C**.

4.2.2 Field Documentation

Observations and data acquired in the field were documented to provide information on the acquisition of the samples and provide a permanent record of field activities. The observations and data were recorded with waterproof ink in a permanently bound, weatherproof field logbook with consecutively numbered pages.

Field water quality measurements, including temperature, pH, specific conductance, dissolved oxygen, ORP, and turbidity were recorded on Sample Collection Field Sheets which are included in **Appendix C**.

Samples were tracked from the time they were collected until the samples reached the analytical laboratory. Information on the dates of sampling, sample types, required analysis, handling, custody transfer and shipping of samples to the laboratory was recorded on the chain of custody (CoC) form.

4.2.3 Sample Handling

Samples were collected in laboratory-supplied containers with required preservatives. An identification label was attached to each sample container and completed using waterproof, permanent ink with the following information: sampler's initials, sample identification number, date and time of sample collection, preservative type, and analysis required. During daily sampling activities and for shipment, sample containers were placed into laboratory-cleaned coolers and packed on ice.

A copy of the CoC for the samples was included in each cooler for laboratory use upon receipt. Sample coolers were sealed with tape and custody seals to ensure security during shipping. A copy of the CoC form was maintained to document sample handling between the field and laboratory. Sample coolers were generally shipped daily via overnight courier service to the contracted laboratory.

4.2.4 Decontamination

A temporary decontamination area was set up at each sampling location. Sampling equipment was decontaminated between use in a five-gallon bucket containing Liquinox soap and potable water by scrubbing with a bristle brush. Equipment was then rinsed with potable water in an additional bucket followed by a deionized water rinse. Rinse and detergent water were replaced with new solutions between sampling locations. Investigation-Derived Waste (IDW) handling procedures are described below.

4.2.5 Investigation-Derived Waste

IDW included monitoring well purge water and decontamination water. All IDW collected during groundwater sampling was temporarily stored in five-gallon buckets then transferred to bulk liquid storage tanks located adjacent to each monitoring well. If a bulk liquid storage tank was not present at the monitoring well, the IDW was transferred to the closest available storage tank.

Some investigative groundwater samples associated with the IDW exceeded the screening criteria (United States Environmental Protection Agency [USEPA] Maximum Contaminant Levels [MCL], New Mexico Groundwater Quality Standards [NMGWQS] or New Mexico Tap Water) as presented in **Table 4-3**. As a result, all IDW associated with the exceedances will be consolidated into drums. These drums will be sampled and the samples analyzed for the compounds that exceeded their respective screening criteria. The results will be compared to the Toxicity Characteristic Leaching Procedure Regulatory Limits (40 CFR 261.24). New Mexico Environmental Department (NMED) will be contacted with the IDW characterization results to determine disposal options.

4.3 ANALYTICAL RESULTS

The groundwater sampling analytical results were compared to current USEPA MCLs, and NMGWQS (20 New Mexico Administrative Code 6.2). If no screening criteria are listed for an analyte in the USEPA MCLs or the NMGWQS, the results were compared to the criteria specified in the NMED Risk Assessment Guidance (NMED 2012). Reported detections and comparisons to MCLs, NMGWQSs, or the NMED Risk Assessment Guidance, are provided in **Table 4-3**.

Groundwater analytical results from three previous groundwater sampling events in 2008 (Tetra Tech 2008), 2010 (Trinity 2010), and 2012 (Bhate 2013) are provided in **Table 4-4**, **Table 4-5**, and **Table 4-6**, respectively. The current screening criteria (USEPA MCLs, NMGWQS, and NMED Tap Water) are also listed on these historical results tables for comparison.

Volatile Organic Compounds, Target Analyte List metals, perchlorate, chloride, sulfate, nitrite, and ammonia were not detected above screening criteria. Nitrite was reported as nondetect for all samples. Reported concentrations for hexavalent chromium and nitrate were detected above at least one screening criteria. Reported total organic carbon concentrations ranged from 0.2 micrograms per liter (µg/L) to 1.4 µg/L.

Hexavalent chromium was detected in 16 of 17 groundwater samples with reported concentrations ranging from 0.20 µg/L to 1.20 µg/L. The sample from well MW-V was rejected due to exceedance of the holding time. No MCL or NMGWQS has been established for hexavalent chromium. Hexavalent chromium exceeded its New Mexico Tap Water screening level of 0.431 µg/L in 14 of 17 wells (**Table 4-3**). The distribution of reported concentrations does not indicate any distinct trends or patterns indicating a point source or a release. Additionally, two of the exceedances were in background wells (MW-X and MW-W) indicating

the hexavalent chromium is naturally occurring. Publications from the State of California have identified hexavalent chromium as naturally occurring in groundwater in California, Nevada, New Mexico, and Arizona.

Hexavalent chromium concentrations in 2010 ranged from 4.1 µg/L to 19.0 µg/L in MW-F, MW-G, and MW-H and exceeded the hexavalent chromium New Mexico Tap Water screening level of 0.431 µg/L. Analytical results from 2008 and 2012 resulted in no groundwater samples exceeding the New Mexico Tap Water screening level for hexavalent chromium. A review of the analytical results from previous reports (**Table 4-4**, **Table 4-5**, and **Table 4-6**) indicated analytical reporting limits for hexavalent chromium were 20 µg/L in 2008 and 2010, and 4 µg/L in 2012. The limit of quantification (LOQ), for the June 2014 sampling round was 0.5 µg/L. The reduced LOQ would account for the detection of hexavalent chromium in 2014 that was not identified by previous sampling events.

The 2012 report (Bhate 2013) recommended future hexavalent chromium samples should be analyzed via EPA method 218.6. However, this method is not a Department of Defense approved method. Discussions with the laboratory determined that USEPA Method 7199 is equivalent to EPA Method 218.6 when preservatives are added to the samples. Therefore, the laboratory agreed to a modification of the method to allow preservatives to be added to 7199 to extend the hold time equivalent to EPA Method 218.6. Preservatives were intended to be added to the laboratory samples during the collection of the field work. No preservatives were included in the first nine samples collected during the field work (MW-B, MW-C, MW-D, MW-Na, MW-S, MW-T, MW-U, MW-V, and MW-X) due to an oversight by field sampling personnel. The preservative was included in the remaining nine samples collected by the field crew. The hexavalent chromium results for eight of the nine affected samples were analyzed within two times the holding time criteria and therefore were qualified estimated (J). Sample MW-V was the only hexavalent chromium result that was rejected due to analysis at more than two times the holding time.

The 2014 groundwater sampling data indicates the range of hexavalent chromium concentrations present in the preserved samples (0.21 µg/L to 1.1 µg/L) is comparable to the unpreserved samples (0.2 µg/L to 1.2 µg/L). This includes exceedances in background wells MW-W (0.75 µg/L) and MW-X (0.66 µg/L). Based on a review of the data, the exceedance of the holding time does not appear to have impacted the data. As discussed previously in this section of the report, there is no indication of a point source or a release of hexavalent chromium and two of the exceedances were in background wells (MW-X and MW-W) indicating the hexavalent chromium is naturally occurring. Based on the detections of hexavalent chromium at the site, the exceedance of the holding time does not alter the conclusions regarding hexavalent chromium in this report.

Nitrate was detected above at least one screening criterion in MW-Oa, which is located south of the former sewage lagoon overflow pond (SWMU 103). Nitrate has been reported in this well in previous rounds of sampling. An upward trend in nitrate concentrations at MW-Oa is apparent when reviewing historical and current data.

Perchlorate was detected in 13 of 18 wells, with reported concentrations ranging from nondetect to 2.0 µg/L. All reported concentrations for perchlorate were an order of magnitude below the NMED Tap Water screening criteria of 25.6 µg/L (see **Table 4-3**). The laboratory analyzed for perchlorate using USEPA Method 314.0 rather than SW-846 Method 6860 as requested. Method 6860 will be used for future sampling events.

As shown in **Tables 4-4 through 4-6**, some exceedances of current screening levels are apparent when screened against historical groundwater analytical results. However, nitrates in MW-Oa are the only consistent detections above screening criteria. Sporadic reported detections of lead, arsenic, and vanadium in previous sampling events may be related to turbidity issues or laboratory errors.

TABLE 4-1
WATER LEVELS - JUNE AND JULY 2014
CANNON AFB, NEW MEXICO

Well Identification	Site Association	Screen Interval (feet BTOC)	Historical TOC Elevation (feet amsl) (NAVD 88)[1]	Date Water Level Measured	July 2013 Depth to Water (feet BTOC)[7]	July 2013 Water Elevation (feet amsl)[7]	Date Water Level Measured	June 2014 Depth to Water (feet BTOC)	June 2014 Water Elevation (feet amsl)[2]	September 2014 TOC Elevation (feet amsl) (NAVD 88)	Date Water Level Measured	July 2014 Depth to Water (feet BTOC)	July 2014 Water Elevation (feet amsl)[3]
MW-A	LF005	341.84-326.84	4269.2	--	NM	NM	6/18/2014	318.42	3950.30	4268.72	7/17/2014	318.77	3949.95
MW-B	LF005	364.50-349.50	4268.1	7/22/2013	330.78	3936.20	6/17/2014	330.35	3936.45	4266.80	7/16/2014	330.49	3936.31
MW-C	LF005	363.50-348.50	4269.2	7/22/2013	334.15	3934.88	6/17/2014	333.42	3935.48	4268.90	7/15/2014	333.87	3935.03
MW-D	LF005	356.70-341.70	4267.6	7/22/2013	327.08	3939.98	6/17/2014	327.53	3939.37	4266.90	7/15/2014	327.71	3939.19
MW-E [4]	SI101	351.14-336.14	4285.9	7/22/2013	318.26	3966.71	6/18/2014	319.50	3965.46	4284.96	7/21/2014	319.65	3965.31
MW-F [4]	SI101	372.30-357.30	4282.3	7/22/2013	316.93	3964.07	6/18/2014	317.32	3963.52	4280.84	7/21/2014	317.80	3963.04
MW-G [4]	SI101	367.80-352.80	4283.1	7/22/2013	320.81	3960.80	6/18/2014	321.56	3959.99	4281.55	7/20/2014	321.16	3960.39
MW-H [4]	SI101	351.80-331.80	4282.6	7/22/2013	320.68	3960.55	6/18/2014	320.95	3960.23	4281.18	7/20/2014	321.44	3959.74
MW-Na	LF004	356.90 - 296-90	4271.0	7/22/2013	311.43	3959.15	6/18/2014	NM [5]	NA	4270.51	7/21/2014	312.35	3958.16
MW-Oa	LF003	366.87-306.87	4273.7	7/22/2013	325.51	3948.68	6/18/2014	324.66	3949.30	4273.96	7/17/2014	325.12	3948.84
MW-Pa	LF025	362.20-302.20	4274.8	7/22/2013	314.35	3960.50	6/18/2014	315.31	3959.42	4274.73	7/17/2014	315.60	3959.13
MW-Rb	LF025	333.71-303.71	4278.4	--	NM	NM	6/18/2014	NM [6]	NA	4277.73	7/20/2014	315.14	3962.59
MW-S	LF005	366.80-326.80	4266.7	--	NM	NM	6/17/2014	332.60	3933.15	4265.75	7/16/2014	332.98	3932.77
MW-T	LF005	366.40-326.40	4266.6	7/22/2013	335.15	3930.94	6/17/2014	334.70	3931.02	4265.72	7/16/2014	335.60	3930.12
MW-U	LF005	366.00-326.00	4267.9	7/22/2013	333.24	3934.12	6/17/2014	330.73	3936.57	4267.30	7/16/2014	330.95	3936.35
MW-V	Background	371.74-311.74	4329.8	7/22/2013	347.48	3983.53	6/17/2014	349.31	3980.59	4329.90	7/14/2014	349.79	3980.11
MW-W	Background	368.00-308.00	4302.1	7/22/2013	332.90	3969.44	6/17/2014	334.74	3967.48	4302.22	7/20/2014	335.50	3966.72
MW-X	Background	337.85-277.85	4269.2	7/22/2013	286.25	3983.31	6/17/2014	286.60	3982.63	4269.23	7/15/2014	287.04	3982.19

Notes:

[1] = Historical top of casing elevation from the 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013).

[2] = June 2014 water elevation was calculated using top of casing elevations from the September 2014 TOC elevation data.

[3] = July 2014 water elevation was calculated using top of casing elevation collected in September 2014.

[4] = Top of casing elevation was altered during the July 2014 maintenance activities. Depth to water in July 2014 was measured after the alteration.

[5] = Dedicated pump could not be removed and water level indicator could not be lowered past a depth of 268 feet BTOC.

[6] = Did not have key to access at time of June 2014 maintenance activities.

[7] = Data was provided by the United States Geological Survey

AFB = Air Force Base

amsl = above mean sea level

BTOC = below top of casing

NA = not applicable

NAVD 88 = North American Vertical Datum 1988

NM = not measured

TOC = top of casing

TABLE 4-2
GROUNDWATER SAMPLE SUMMARY
CANNON AFB, NEW MEXICO

Well Identification	Sample Identification [1]	Site Association	Sample Date	Analysis									
				Water Level	VOCs (USEPA Method 8260C)	TAL Metals (USEPA Method 7470A/6020A)	Hexavalent Chromium (USEPA Method 7199)	Perchlorate (Method 314.0)	Chloride, Sulfate, Nitrate, Nitrite (USEPA Method 9056)	Ammonia (USEPA Method SM 4500 NH3)	Total Organic Carbon (USEPA Method 9060A)	Duplicate	MS/MSD
MW-A	MWA-7-14	LF005	7/17/2014	X	X	X	X	X	X	X	X		
MW-B	MWB-7-14	LF005	7/16/2014	X	X	X	X	X	X	X	X		
MW-C	MWC-7-14	LF005	7/15/2014	X	X	X	X	X	X	X	X		
MW-D	MWD-7-14	LF005	7/15/2014	X	X	X	X	X	X	X	X		
MW-E	MWE-7-14	SI101	7/21/2014	X	X	X	X	X	X	X	X		
MW-F	MWF-7-14	SI101	7/21/2014	X	X	X	X	X	X	X	X		X
MW-G	MWG-7-14	SI101	7/20/2014	X	X	X	X	X	X	X	X		
MW-H	MWH-7-14	SI101	7/20/2014	X	X	X	X	X	X	X	X		
MW-Na	MWNa-7-14	LF004	7/21/2014	X	X	X	X	X	X	X	X		
MW-Oa	MWOa-7-14	LF003	7/17/2014	X	X	X	X	X	X	X	X	X	
MW-Pa	MWPa-7-14	LF025	7/17/2014	X	X	X	X	X	X	X	X		
MW-Rb	MWRb-7-14	LF025	7/20/2014	X	X	X	X	X	X	X	X		
MW-S	MWS-7-14	LF005	7/16/2014	X	X	X	X	X	X	X	X		
MW-T	MWT-7-14	LF005	7/16/2014	X	X	X	X	X	X	X	X		
MW-U	MWU-7-14	LF005	7/16/2014	X	X	X	X	X	X	X	X		
MW-V	MWV-7-14	Background	7/14/2014	X	X	X	X	X	X	X	X		
MW-W	MWW-7-14	Background	7/20/2014	X	X	X	X	X	X	X	X		
MW-X	MWX-7-14	Background	7/15/2014	X	X	X	X	X	X	X	X		

Notes:

[1] Sample identification uses the following naming scheme : well identification-sample month-sample year

AFB = Air Force Base

MS/MSD = Matrix Spike/Matrix Spike Duplicate

TAL = Target Analyte List

USEPA = United States Environmental Protection Agency

VOC = volatile organic compound

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS – JULY 2014
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION						MW-A			MW-B			MW-C			MW-D			MW-E			MW-F		
FIELD IDENTIFICATION						MWA-7-14			MWB-7-14			MWC-7-14			MWD-7-14			MWE-7-14			MWF-7-14		
DATE COLLECTED						July 17, 2014			July 16, 2014			July 15, 2014			July 15, 2014			July 21, 2014			July 21, 2014		
	Maximum	Frequency	USEPA MCL	NMGWQS[2]	New Mexico Tap Water[3]	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260C (µg/L)																							
1,1-Dichloroethane	4.60E-01	2 / 18	NE	2.50E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chloroform	4.00E-01	3 / 18	NE	1.00E+02	NA	<	5.00E+00	U	<	5.00E+00	U	4.00E-01	5.00E+00	J	3.90E-01	5.00E+00	J	<	5.00E+00	U	<	5.00E+00	U
Dichlorodifluoromethane	1.10E+00	2 / 18	NE	NE	2.03E+02	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Trichloroethene	6.50E-01	1 / 18	5.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
METALS - USEPA Method 7470A/6010B/6020A (µg/L)																							
Aluminum	3.00E+02	15 / 18	NE	NE	3.65E+04	1.30E+02	1.00E+02		5.30E+01	1.00E+02	J	7.80E+01	1.00E+02	J	7.10E+01	1.00E+02	J	5.50E+01	1.00E+02	J	1.60E+02	1.00E+02	
Antimony	6.20E-01	5 / 18	6.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Arsenic	7.80E+00	17 / 18	1.00E+01	1.00E+02	NA	5.10E+00	1.00E+00		4.90E+00	1.00E+00		5.70E+00	1.00E+00		6.00E+00	1.00E+00		3.50E+00	1.00E+00		4.40E+00	1.00E+00	
Barium	9.20E+01	17 / 18	2.00E+03	1.00E+03	NA	5.50E+01	2.00E+00		5.40E+01	2.00E+00		8.00E+01	2.00E+00		9.20E+01	2.00E+00		3.50E+01	2.00E+00		4.70E+01	2.00E+00	
Beryllium	2.70E-01	5 / 18	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	2.00E-01	1.00E+00	J	2.10E-01	1.00E+00	J	<	1.00E+00	U	1.80E-01	1.00E+00	J
Cadmium	2.50E-01	7 / 18	5.00E+00	1.00E+01	NA	1.80E-01	5.00E-01	J	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U
Calcium	9.30E+04	17 / 18	NE	NE	NE	3.90E+04	1.00E+03		3.80E+04	1.00E+03		3.60E+04	1.00E+03		2.80E+04	1.00E+03		4.40E+04	1.00E+03		4.90E+04	1.00E+03	J
Chromium	5.00E+00	15 / 18	1.00E+02	5.00E+01	NA	1.80E+00	2.00E+00	J	1.50E+00	2.00E+00	J	8.90E-01	2.00E+00	J	<	2.00E+00	U	<	2.00E+00	U	4.80E+00	2.00E+00	
Cobalt	4.90E-01	4 / 18	NE	5.00E+01	NE	4.10E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	4.90E-01	1.00E+00	J
Copper	5.30E+00	17 / 18	1.30E+03	1.00E+03	NA	1.20E+00	2.00E+00	J	1.80E+00	2.00E+00	J	1.20E+00	2.00E+00	J	8.20E-01	2.00E+00	J	1.20E+00	2.00E+00	J	1.90E+00	2.00E+00	J
Iron	5.20E+02	17 / 18	NE	1.00E+03	NA	1.40E+02	1.00E+02		3.50E+02	1.00E+02		1.60E+02	1.00E+02		1.00E+02	1.00E+02		7.20E+01	1.00E+02	J	3.70E+02	1.00E+02	
Lead	8.40E+00	12 / 18	1.50E+01	5.00E+01	NE	8.50E-01	1.00E+00	J	1.20E+00	1.00E+00		5.30E-01	1.00E+00	J	2.80E-01	1.00E+00	J	8.40E+00	1.00E+00		1.70E+00	1.00E+00	
Magnesium	8.10E+04	17 / 18	NE	NE	NE	3.70E+04	1.00E+03		3.60E+04	1.00E+03		3.50E+04	1.00E+03		2.80E+04	1.00E+03		4.00E+04	1.00E+03		4.50E+04	1.00E+03	J
Manganese	3.70E+01	17 / 18	NE	2.00E+02	NA	1.00E+01	2.00E+00		3.70E+01	2.00E+00		1.60E+01	2.00E+00		1.80E+01	2.00E+00		5.10E+00	2.00E+00		1.80E+01	2.00E+00	
Nickel	2.20E+01	17 / 18	NE	2.00E+02	NA	1.60E+00	1.00E+00		1.00E+00	1.00E+00		7.80E-01	1.00E+00	J	6.90E-01	1.00E+00	J	1.30E+00	1.00E+00		1.20E+00	1.00E+00	
Potassium	1.00E+04	17 / 18	NE	NE	NE	6.40E+03	1.00E+03		6.30E+03	1.00E+03		6.00E+03	1.00E+03		5.20E+03	1.00E+03		6.90E+03	1.00E+03		7.80E+03	1.00E+03	
Selenium	2.00E+01	17 / 18	5.00E+01	5.00E+01	NA	7.70E+00	1.00E+00		6.30E+00	1.00E+00		1.70E+00	1.00E+00		9.70E-01	1.00E+00	J	9.10E+00	1.00E+00		1.00E+01	1.00E+00	
Silver	3.60E+00	1 / 18	NE	5.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	3.60E+00	1.00E+00	
Sodium	1.30E+05	17 / 18	NE	NE	NE	5.00E+04	1.00E+03		5.00E+04	1.00E+03		5.30E+04	1.00E+03		4.40E+04	1.00E+03		5.10E+04	1.00E+03		5.70E+04	1.00E+03	
Vanadium	4.90E+01	17 / 18	NE	NE	1.83E+02	3.40E+01	2.00E+00		2.70E+01	2.00E+00		3.90E+01	2.00E+00		4.00E+01	2.00E+00		2.10E+01	2.00E+00		2.10E+01	2.00E+00	
Zinc	3.10E+02	17 / 18	NE	1.00E+04	NA	1.40E+01	1.00E+01		6.60E+00	1.00E+01	J	7.60E+00	1.00E+01	J	4.50E+00	1.00E+01	J	1.50E+01	1.00E+01		1.20E+01	1.00E+01	
Other Parameters (mg/L)																							
Chromium, Hexavalent - USEPA Method 7199 (µg/L)	1.20E+00	16 / 17	NE	NE	4.31E-01	9.20E-01	5.00E-01		8.10E-01	5.00E-01	J	2.00E-01	5.00E-01	J	3.20E-01	5.00E-01	J	8.90E-01	5.00E-01		9.00E-01	5.00E-01	
Perchlorate - EPA Method 314.0 (µg/L)	2.00E+00	13 / 17	NE	NE	2.56E+01	1.70E+00	5.00E-01		1.70E+00	5.00E-01		<	5.00E-01	U	<	5.00E-01	U	1.80E+00	5.00E-01		1.80E+00	5.00E-01	
Ammonia as Nitrogen - EPA Method 350.1	7.80E-02	10 / 18	NE	1.00E+01	NE	7.80E-02	2.50E-01	J	<	2.50E-01	U	<	2.50E-01	U	<	2.50E-01	U	5.40E-02	2.50E-01	J	5.70E-02	2.50E-01	J
Nitrate - USEPA Method 9056	1.50E+01	17 / 18	1.00E+01	1.00E+01	NA	1.90E+00	1.00E-01		1.30E+00	1.00E-01		2.00E+00	1.00E-01		1.30E+00	1.00E-01		1.40E+00	1.00E-01		1.20E+00	1.00E-01	
Chloride - USEPA Method 9056	2.00E+02	17 / 18	NE	2.50E+02	NE	5.00E+01	1.00E+00		4.30E+01	1.00E+00		1.30E+01	1.00E+00		4.50E+00	1.00E+00		4.80E+01	1.00E+00		6.70E+01	1.00E+00	
Sulfate - USEPA Method 9056	3.80E+02	17 / 18	NE	6.00E+02	NE	7.20E+01	5.00E+00		9.30E+01	5.00E+00		4.30E+01	5.00E+00		3.00E+01	5.00E+00		1.30E+02	2.50E+01		1.50E+02	2.50E+01	
Total Organic Carbon - USEPA Method 9060A	1.40E+00	16 / 18	NE	NE	NE	3.50E-01	1.00E+00	J	2.40E-01	1.00E+00	J	3.20E-01	1.00E+00	J	2.20E-01	1.00E+00	J	1.20E-01	1.00E+00	J	2.60E-01	1.00E+00	J

Notes:
[1] = USEPA Maximum Contaminant Levels (May 2009).
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Screening Levels for tap water.

µg/L = microgram per liter
< = Not Detected
J = Estimated
LOQ = Limit of Quantitation
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
R = Rejected
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS – JULY 2014
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION						MW-G			MW-H			MW-Na			MW-Oa			MW-Pa			MW-Rb		
FIELD IDENTIFICATION						MWG-7-14			MWH-7-14			MWNA-7-14			MWOA-7-14			MWPA-7-14			MWRB-7-14		
DATE COLLECTED						July 20, 2014			July 20, 2014			July 21, 2014			July 17, 2014			July 17, 2014			July 20, 2014		
	Maximum	Frequency	USEPA MCL	NMGWQS[2]	New Mexico Tap Water[3]	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260C (µg/L)																							
1,1-Dichloroethane	4.60E-01	2 / 18	NE	2.50E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chloroform	4.00E-01	3 / 18	NE	1.00E+02	NA	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Dichlorodifluoromethane	1.10E+00	2 / 18	NE	NE	2.03E+02	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Trichloroethene	6.50E-01	1 / 18	5.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
METALS - USEPA Method 7470A/6010B/6020A (µg/L)																							
Aluminum	3.00E+02	15 / 18	NE	NE	3.65E+04	7.20E+01	1.00E+02	J	7.20E+01	1.00E+02	J	4.80E+01	1.00E+02	J	7.00E+01	1.00E+02	J	1.40E+02	1.00E+02		5.50E+01	1.00E+02	J
Antimony	6.20E-01	5 / 18	6.00E+00	NE	NA	3.50E-01	1.00E+00	J	6.20E-01	1.00E+00	J	3.50E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	4.30E-01	1.00E+00	J
Arsenic	7.80E+00	17 / 18	1.00E+01	1.00E+02	NA	3.80E+00	1.00E+00		3.40E+00	1.00E+00		5.00E+00	1.00E+00		2.60E+00	1.00E+00		3.60E+00	1.00E+00		1.40E+00	1.00E+00	
Barium	9.20E+01	17 / 18	2.00E+03	1.00E+03	NA	3.00E+01	2.00E+00		4.70E+01	2.00E+00		4.40E+01	2.00E+00		6.10E+01	2.00E+00		4.40E+01	2.00E+00		2.80E+01	2.00E+00	
Beryllium	2.70E-01	5 / 18	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	1.80E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Cadmium	2.50E-01	7 / 18	5.00E+00	1.00E+01	NA	1.80E-01	5.00E-01	J	2.30E-01	5.00E-01	J	<	5.00E-01	U	1.80E-01	5.00E-01	J	1.80E-01	5.00E-01	J	1.90E-01	5.00E-01	J
Calcium	9.30E+04	17 / 18	NE	NE	NE	4.70E+04	1.00E+03		5.00E+04	1.00E+03		3.40E+04	1.00E+03		8.70E+04	1.00E+03		5.30E+04	1.00E+03		4.00E+04	1.00E+03	
Chromium	5.00E+00	15 / 18	1.00E+02	5.00E+01	NA	1.80E+00	2.00E+00	J	1.20E+00	2.00E+00	J	1.90E+00	2.00E+00	J	8.90E-01	2.00E+00	J	1.40E+00	2.00E+00	J	8.00E-01	2.00E+00	J
Cobalt	4.90E-01	4 / 18	NE	5.00E+01	NE	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	4.20E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U
Copper	5.30E+00	17 / 18	1.30E+03	1.00E+03	NA	2.80E+00	2.00E+00		4.60E+00	2.00E+00		5.30E+00	2.00E+00		1.40E+00	2.00E+00	J	1.60E+00	2.00E+00	J	1.60E+00	2.00E+00	J
Iron	5.20E+02	17 / 18	NE	1.00E+03	NA	3.40E+02	1.00E+02		2.50E+02	1.00E+02		2.50E+01	1.00E+02	J	6.70E+01	1.00E+02	J	1.00E+02	1.00E+02		5.00E+01	1.00E+02	J
Lead	8.40E+00	12 / 18	1.50E+01	5.00E+01	NE	1.20E+00	1.00E+00		9.60E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	5.30E-01	1.00E+00	J	<	1.00E+00	U
Magnesium	8.10E+04	17 / 18	NE	NE	NE	4.30E+04	1.00E+03		3.50E+04	1.00E+03		3.10E+04	1.00E+03		7.90E+04	1.00E+03		4.80E+04	1.00E+03		3.80E+04	1.00E+03	
Manganese	3.70E+01	17 / 18	NE	2.00E+02	NA	5.80E+00	2.00E+00		1.80E+01	2.00E+00		3.30E+00	2.00E+00		3.60E+00	2.00E+00		5.90E+00	2.00E+00		2.00E+00	2.00E+00	
Nickel	2.20E+01	17 / 18	NE	2.00E+02	NA	2.80E+00	1.00E+00		2.20E+01	1.00E+00		4.70E-01	1.00E+00	J	3.00E+00	1.00E+00		1.40E+00	1.00E+00		2.40E+00	1.00E+00	
Potassium	1.00E+04	17 / 18	NE	NE	NE	7.60E+03	1.00E+03		6.60E+03	1.00E+03		7.40E+03	1.00E+03		9.90E+03	1.00E+03		7.50E+03	1.00E+03		7.00E+03	1.00E+03	
Selenium	2.00E+01	17 / 18	5.00E+01	5.00E+01	NA	1.00E+01	1.00E+00		9.40E+00	1.00E+00		8.10E+00	1.00E+00		9.00E+00	1.00E+00		1.10E+01	1.00E+00		1.00E+01	1.00E+00	
Silver	3.60E+00	1 / 18	NE	5.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Sodium	1.30E+05	17 / 18	NE	NE	NE	5.30E+04	1.00E+03		4.90E+04	1.00E+03		4.40E+04	1.00E+03		1.30E+05	1.00E+03		3.70E+04	1.00E+03		4.20E+04	1.00E+03	
Vanadium	4.90E+01	17 / 18	NE	NE	1.83E+02	1.80E+01	2.00E+00		1.60E+01	2.00E+00		2.40E+01	2.00E+00		1.60E+01	2.00E+00		1.90E+01	2.00E+00		2.00E+01	2.00E+00	
Zinc	3.10E+02	17 / 18	NE	1.00E+04	NA	6.10E+01	1.00E+01		3.10E+02	1.00E+01		3.70E+00	1.00E+01	J	6.00E+00	1.00E+01	J	1.30E+01	1.00E+01		7.10E+00	1.00E+01	J
Other Parameters (mg/L)																							
Chromium, Hexavalent - USEPA Method 7199 (µg/L)	1.20E+00	16 / 17	NE	NE	4.31E-01	1.10E+00	5.00E-01		2.10E-01	5.00E-01	J	1.10E+00	5.00E-01		6.80E-01	5.00E-01		1.10E+00	5.00E-01		5.90E-01	5.00E-01	
Perchlorate - EPA Method 314.0 (µg/L)	2.00E+00	13 / 17	NE	NE	2.56E+01	2.00E+00	5.00E-01		1.70E+00	5.00E-01		1.50E+00	5.00E-01		<	5.00E-01	U	1.50E+00	5.00E-01		1.80E+00	5.00E-01	
Ammonia as Nitrogen - EPA Method 350.1	7.80E-02	10 / 18	NE	1.00E+01	NE	7.40E-02	2.50E-01	J	7.00E-02	2.50E-01	J	4.90E-02	2.50E-01	J	7.00E-02	2.50E-01	J	6.40E-02	2.50E-01	J	5.70E-02	2.50E-01	J
Nitrate - USEPA Method 9056	1.50E+01	17 / 18	1.00E+01	1.00E+01	NA	1.40E+00	1.00E-01		2.30E+00	1.00E-01		1.40E+00	1.00E-01		1.50E+01	5.00E-01		1.60E+00	1.00E-01		1.10E+00	1.00E-01	
Chloride - USEPA Method 9056	2.00E+02	17 / 18	NE	2.50E+02	NE	6.60E+01	1.00E+00		5.00E+01	1.00E+00		3.90E+01	1.00E+00		1.90E+02	5.00E+00		6.80E+01	1.00E+00		5.80E+01	1.00E+00	
Sulfate - USEPA Method 9056	3.80E+02	17 / 18	NE	6.00E+02	NE	1.30E+02	1.00E+01		1.20E+02	1.00E+01		7.80E+01	5.00E+00		1.60E+02	2.50E+01		1.20E+02	1.00E+01		1.20E+02	2.50E+01	
Total Organic Carbon - USEPA Method 9060A	1.40E+00	16 / 18	NE	NE	NE	2.30E-01	1.00E+00	J	3.60E-01	1.00E+00	J	1.20E+00	1.00E+00		9.00E-01	1.00E+00	J	2.30E-01	1.00E+00	J	<	1.00E+00	U

Notes:

[1] = USEPA Maximum Contaminant Levels (May 2009).

[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).

[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Scr

µg/L = microgram per liter
< = Not Detected
J = Estimated
LOQ = Limit of Quantitation
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
R = Rejected
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS – JULY 2014
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION						MW-S			MW-T			MW-U			MW-V			MW-W			MW-X		
FIELD IDENTIFICATION						MWS-7-14			MWT-7-14			MWU-7-14			MWV-7-14			MWW-7-14			MWX-7-14		
DATE COLLECTED						July 16, 2014			July 16, 2014			July 16, 2014			July 14, 2014			July 20, 2014			July 15, 2014		
	Maximum	Frequency	USEPA MCL	NMGWQS[2]	New Mexico Tap Water[3]	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	6.00E+00	LOQ	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260C (µg/L)																							
1,1-Dichloroethane	4.60E-01	2 / 18	NE	2.50E+01	NA	<	1.00E+00	U	4.60E-01	1.00E+00	J	3.60E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chloroform	4.00E-01	3 / 18	NE	1.00E+02	NA	<	5.00E+00	U	3.50E-01	5.00E+00	J	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	3.80E-01	5.00E+00	J
Dichlorodifluoromethane	1.10E+00	2 / 18	NE	NE	2.03E+02	<	5.00E+00	U	6.70E-01	5.00E+00	J	1.10E+00	5.00E+00	J	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Trichloroethene	6.50E-01	1 / 18	5.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	6.50E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
METALS - USEPA Method 7470A/6010B/6020A (µg/L)																							
Aluminum	3.00E+02	15 / 18	NE	NE	3.65E+04	<	1.00E+02	U	4.80E+01	1.00E+02	J	<	1.00E+02	U	1.40E+02	1.00E+02		1.40E+02	1.00E+02		3.00E+02	1.00E+02	
Antimony	6.20E-01	5 / 18	6.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	4.20E-01	1.00E+00	J	<	1.00E+00	U
Arsenic	7.80E+00	17 / 18	1.00E+01	1.00E+02	NA	4.40E+00	1.00E+00		3.80E+00	1.00E+00		4.30E+00	1.00E+00		4.60E+00	1.00E+00		2.20E+00	1.00E+00		7.80E+00	1.00E+00	
Barium	9.20E+01	17 / 18	2.00E+03	1.00E+03	NA	3.40E+01	2.00E+00		3.80E+01	2.00E+00		6.10E+01	2.00E+00		2.80E+01	2.00E+00		1.40E+01	2.00E+00		8.50E+01	2.00E+00	
Beryllium	2.70E-01	5 / 18	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	2.70E-01	1.00E+00	J	<	1.00E+00	U	2.60E-01	1.00E+00	J
Cadmium	2.50E-01	7 / 18	5.00E+00	1.00E+01	NA	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	2.50E-01	5.00E-01	J	<	5.00E-01	U
Calcium	9.30E+04	17 / 18	NE	NE	NE	4.90E+04	1.00E+03		4.90E+04	1.00E+03		8.10E+04	1.00E+03		9.30E+04	1.00E+03		5.90E+04	1.00E+03		3.00E+04	1.00E+03	
Chromium	5.00E+00	15 / 18	1.00E+02	5.00E+01	NA	1.70E+00	2.00E+00	J	3.00E+00	2.00E+00		5.00E+00	2.00E+00		5.70E-01	2.00E+00	J	5.50E-01	2.00E+00	J	1.70E+00	2.00E+00	J
Cobalt	4.90E-01	4 / 18	NE	5.00E+01	NE	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	3.20E-01	1.00E+00	J	<	1.00E+00	U	2.90E-01	1.00E+00	J
Copper	5.30E+00	17 / 18	1.30E+03	1.00E+03	NA	2.10E+00	2.00E+00		2.30E+00	2.00E+00		2.00E+00	2.00E+00	J	2.00E+00	2.00E+00	J	2.90E+00	2.00E+00		5.70E+00	2.00E+00	
Iron	5.20E+02	17 / 18	NE	1.00E+03	NA	2.80E+01	1.00E+02	J	5.20E+02	1.00E+02		2.30E+01	1.00E+02	J	6.90E+01	1.00E+02	J	1.20E+02	1.00E+02		2.20E+02	1.00E+02	
Lead	8.40E+00	12 / 18	1.50E+01	5.00E+01	NE	3.40E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	4.20E-01	1.00E+00	J	3.20E-01	1.00E+00	J	8.10E-01	1.00E+00	J
Magnesium	8.10E+04	17 / 18	NE	NE	NE	4.60E+04	1.00E+03		3.80E+04	1.00E+03		5.60E+04	1.00E+03		8.10E+04	1.00E+03		4.60E+04	1.00E+03		2.70E+04	1.00E+03	
Manganese	3.70E+01	17 / 18	NE	2.00E+02	NA	3.10E+00	2.00E+00		1.50E+01	2.00E+00		6.40E+00	2.00E+00		3.60E+01	2.00E+00		2.00E+00	2.00E+00	J	1.30E+01	2.00E+00	
Nickel	2.20E+01	17 / 18	NE	2.00E+02	NA	1.30E+00	1.00E+00		7.30E+00	1.00E+00		4.50E+00	1.00E+00		1.40E+00	1.00E+00		2.40E+00	1.00E+00		6.80E-01	1.00E+00	J
Potassium	1.00E+04	17 / 18	NE	NE	NE	6.60E+03	1.00E+03		6.60E+03	1.00E+03		7.30E+03	1.00E+03		8.40E+03	1.00E+03		1.00E+04	1.00E+03		5.80E+03	1.00E+03	
Selenium	2.00E+01	17 / 18	5.00E+01	5.00E+01	NA	7.00E+00	1.00E+00		1.80E+00	1.00E+00		7.40E+00	1.00E+00		2.00E+01	1.00E+00		6.70E+00	1.00E+00		4.80E+00	1.00E+00	
Silver	3.60E+00	1 / 18	NE	5.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Sodium	1.30E+05	17 / 18	NE	NE	NE	4.60E+04	1.00E+03		5.10E+04	1.00E+03		5.60E+04	1.00E+03		6.70E+04	1.00E+03		1.30E+05	1.00E+03		4.70E+04	1.00E+03	
Vanadium	4.90E+01	17 / 18	NE	NE	1.83E+02	2.80E+01	2.00E+00		2.30E+01	2.00E+00		2.30E+01	2.00E+00		2.10E+01	2.00E+00		6.40E+00	2.00E+00		4.90E+01	2.00E+00	
Zinc	3.10E+02	17 / 18	NE	1.00E+04	NA	7.80E+01	1.00E+01		9.80E+01	1.00E+01		9.20E+01	1.00E+01		4.70E+01	1.00E+01		2.00E+01	1.00E+01		5.90E+01	1.00E+01	
Other Parameters (mg/L)																							
Chromium, Hexavalent - USEPA Method 7199 (µg/L)	1.20E+00	16 / 17	NE	NE	4.31E-01	9.90E-01	5.00E-01	J	1.20E+00	5.00E-01	J	1.00E+00	5.00E-01	J			R	7.50E-01	5.00E-01		6.60E-01	5.00E-01	
Perchlorate - EPA Method 314.0 (µg/L)	2.00E+00	13 / 17	NE	NE	2.56E+01	1.30E+00	5.00E-01		1.30E+00	5.00E-01		1.30E+00	5.00E-01		<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U
Ammonia as Nitrogen - EPA Method 350.1	7.80E-02	10 / 18	NE	1.00E+01	NE	<	2.50E-01	U	<	2.50E-01	U	<	2.50E-01	U	<	2.50E-01	U	7.50E-02	2.50E-01	J	<	2.50E-01	U
Nitrate - USEPA Method 9056	1.50E+01	17 / 18	1.00E+01	1.00E+01	NA	1.60E+00	1.00E-01		1.10E+00	1.00E-01		1.30E+00	1.00E-01		7.20E+00	1.00E-01		5.70E-01	1.00E-01		1.70E+00	1.00E-01	
Chloride - USEPA Method 9056	2.00E+02	17 / 18	NE	2.50E+02	NE	5.90E+01	1.00E+00		4.90E+01	1.00E+00		6.90E+01	1.00E+00		2.00E+02	5.00E+00		1.20E+02	5.00E+00		3.00E+01	1.00E+00	
Sulfate - USEPA Method 9056	3.80E+02	17 / 18	NE	6.00E+02	NE	1.00E+02	1.00E+01		1.00E+02	1.00E+01		1.10E+02	1.00E+01		2.30E+02	2.50E+01		3.80E+02	2.50E+01		4.70E+01	5.00E+00	
Total Organic Carbon - USEPA Method 9060A	1.40E+00	16 / 18	NE	NE	NE	7.40E-01	1.00E+00	J	4.40E-01	1.00E+00	J	3.70E-01	1.00E+00	J	1.40E+00	1.00E+00		2.00E-01	1.00E+00	J	2.20E-01	1.00E+00	J

Notes:
[1] = USEPA Maximum Contaminant Levels (May 2009).
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Scr

µg/L = microgram per liter
< = Not Detected
J = Estimated
LOQ = Limit of Quantitation
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
R = Rejected
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-4
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2008
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-Oa			MW-Na			MW-Pa			MW-Ra		
DATE COLLECTED				October-08			October-08			October-08			October-08		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS-USEPA Method 8260B (µg/L)															
Tetrachloroethene	5.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	2.80E-01	1.00E+00	J	<	1.00E+00	U
All other analytes	Various	Various	Various	<	NA	U	<	NA	U	<	NA	U	<	NA	U
TOTAL METALS- USEPA Method 6020 (µg/L)															
Antimony	6.00E+00	NE	NA	<	6.00E+00	U	<	6.00E+00	U	<	6.00E+00	U	<	6.00E+00	U
Arsenic	1.00E+01	1.00E+02	NA	2.20E+00	5.00E+00	J	4.10E+00	5.00E+00	J	2.60E+00	5.00E+00	J	3.80E+00	5.00E+00	J
Barium	2.00E+03	1.00E+03	NA	5.30E+01	3.00E+00		4.40E+01	3.00E+00		3.70E+01	3.00E+00		6.90E+01	3.00E+00	
Beryllium	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Cadmium	5.00E+00	1.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	1.20E-01	1.00E+00	J	6.50E-01	1.00E+00	J
Copper	1.30E+03	1.00E+03	NA	8.00E-01	2.00E+00	J	<	2.00E+00	U	2.40E+00	2.00E+00		<	2.00E+00	U
Lead	1.50E+01	5.00E+01	NE	<	3.00E+00	U	<	3.00E+00	U	3.10E-01	3.00E+00	J	6.80E-01	3.00E+00	J
Nickel	NE	2.00E+02	NA	4.70E+00	3.00E+00		7.90E-01	3.00E+00	J	2.50E+00	3.00E+00	J	2.30E+00	3.00E+00	J
Mercury- USEPS Method 7470A	2.00E+00	2.00E+00	NA	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U
Selenium	5.00E+01	5.00E+01	NA	3.60E+00	5.00E+00	J	6.90E+00	5.00E+00		4.30E+00	5.00E+00	J	1.00E+01	5.00E+00	
Silver	NE	5.00E+01	NA	<	5.00E+00	U	<	5.00E+00	U	2.10E-01	5.00E+00	J	<	5.00E+00	U
Thallium	2.00E+00	NE	Na	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Zinc	NE	1.00E+04	NA	5.40E+00	2.00E+01	J	5.60E+00	2.00E+01	J	1.10E+01	2.00E+01	J	4.90E+02	2.00E+01	
Trivalent Chromium	NE	NE	NE	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U
Other Parameters (mg/L)															
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NA	7.60E+00	5.00E-01		1.30E+00	5.00E-01		1.90E+00	5.00E-01		1.70E+00	5.00E-01	
Nitrate/Nitrite (Nitrogen)- USEPA Method 353.2	1.00E+01	NE	NA	6.60E+00	1.00E-01		1.20E+00	1.00E-01		1.70E+00	1.00E-01		1.60E+00	1.00E-01	
Perchlorate- USEPA Method 6860 (µg/L)	NE	NE	2.56E+01	6.90E-01	5.00E-02		2.10E+00	5.00E-02		1.70E+00	5.00E-02		2.70E+00	5.00E-02	

Notes:
Groundwater analytical result from 2008 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Tetra Tech 2008).
[1] = USEPA Maximum Contaminant Levels (May 2009).
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Screening Levels for tap water.

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-5
SUMMARY OF ANALYTICAL RESULTS – NOVEMBER 2010
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-Oa			MW-Na			MW-Pa			MW-E			MW-F		
DATE COLLECTED				November-10			November-10			November-10			November-10			November-10		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS-USEPA Method 8260B (µg/L)																		
1,2,4-trimethylbenzene	NE	NE	NE	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Naphthalene	NE	NE	1.43E+00	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Toluene	1.00E+03	7.50E+02	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	2.80E-01	1.00E+00	J	<	1.00E+00	U
All other analytes	Various	Various	Various	<	NA	U	<	NA	U	<	NA	U	<	NA	U	<	NA	U
TOTAL METALS- USEPA Method 6020 (µg/L)																		
Antimony	6.00E+00	NE	NA	<	6.00E+00	U	1.40E-01	6.00E+00	J	<	6.00E+00	U	7.10E-02	6.00E+00	J	<	6.00E+00	U
Arsenic	1.00E+01	1.00E+02	NA	2.20E+00	5.00E+00	J	4.20E+00	5.00E+00	J	2.60E+00	5.00E+00	J	3.10E+00	5.00E+00	J	3.30E+00	5.00E+00	J
Barium	2.00E+03	1.00E+03	NA	5.50E+01	3.00E+00		4.70E+01	3.00E+00		3.50E+01	3.00E+00		4.60E+01	3.00E+00		3.80E+01	3.00E+00	
Beryllium	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Cadmium	5.00E+00	1.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	5.70E-02	1.00E+00	J	<	1.00E+00	U
Copper	1.30E+03	1.00E+03	NA	<	2.00E+00	U	3.50E+00	2.00E+00		<	2.00E+00	U	1.51E+00	1.00E+00	J	<	1.00E+00	U
Lead	1.50E+01	5.00E+01	NE	<	3.00E+00	U	4.90E-01	3.00E+00	J	<	3.00E+00	U	2.00E+01	3.00E+00	J	4.40E-01	3.00E+00	J
Nickel	NE	2.00E+02	NA	3.20E+00	3.00E+00		6.80E-01	3.00E+00	J	5.40E-01	3.00E+00	J	2.40E+00	3.00E+00	J	1.10E+00	3.00E+00	J
Mercury-USEPS Method 7470A	2.00E+00	2.00E+00	NA	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U
Selenium	5.00E+01	5.00E+01	NA	3.30E+00	5.00E+00	J	5.50E+00	5.00E+00		4.50E+00	5.00E+00	J	7.60E+00	5.00E+00		7.50E+00	5.00E+00	
Silver	NE	5.00E+01	NA	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Thallium	2.00E+00	NE	NA	<	1.00E+00	U	3.70E-02	1.00E+00	J	<	1.00E+00	U	2.30E-02	1.00E+00	J	<	1.00E+00	U
Zinc	NE	1.00E+04	NA	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	1.20E+02	2.00E+01		8.10E+01	2.00E+01	
Trivalent Chromium	NE	NE	NE	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U
Other Parameters (mg/L)																		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	2.00E+01	U	<	2.00E+01	J	<	2.00E+01	U	<	2.00E+01	U	4.10E+00	2.00E+01	J
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	1.10E+01	5.00E-01	J	1.30E+00	5.00E-01		1.80E+00	5.00E-01		1.70E+00	5.00E-01		1.30E+00	5.00E-01	
Nitrate/Nitrite (Nitrogen)- USEPA Method 353.2	1.00E+01	NE	NA	1.10E+01	1.00E-01		1.40E+00	1.00E-01		2.00E+00	1.00E-01		1.80E+00	1.00E-01		1.40E+00	1.00E-01	
Perchlorate- USEPA Method 6860 (µg/L)	NE	NE	2.56E+01	9.10E-01	5.00E-02		2.00E+00	5.00E-02		1.70E+00	5.00E-02		3.10E+00	5.00E-02		2.80E+00	5.00E-02	

Notes:

Groundwater analytical result from 2010 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Trinity 2010).

[1] = USEPA Maximum Contaminant Levels (May 2009).

[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).

[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Screening Levels for tap water.

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-5
SUMMARY OF ANALYTICAL RESULTS – NOVEMBER 2010
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-G			MW-H		
DATE COLLECTED				November-10			November-10		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS-USEPA Method 8260B (µg/L)									
1,2,4-trimethylbenzene	NE	NE	NE	1.70E-01	1.00E+00	J	<	1.00E+00	U
Naphthalene	NE	NE	1.43E+00	6.30E-01	1.00E+00	J	<	1.00E+00	U
Toluene	1.00E+03	7.50E+02	NA	3.30E-01	1.00E+00	J	1.80E+00	1.00E+00	
All other analytes	Various	Various	Various	<	NA	U	<	NA	U
TOTAL METALS- USEPA Method 6020 (µg/L)									
Antimony	6.00E+00	NE	NA	1.30E-01	6.00E+00	J	2.10E-01	6.00E+00	J
Arsenic	1.00E+01	1.00E+02	NA	3.80E+00	5.00E+00	J	4.20E+00	5.00E+00	J
Barium	2.00E+03	1.00E+03	NA	3.90E+01	3.00E+00		4.40E+01	3.00E+00	
Beryllium	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U
Cadmium	5.00E+00	1.00E+01	NA	4.90E-02	1.00E+00	J	1.40E-01	1.00E+00	J
Copper	1.30E+03	1.00E+03	NA	1.00E+01	1.00E+00		1.10E+01	1.00E+00	
Lead	1.50E+01	5.00E+01	NE	5.10E+00	3.00E+00		6.20E+00	3.00E+00	
Nickel	NE	2.00E+02	NA	9.00E+00	3.00E+00		2.50E+01	3.00E+00	
Mercury-USEPS Method 7470A	2.00E+00	2.00E+00	NA	<	2.00E-01	U	<	2.00E-01	U
Selenium	5.00E+01	5.00E+01	NA	6.60E+00	5.00E+00		6.80E+00	5.00E+00	
Silver	NE	5.00E+01	NA	2.00E-01	5.00E+00	J	1.10E-01	5.00E+00	J
Thallium	2.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U
Zinc	NE	1.00E+04	NA	9.90E+01	2.00E+01		3.80E+02	2.00E+01	
Trivalent Chromium	NE	NE	NE	<	2.00E+01	U	<	2.00E+01	U
Other Parameters (mg/L)									
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	7.50E+00	2.00E+01	J	1.90E+01	2.00E+01	J
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	1.30E+00	5.00E-01		1.70E+00	5.00E-01	
Nitrate/Nitrite (Nitrogen)- USEPA Method 353.2	1.00E+01	NE	NA	1.40E+00	1.00E-01		1.90E+00	1.00E-01	
Perchlorate- USEPA Method 6860 (µg/L)	NE	NE	2.56E+01	2.40E+00	5.00E-02		2.60E+00	5.00E-02	

Notes:

Groundwater analytical result from 2010 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Trinity 2010).

[1] = USEPA Maximum Contaminant Levels (May 2009).

[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).

[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-A Total			MW-A Dissolved			MW-C Total			MW-C Dissolved			MW-E Total			MW-E Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 19, 2012			October 19, 2012			October 29, 2012			October 29, 2012			October 1, 2012			October 1, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	<	1.45E-01	U	NA			<	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	<	1.57E-01	U	NA			<	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	<	3.03E+01	U	<	3.03E+01	U	<	6.83E+01	UB	<	5.84E+01	UB	<	4.33E+01	UB	<	3.03E+01	U
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	4.55E+00		J	<	3.59E+00	U	<	3.59E+00	U	4.75E+00		J	5.55E+00		J
Barium	2.00E+03	1.00E+03	NA	5.56E+01			5.27E+01			8.01E+01			8.40E+01			3.39E+01	3.39E+01	UB	<	3.52E+01	UB
Cadmium	5.00E+00	1.00E+01	NA	<	1.07E+00	UB	7.80E-01		J	8.10E-01		J	7.80E-01		J	6.10E-01	6.10E-01	UB	<	6.40E-01	UB
Calcium	NE	NE	NE	3.48E+04			3.46E+04			3.58E+04			3.76E+04			4.83E+04			5.11E+04		
Chromium	1.00E+02	5.00E+01	NA	3.09E+00		J	1.09E+00		J	1.32E+00		J	1.00E+00		J	2.32E+00		J	<	1.71E+00	UB
Cobalt	NE	5.00E+01	NE	1.85E+00		J	1.07E+00		J	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U
Copper	1.30E+03	1.00E+03	NA	8.47E+00		J	6.37E+00		J	8.17E+00		J	7.90E+00		J	7.53E+00		J	7.93E+00		J
Iron	NE	1.00E+03	NA	1.67E+02			<	1.26E+01	U	1.48E+02			<	1.26E+01	U	7.75E+01		J	<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	3.76E+00		J	<	1.96E+00	U
Magnesium	NE	NE	NE	3.19E+04			3.07E+04			3.46E+04			3.76E+04			4.44E+04			4.67E+04		
Manganese	NE	2.00E+02	NA	3.16E+01			7.10E+00		J	2.49E+01			<	1.31E+00	U	<	6.39E+00	UB	<	3.26E+00	UB
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	6.91E-02		J	9.49E-02		J	<	6.80E-02	U	<	6.80E-02	U
Nickel	NE	2.00E+02	NA	<	2.80E+00	UB	<	2.40E+00	UB	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U
Potassium	NE	NE	NE	6.90E+03			6.70E+03			6.57E+03			6.91E+03			7.41E+03			7.82E+03		
Selenium	5.00E+01	5.00E+01	NA	4.69E+00		J	5.70E+00		J	<	4.42E+00	U	4.72E+00		J	1.28E+01		J	1.16E+01		J
Sodium	NE	NE	NE	5.14E+04			5.14E+04			5.14E+04			5.60E+04			<	5.79E+04	UB	<	6.06E+04	UB
Thallium	2.00E+00	NE	NA	<	3.04E+00	U	5.77E+00		J	<	3.04E+00	U	3.51E+00		J	<	3.04E+00	U	<	3.04E+00	U
Vanadium	NE	NE	1.83E+02	4.13E+01			4.14E+01			4.84E+01			5.22E+01			2.81E+01			2.84E+01		
Zinc	NE	1.00E+04	NA	1.04E+03			9.39E+02			1.11E+02			1.29E+02			2.76E+02			2.85E+02		
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	8.60E-01		J	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	3.79E+01			NA			1.97E+01			NA			6.16E+01			NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	UJ	NA			<	4.00E+00	U	NA			<	4.00E+00	UJ	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	1.00E-02			NA			<	1.50E-02	U	NA			<	2.00E-03	U	NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.55E+00			NA			1.80E+00			NA			1.29E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	2.03E-03			NA			5.89E-04			NA			2.92E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	5.37E+01			NA			3.85E+01			NA			1.38E+02			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	4.60E+00			NA			3.20E+00			NA			<	3.10E+00	UB	NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Screening Levels for tap water

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
UB = analyte also found in associated laboratory or field blank, probable blank contaminant
UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-F Total			MW-F Dissolved			MW-G Total			MW-G Dissolved			MW-H Total			MW-H Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 1, 2012			October 1, 2012			October 1, 2012			October 1, 2012			October 1, 2012			October 1, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	<	0.145	U	NA			<	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	<	1.57E-01	U	NA			<	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	<	3.03E+01	U	<	3.03E+01	U	3.20E+01		J	<	3.03E+01	U	3.46E+01		J	3.03E+01		J
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	3.42E+00		J	<	3.11E+00	U	3.11E+00		J
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	3.59E+00		J
Barium	2.00E+03	1.00E+03	NA	3.60E+01			3.76E+01			3.06E+01			2.91E+01			3.88E+01			3.19E+01		
Cadmium	5.00E+00	1.00E+01	NA	<	9.30E-01	UB	7.00E-01		J	<	1.06E+00	UB	7.10E-01		J	1.03E+00			6.80E-01		J
Calcium	NE	NE	NE	4.45E+04			4.69E+04			4.41E+04			4.48E+04			4.73E+04			4.48E+04		
Chromium	1.00E+02	5.00E+01	NA	1.68E+00		J	1.05E+00			2.33E+00		J	1.04E+00		J	7.55E+00		J	1.06E+00		J
Cobalt	NE	5.00E+01	NE	6.10E-01		J	1.06E+00		J	<	1.47E+00	UB	6.30E-01		J	7.70E-01		J	6.80E-01		J
Copper	1.30E+03	1.00E+03	NA	7.64E+00		J	8.62E+00		J	1.20E+01			8.61E+00		J	1.36E+01			9.24E+00		J
Iron	NE	1.00E+03	NA	5.56E+01		J	2.51E+01		J	5.87E+02			<	1.26E+01	U	6.51E+02			<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U
Magnesium	NE	NE	NE	3.82E+04			3.97E+04			4.09E+04			4.09E+04			4.03E+04			3.55E+04		
Manganese	NE	2.00E+02	NA	<	1.31E+00	U	<	1.31E+00	U	1.63E+01			<	1.31E+00	U	1.29E+01		J	<	1.31E+00	U
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U
Nickel	NE	2.00E+02	NA	<	1.51E+00	UB	<	3.55E+00	UB	<	4.06E+00	UB	1.75E+00		J	1.04E+01		J	<	5.30E+00	UB
Potassium	NE	NE	NE	7.47E+03			7.81E+03			7.20E+03			7.31E+03			7.31E+03			6.84E+03		
Selenium	5.00E+01	5.00E+01	NA	9.77E+00		J	6.24E+00		J	<	4.42E+00	U	7.99E+00		J	8.63E+00		J	7.96E+00		J
Sodium	NE	NE	NE	5.38E+04			5.66E+04			4.99E+04			5.10E+04			5.83E+04			5.44E+04		
Thallium	2.00E+00	NE	NA	3.22E+00		J	4.65E+00		J	3.69E+00		J	3.45E+00		J	<	3.04E+00	U	3.06E+00		J
Vanadium	NE	NE	1.83E+02	2.60E+01			2.66E+01			2.86E+01			2.62E+01			2.91E+01			2.65E+01		
Zinc	NE	1.00E+04	NA	1.70E+02			2.54E+02			1.75E+02			1.61E+02			2.17E+02			1.28E+02		
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	<	2.40E-01	U	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	6.03E+01			NA			6.97E+01			NA			7.13E+01			NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	U	NA			<	4.00E+00	U	NA			<	4.00E+00	UJ	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	<	2.00E-03	U	NA			7.00E-03			NA			<	1.00E-02	UB	NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.21E+00			NA			1.02E+00			NA			1.33E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	2.86E-03			NA			2.48E-03			NA			2.85E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	1.38E+02			NA			1.32E+02			NA			2.72E+03			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	2.50E+00			NA			1.80E+00		J	NA			3.40E+00			NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screene

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
UB = analyte also found in associated laboratory or field blank, probable blank contaminant
UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-Na Total			MW-Na Dissolved			MW-Oa Total			MW-Oa Dissolved			MW-Pa Total			MW-Pa Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 1, 2012			October 1, 2012			October 17, 2012			October 17, 2012			October 1, 2012			October 1, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	<	0.145	U	NA			0.145	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	<	1.57E-01	U	NA			1.57E-01	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	2.01E+02			<	3.03E+01	U	<	3.03E+01	U	<	3.03E+01	U	<	3.03E+01	U	<	3.03E+01	U
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	3.25E+00		J	<	3.11E+00	U
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U
Barium	2.00E+03	1.00E+03	NA	4.44E+01			3.70E+01			6.03E+01			6.15E+01			3.09E+01			2.99E+01		
Cadmium	5.00E+00	1.00E+01	NA	8.30E-01		J	7.00E-01		J	7.80E-01		J	6.10E-01		J	<	7.90E-01	UB	6.30E-01		
Calcium	NE	NE	NE	3.16E+04			3.03E+04			7.11E+04			7.15E+04			4.40E+04			4.44E+04		J
Chromium	1.00E+02	5.00E+01	NA	1.69E+00		J	1.29E+00		J	1.78E+00		J	1.91E+00		J	2.06E+00		J	1.88E+00		J
Cobalt	NE	5.00E+01	NE	7.00E-01		J	<	7.90E-01	UB	1.12E+00		J	<	1.27E+00	UB	<	1.05E+00	UB	<	8.50E-01	UB
Copper	1.30E+03	1.00E+03	NA	1.36E+01			1.13E+01			1.19E+01			1.17E+01			8.68E+00		J	7.35E+00		J
Iron	NE	1.00E+03	NA	1.11E+02			<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U
Magnesium	NE	NE	NE	2.81E+04			2.75E+04			6.51E+04			6.53E+04			4.11E+04			4.27E+04		
Manganese	NE	2.00E+02	NA	1.05E+01		J	<	1.31E+00	U	<	1.31E+00	U	<	1.31E+00	U	<	1.31E+00	U	<	1.31E+00	U
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	7.65E-02	UB	<	8.57E-02	UB
Nickel	NE	2.00E+02	NA	<	1.13E+00	U	1.21E+00		J	<	1.13E+00	U	<	6.80E-02	U	<	1.13E+00	U	<	1.13E+00	U
Potassium	NE	NE	NE	6.91E+03			6.90E+03			9.24E+03			9.56E+03			6.89E+03			7.08E+03		
Selenium	5.00E+01	5.00E+01	NA	5.50E+00		J	5.07E+00		J	8.00E+00		J	5.05E+00		J	<	4.42E+00	U	9.72E+00		J
Sodium	NE	NE	NE	4.37E+04			4.45E+04			1.31E+05			1.28E+05			3.90E+04			3.92E+04		
Thallium	2.00E+00	NE	NA	<	3.04E+00	U	5.06E+00		J	4.58E+00		J	4.18E+00		J	4.89E+00		J	<	3.04E+00	U
Vanadium	NE	NE	1.83E+02	3.37E+01			3.41E+01			3.23E+01			3.51E+01			3.41E+01			2.49E+01		
Zinc	NE	1.00E+04	NA	9.16E+00		J	<	4.51E+00	U	<	4.51E+00	U	<	4.51E+00	U	<	4.51E+00	U	<	4.51E+00	U
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	<	2.40E-01	U	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	3.89E+01			NA			1.85E+02			NA			7.30E+01			NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	U	NA			<	4.00E+00	UJ	NA			<	4.00E+00	U	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	8.00E-03		J	NA			1.00E-02			NA			1.00E-02			NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.41E+00			NA			1.18E+01			NA			1.37E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	2.08E-03			NA			1.47E-03			NA			2.17E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	7.99E+01			NA			1.99E+02			NA			1.17E+02			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	5.00E+00			NA			6.80E+00			NA			3.20E+00			NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screenec

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
UB = analyte also found in associated laboratory or field blank, probable blank contaminant
UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-Rb Total			MW-Rb Dissolved			MW-S Total			MW-S Dissolved			MW-T Total			MW-T Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 1, 2012			October 1, 2012			October 30, 2012			October 30, 2012			October 16, 2012			October 16, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	<	0.145	U	NA			<	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	<	1.57E-01	U	NA			<	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	<	3.03E+01	U	<	4.68E+01	UB	<	5.68E+01	UB	<	4.55E+01	UB	<	6.10E+01	UB	<	3.05E+01	UB
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	UB	<	3.11E+00	U
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	<	3.59E+00	U	3.90E+00		J	<	3.59E+00	U	5.39E+00		J	7.50E+00		J
Barium	2.00E+03	1.00E+03	NA	3.51E+01			3.46E+01			3.90E+01			3.80E+01			<	3.38E+01	UB	<	3.47E+01	UB
Cadmium	5.00E+00	1.00E+01	NA	5.30E-01		J	3.80E-01		J	9.70E-01		J	5.90E-01		J	<	5.10E-01	UB	4.10E-01		J
Calcium	NE	NE	NE	4.20E+04		J	4.22E+04		J	5.17E+04			5.16E+04			3.79E+04			4.07E+04		
Chromium	1.00E+02	5.00E+01	NA	1.36E+00		J	1.32E+00		J	2.99E+00		J	2.32E+00		J	3.33E+00		J	2.24E+00		J
Cobalt	NE	5.00E+01	NE	8.60E-01		J	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U
Copper	1.30E+03	1.00E+03	NA	8.08E+00		J	6.83E+00		J	9.62E+00		J	9.35E+00		J	7.84E+00		J	7.04E+00		J
Iron	NE	1.00E+03	NA	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	1.39E+02			<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U
Magnesium	NE	NE	NE	4.08E+04		J	4.10E+04			4.85E+04			4.90E+04			3.51E+04			3.77E+04		
Manganese	NE	2.00E+02	NA	1.98E+00		J	<	1.31E+00	U	4.45E+00		J	<	1.31E+00	U	<	3.28E+00	UB	<	1.31E+00	U
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	7.02E-02		J	7.70E-02		J	<	6.80E-02	U	<	6.80E-02	U
Nickel	NE	2.00E+02	NA	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U	5.41E+00		J	4.86E+00		J
Potassium	NE	NE	NE	7.07E+03			7.29E+03			7.65E+03			7.70E+03			6.48E+03			6.97E+03		
Selenium	5.00E+01	5.00E+01	NA	7.75E+00		J	1.12E+01		J	7.84E+00		J	7.14E+00		J	<	4.42E+00	U	<	4.42E+00	U
Sodium	NE	NE	NE	4.14E+04			4.18E+04			5.47E+04			5.49E+04			<	5.37E+04	UB	<	5.70E+04	UB
Thallium	2.00E+00	NE	NA	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U	3.43E+00		J
Vanadium	NE	NE	1.83E+02	3.02E+01			2.67E+01			4.76E+01			4.89E+01			3.77E+01			3.80E+01		
Zinc	NE	1.00E+04	NA	1.38E+03		J	1.16E+03			8.79E+01			8.42E+01			8.83E+01			9.10E+01		
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	<	2.40E-01	U	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	6.86E+01			NA			6.64E+01			NA			<	4.85E+01	UB	NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	UJ	NA			<	4.00E+00	U	NA			<	4.00E+00	U	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	<	1.50E-02	U	NA			<	1.50E-02	U	NA			<	1.50E-02	UB	NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.02E+00			NA			1.59E+00			NA			1.20E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	1.98E-03			NA			2.20E-03			NA			2.02E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	1.01E+02			NA			1.03E+02			NA			9.85E+01			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	5.20E+00			NA			<	3.00E-01	U	NA			<	3.30E+00	UB	NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screene

µg/L = microgram per liter
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UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-U Total			MW-U Dissolved			MW-V Total			MW-V Dissolved			MW-X Total			MW-X Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 30, 2012			October 30, 2012			October 30, 2012			October 30, 2012			October 30, 2012			October 30, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	0.832		J	NA			<	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	5.59E-01		J	NA			<	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	<	4.41E+01	UB	<	4.17E+01	UB	<	3.03E+01	U	<	3.58E+01	UB	<	1.14E+02	UB	<	3.87E+01	UB
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	5.52E+00		J	8.84E+00		J	1.14E+01		
Barium	2.00E+03	1.00E+03	NA	4.40E+01			4.19E+01			<	2.03E+01	UB	<	1.98E+01	UB	6.24E+01			6.29E+01		
Cadmium	5.00E+00	1.00E+01	NA	8.40E-01		J	6.50E-01		J	<	4.60E-01	UB	4.10E-01		J	<	6.20E-01	UB	<	6.30E-01	UB
Calcium	NE	NE	NE	5.98E+04			5.82E+04			9.64E+04			9.41E+04			2.79E+04		J	2.92E+04		
Chromium	1.00E+02	5.00E+01	NA	4.86E+00		J	2.14E+00		J	1.26E+00		J	1.28E+00		J	1.64E+00		J	<	1.39E+00	UB
Cobalt	NE	5.00E+01	NE	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U
Copper	1.30E+03	1.00E+03	NA	1.02E+01			1.02E+01			9.97E+00		J	9.69E+00		J	8.62E+00		J	<	6.52E+00	UB
Iron	NE	1.00E+03	NA	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	5.83E+01		J	<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U
Magnesium	NE	NE	NE	5.47E+04			5.42E+04			8.10E+04			7.91E+04			2.31E+04		J	2.52E+04		
Manganese	NE	2.00E+02	NA	2.04E+01			1.66E+01			<	1.31E+00	U	<	1.31E+00	U	<	4.15E+00	UB	<	1.31E+00	U
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U
Nickel	NE	2.00E+02	NA	3.97E+00		J	3.19E+00		J	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U
Potassium	NE	NE	NE	8.25E+03			8.11E+03			9.79E+03			9.47E+03			5.70E+03			6.10E+03		
Selenium	5.00E+01	5.00E+01	NA	9.93E+00		J	7.82E+00		J	2.41E+01		J	2.43E+01			7.89E+00		J	7.34E+00		J
Sodium	NE	NE	NE	6.12E+04			6.00E+04			<	8.46E+04	UB	<	8.12E+04	UB	<	4.42E+04	UB	<	4.69E+04	UB
Thallium	2.00E+00	NE	NA	<	3.04E+00	U	3.40E+00		J	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U
Vanadium	NE	NE	1.83E+02	4.24E+01			4.27E+01			<	3.44E+01	UB	3.30E+01			5.33E+01			5.99E+01		
Zinc	NE	1.00E+04	NA	3.35E+02			3.30E+02			5.29E+02			5.49E+02			2.21E+02			2.48E+02		
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	<	2.40E-01	U	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	8.27E+01			NA			1.92E+02			NA			<	2.47E+01	UB	NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	UJ	NA			<	4.00E+00	UJ	NA			<	4.00E+00	U	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	<	1.50E-02	U	NA			<	3.00E-02	U	NA			<	7.00E-03	UB	NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.57E+00			NA			8.35E+00			NA			1.39E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	2.47E-03			NA			6.82E-03			NA			1.51E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	1.05E+02			NA			2.61E+02			NA			4.39E+01			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	1.30E+00			NA			<	4.80E+00	UB	NA			<	2.00E+00	UB	NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
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Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screene

µg/L = microgram per liter
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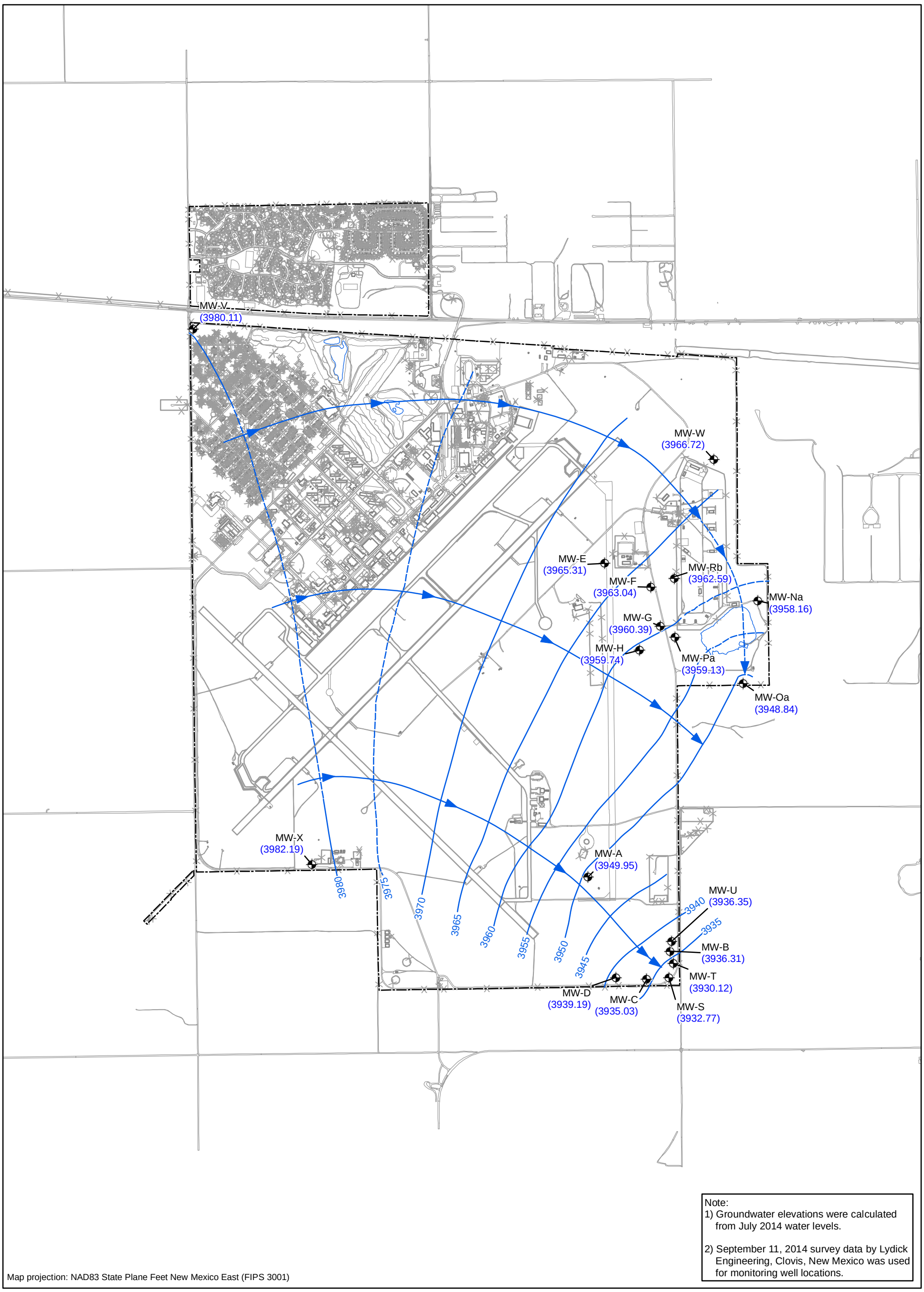
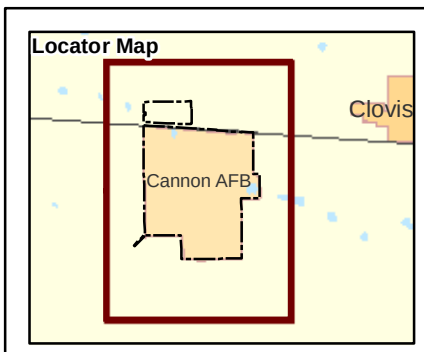
UB = analyte also found in associated laboratory or field blank, probable blank contaminant
UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency



Note:
1) Groundwater elevations were calculated from July 2014 water levels.

2) September 11, 2014 survey data by Lydick Engineering, Clovis, New Mexico was used for monitoring well locations.

Map projection: NAD83 State Plane Feet New Mexico East (FIPS 3001)



Legend

- Monitoring Well Location
- Interpreted Groundwater Elevation (ft amsl)
- Groundwater Elevation (ft amsl)
- Groundwater Flow Direction
- Interpreted Groundwater Flow Direction
- Base Boundary

amsl = above mean sea level
ft = feet

N

2,000 1,000 0 2,000 Feet

Potentiometric Surface Map - July 2014

Cannon Air Force Base, New Mexico

Drawn By: DPG	Date: 4/29/2015	Project No. 23446539	Figure 4-1
Checked By: MS	Revision: 0		

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5.1 DATA REVIEW PROCESS

Analytical data were reviewed and verified by URS in accordance with the Work Plan Addendum for Landfill and Institutional Control inspections Report (FPM/URS 2014a). The data review process included evaluations of the following elements and verification of raw data by a URS chemist:

- Laboratory case narrative/cooler receipt form
- Sample documentation
- Sample preservation and holding time compliance
- Instrument performance check (tuning)
- Initial calibration
- Initial calibration verification second source
- Continuing calibration verification
- Blank samples
- Laboratory control samples
- Surrogate compounds
- Internal standards
- MS/MSD
- Dilution tests
- Post digestion spikes
- Interference check solutions
- Laboratory duplicates
- Field duplicates
- Sensitivity
- Additional qualifications (professional judgment)

5.2 COMPLETENESS AND ANALYTICAL RESULTS VERIFICATION

The laboratory data reports and URS data verification reports are provided in **Appendix E**. **Table 5-1** presents all qualifications in tabular format. Qualifications applied to the analytical results based on the data review findings are summarized as follows.

- For results less than two times the limit of quantitation, professional judgment was used to qualify the common laboratory contaminants acetone in one sample and methylene chloride in three samples as nondetect (**U**).

- The total organic carbon results for the parent sample / field duplicate pair MWOA-7-14 / MWOA-7-14-A were qualified as estimated (**J**) due to field duplicate relative percent difference above evaluation criteria.
- The hexavalent chromium result for sample MWV-7-14 was rejected due to analysis 72 hours outside the 24 hour holding time criteria.
- The hexavalent chromium results for four samples were qualified as **J** due to analysis less than 24 hours outside the 24 hour holding time criteria.
- The 2-chloroethyl vinyl ether results for three samples, the hexavalent chromium result for one sample, the calcium result for one sample, and the magnesium result for one sample were qualified as **J** due to MS/MSD recoveries below evaluation criteria.

5.3 CONCLUSIONS OF DATA QUALITY REVIEW

The analytical data were found to be acceptable for their intended use based on the data reviews. Completeness, defined to be the percentage of analytical results judged to be valid, including estimated (**J/U**) data, was 98.9 percent for the July 2014 groundwater samples from Cannon AFB.

TABLE 5-1
SUMMARY OF ANALYTICAL DATA QUALIFICATIONS - JULY 2014
CANNON AFB, NEW MEXICO

SDG	Field ID	Matrix	Analysis	Analyte	URS Qual.	Comments
L709935	MWV-7-14	Aq	VOCs	2-Chloroethyl vinyl ether	UJ	Low MS/MSD recovery
L709935	MWV-7-14	Aq	Hexavalent chromium	Hexavalent chromium	R	Analyzed 3 days outside 24 hour criteria
L709935	MWV-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710204	MWC-7-14	Aq	VOCs	Methylene chloride	U	Common laboratory contaminant
L710204	MWC-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710204	MWD-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Low MS/MSD recovery
L710204	MWD-7-14	Aq	VOCs	Methylene chloride	U	Common laboratory contaminant
L710204	MWD-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710204	MWX-7-14	Aq	VOCs	Methylene chloride	U	Common laboratory contaminant
L710204	MWX-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710491	MWB-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Analyzed 1 day outside 24 hour criteria
L710491	MWB-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710491	MWS-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Analyzed 1 day outside 24 hour criteria
L710491	MWS-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710491	MWT-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Analyzed 1 day outside 24 hour criteria
L710491	MWT-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710491	MWU-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Analyzed 1 day outside 24 hour criteria
L710491	MWU-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711018	MWA-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711018	MWOA-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711018	MWOA-7-14	Aq	TOC	TOC	J	Field duplicate RPD >30%
L711018	MWOA-7-14-A	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711018	MWOA-7-14-A	Aq	TOC	TOC	J	Field duplicate RPD >30%
L711018	MWPA-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711295	MWNA-7-14	Aq	VOCs	2-Chloroethyl vinyl ether	UJ	Low MS/MSD recovery
L711295	MWNA-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711300	MWF-7-14	Aq	VOCs	2-Chloroethyl vinyl ether	UJ	Low MS/MSD recovery
L711300	MWF-7-14	Aq	Metals	Calcium	J	Low MS/MSD recovery
L711300	MWF-7-14	Aq	Metals	Magnesium	J	Low MS/MSD recovery
L711300	MWF-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711329	MWE-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711384	MWRb-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711384	MWW-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711387	MWG-7-14	Aq	VOCs	Acetone	U	Common laboratory contaminant
L711387	MWG-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711387	MWH-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850

Notes:

AFB = Air Force Base
Aq = Aqueous
ID = Identification
J = Estimated
LOQ = Limit of Quantitation
MS/MSD = Matrix Spike/Matrix Spike Duplicate
R = Rejected
RPD = Relative Percent Difference
SDG = Sample Delivery Group
TOC = Total Organic Carbon
Qual = Qualifier
U = Estimated
UJ = Estimated Nondetect
URS = URS Group Inc.
VOCs = Volatile Organic Compound

6.1 CONCLUSIONS

The nitrate/nitrite concentrations have historically exceeded the MCL of 10 milligrams per liter (mg/L) at MW-Oa, according to the 2010 (Trinity 2010) and the 2012 (Bhate 2013) Biennial Groundwater Monitoring and Annual Landfill Inspection Report. Nitrate/nitrite analytical results from MW-Oa in July 2014 indicated an increase in concentration from 11.8 mg/L in 2012 to 15.0 mg/L in 2014. Groundwater depicts an interpreted groundwater flow direction to the south in the vicinity of MW-Oa. This is likely due to groundwater being pulled south from beneath the Playa Lake by irrigation and residual nitrate contamination related to sanitary waste treatment practices associated with the Playa Lake.

Hexavalent chromium concentrations from July 2014 were above the NMED Risk Assessment Guidance screening criteria of 0.431 µg/L in 14 monitoring wells. Historically, the detection of hexavalent chromium above screening criteria was limited to MW-F, MW-G, and MW-H. The increase in detections could be the result of using USEPA hexavalent chromium method 7196A and a high historical reporting limit of 20.0 µg/L in 2008 (Tetra Tech 2008) and in 2010 (Trinity 2010). The 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013) also utilized USEPA hexavalent chromium method 7196A and a reporting limit of 4.0 µg/L for analysis. Hexavalent chromium has been shown to be naturally occurring in some areas and these low levels, including in background wells, indicate that hexavalent chromium in groundwater is not related to activities at Cannon AFB.

Low levels of perchlorate below screening criteria and in background wells indicates the low levels of perchlorate reported in groundwater samples is naturally occurring and is not related to site activities. Also, previous reports used higher reporting limits which likely explains why it was not detected in previous sampling events.

Groundwater sampling analytical results from July 2014 indicated that there are no new contaminant releases to groundwater. Furthermore, proposed new or current Base activities do not pose a threat to groundwater.

6.2 RECOMMENDATIONS

Water levels will be collected in conjunction with the annual landfill and institutional controls inspection to meet NMED requirements. Biennial groundwater sampling will continue in accordance with the WPA (FPM/URS 2014a).

Monitoring well identification tags will be installed for all 18 wells and a sign identifying LF025 with be installed during the 2015 annual inspections. Corrected issues will be documented in future Biennial Groundwater Monitoring Well and Annual Landfill Inspection Reports.

Bhate. 2013. 2012 Biennial Groundwater Monitoring Report and Annual Landfill Inspection Report, Landfills LF-03, LF-04, LF-05, LF-25, and Former Sewage Lagoons. Cannon Air Force Base, New Mexico. April.

Department of Defense (DoD). 2007. The Department of Defense Environmental Data Quality Workgroup. Perchlorate Handbook, Rev 1. August.

FPM Remediations, Inc./URS Group, Inc. (FPM/URS). 2014a. Work Plan Addendum for Landfill and Institutional Control Inspection Sites. Cannon Air Force Base, New Mexico. June.

FPM/URS. 2014b. Annual Land Use Control Inspections Report. Cannon Air Force Base, New Mexico. June.

New Mexico Environmental Department (NMED). 2012. Risk Assessment Guidance for Site Investigations and Remediation, Volume 2. New Mexico Environmental Department, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. June.

Tetra Tech EC, Inc. and Brown, Burdine, & Associates, LLC (Tetra Tech). 2008. 2008 Biennial Groundwater Monitoring and Annual Landfill Inspection Report Landfill No. 3 (LF-03/SWMU 105), Landfill No. 4 (LF-04/SWMU 104), and Landfill No. 25 (LF-25/SWMU 97). Cannon Air Force Base, New Mexico. Final. December.

Tetra Tech EC, Inc. and Trinity Analysis & Development Corp. (Trinity) 2010. 2010 Biennial Groundwater Monitoring and Annual Landfill Inspection Report Landfill No. 3 (LF-03/SWMU 105), Landfill No. 4 (LF-04/SWMU 104), Landfill No. 25 (LF-25/SWMU 97), and Sewage Lagoons (SWMU 101). Cannon Air Force Base, New Mexico. Final. December.

DAILY QUALITY CONTROL REPORT

Date	**06/16/14**

Day	S	M	T	W	TH	F	S
		X					

On Site Hours	4
Travel Time	6
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Corey Anderson
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear X	Overcast	Rain	Snow
Temp	To 32	32-50	50-70	70-85 X	85 up
Wind	Still	Moderate X	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	1	

Subcontractors on Site:
None.

Equipment on Site:
Rental truck and car.

Visitors on Site:
Sheen Kottkamp and Laura Peters (Cannon AFB base contacts).

URS Personnel on Site:
Kyle Kloewer, Paul Wilson, Jenn Allen, James Conradi

Field Work Performed (including sampling):
Arrived at Cannon AFB. Acquired base passes.
Obtained supplies for monitoring well maintenance.
Conducted institutional controls for SD015, SW002, SW004, and SW006.

Quality Control Activities (including field calibration):
None.

Health and Safety and Activities:
Had the initial H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, hazards with fire, heat stress, slip-trip-falls, and lifting hazards. Discussed route to hospital, severe weather procedures - including lightning, and dust storms, trains and RR track safety.

Observations/Problems Encountered/Corrective Action Taken:
None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**06/17/14**

Day	S	M	T	W	TH	F	S
			X				

On Site Hours	11
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Corey Anderson
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X			

Temp	To 32	32-50	50-70	70-85	85 up
				X	

Wind	Still	Moderate	High
		X	

Humidity	Dry	Moderate	Humid
	X		

Report No.

2

Subcontractors on Site:

None.

Equipment on Site:

Rental truck / car, Heron Dipper T 500ft. water level meter, cameras, decontamination supplies (DI water, brushes, spray bottles, buckets).

Visitors on Site:

Sheen Kottkamp (Cannon AFB base contact).

URS Personnel on Site:

Kyle Kloewer, Paul Wilson, Jenn Allen, James Conradi.

Field Work Performed (including sampling):

Water level / depth to bottom measured at monitoring wells D, C, S, T, B, U, X, V, and W.
Replaced missing well plugs at B, S, and X.
Pulled tubing out of S, B, and W.
Conducted Landfill inspections at LF005, LF025, LF003, LF004, LF002, and SI101.
Conducted institutional controls at FT006.

Quality Control Activities (including field calibration):

None.

Health and Safety and Activities:

Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, hazards with fire, heat stress, slip-trip-falls, and lifting hazards. Discussed route to hospital, severe weather procedures - including lightning, and dust storms, trains and RR track safety.

Observations/Problems Encountered/Corrective Action Taken:

Encountered Western Prairie Rattlesnake near MW-D. Short term corrective actions taken to avoid rattle snakes included: avoid walking long distances in tall grass, sweeping the ground with object, and making presence be known. Long term corrective actions will include the use a snake proof clothing, or snake chaps.

Depth to bottom of monitoring wells was difficult to determine due to depths of wells (up to 365 ft). Purchased steel fully-threaded rod to add weight to water level meter probe. Used zip-ties to attach steel rod to bottom of probe.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	06/18/14

Day	S	M	T	W	TH	F	S
				X			

On Site Hours	10
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Corey Anderson
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X			
Temp	To 32	32-50	50-70	70-85	85 up
				X	

Wind	Still	Moderate	High	**Report No.**
		X		
Humidity	Dry	Moderate	Humid	3
	X			

Subcontractors on Site:

None.

Equipment on Site:

Rental truck / car, Heron Dipper T 500ft. water level meter, cameras, decontamination supplies (DI water, brushes, spray bottles, buckets) Concrete installation tools (Shovels, pick axe, etc.).

Visitors on Site:

Sheen Kottkamp (Cannon AFB base contact).

URS Personnel on Site:

Kyle Kloewer, Paul Wilson, Jenn Allen, James Conradi

Field Work Performed (including sampling):

Water level / depth to bottom measured at monitoring wells E, H, G, F, Pa, Oa, and A.
Pulled tubing out of Pa, Oa, F, G, H, A.
Removed pumps from monitoring wells Pa and Oa.
Concrete well pads dug at monitoring wells A and B.
Cut fallen tree and removed from fence at LF025anf LF005.
Revisited institutional controls SD015 and Landfill LF04 for further inspections.
Conduct instituational controls at WL102, SD017,and SDO20.
Painted 4 wells, including bollards.

Quality Control Activities (including field calibration):

None.

Health and Safety and Activities:

Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, hazards with fire, heat stress, slip-trip-falls, and lifting hazards. Discussed route to hospital, snake safety, severe weather procedures - including lightning, and dust storms, trains and RR track safety.

Observations/Problems Encountered/Corrective Action Taken:

Lock on monitoring well Rb did not match key used on other wells, no water level or depth to bottom recorded. Notified base contact (Sheen K.) and he will acquire necessary key to unlock well.

Dedicated pump and tubing at monitoring well Na was not able to be removed. Water level and depth to bottom were not recorded.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**06/19/14**

Day	S	M	T	W	TH	F	S
					X		

On Site Hours	10
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Corey Anderson
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear X	Overcast	Rain	Snow
Temp	To 32	32-50	50-70	70-85 X	85 up
Wind	Still	Moderate X	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	4	

Subcontractors on Site:

None.

Equipment on Site:

Rental truck / car, Heron Dipper T 500ft. water level meter, cameras, decontamination supplies (DI water, brushes, spray bottles, buckets), Quickrete concrete crack filler crack seal, Concrete installation tools (Shovels, pick axe, bags of concrete, trowels, mixing water)

Visitors on Site:

Sheen Kottkamp (Cannon AFB base contact).

URS Personnel on Site:

Kyle Kloewer, Paul Wilson, Jenn Allen, James Conradi

Field Work Performed (including sampling):

Poured and finished concrete at monitoring wells A and B.
Painted remaining 14 wells including bollards.
Sealed cracks in concrete pads at monitoring wells C, D, and F.
Mended barbed wire fence at SI101 and LF025.

Quality Control Activities (including field calibration):

None

Health and Safety and Activities:

Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, hazards with fire, heat stress, slip-trip-falls, and lifting hazards. Discussed route to hospital, severe weather procedures - including lightning, and dust storms, trains and RR track safety.

Observations/Problems Encountered/Corrective Action Taken:

None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**06/20/14**

Day	S	M	T	W	TH	F	S
						X	

On Site Hours	4
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Corey Anderson
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X			

Temp	To 32	32-50	50-70	70-85	85 up
				X	

Wind	Still	Moderate	High
		X	

Humidity	Dry	Moderate	Humid
	X		

Report No.

5

Subcontractors on Site:

None.

Equipment on Site:

Rental truck / car, Heron Dipper T 500ft. water level meter, cameras, decontamination supplies (DI water, brushes, spray bottles, buckets)

Visitors on Site:

Sheen Kottkamp (Cannon AFB base contact).

URS Personnel on Site:

Kyle Kloewer, Paul Wilson, Jenn Allen, James Conradi

Field Work Performed (including sampling):

Staked locations for DP sampling at FL070 and AT109.

Acquired signatures from base personnel for dig permit.

Quality Control Activities (including field calibration):

None.

Health and Safety and Activities:

Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, hazards with fire, heat stress, slip-trip-falls, and lifting hazards. Discussed route to hospital, severe weather procedures - including lightning, and dust storms, trains and RR track safety.

Observations/Problems Encountered/Corrective Action Taken:

None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	07/14/14

Day	S	M	T	W	TH	F	S
		X					

On Site Hours	11
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
	X				
Temp	To 32	32-50	50-70	70-85	85 up
					X
Wind	Still	Moderate	High	**Report No.**	
		X		1	
Humidity	Dry	Moderate	Humid		
	X				

Subcontractors on Site:

None.

Equipment on Site:

Geotech Pump, nitrogen tanks, Heron "Dipper T" 500ft. water level meter, YSI-556 MPS and flow-through cell, Lamotte 2020e turbidity meter, decontamination supplies (liquinox, brushes, spray bottles, buckets) sampling supplies, coolers, various tools (hammer, nut driver, tubing cutter) camera, IDW buckets, rental truck.

Visitors on Site:

None.

URS Personnel on Site:

Kyle Kloewer and James Conradi

Field Work Performed (including sampling):

-Acquired base passes.

-Acquired supplies and tools for sampling.

-Collected groundwater samples from monitoring well MW-V. Groundwater samples were collected from all monitoring wells were analyzed for VOC EPA Method 8260B, Tal metals 7470A/6020A, hexavalent chromium 7199, Perchlorate 6850, chloride/sulfate/nitrate/nitrite 9056, ammonium sm 4500 NM3, and TOC 9060A.

Well Purging

-Low-flow purging was conducted at a pumping rate of less than 500 ml/min with minimal drawdown until parameter stabilization. Field parameters collected included: pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity. Purged groundwater was containerized in 5 gallon buckets, then transferred to a poly container.

Quality Control Activities (including field calibration):

Field Checked the PID with 100 ppb isobutylene. Calibrated Check YSI 556 MPS for pH (4, 7, 10).

Health and Safety and Activities:

Had the initial H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:

Water would not rise to surface from monitoring well, called Field Environmental and was informed to alter refill/discharge times. Altered refill/discharge times corrected problem.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	07/15/14

Day	S	M	T	W	TH	F	S
			X				

On Site Hours	11
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
			X		

Temp	To 32	32-50	50-70	70-85	85 up
				X	

Wind	Still	Moderate	High
		X	

Humidity	Dry	Moderate	Humid
	X		

Report No. 2

Subcontractors on Site:
None.

Equipment on Site:
Geotech Pump, nitrogen tanks, Heron "Dipper T" 500ft. water level meter, YSI-556 MPS and flow-through cell, Lamotte 2020e turbidity meter, decontamination supplies (liquinox, brushes, spray bottles, buckets) sampling supplies, coolers, various tools (hammer, nut driver, tubing cutter) camera, IDW buckets, rental truck.

Visitors on Site:
None.

URS Personnel on Site:
Kyle Kloewer and James Conradi

Field Work Performed (including sampling):

-Collected groundwater samples from monitoring wells MW-X, MW-D, and MW-C. Groundwater samples were collected from all monitoring wells were analyzed for VOC EPA Method 8260B, Tal metals 7470A/6020A, hexavalent chromium 7199, Perchlorate 6850, chloride/sulfate/nitrate/nitrite 9056, ammonium sm 4500 NM3, and TOC 9060A.

Well Purging
-Low-flow purging was conducted at a pumping rate of less than 500 ml/min with minimal drawdown until parameter stabilization. Field parameters collected included: pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity. Purged groundwater was containerized in 5 gallon buckets, then transferred to a poly container.

Quality Control Activities (including field calibration):
Field Checked the PID with 100 ppb isobutylene. Calibrated Check YSI 556 MPS for pH (4, 7, 10).

Health and Safety and Activities:
Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:
None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	07/16/14

Day	S	M	T	W	TH	F	S
				X			

On Site Hours	10
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear X	Overcast X	Rain	Snow
Temp	To 32	32-50	50-70	70-85 X	85 up
Wind	Still	Moderate X	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	3	

Subcontractors on Site:
None.

Equipment on Site:
Geotech Pump, nitrogen tanks, Heron "Dipper T" 500ft. water level meter, YSI-556 MPS and flow-through cell, Lamotte 2020e turbidity meter, decontamination supplies (liquinox, brushes, spray bottles, buckets) sampling supplies, coolers, various tools (hammer, nut driver, tubing cutter) camera, IDW buckets, rental truck.

Visitors on Site:
None.

URS Personnel on Site:
Kyle Kloewer and James Conradi

Field Work Performed (including sampling):

-Collected groundwater samples from monitoring wells MW-S, MW-T, MW-B, and MW-U. Groundwater samples were collected from all monitoring wells were analyzed for VOC EPA Method 8260B, Tal metals 7470A/6020A, hexavalent chromium 7199, Perchlorate 6850, chloride/sulfate/nitrate/nitrite 9056, ammonium sm 4500 NM3, and TOC 9060A.

Well Purging
-Low-flow purging was conducted at a pumping rate of less than 500 ml/min with minimal drawdown until parameter stabilization. Field parameters collected included: pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity. Purged groundwater was containerized in 5 gallon buckets, then transferred to a poly container.

Quality Control Activities (including field calibration):
Field Checked the PID with 100 ppb isobutylene. Calibrated Check YSI 556 MPS for pH (4, 7, 10).

Health and Safety and Activities:
Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:
None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	07/17/14

Day	S	M	T	W	TH	F	S
					X		

On Site Hours	11
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear X	Overcast X	Rain	Snow
Temp	To 32	32-50	50-70	70-85 X	85 up
Wind	Still	Moderate X	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	4	

Subcontractors on Site:

None.

Equipment on Site:

Geotech Pump, nitrogen tanks, Heron "Dipper T" 500ft. water level meter, YSI-556 MPS and flow-through cell, Lamotte 2020e turbidity meter, decontamination supplies (liquinox, brushes, spray bottles, buckets) sampling supplies, coolers, various tools (hammer, nut driver, tubing cutter) camera, IDW buckets, rental truck.

Visitors on Site:

None.

URS Personnel on Site:

Kyle Kloewer and James Conradi

Field Work Performed (including sampling):

-Collected groundwater samples from monitoring wells MW-A, MW-Oa, and MW-Pa. Groundwater samples were collected from all monitoring wells were analyzed for VOC EPA Method 8260B, Tal metals 7470A/6020A, hexavalent chromium 7199, Perchlorate 6850, chloride/sulfate/nitrate/nitrite 9056, ammonium sm 4500 NM3, and TOC 9060A.

Well Purging

-Low-flow purging was conducted at a pumping rate of less than 500 ml/min with minimal drawdown until parameter stabilization. Field parameters collected included: pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity. Purged groundwater was containerized in 5 gallon buckets, then transferred to a poly container.

Quality Control Activities (including field calibration):

Field Checked the PID with 100 ppb isobutylene. Calibrated Check YSI 556 MPS for pH (4, 7, 10).

A duplicate groundwater sample was collected from monitoring well MW-Oa (sample ID: MWOa-7-14-A)

Health and Safety and Activities:

Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:

None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	07/18/14

Day	S	M	T	W	TH	F	S
						X	

On Site Hours	10
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X	X		

Temp	To 32	32-50	50-70	70-85	85 up
			X	X	

Wind	Still	Moderate	High	**Report No.**
	X			

Humidity	Dry	Moderate	Humid	
	X			5

Subcontractors on Site:

None.

Equipment on Site:

Heron "Dipper T" 500ft. water level meter, assorted sizes of well caps, general hand tools for well cap installation, 3/8" and 1/4" tubing and dedicated pumps for MW-OA and Pa, rental truck.

Visitors on Site:

None.

URS Personnel on Site:

Kyle Kloewer and James Conradi

Field Work Performed (including sampling):

-Inspected MW-Rb.
-Installed new well caps on MW-E, MW-F, MW-G, and MW-H.
-Approximately 4 inches of riser PVC was removed from MW-E.
-Approximately 1 inches of riser PVC was removed from MW-F.
-Approximately 9 inches of riser PVC was removed from MW-G.
-Approximately 6 inches of riser PVC was removed from MW-H.
-Removed stakes at AT109.

Quality Control Activities (including field calibration):

None.

Health and Safety and Activities:

Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:

Attempted installation of dedicated pumps at MW-Oa and Pa. Could not find correct fitting to install the pump. Will ship both pumps back to Omaha and order correct fitting and rebuild kits for each. Will then ship pumps back to Cannon AFB to be installed.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	07/19/14

Day	S	M	T	W	TH	F	S
							X

On Site Hours	4
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X	X		
Temp	To 32	32-50	50-70	70-85	85 up
				X	X

Wind	Still	Moderate	High	**Report No.**
		X		
Humidity	Dry	Moderate	Humid	6
	X			

Subcontractors on Site:

None.

Equipment on Site:

Master locks #3QLD, Chainsaw, Chainsaw PPE, rental truck.

Visitors on Site:

None.

URS Personnel on Site:

Kyle Kloewer and James Conradi

Field Work Performed (including sampling):

-Added new locks on all 18 monitoring wells and at LF005 and SI101 gates.
-Recorded dimensions of Landfill signs.
-Determined the amount of fence that needed to be fixed at LF005.

Quality Control Activities (including field calibration):

None.

Health and Safety and Activities:

Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE (chainsaw PPE and QMS operating procedure), fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:

Attempted to cut down trees at LF005. After cutting down 4 trees the chain feel off. Did not have to tools to fix the chain. Determined that cutting down the rest of the trees would result in the possibility of encountering a rattlesnake. Did not fix the chainsaw, or cut anymore trees.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	07/20/14

Day	S	M	T	W	TH	F	S
	X						

On Site Hours	15
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X			
Temp	To 32	32-50	50-70	70-85	85 up
					X
Wind	Still	Moderate	High	**Report No.**	
	X				
Humidity	Dry	Moderate	Humid	7	
	X				

Subcontractors on Site:
None.

Equipment on Site:
Geotech Pump, nitrogen tanks, Heron "Dipper T" 500ft. water level meter, YSI-556 MPS and flow-through cell, Lamotte 2020e turbidity meter, decontamination supplies (liquinox, brushes, spray bottles, buckets) sampling supplies, coolers, various tools (hammer, nut driver, tubing cutter) camera, IDW buckets, rental truck.

Visitors on Site:
None.

URS Personnel on Site:
Kyle Kloewer and James Conradi

Field Work Performed (including sampling):

-Collected groundwater samples from monitoring wells MW-H, MW-G, MW-Rb, and MW-W. Groundwater samples were collected from all monitoring wells were analyzed for VOC EPA Method 8260B, Tal metals 7470A/6020A, hexavalent chromium 7199, Perchlorate 6850, chloride/sulfate/nitrate/nitrite 9056, ammonium sm 4500 NM3, and TOC 9060A.

Well Purging
-Low-flow purging was conducted at a pumping rate of less than 500 ml/min with minimal drawdown until parameter stabilization. Field parameters collected included: pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity. Purged groundwater was containerized in 5 gallon buckets, then transferred to a poly container.

Quality Control Activities (including field calibration):
Field Checked the PID with 100 ppb isobutylene. Calibrated Check YSI 556 MPS for pH (4, 7, 10).

Health and Safety and Activities:
Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:
Attempted to Sample at MW-Na. Was not able to purge any water. Informed that MW-Na requires a tubing extension to be sample. Acquired extension and will collected sample on 7-21-2014.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	07/21/14

Day	S	M	T	W	TH	F	S
		X					

On Site Hours	10
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear X	Overcast	Rain	Snow
Temp	To 32	32-50	50-70	70-85 X	85 up
Wind	Still X	Moderate	High	**Report No.**	
Humidity	Dry X	Moderate	Humid	8	

Subcontractors on Site:
None.

Equipment on Site:
Geotech Pump, nitrogen tanks, Heron "Dipper T" 500ft. water level meter, YSI-556 MPS and flow-through cell, Lamotte 2020e turbidity meter, decontamination supplies (liquinox, brushes, spray bottles, buckets) sampling supplies, coolers, various tools (hammer, nut driver, tubing cutter) camera, IDW buckets, rental truck.

Visitors on Site:
None.

URS Personnel on Site:
Kyle Kloewer and James Conradi

Field Work Performed (including sampling):

-Collected groundwater samples from monitoring wells MW-F, MW-E, and MW-Na. Groundwater samples were collected from all monitoring wells were analyzed for VOC EPA Method 8260B, Tal metals 7470A/6020A, hexavalent chromium 7199, Perchlorate 6850, chloride/sulfate/nitrate/nitrite 9056, ammonium sm 4500 NM3, and TOC 9060A.

Well Purging
-Low-flow purging was conducted at a pumping rate of less than 500 ml/min with minimal drawdown until parameter stabilization. Field parameters collected included: pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity. Purged groundwater was containerized in 5 gallon buckets, then transferred to a poly container.

Quality Control Activities (including field calibration):
Field Checked the PID with 100 ppb isobutylene. Calibrated Check YSI 556 MPS for pH (4, 7, 10).
A MS/MSD groundwater sample was collected from monitoring well MW-F.

Health and Safety and Activities:
Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:
None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**10/28/14**

Day	S	M	T	W	TH	F	S
			X				

On Site Hours	8
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X			
Temp	To 32	32-50	50-70	70-85	85 up
			X		

Wind	Still	Moderate	High	**Report No.**
	X			
Humidity	Dry	Moderate	Humid	1
	X			

Subcontractors on Site:

Bob Rogers (B and D Waste Management).
Charles Stevens (A Cut Above Tree Service).

Equipment on Site:

Rental truck, chainsaw, oil, gas, various tools, roll-off dumpster, PPE (chaps, helmet, earmuffs, gloves).

Visitors on Site:

None.

URS Personnel on Site:

Kyle Kloewer and James Conradi.

Field Work Performed (including sampling):

Cut and cleared trees at SI-101.
Met with roll-off dumpster contractor and placed dumpster near LF005.
Met with tree removal contractor and showed him trees to be removed at LF025.

Quality Control Activities (including field calibration):

None.

Health and Safety and Activities:

Had the initial H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:

None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**10/29/14**

Day	S	M	T	W	TH	F	S
				X			

On Site Hours	10
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X			
Temp	To 32	32-50	50-70	70-85	85 up
			X		
Wind	Still	Moderate	High	**Report No.**	
	X	X			
Humidity	Dry	Moderate	Humid	2	
	X				

Subcontractors on Site:
Steve Dragony (Embassy Landscaping).

Equipment on Site:
Rental truck, chainsaw, oil, gas, various tools, roll-off dumpster, PPE (chaps, helmet, earmuffs, gloves).

Visitors on Site:
None.

URS Personnel on Site:
Kyle Kloewer and James Conradi.

Field Work Performed (including sampling):
Cut and cleared trees at SI-101 and LF005.
Met with mowing contractor and showed him the area that needs to mowed within Cell 3 at LF005.
Mowing contactor removed brush from SI-101 using tractor and shredder.

Quality Control Activities (including field calibration):
None.

Health and Safety and Activities:
Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:
None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	10/30/14

Day	S	M	T	W	TH	F	S
					X		

On Site Hours	8
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear X	Overcast	Rain	Snow
Temp	To 32	32-50	50-70 X	70-85	85 up
Wind	Still	Moderate X	High X	**Report No.**	
Humidity	Dry X	Moderate	Humid	3	

Subcontractors on Site:
None.

Equipment on Site:
Rental truck, various tools, GPS, marking paint and stakes, PPE (level D).

Visitors on Site:
None.

URS Personnel on Site:
Kyle Kloewer and James Conradi.

Field Work Performed (including sampling):
Attended utility clearance meeting on base. Called New Mexico 811 for utility clearance.
Acquired signatures for dig permit clearance for AT109, FL070, and FT006.
Staked boring locations at AT109 and FL070.

Quality Control Activities (including field calibration):
None.

Health and Safety and Activities:
Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:
None.

By James Conradi **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	**10/31/14**

Day	S	M	T	W	TH	F	S
						X	

On Site Hours	5
Travel Time	0
Office Time	0

Site Name and Location	Cannon Air Force Base
URS Project Manager	Mike Sonderman
Project	NM-AZ Group PBR
Project No.	23446539/23449540
Contract No.	FA8903-13-C-0088

Weather	Bright Sun	Clear X	Overcast	Rain	Snow
Temp	To 32	32-50	50-70 X	70-85	85 up
Wind	Still	Moderate X	High X	**Report No.**	
Humidity	Dry X	Moderate	Humid	4	

Subcontractors on Site:
None.

Equipment on Site:
Rental truck, various tools, PPE (level D).

Visitors on Site:
None.

URS Personnel on Site:
Kyle Kloewer and James Conradi.

Field Work Performed (including sampling):
Straightened gate on East side of fence at Cell 3 within LF005.
Installed chain and lock at East and North gate of Cell 3 within LF005.
Installed refurbished dedicated pumps in MW-Oa and MW-Pa.

Quality Control Activities (including field calibration):
None.

Health and Safety and Activities:
Had the morning H&S meeting with all personnel on site. Discussed H&S procedures including, PPE, fire hazards, heat stress, sunburns, slip-trip-falls, lifting hazards, biological hazards including rattlesnakes, insects, and spiders. Discussed route to hospital, severe weather procedures - including lightning.

Observations/Problems Encountered/Corrective Action Taken:
None.

By James Conradi **Title** Field Manager

Cover System Inspection Report
LF025 and SI101
Cannon AFB, New Mexico

Inspector Name and Title: Jennifer Allen / Geologist
Days since last rain fall: November 23, 2013
(Contact Base Weather Service) 24 days

Date: 12/18/13
Amount of rainfall: 0.21"

Inspection Type	Check as Appropriate
Annual	
Other (Identify)	

	LF025		SI101	
1. Fences and Gates:	Yes	No	Yes	No
• Structural integrity?	X		X	
• Gates locks in place?	X		X	
• Signage in place?	X		X	
• Tumbleweeds and silt built up?	X		X	

Problems observed with the fences/gates/signage: LF025 None	SI101 Fence is not locked
Maintenance or repairs required: None	None
Maintenance to be performed by (Subcontractor name and date): None	None

	LF025		SI101	
2. Cover:	Yes	No	Yes	No
• Overall structural integrity maintained?	X		X	
• Surface erosion present?		X		X
• Gullies/washouts present?		X		X
• Exposed buried waste?	X			X
• As-constructed contours (topographic highs) intact?	X		X	
• As-constructed contours (depressions) intact?	X		X	
• Stormwater runoff contained within boundaries of site?	X		X	
• Evidence of drainage pathways/diverted runoff?		X		X
• Tumbleweeds or silt built up?	X		X	

Problems observed with the cover: None	None
Maintenance or repair required: None	None

LF25

Vegitation @ LF025 varies, most of the cover is grasses (2ft tell) and sage brush. Some yucca plants were observed @ the base of the high points where water run off occurs. Full grown Trees are present across the site ~~and~~ with average trunk diameter of apx 1'. Vegitation covers apx 75% of area. Sparse areas have concrete rubble and construction debris. Soil is rocky. No animal burrows were observed. Topography varies across the site. From low point to high point is apx 15 ft. The high areas are mostly in the center of the LF. We saw a downed power line that runs W to E across the LF

Maintenance to be performed by (Subcontractor name and date):

None

3. Berms (Indicate NA if not present) N/A	LF025		SI101	
	Yes	No	Yes	No
• Is any erosion present?				
• Is any ponding present?				
• Stormwater runoff contained onsite?				

Describe location and condition:

Problems observed with berms:

Maintenance or repairs required:

Maintenance to be performed by (Subcontractor name and date):

4. Drainage Ditches/Channels (Indicate NA if no channels are present) N/A	LF025		SI101	
	Yes	No	Yes	No
• Is any erosion present?				
• Is buildup of sediment/silt debris present?				
• Is displaced crushed concrete present?				
• Is stormwater runoff contained onsite?				
• Excess accumulation of tumbleweeds present?				

Describe location and condition:

Problems observed with channels:

Maintenance or repair required:

Maintenance to be performed by (Subcontractor name and date):

5. Vegetation	LF025		SI101	
	Yes	No	Yes	No
• Vegetation native perennial?	X		X	
• Vegetation in good condition?	X			X
• Bare/sparse areas?	X		X	

LF025

Describe overall condition: Good condition, topography varies throught the site, most high points are found in the center of the LF

Estimate extent and type of vegetative cover: tall grass, sage brush, trees
vegitation covers apx 75% of area

Maintenance or repairs required:
Observed loose wires from a power line that runs aroross LF25 from W to E

Maintenance to be performed by (Subcontractor name and date):
None

	LF025		SI101	
6. Monitoring Wells	Yes	No	Yes	No
Evidence of tampering?	X			X
Damage?		X	X	

Problems observed with the wells.
None

MW-H has a broken PVC cap. Cap was replaced by a rubber coupler w/ plug

11. Changes required to the Monitoring and Maintenance Plan?

SI 101: Vegitation is sparse @ apx a 50% cover. Vegitation is mostly tall grasses (1'-2') and weeds with a few small shrubs.

Jennifer Allen
Inspector's Name

Inspector's Signature

Date

Cover System Inspection Report
Landfill-03 and Landfill-04
Cannon AFB, New Mexico

Inspector Name and Title: Jennifer Allen, Geologist
Days since last rain fall: November 23, 2013
(Contact Base Weather Service) 24 days

Date: 12/17/18
Amount of rainfall: 0.21"

Inspection Type	Check as Appropriate
Annual	✓
Other (identify)	

	LF003		LF004	
1. Cover:	Yes	No	Yes	No
• Overall structural integrity maintained?	X		X	
• Surface erosion present?	X		X	
• Gullies/washouts present?	X		X	
• Exposed buried waste?	X		X	
• As-constructed contours (topographic highs) intact?	X		X	
• As-constructed contours (depressions) intact?	X		X	
• Stormwater runoff contained within boundaries of site?	X			X
• Evidence of drainage pathways/diverted runoff?		X	X	
• Tumbleweeds or silt built up?		X		X

Describe overall condition:
Good

Problems observed with the cover: LF003 Several small wash outs on North boundary	LF004 Small washout near rip rap on South side
Maintenance or repairs required: LF003 None	None
Maintenance to be performed by (Subcontractor name and date): LF003 None	None

	LF003		LF004	
2. Vegetation:	Yes	No	Yes	No
• Vegetation native perennial?	X		X	
• Vegetation in good condition?	X			X
• Bare/sparse areas?	X		X	

Describe overall condition: Vegitation LF003 covers apx 50%, mostly grasses < 1' and weeds < 0.5'	Poor vegitation cover
Estimate extent and type of vegetative cover: Fair condition, much of LF is sparse (50%)	Sparsly vegitated 25%

LF003

Vegitation covers apx 50% of area with short (less then 1') grasses and weeds. Soil is rocky, some small concrete/ construction debris present. Some small animal burrows. Landfill is built up apx 2-3 ft from boundary w/ high point in center. Topography is generally flat within the LF. Some surface erosion present along Northern boundary (along gravel road to radio tower bldg) Erosion consists of several small wash outs.

LF004

Vegitation is sparse on the landfill @ only 25%. Vegitation is short grass and weeds. Soil is full of small concrete/asphalt debris. No observed animal burrows. Land fill is built up apx 8 ft from boundary and is flat on top. A wash out on the southern boundary has been repaired with rip rap. A few small wash outs can be found around the rip rap.

Maintenance or repairs required:

Re seeding?

Maintenance to be performed by (Subcontractor name and date):

None

3. Berms (Indicate NA if no berms are present) N/A	LF003		LF004	
	Yes	No	Yes	No
• Is any erosion present?				
• Is any ponding present?				
• Stormwater runoff contained onsite?				

Describe location and condition:

Problems observed with berms:

Maintenance or repairs required:

Maintenance to be performed by (Subcontractor name and date):

4. Drainage Ditches/Channels (Indicate NA if no channels are present) N/A	LF003		LF004	
	Yes	No	Yes	No
• Is any erosion present?				
• Is buildup of sediment/silt debris present?				
• Stormwater runoff contained onsite?				
• Excess accumulation of tumbleweeds present?				

Describe location and condition:

Problems observed with channels:

Maintenance or repair required:

Maintenance to be performed by (Subcontractor name and date):

	LF003		LF004	
5. Monitoring Wells	Yes	No	Yes	No
• Evidence of tampering?		X		X
• Damage?	X		X	

Problems observed with wells:	
LF003 Broken metal well cover, broken lock	LF004 2 wells @ LF004, unlabeled

	LF003		LF004	
6. Fences/Gates/Signage (Indicate NA if not present) No Fence or Gate @ LF003/LF004	Yes	No	Yes	No
• Structural integrity?	X		X	
• Gate locks in place?		X		X
• Signage in place?	X		X	
• Tumbleweeds or silt built up?		X		X

Problems observed with fencing/gates/signage: LF003 None, signs on all boundaries	None, signs on all boundaries
Maintenance or repair required: ? LF003 None	None
Maintenance to be performed by (Subcontractor name and date): None LF003	None

11. Changes required to the Monitoring and Maintenance Plan?

Jennifer Allen
Inspector's Name

Inspector's Signature

Date

Cover System Inspection Report
LF005
Cannon AFB, New Mexico

Inspector Name and Title: Jennifer Allen / James Conradi Geologist Date: 12/17/13
Days since last rain fall: November 23, 2013 Amount of rainfall: 0.21"
(Contact Base Weather Service) 24 days

Inspection Type	Check as Appropriate
Annual	✓
Other (Identify)	

	LF005		LF002	
1. Fences and Gates:	Yes	No	Yes	No
• Structural integrity?	X		X	
• Gates locks in place?	X			X
• Signage in place?	X			X
• Tumbleweeds and silt built up? (No silt build up)	X			X

Problems observed with the fences/gates/signage: LF005 None | LF002 None (No Fencing)

Maintenance or repairs required: LF005 Fence broken near MW11, and also near MW-5. Needs minor repair

Maintenance to be performed by (Subcontractor name and date):

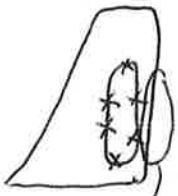
	LF005		LF002	
2. Cover: * See reverse	Yes	No	Yes	No
• Overall structural integrity maintained?	X		X	
• Surface erosion present?		X		X
• Gullies/washouts present?		X		X
• Exposed buried waste?	X			X
• As-constructed contours (topographic highs) intact?				X
• As-constructed contours (depressions) intact?				X
• Stormwater runoff contained within boundaries of site?	X		X	
• Evidence of drainage pathways/diverted runoff?		X		X
• Tumbleweeds or silt built up?	X			X

Problems observed with the cover:
None

Maintenance or repair required:
None

LF005

* Near the LF05 SE corner, running N to S is a fenced off area that is elevated from the surrounding terrain. PVC is visible on top of the 'cap' in multiple places. (pics 43-54)



SE boundary of landfill is elevated along perimeter fence. Some small animal burrows, vegitation is more sparse

NOTE Vegitation is mostly consistent w/ apx 2' tall grasses w/ some yucca + small cactus. Topography is mostly flat but there are some dips and rises which do not seem to be a result of erosion. Soil is rocky w/ surface debris in areas. Trace trees (7) w/ 2"-4" diameter, apx 8' tall

LF002

LF002 lies in a undeveloped grassy field in the NE corner of the base. Vegitation cover is good with mostly 2' tall grasses, weeds and sage/tumbleweed. Surface soil is rocky with some small surface debris. No visable erosion offsite or ponding water. No fencing or signs. LF002 is slightly elevated from the surrounding terrain and is mostly flat.

Maintenance to be performed by (Subcontractor name and date):

None

	LF005		LF002	
3. Berms (Indicate NA if not present) NA	Yes	No	Yes	No
• Is any erosion present?				
• Is any ponding present?				
• Stormwater runoff contained onsite?				

Describe location and condition:

Problems observed with berms:

Maintenance or repairs required:

Maintenance to be performed by (Subcontractor name and date):

	LF005		LF002	
4. Drainage Ditches/Channels (Indicate NA if no channels are present)	Yes	No	Yes	No
• Is any erosion present?				
• Is buildup of sediment/silt debris present?				
• Is displaced crushed concrete present?				
• Is stormwater runoff contained onsite?				
• Excess accumulation of tumbleweeds present?				

Describe location and condition:

Problems observed with channels:

Maintenance or repair required:

Maintenance to be performed by (Subcontractor name and date):

	LF005		LF002	
5. Vegetation	Yes	No	Yes	No
• Vegetation native perennial?	X		X	
• Vegetation in good condition?	X		X	
• Bare/sparse areas?	X		X	

Describe overall condition:	Condition is good, some bare/sparse areas
Estimate extent and type of vegetative cover:	Mostly 2' tall grasses, some yucca and small cactus
Maintenance or repairs required:	None
Maintenance to be performed by (Subcontractor name and date):	None

	LF005		LF002	
6. Monitoring Wells	Yes	No	Yes	No
Evidence of tampering?		X		X
Damage?	X			X

Problems observed with the wells. See well inspection forms

11. Changes required to the Monitoring and Maintenance Plan?

Jennifer Allen
Inspector's Name

Inspector's Signature

Date

Cover System Inspection Report
LF025 and SI101
Cannon AFB, New Mexico

Inspector Name and Title: Paul Wilson Senior Environmental Scientist Date: 6/18/14
Days since last rain fall: 6/13/14 Amount of rainfall: 0.39 inches
(Contact Base Weather Service)

Inspection Type	Check as Appropriate
Annual	X
Other (Identify)	

1. Fences and Gates:	LF025 Yes	LF025 No	SI101 Yes	SI101 No
• Structural integrity?	X		X	
• Gates locks in place?	X		X	
• Signage in place?	X		X	
• Tumbleweeds and silt built up?	X		X	

Problems observed with the fences/gates/signage: Broken areas of fencing at SI101 and LF025. Sign missing on W side to LF025.

Maintenance or repairs required: Repairs to broken sections of fencing throughout. Replace sign on W side to LF025.

Maintenance to be performed by (Subcontractor name and date): TBD

2. Cover:	LF025 Yes	LF025 No	SI101 Yes	SI101 No
• Overall structural integrity maintained?	X		X	
• Surface erosion present?		X		X
• Gullies/washouts present?		X		X
• Exposed buried waste?	X			X
• As-constructed contours (topographic highs) intact?	X		X	
• As-constructed contours (depressions) intact?	X		X	
• Stormwater runoff contained within boundaries of site?	X		X	
• Evidence of drainage pathways/diverted runoff?		X		X
• Tumbleweeds or silt built up?	X		X	

Problems observed with the cover: None

Maintenance or repair required: Remove Tumbleweeds.

Notes LF025 - Numerous dead trees are located along the western fence line. These trees have been allowed to stand as dead trees for a number of years & will likely begin falling on the fence line. Dead trees are located throughout LF025.

Maintenance to be performed by (Subcontractor name and date): TBD

	LF025		SI101	
3. Berms (Indicate NA if not present) N/A	Yes	No	Yes	No
• Is any erosion present?				
• Is any ponding present?				
• Stormwater runoff contained onsite?				

Describe location and condition:
Problems observed with berms:
Maintenance or repairs required:
Maintenance to be performed by (Subcontractor name and date):

	LF025		SI101	
4. Drainage Ditches/Channels (Indicate NA if no channels are present) N/A	Yes	No	Yes	No
• Is any erosion present?				
• Is buildup of sediment/silt debris present?				
• Is displaced crushed concrete present?				
• Is stormwater runoff contained onsite?				
• Excess accumulation of tumbleweeds present?				

Describe location and condition:
Problems observed with channels:
Maintenance or repair required:
Maintenance to be performed by (Subcontractor name and date):

	LF025		SI101	
5. Vegetation	Yes	No	Yes	No
• Vegetation native perennial?	X		X	
• Vegetation in good condition?	X		X	
• Bare/sparse areas?	X			X

Describe overall condition:	Cover in good condition. LF025 shows some areas of sparse vegetation.
Estimate extent and type of vegetative cover:	80% - LF025 90% - SI101
Maintenance or repairs required:	N/A
Maintenance to be performed by (Subcontractor name and date):	N/A

	LF025		SI101	
6. Monitoring Wells	Yes	No	Yes	No
Evidence of tampering?		X		X
Damage?		X		X

Problems observed with the wells. Rb was inaccessible during the inspection. The key to open the well could not be located. Minor repairs were completed during the site inspection.

11. Changes required to the Monitoring and Maintenance Plan?

N/A

Paul Wilson

Inspector's Name

Paul M. Wilson

Inspector's Signature

6/17/14

Date

Cover System Inspection Report
Landfill-03 and Landfill-04
Cannon AFB, New Mexico

Inspector Name and Title: Paul Wilson Senior Environmental Scientist — Date: 6/17/14 + 6/18/14
Days since last rain fall: 6/13/14 — Amount of rainfall: 0.39 inches
(Contact Base Weather Service) 6/18/14 - morning — 1.39 inches

Inspection Type	Check as Appropriate
Annual	X
Other (identify)	

	LF003		LF004	
1. Cover:	Yes	No	Yes	No
• Overall structural integrity maintained?	X		X	
• Surface erosion present?	X		X	
• Gullies/washouts present?	X		X	
• Exposed buried waste?		X		X
• As-constructed contours (topographic highs) intact?	X		X	
• As-constructed contours (depressions) intact?	X		X	
• Stormwater runoff contained within boundaries of site?	X			X
• Evidence of drainage pathways/diverted runoff?		X	X	
• Tumbleweeds or silt built up?		X		X

Describe overall condition: LF003 in generally good condition. LF004 showing absence of vegetative cover + resulting erosion issues.

Problems observed with the cover: LF003 - A sink hole was observed on the west central portion of the landfill. LF004 - Washouts on both sides of rip rap on south end. Washouts forming on East slope.

Maintenance or repairs required: Washouts + gullies need to be repaired. Vegetation needs to be established on the cap. Off-road vehicle traffic needs to cease on landfill.

Maintenance to be performed by (Subcontractor name and date):

	LF003		LF004	
2. Vegetation:	Yes	No	Yes	No
• Vegetation native perennial?	X		X	
• Vegetation in good condition?	X			X
• Bare/sparse areas?	X		X	

Describe overall condition: LF003 is in good condition. 1 large (10'x5') sinkhole and smaller washouts observed. LF004 is in poor condition. Little to no vegetation on slopes resulting in washouts during rain events.

Estimate extent and type of vegetative cover: LF003 has approximately 70% coverage. LF004 has approximately 25% coverage.

Notes for LF004.

Due to the rain event on 6/17-6/18 we revisited LF004. Significant erosion was observed due to the single rain event. The absence of cover & lack of compaction on land fill is resulting in washouts & gullies. Re-seeding is scheduled for August. Erosion gullies will be repaired regularly until reseeding occurs. Gullies were repaired in January 2014 and erosion gullies in the photographs included in this report were repaired on July 7, 2014 (communication from Base RPM)

Notes for LF003

Sinkhole observed may be an indication of subsidence in landfill due to inadequate compaction during installation of the cover.

Maintenance or repairs required: Repair washouts, gullies, and sink hole. Reseed LF004 to establish cover.

Maintenance to be performed by (Subcontractor name and date):
TBD

	LF003		LF004	
3. Berms (Indicate NA if no berms are present) N/A	Yes	No	Yes	No
• Is any erosion present?				
• Is any ponding present?				
• Stormwater runoff contained onsite?				

Describe location and condition:

Problems observed with berms:

Maintenance or repairs required:

Maintenance to be performed by (Subcontractor name and date):

	LF003		LF004	
4. Drainage Ditches/Channels (Indicate NA if no channels are present) N/A	Yes	No	Yes	No
• Is any erosion present?				
• Is buildup of sediment/silt debris present?				
• Stormwater runoff contained onsite?				
• Excess accumulation of tumbleweeds present?				

Describe location and condition:

Problems observed with channels:

Maintenance or repair required:

Maintenance to be performed by (Subcontractor name and date):

	MW-0a		MW-N9	
	LF003		LF004	
5. Monitoring Wells	Yes	No	Yes	No
• Evidence of tampering?		X		X
• Damage?	X		X	

Problems observed with wells: MW-0a needs a new 10 3/4 roller top, and a J plug. MW-N9 could not remove dedicated pump & Tubing. No water levels possible.

	LF003		LF004	
6. Fences/Gates/Signage (Indicate NA if not present) No fence or gates at LF003 or LF004	Yes	No	Yes	No
• Structural integrity? N/A				
• Gate locks in place? N/A				
• Signage in place?	X		X	
• Tumbleweeds or silt built up?		X		X

Problems observed with fencing/gates/signage: N/A

Maintenance or repair required: N/A

Maintenance to be performed by (Subcontractor name and date): N/A

11. Changes required to the Monitoring and Maintenance Plan?

N/A

Paul M. Wilson
Inspector's Name

Paul M. Wilson
Inspector's Signature

6/18/14
Date

Cover System Inspection Report
LF002 and LF005
Cannon AFB, New Mexico

Inspector Name and Title: Paul Wilson Senior Environmental Scientist Date: 6/17/14
Days since last rain fall: 6/13/14 Amount of rainfall: 0.39 inches
(Contact Base Weather Service)

Inspection Type	Check as Appropriate
Annual	X
Other (Identify)	

	LF002		LF005	
1. Fences and Gates:	Yes	No	Yes	No
• Structural integrity?		X		X
• Gates locks in place?		X	X	
• Signage in place?		X	X	
• Tumbleweeds and silt built up?		X	X	

Problems observed with the fences/gates/signage: No fences or signage at LF002. LF005 had large sections of barb wire fence in need of repair. Tumble weeds were observed in interior fenced landfill cell.

Maintenance or repairs required: Repairs to fencing are required.

Maintenance to be performed by (Subcontractor name and date): TBD

	LF002		LF005	
2. Cover:	Yes	No	Yes	No
• Overall structural integrity maintained?	X		X	
• Surface erosion present?		X		X
• Gullies/washouts present?		X		X
• Exposed buried waste?		X	X	
• As-constructed contours (topographic highs) intact?	N/A	N/A	X	
• As-constructed contours (depressions) intact?	N/A	N/A	N/A	N/A
• Stormwater runoff contained within boundaries of site?	X		X	
• Evidence of drainage pathways/diverted runoff?		X		X
• Tumbleweeds or silt built up?		X	X	

Problems observed with the cover: Trees growing throughout LF005. Build up of tumbleweeds in interior fenced area. Low spot/trench in LF002 from NW to SE across landfill

Maintenance or repair required: Remove trees & tumbleweeds. Monitor "trench" area for subsidence.

Notes. for LF005

- Small animal burrows observed in numerous locations.
- Old monitoring wells are still present at LF001 but not shown on current figures. Wells have not been abandoned.
- Engineered cover is located over cell 3 only. This area is marked by fencing surrounding the cell inside LF005.
- Need chain to lock cell 3.
- Debris is located in the northern portion of the landfill, and in the west central portion. Large poles, slabs of concrete, etc.
- Areas of debris & rubble showing through surface throughout
- North fence is in need of complete replacement.

Maintenance to be performed by (Subcontractor name and date): TBD

3. Berms (Indicate NA if not present) N/A	LF002		LF005	
	Yes	No	Yes	No
• Is any erosion present?				
• Is any ponding present?				
• Stormwater runoff contained onsite?				

Describe location and condition:

Problems observed with berms:

Maintenance or repairs required:

Maintenance to be performed by (Subcontractor name and date):

4. Drainage Ditches/Channels (Indicate NA if no channels are present) N/A	LF002		LF005	
	Yes	No	Yes	No
• Is any erosion present?				
• Is buildup of sediment/silt debris present?				
• Is displaced crushed concrete present?				
• Is stormwater runoff contained onsite?				
• Excess accumulation of tumbleweeds present?				

Describe location and condition:

Problems observed with channels:

Maintenance or repair required:

Maintenance to be performed by (Subcontractor name and date):

5. Vegetation	LF002		LF005	
	Yes	No	Yes	No
• Vegetation native perennial?	X		X	
• Vegetation in good condition?	X		X	
• Bare/sparse areas? isolated	X		X	

Describe overall condition: Vegetative cover is in good condition with small areas of bare/sparse growth.

Estimate extent and type of vegetative cover: 95% coverage with native soils

Maintenance or repairs required: None

Maintenance to be performed by (Subcontractor name and date): N/A

	LF002		LF005	
LF002 - None 6. Monitoring Wells LF005: ~~A~~, A, B, C, D, S, T, + U	Yes	No	Yes	No
Evidence of tampering?	N/A			X
Damage?	X			X

Problems observed with the wells. Pads were cracking & wells were missing J-Plugs. Pads were repaired during site work completed during inspections. J-Plugs were added to wells. See attached spreadsheet (Table 2).

11. Changes required to the Monitoring and Maintenance Plan?

N/A

Paul Wilson
Inspector's Name

Paul Wilson
Inspector's Signature

6/17/14
Date

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWA-7-14**	WELL NO.	**MW-A**
DATE/TIME COLLECTED	7-17-14 / 1110	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 50 mL HDPE	Ammonia Sulfate buffer solution, 4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	341.84
Date	7/17/2014	Depth to Water (ft BTOC)	318.77
Time Started	1030	Water Column Length (ft)	23.07
Time Completed	1110	Volume of Water in Well (L)	56.98
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	318.77
Breathing Zone	Not Detected	Total Amount Purged (L)	12.60
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1035	1.80	7.59	17.31	0.654	9.25	240.5	15.2	318.77	0.36
1045	5.40	6.95	17.06	0.654	8.68	276.8	10.6	318.77	0.36
1050	7.20	7.30	17.23	0.655	6.87	259.3	5.8	318.77	0.36
1055	9.00	7.37	17.37	0.659	7.19	257.0	3.2	318.77	0.36
1100	10.80	7.45	17.26	0.659	7.16	250.0	0.0	318.77	0.36
1105	12.60	7.41	17.31	0.659	7.14	251.0	0.0	318.77	0.36

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 330.30 ft BTOC
Well Diameter = 4 inches
Screen Interval = 341.84-326.84 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWB-7-14**	WELL NO.	**MW-B**
DATE/TIME COLLECTED	7-16-14 / 1315	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 250 mL HDPE	4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	364.50
Date	7/16/2014	Depth to Water (ft BTOC)	330.49
Time Started	1230	Water Column Length (ft)	34.00
Time Completed	1315	Volume of Water in Well (L)	83.98
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	330.55
Breathing Zone	Not Detected	Total Amount Purged (L)	14.40
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1235	1.80	7.74	20.17	0.639	10.53	158.5	12.0	330.50	0.36
1245	5.40	7.62	19.24	0.640	8.28	167.5	11.8	330.50	0.36
1250	7.20	7.56	19.32	0.642	8.07	199.9	8.7	330.50	0.36
1255	9.00	7.63	18.63	0.639	7.15	165.8	7.0	330.50	0.36
1300	10.80	7.69	19.43	0.642	6.18	161.4	4.3	330.50	0.19
1305	12.60	7.74	19.53	0.642	6.18	158.5	0.0	330.50	0.19
1310	14.40	7.78	19.50	0.642	6.07	155.7	0.0	330.50	0.19

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 347.50 ft BTOC
Well Diameter = 4 inches
Screen Interval = 364.50-349.50 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWC-7-14**	WELL NO.	**MW-C**
DATE/TIME COLLECTED	7-15-14 / 1340	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 250 mL HDPE	4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	363.50
Date	7/15/2014	Depth to Water (ft BTOC)	333.87
Time Started	1255	Water Column Length (ft)	29.63
Time Completed	1340	Volume of Water in Well (L)	114.37
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	333.95
Breathing Zone	Not Detected	Total Amount Purged (L)	14.40
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1300	1.80	7.57	19.08	0.598	8.69	167.5	3.2	333.95	0.36
1310	5.40	7.55	18.35	0.599	7.80	175.2	0.0	333.95	0.36
1315	7.20	7.54	18.62	0.603	7.75	170.2	0.0	333.95	0.36
1320	9.00	7.47	18.69	0.611	7.33	170.3	0.0	333.95	0.36
1325	10.80	7.51	18.49	0.611	7.50	167.3	0.0	333.95	0.36
1330	12.60	7.51	18.51	0.611	7.14	166.1	0.0	333.95	0.36
1335	14.40	7.52	18.43	0.611	7.02	165.0	0.0	333.95	0.36

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 348.69 ft BTOC
Well Diameter = 5 inches
Screen Interval = 363.50-348.50 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWD-7-14**	WELL NO.	**MW-D**
DATE/TIME COLLECTED	7-15-14 / 1115	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 250 mL HDPE	4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	356.70
Date	7/15/2014	Depth to Water (ft BTOC)	327.71
Time Started	1025	Water Column Length (ft)	28.99
Time Completed	1115	Volume of Water in Well (L)	111.90
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	327.80
Breathing Zone	Not Detected	Total Amount Purged (L)	16.20
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1030	1.80	7.75	18.99	0.492	9.27	148.5	1.7	327.80	0.36
1040	5.40	7.65	18.02	0.502	8.13	157.3	0.0	327.80	0.36
1045	7.20	7.53	18.16	0.491	8.03	171.4	0.0	327.80	0.36
1050	9.00	7.58	17.87	0.498	7.72	164.5	0.0	327.80	0.36
1055	10.80	7.63	18.10	0.499	7.77	160.9	0.0	327.80	0.36
1100	12.60	7.58	18.42	0.499	7.79	161.2	0.0	327.80	0.36
1105	14.40	7.56	18.50	0.499	7.76	158.9	0.0	327.80	0.36
1110	16.20	7.61	18.60	0.499	7.78	159.4	0.0	327.80	0.36

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 342.21 ft BTOC
Well Diameter = 5 inches
Screen Interval = 356.70-341.70 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWE-7-14**	WELL NO.	**MW-E**
DATE/TIME COLLECTED	7-21-14 / 1215	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 50 mL HDPE	Ammonia Sulfate buffer solution, 4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	351.14
Date	7/21/2014	Depth to Water (ft BTOC)	319.65
Time Started	1125	Water Column Length (ft)	31.49
Time Completed	1215	Volume of Water in Well (L)	77.78
PID Measurements		Stabilized Purge Rate (L/min)	0.25
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	319.75
Breathing Zone	Not Detected	Total Amount Purged (L)	11.25
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1130	1.25	7.71	26.05	0.758	15.48	198.6	2.5	319.75	0.25
1135	2.50	7.54	22.82	0.751	5.32	200.1	0.0	319.75	0.25
1140	3.75	7.60	22.67	0.748	6.82	193.2	0.0	319.75	0.25
1145	5.00	7.59	22.08	0.747	6.52	194.6	0.0	319.75	0.25
1150	6.25	7.60	22.12	0.748	4.67	187.2	0.0	319.75	0.25
1155	7.50	7.60	22.12	0.748	4.47	189.5	0.0	319.75	0.25
1200	8.75	7.60	22.19	0.745	4.82	188.4	0.0	319.75	0.25
1205	10.00	7.60	22.08	0.745	4.73	189.0	0.0	319.75	0.25
1210	11.25	7.59	22.12	0.745	4.77	188.9	0.0	319.75	0.25

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 335.40 ft BTOC
Well Diameter = 4 inches
Screen Interval = 351.14-336.14 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWF-7-14**	WELL NO.	**MW-F**
DATE/TIME COLLECTED	7-21-14 / 1000	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
9 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
3 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
2 - 50 mL HDPE	Ammonia Sulfate buffer solution, 4ºC	Hexavalent Chromium (7199)
3 - 125 mL HDPE	4ºC	Perchlorate (6850)
3 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
3 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
3 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	372.30
Date	7/21/2014	Depth to Water (ft BTOC)	317.80
Time Started	910	Water Column Length (ft)	54.50
Time Completed	1000	Volume of Water in Well (L)	134.62
PID Measurements		Stabilized Purge Rate (L/min)	0.25
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	317.95
Breathing Zone	Not Detected	Total Amount Purged (L)	11.25
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
915	1.25	7.72	22.35	0.810	29.14	161.4	10.2	317.90	0.25
920	2.50	6.95	20.76	0.797	5.80	196.7	6.7	317.95	0.25
925	3.75	7.10	20.69	0.792	6.08	188.0	2.3	317.95	0.25
930	5.00	7.32	21.32	0.797	5.77	173.4	0.0	317.95	0.25
935	6.25	7.47	20.72	0.797	5.66	168.9	0.0	317.95	0.25
940	7.50	7.49	20.74	0.796	5.68	167.1	0.0	317.95	0.25
945	8.75	7.51	20.89	0.796	5.66	166.3	0.0	317.95	0.25
950	10.00	7.48	20.87	0.796	5.65	166.8	0.0	317.95	0.25
955	11.25	7.50	20.88	0.797	5.69	166.6	0	317.95	0.25

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 345.05 ft BTOC
Well Diameter = 4 inches
Screen Interval = 372.30-357.30 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWG-7-14**	WELL NO.	**MW-G**
DATE/TIME COLLECTED	7-20-14 / 1345	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 50 mL HDPE	Ammonia Sulfate buffer solution, 4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	367.80
Date	7/20/2014	Depth to Water (ft BTOC)	321.16
Time Started	1255	Water Column Length (ft)	46.64
Time Completed	1345	Volume of Water in Well (L)	115.20
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	321.55
Breathing Zone	Not Detected	Total Amount Purged (L)	15.20
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1300	1.80	7.20	23.84	0.795	5.36	190.7	2.2	321.55	0.36
1310	5.40	7.23	22.89	0.791	2.36	189.9	0.0	321.55	0.36
1315	7.20	7.29	22.64	0.782	1.07	185.5	0.0	321.55	0.36
1320	9.00	4.72	23.07	0.794	0.97	189.9	0.0	321.55	0.36
1325	10.80	7.31	24.90	0.795	1.58	187.8	0.0	321.55	0.36
1330	12.60	7.39	24.27	0.796	6.03	201.9	0.0	321.55	0.36
1335	14.40	7.33	24.34	0.796	5.97	203.4	0.0	321.55	0.36
1340	16.20	7.40	24.29	0.769	6.01	202.7	0.0	321.55	0.36

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 344.48 ft BTOC
Well Diameter = 4 inches
Screen Interval = 367.80-352.80 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWH-7-14**	WELL NO.	**MW-H**
DATE/TIME COLLECTED	7-20-14 / 1150	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 50 mL HDPE	Ammonia Sulfate buffer solution, 4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	351.80
Date	7/20/2014	Depth to Water (ft BTOC)	321.44
Time Started	1020	Water Column Length (ft)	30.36
Time Completed	1150	Volume of Water in Well (L)	74.99
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	321.45
Breathing Zone	Not Detected	Total Amount Purged (L)	18.00
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1025	1.80	7.54	23.85	0.712	7.35	195.5	2.6	321.45	0.36
1035	5.40	7.58	25.38	0.664	6.24	195.7	0.0	321.45	0.36
1040	7.20	Flowcell not holding water. Pull pump, clean check balls. Install pump. Flowcell holding water again.							
1120	9.00	7.54	22.99	0.724	7.53	194.0	0.0	321.45	0.36
1125	10.80	7.48	21.93	0.725	9.86	196.7	0.0	321.45	0.36
1130	12.60	7.51	21.32	0.713	8.76	199.6	0.0	321.45	0.36
1135	14.40	6.60	19.50	0.726	7.00	243.1	0.0	321.45	0.36
1140	16.20	6.60	19.46	0.726	6.92	241.2	0.0	321.45	0.36
1145	18.00	6.64	19.48	0.726	6.98	242.4	0	321.45	0.36

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 336.62 ft BTOC
Well Diameter = 4 inches
Screen Interval = 351.80-331.80 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWNa-7-14**	WELL NO.	**MW-Na**
DATE/TIME COLLECTED	7-21-14 / 1445	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 125 mL HDPE	4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	Unknown
Date	7/21/2014	Depth to Water (ft BTOC)	312.35
Time Started	1400	Water Column Length (ft)	Unknown
Time Completed	1445	Volume of Water in Well (L)	Unknown
PID Measurements		Stabilized Purge Rate (L/min)	0.25
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	312.47
Breathing Zone	Not Detected	Total Amount Purged (L)	10.00
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1405	1.25	7.14	27.32	0.752	16.12	200.3	5.2	312.47	0.25
1410	2.50	7.23	27.03	0.752	15.48	198.8	2.8	312.47	0.25
1415	3.75	7.31	25.28	0.752	6.39	198.6	0.0	312.47	0.25
1420	5.00	7.48	24.32	0.748	5.12	202.1	0.0	312.47	0.25
1425	6.25	7.16	24.19	0.748	6.83	188.4	0.0	312.47	0.25
1430	7.50	7.28	23.20	0.748	5.34	187.3	0.0	312.47	0.25
1435	8.75	7.50	22.32	0.748	5.38	187.3	0.0	312.47	0.25
1440	10.00	7.51	22.35	0.748	5.36	187.6	0.0	312.47	0.25

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = Unknown
Well Diameter = 4 inches
Screen Interval = Unknown

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWOa-7-14**	WELL NO.	**MW-Oa**
DATE/TIME COLLECTED	7-17-14 / 1445	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**MWOa-7-14-A @ 1005**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
6 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
2 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
2 - 50 mL HDPE	Ammonia Sulfate buffer solution, 4ºC	Hexavalent Chromium (7199)
2 - 125 mL HDPE	4ºC	Perchlorate (6850)
2 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
2 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
2 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	366.87
Date	7/17/2014	Depth to Water (ft BTOC)	325.12
Time Started	1405	Water Column Length (ft)	41.75
Time Completed	1445	Volume of Water in Well (L)	103.12
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	325.12
Breathing Zone	Not Detected	Total Amount Purged (L)	12.60
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1410	1.80	7.97	21.95	1.430	9.42	209.0	12.3	325.14	0.36
1420	5.40	7.12	17.02	1.480	6.06	219.6	1.5	325.14	0.36
1425	7.20	6.94	16.50	1.485	5.52	223.2	0.0	325.14	0.36
1430	9.00	6.97	16.51	1.489	4.96	224.8	0.0	325.14	0.36
1435	10.80	7.03	16.68	1.489	4.75	219.7	0.0	325.14	0.36
1440	12.60	7.01	16.52	1.489	4.90	220.0	0.0	325.14	0.36

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 345.90 ft BTOC
Well Diameter = 4 inches
Screen Interval = 366.87-306.87 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWPa-7-14**	WELL NO.	**MW-Pa**
DATE/TIME COLLECTED	7-17-14 / 1305	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 50 mL HDPE	Ammonia Sulfate buffer solution, 4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	362.20
Date	7/17/2014	Depth to Water (ft BTOC)	315.60
Time Started	1220	Water Column Length (ft)	46.60
Time Completed	1305	Volume of Water in Well (L)	115.10
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	315.80
Breathing Zone	Not Detected	Total Amount Purged (L)	14.40
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1225	1.80	7.61	18.04	0.767	15.50	224.7	23.1	318.80	0.36
1235	5.40	7.53	17.23	0.773	8.54	228.5	7.5	318.80	0.36
1240	7.20	7.52	17.19	0.772	7.69	227.2	3.8	318.80	0.36
1245	9.00	7.52	17.15	0.772	7.47	228.1	1.7	318.80	0.36
1250	10.80	7.54	17.14	0.772	7.32	228.2	0.0	318.80	0.36
1255	12.60	7.51	17.14	0.771	7.33	227.1	0.0	318.80	0.36
1300	14.40	7.53	17.17	0.771	7.30	225.7	0.0	318.80	0.36

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 338.90 ft BTOC
Well Diameter = 4 inches
Screen Interval = 362.20-302.20 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWRb-7-14**	WELL NO.	**MW-Rb**
DATE/TIME COLLECTED	7-20-14 / 1840	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 50 mL HDPE	Ammonia Sulfate buffer solution, 4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	333.71
Date	7/20/2014	Depth to Water (ft BTOC)	315.14
Time Started	1805	Water Column Length (ft)	18.57
Time Completed	1840	Volume of Water in Well (L)	45.87
PID Measurements		Stabilized Purge Rate (L/min)	0.25
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	315.17
Breathing Zone	Not Detected	Total Amount Purged (L)	7.50
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1810	1.25	8.14	21.07	0.692	0.86	3.4	0.0	315.17	0.25
1815	2.50	8.11	19.95	0.689	0.34	56.2	0.0	315.17	0.25
1820	3.75	8.17	19.71	0.688	0.22	69.6	0.0	315.17	0.25
1825	5.00	8.20	19.69	0.688	0.24	75.5	0.0	315.17	0.25
1830	6.25	8.24	19.61	0.689	0.23	68.3	0.0	315.17	0.25
1835	7.50	8.21	19.65	0.689	0.24	73.4	0.0	315.17	0.25

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 324.69 ft BTOC
Well Diameter = 4 inches
Screen Interval = 333.71-303.71 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWS-7-14**	WELL NO.	**MW-S**
DATE/TIME COLLECTED	7-16-14 / 0850	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 250 mL HDPE	4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	366.80
Date	7/16/2014	Depth to Water (ft BTOC)	332.40
Time Started	745	Water Column Length (ft)	33.82
Time Completed	850	Volume of Water in Well (L)	83.54
PID Measurements		Stabilized Purge Rate (L/min)	0.19
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	339.15
Breathing Zone	Not Detected	Total Amount Purged (L)	16.85
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
750	1.80	7.48	17.64	0.005	10.25	203.6	5.2	334.15	0.36
800	5.40	7.61	17.27	0.004	10.14	199.5	0.0	334.77	0.36
805	7.20	7.65	17.27	0.427	9.64	191.3	0.0	335.45	0.36
810	9.00	7.70	17.39	0.760	8.04	190.5	0.0	336.35	0.36
Changed Refill to 80 seconds, Discharge to 40 seconds, PSI to 210, Pumping rate is .33 L/min									
815	10.65	7.64	17.33	0.758	6.00	187.4	0.0	337.30	0.33
Changed Refill to 120 seconds, Discharge to 40 seconds, PSI to 210, Pumping rate is .24 L/min									
820	11.85	7.65	17.51	0.754	5.60	184.4	0.0	337.75	0.24
825	13.05	7.64	17.52	0.759	6.00	184.1	0.0	338.25	0.24
Changed Refill to 160 seconds, Discharge to 40 seconds, PSI to 210, Pumping rate is .19 L/min									
835	14.95	7.65	17.34	0.756	5.78	179.9	0.0	339.15	0.19
840	15.90	7.67	17.54	0.756	5.88	179.4	0.0	339.15	0.19
845	16.85	7.65	17.52	0.756	5.60	178.3	0.0	339.15	0.19

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 349.98 ft BTOC

Well Diameter = 4 inches

Screen Interval = 366.80-326.80 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWT-7-14**	WELL NO.	**MW-T**
DATE/TIME COLLECTED	7-16-14 / 1100	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 250 mL HDPE	4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	366.40
Date	7/16/2014	Depth to Water (ft BTOC)	335.60
Time Started	950	Water Column Length (ft)	30.81
Time Completed	1100	Volume of Water in Well (L)	118.93
PID Measurements		Stabilized Purge Rate (L/min)	0.19
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	341.40
Breathing Zone	Not Detected	Total Amount Purged (L)	16.20
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
955	1.80	6.86	19.71	0.719	10.18	150.1	6.3	336.30	0.36
1005	5.40	6.80	19.00	0.724	7.18	160.7	3.2	337.15	0.36
1010	7.20	6.80	18.69	0.723	7.23	163.6	0.0	337.95	0.36
1015	9.00	6.81	18.73	0.723	7.16	167.0	0.0	338.55	0.36
Changed Refill to 160 seconds, Discharge to 40 seconds, PSI to 210, Pumping rate is .19 L/min									
1020	10.00	6.83	19.40	0.724	6.79	166.8	0.0	339.55	0.19
1025	11.00	6.86	19.58	0.724	6.99	165.5	0.0	339.85	0.19
1030	12.00	6.85	19.71	0.723	6.75	171.7	0.0	340.15	0.19
1035	13.00	6.88	19.80	0.724	5.50	173.6	0.0	340.80	0.19
Changed Refill to 280 seconds, Discharge to 40 seconds, PSI to 210, Pumping rate is .12 L/min									
1045	14.20	6.89	20.46	0.725	5.44	170.9	0.0	341.40	0.12
1050	15.20	6.90	20.63	0.726	5.44	170.9	0.0	341.40	0.12
1055	16.20	9.91	20.55	0.726	5.50	168.9	0.0	341.40	0.12

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell

Pump Placement Depth = 351.0 ft BTOC

Well Diameter = 5 inches

Screen Interval = 366.40-326.40 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWU-7-14**	WELL NO.	**MW-U**
DATE/TIME COLLECTED	7-16-14 / 1515	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 250 mL HDPE	4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	366.00
Date	7/16/2014	Depth to Water (ft BTOC)	330.95
Time Started	1425	Water Column Length (ft)	35.05
Time Completed	1515	Volume of Water in Well (L)	86.57
PID Measurements		Stabilized Purge Rate (L/min)	0.12
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	337.00
Breathing Zone	Not Detected	Total Amount Purged (L)	11.40
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1430	1.80	7.07	18.86	0.961	6.67	165.7	3.8	334.05	0.36
1440	5.40	7.11	18.69	0.963	5.59	170.0	2.4	334.60	0.36
1445	7.20	7.17	19.33	0.961	5.10	164.0	1.4	335.45	0.36
1450	9.00	7.12	20.02	0.964	5.29	166.8	0.0	336.35	0.36
Changed Refill to 280 seconds, Discharge to 40 seconds, PSI to 210, Pumping rate is .19 L/min									
1455	9.60	7.16	19.83	0.961	4.28	170.3	0.0	336.80	0.12
1500	10.20	7.19	19.73	0.961	4.87	168.6	0.0	337.00	0.12
1505	10.80	7.18	19.83	0.961	4.89	168.4	0.0	337.00	0.12
1510	11.40	7.18	19.78	0.961	4.91	167.4	0.0	337.00	0.12

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 348.48 ft BTOC
Well Diameter = 4 inches
Screen Interval = 366.0-326.0 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWV-7-14**	WELL NO.	**MW-V**
DATE/TIME COLLECTED	7-14-14 / 1625	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 250 mL HDPE	4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	371.74
Date	7/14/2014	Depth to Water (ft BTOC)	349.79
Time Started	1550	Water Column Length (ft)	21.95
Time Completed	1630	Volume of Water in Well (L)	54.22
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	349.77
Breathing Zone	Not Detected	Total Amount Purged (L)	12.60
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1555	1.80	7.54	19.25	1.178	10.39	117.8	5.1	349.77	0.36
1600	3.60	7.52	19.78	1.187	10.45	119.1	3.1	350.00	0.36
1605	5.40	7.51	19.34	1.185	9.75	120.1	2.0	349.80	0.36
1610	7.20	7.50	19.31	1.181	8.98	125.9	2.1	349.78	0.36
1615	9.00	7.50	19.29	1.179	8.96	126.2	1.8	349.78	0.36
1620	10.80	7.50	19.28	1.178	8.97	126.7	1.5	349.78	0.36
1625	12.60	7.51	19.29	1.177	8.95	126.8	1.5	349.78	0.36

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 360.77 ft BTOC
Well Diameter = 4 inches
Screen Interval = 371.74-311.74 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWW-7-14**	WELL NO.	**MW-W**
DATE/TIME COLLECTED	7-20-14 / 2035	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 50 mL HDPE	Ammonia Sulfate buffer solution, 4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	368.00
Date	7/20/2014	Depth to Water (ft BTOC)	335.50
Time Started	1950	Water Column Length (ft)	32.50
Time Completed	2035	Volume of Water in Well (L)	80.28
PID Measurements		Stabilized Purge Rate (L/min)	0.25
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	335.87
Breathing Zone	Not Detected	Total Amount Purged (L)	10.00
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
1955	1.25	8.10	21.08	1.142	16.53	153.1	2.7	335.87	0.25
2000	2.50	7.83	19.31	1.171	4.20	157.2	1.3	335.87	0.25
2005	3.75	7.85	18.84	1.173	1.50	158.8	0.0	335.87	0.25
2010	5.00	7.87	18.69	1.172	1.42	150.3	0.0	335.87	0.25
2015	6.25	7.89	18.62	1.173	0.86	145.0	0.0	335.87	0.25
2020	7.50	7.91	18.65	1.173	1.52	147.2	0.0	335.87	0.25
2025	8.75	7.88	18.67	1.173	1.54	151.4	0.0	335.87	0.25
2030	10.00	7.93	18.64	1.173	1.58	153.1	0.0	335.87	0.25

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 351.75 ft BTOC
Well Diameter = 4 inches
Screen Interval = 368.00-308.00 ft BTOC

WATER SAMPLE COLLECTION FIELD SHEET

URS

GENERAL INFORMATION

SITE NAME	**CANNON AFB**	PROJECT NO.	**23446540**
SAMPLE NO.	**MWX-7-14**	WELL NO.	**MW-X**
DATE/TIME COLLECTED	7-15-14 / 0845	PERSONNEL	James Conradi
SAMPLE METHOD	Low flow- Bladder Pump		Kyle Kloewer

SAMPLE MEDIA:	**Groundwater**			
SAMPLE QA SPLIT:	YES	NO	SPLIT SAMPLE NO.	**N/A**
SAMPLE QC DUPLICATE:	YES	NO	DUPLICATE SAMPLE NO.	**N/A**
MS/MSD REQUESTED:	YES	NO		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
3 - 40 mL VOA	4ºC, HCl	Volatile Organic Compounds (8260C)
1 - 500 mL HDPE	4ºC, HNO_3	Total Analyte List (TAL) Metals (7470A) (6020A)
1 - 250 mL HDPE	4ºC	Hexavalent Chromium (7199)
1 - 125 mL HDPE	4ºC	Perchlorate (6850)
1 - 250 mL HDPE	4ºC	Chloride, Sulfate, Nitrate, Nitrite (9056)
1 - 125 mL HDPE	4ºC, H_2S0_4	Ammonia (SM 4500 NH3)
1 - 250 mL Amber	4ºC, HCL	Total Organic Carbon (9060A)

WELL PURGING DATA

		Well Depth (ft BTOC)	337.85
Date	7/15/2014	Depth to Water (ft BTOC)	287.04
Time Started	800	Water Column Length (ft)	50.80
Time Completed	845	Volume of Water in Well (L)	125.47
PID Measurements		Stabilized Purge Rate (L/min)	0.36
Background	Not Detected	Stabilized Level of Drawdown (ft. BTOC)	287.04
Breathing Zone	Not Detected	Total Amount Purged (L)	14.40
Well Head	Not Detected		
Purge Water	Not Detected		

FIELD MEASUREMENTS

Time	Amount Purged (L)	pH	Temperature (Celsius)	Specific Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft BTOC)	Purge Rate (L/min)
805	1.80	7.79	17.28	0.442	9.93	130.9	1.3	287.04	0.36
810	3.60	7.80	17.28	0.517	8.64	137.5	0.0	287.04	0.36
815	5.40	7.78	17.28	0.518	8.86	144.5	0.0	287.04	0.36
820	7.20	7.77	17.36	0.518	8.98	149.1	0.0	287.04	0.36
825	9.00	7.79	17.30	0.518	8.45	150.1	0.0	287.04	0.36
830	10.80	7.79	17.58	0.518	8.30	155.7	0.0	287.04	0.36
835	12.60	7.80	17.73	0.518	8.25	155.7	0.0	287.04	0.36
840	14.40	7.80	17.62	0.518	8.28	155.7	0.0	287.04	0.36

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Heron Dipper T	N/A
Water Quality Meter	YSI 556 Multi-Parameter Probe	Calibration Check

GENERAL COMMENTS

Field Parameters Measured in Flow-Through Cell
Pump Placement Depth = 312.44 ft BTOC
Well Diameter = 4 inches
Screen Interval = 337.85-277.85 ft BTOC

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Robert C. Lydick
Professional Engineer and Land Surveyor
New Mexico-Texas-Oklahoma-Colorado

Monitor Well Locations at Cannon Air Force Base, New Mexico
Survey Date: September 11, 2014

Horizontal Projection: New Mexico (East Zone)
Horizontal Datum: NAD 83 (2011) – US Survey Feet
Vertical Datum: NAVD 88 – Feet

DESIGNATION	NORTHING	EASTING	LATITUDE	LONGITUDE	SURVEY ELEVATION
MW-A-TOP OF BELL	1228291.094	850513.239	34° 22' 18.98116"	-103° 18' 31.40385"	4269.177
MW-A-PLATFORM	1228291.094	850513.239	34° 22' 18.98116"	-103° 18' 31.40385"	4268.963
MW-A-TOP OF CASING	1228291.094	850513.239	34° 22' 18.98116"	-103° 18' 31.40385"	4268.720
MW-A-CONCRETE	1228291.3250	850513.2010	34° 22' 18.983445"	-103° 18' 31.40427"	4267.0090
MW-B-TOP OF CASING	1226666.3410	852296.6010	34° 22' 02.731952"	-103° 18' 10.327517"	4266.7950
MW-B-CONCRETE	1226666.5490	852296.6100	34° 22' 02.734007"	-103° 18' 10.327395"	4265.1940
MW-C-TOP OF CASING	1226056.0990	851789.7220	34° 21' 56.746902"	-103° 18' 16.447442"	4268.9030
MW-C-CONCRETE	1226056.2560	851789.7750	34° 21' 56.748448"	-103° 18' 16.446786"	4267.0040
MW-D-TOP OF CASING	1226095.8520	851123.7030	34° 21' 57.206838"	-103° 18' 24.386807"	4266.8980
MW-D-CONCRETE	1226096.0020	851123.8030	34° 21' 57.208316"	-103° 18' 24.385596"	4265.1950
MW-E-TOP OF CASING	1235128.4320	850881.4560	34° 23' 26.57267"	-103° 18' 26.186447"	4284.9640
MW-E-CONCRETE	1235128.7440	850881.4570	34° 23' 26.575754"	-103° 18' 26.1864"	4282.9180
MW-F-TOP OF CASING	1234609.9800	851885.2160	34° 23' 21.344068"	-103° 18' 14.272998"	4280.8420
MW-F-CONCRETE	1234610.1800	851885.3550	34° 23' 21.346027"	-103° 18' 14.271314"	4278.0920
MW-G-TOP OF CASING	1233761.4160	852082.6830	34° 23' 12.931075"	-103° 18' 12.01979"	4281.5530
MW-G-CONCRETE	1233761.6910	852082.6200	34° 23' 12.933808"	-103° 18' 12.020512"	4279.6510
MW-H-TOP OF CASING	1233235.6820	851638.4360	34° 23' 07.775621"	-103° 18' 17.383624"	4281.1810
MW-H-CONCRETE	1233235.9020	851638.3310	34° 23' 07.77781"	-103° 18' 17.38485"	4279.1810
MW-Na-TOP OF CASING	1234314.8230	854201.7570	34° 23' 18.191277"	-103° 17' 46.670003"	4270.5080
MW-Na-CONCRETE	1234314.9680	854201.8750	34° 23' 18.192702"	-103° 17' 46.668572"	4269.4170
MW-Oa-TOP OF CASING	1232514.3980	853895.3730	34° 23' 00.414221"	-103° 17' 50.544857"	4273.9550
MW-Oa-CONCRETE	1232514.7340	853895.3660	34° 23' 00.417544"	-103° 17' 50.544902"	4273.2880
MW-Pa-TOP OF CASING	1233526.8450	852403.8810	34° 23' 10.578658"	-103° 18' 08.216081"	4274.7270
MW-Pa-CONCRETE	1233527.1800	852403.7310	34° 23' 10.581986"	-103° 18' 08.217825"	4274.0690
MW-Rb-TOP OF CASING	1234803.2050	852390.6610	34° 23' 23.204482"	-103° 18' 08.219015"	4277.7300
MW-Rb-CONCRETE	1234803.4250	852390.6190	34° 23' 23.206657"	-103° 18' 08.219491"	4275.4140
MW-S-TOP OF CASING	1226092.4600	852274.8490	34° 21' 57.057845"	-103° 18' 10.656516"	4265.7480
MW-S-CONCRETE	1226092.9410	852274.8680	34° 21' 57.062602"	-103° 18' 10.656232"	4263.8130

205 E. Second St. • Clovis, New Mexico 88101 • P.O. Box 728 • Clovis, New Mexico 88102-0728
ph: 575-762-3771 • fax: 575-762-9093

LYDICK
ENGINEERS & SURVEYORS
CLOVIS, NEW MEXICO

Robert C. Lydick
Professional Engineer and Land Surveyor
New Mexico-Texas-Oklahoma-Colorado

Monitor Well Locations at Cannon Air Force Base, New Mexico
Survey Date: September 11, 2014

Horizontal Projection: New Mexico (East Zone)
Horizontal Datum: NAD 83 (2011) – US Survey Feet
Vertical Datum: NAVD 88 – Feet

DESIGNATION	NORTHING	EASTING	LATITUDE	LONGITUDE	SURVEY ELEVATION
MW-T-TOP OF CASING	1226404.0210	852375.3330	34° 22' 00.12942"	-103° 18' 09.420191"	4265.7240
MW-T-CONCRETE	1226404.5410	852375.3000	34° 22' 00.13456"	-103° 18' 09.420523"	4263.8960
MW-U-TOP OF CASING	1226884.1970	852330.0990	34° 22' 04.883413"	-103° 18' 09.901557"	4267.2970
MW-U-CONCRETE	1226884.5850	852330.0110	34° 22' 04.887259"	-103° 18' 09.902551"	4265.4340
MW-V-TOP OF CASING	1240246.9710	841913.7400	34° 24' 18.084576"	-103° 20' 12.5838"	4329.8950
MW-V-CONCRETE	1240247.4050	841913.9150	34° 24' 18.088848"	-103° 20' 12.581663"	4328.2660
MW-W-TOP OF CASING	1237389.1950	853254.2080	34° 23' 48.695553"	-103° 17' 57.601329"	4302.2180
MW-W-CONCRETE	1237389.7920	853254.3980	34° 23' 48.70144"	-103° 17' 57.598994"	4300.1530
MW-X-TOP OF CASING	1228560.0040	844498.6570	34° 22' 22.236091"	-103° 19' 43.118465"	4269.2300
MW-X-CONCRETE	1228560.7030	844498.8780	34° 22' 22.242982"	-103° 19' 43.115748"	4268.0240

Note: Well coordinates were established by "side-shot" surveying of actual well locations based on a 6 point localization on control points established by Lydick Engineers. Control point data was obtained by "long set" static occupation (over 2 hours) of each point. The resulting static data was uploaded to OPUS for solutions.

Robert Chad Lydick

Robert C. Lydick

P.E. & L.S. No. 5955

REFERENCE NO. 24288

205 E. Second St. • Clovis, New Mexico 88101 • P.O. Box 728 • Clovis, New Mexico 88102-0728
ph: 575-762-3771 • fax: 575-762-9093

E.1 Summary of Analytical Results (Dump Table)

SUMMARY OF ANALYSIS
2014 BIENNIAL SAMPLING EVENT
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID			MWA-7-14			MWB-7-14			MWC-7-14			MWD-7-14			MWE-7-14			MWF-7-14			MWG-7-14		
DATE COLLECTED			July 17, 2014			7/16/2014			7/15/2014			7/15/2014			7/21/2014			7/21/2014			7/20/2014		
	Maximum	Frequency	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
VOLATILE ORGANIC COMPOUNDS (µg/L)																							
1,1,1,2-Tetrachloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,1-Trichloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,2,2-Tetrachloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,2-Trichloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,2-Trichlorotrifluoroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1-Dichloroethane	4.60E-01	2 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1-Dichloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1-Dichloropropene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,3-Trichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,3-Trichloropropane	ND	0 / 18	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U
1,2,3-Trimethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,4-Trichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,4-Trimethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dibromo-3-Chloropropane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
1,2-Dibromoethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dichloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dichloropropane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,3,5-Trimethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,3-Dichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,3-Dichloropropane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,4-Dichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
2,2-Dichloropropane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
2-Butanone (MEK)	ND	0 / 18	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U
2-Chloroethyl vinyl ether	ND	0 / 18	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	UJ	<	5.00E+01	U
2-Chlorotoluene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
4-Chlorotoluene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
4-Methyl-2-pentanone (MIBK)	ND	0 / 18	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U
Acetone	ND	0 / 18	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U
Acrolein	ND	0 / 18	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U
Acrylonitrile	ND	0 / 18	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U
Benzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromodichloromethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromoform	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromomethane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Carbon tetrachloride	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U

SUMMARY OF ANALYSIS
2014 BIENNIAL SAMPLING EVENT
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID			MWA-7-14			MWB-7-14			MWC-7-14			MWD-7-14			MWE-7-14			MWF-7-14			MWG-7-14		
DATE COLLECTED			July 17, 2014			7/16/2014			7/15/2014			7/15/2014			7/21/2014			7/21/2014			7/20/2014		
	Maximum	Frequency	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
Chlorodibromomethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chloroethane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Chloroform	4.00E+00	3 / 18	<	5.00E+00	U	<	5.00E+00	U	4.00E+00	5.00E+00	J	3.90E-01	5.00E+00	J	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Chloromethane	ND	0 / 18	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U
cis-1,2-Dichloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
cis-1,3-Dichloropropene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Dibromomethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Dichlorodifluoromethane	1.10E+00	2 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Di-isopropyl ether	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Ethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Hexachloro-1,3-butadiene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Isopropylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Methyl tert-butyl ether	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Methylene Chloride	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Naphthalene	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
n-Butylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
n-Propylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
p-Isopropyltoluene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
sec-Butylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Styrene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
tert-Butylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Tetrachloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Toluene	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
trans-1,2-Dichloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
trans-1,3-Dichloropropene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Trichloroethene	6.50E-01	1 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Trichlorofluoromethane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Vinyl chloride	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Xylenes, Total	ND	0 / 18	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U
METALS (µg/L)																							
Aluminum	1.60E+02	15 / 18	1.30E+02	1.00E+02		5.30E+01	1.00E+02	J	7.80E+01	1.00E+02	J	7.10E+01	1.00E+02	J	5.50E+01	1.00E+02	J	1.60E+02	1.00E+02		7.20E+01	1.00E+02	J
Antimony	6.20E-01	5 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	3.50E-01	1.00E+00	J
Arsenic	6.00E+00	17 / 18	5.10E+00	1.00E+00		4.90E+00	1.00E+00		5.70E+00	1.00E+00		6.00E+00	1.00E+00		3.50E+00	1.00E+00		4.40E+00	1.00E+00		3.80E+00	1.00E+00	
Barium	9.20E+01	17 / 18	5.50E+01	2.00E+00		5.40E+01	2.00E+00		8.00E+01	2.00E+00		9.20E+01	2.00E+00		3.50E+01	2.00E+00		4.70E+01	2.00E+00		3.00E+01	2.00E+00	
Beryllium	2.70E-01	5 / 18	<	1.00E+00	U	<	1.00E+00	U	2.00E-01	1.00E+00	J	2.10E-01	1.00E+00	J	<	1.00E+00	U	1.80E-01	1.00E+00	J	<	1.00E+00	U
Cadmium	2.50E-01	7 / 18	1.80E-01	5.00E-01	J	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	1.80E-01	5.00E-01	J
Calcium	9.30E+04	17 / 18	3.90E+04	1.00E+03		3.80E+04	1.00E+03		3.60E+04	1.00E+03		2.80E+04	1.00E+03		4.40E+04	1.00E+03		4.90E+04	1.00E+03	J	4.70E+04	1.00E+03	
Chromium	5.00E+00	15 / 18	1.80E+00	2.00E+00	J	1.50E+00	2.00E+00	J	8.90E-01	2.00E+00	J	<	2.00E+00	U	<	2.00E+00	U	4.80E+00	2.00E+00		1.80E+00	2.00E+00	J
Chromium, Hexavalent	1.20E+00	16 / 17	9.20E-01	5.00E-01		8.10E-01	5.00E-01	J	2.00E-01	5.00E-01	J	3.20E-01	5.00E-01	J	8.90E-01	5.00E-01		9.00E-01	5.00E-01		1.10E+00	5.00E-01	

SUMMARY OF ANALYSIS
2014 BIENNIAL SAMPLING EVENT
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID			MWA-7-14			MWB-7-14			MWC-7-14			MWD-7-14			MWE-7-14			MWF-7-14			MWG-7-14		
DATE COLLECTED			July 17, 2014			7/16/2014			7/15/2014			7/15/2014			7/21/2014			7/21/2014			7/20/2014		
	Maximum	Frequency	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
Cobalt	4.90E-01	4 / 18	4.10E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	4.90E-01	1.00E+00	J	<	1.00E+00	U
Copper	5.30E+00	17 / 18	1.20E+00	2.00E+00	J	1.80E+00	2.00E+00	J	1.20E+00	2.00E+00	J	8.20E-01	2.00E+00	J	1.20E+00	2.00E+00	J	1.90E+00	2.00E+00	J	2.80E+00	2.00E+00	
Iron	5.20E+02	17 / 18	1.40E+02	1.00E+02		3.50E+02	1.00E+02		1.60E+02	1.00E+02		1.00E+02	1.00E+02		7.20E+01	1.00E+02	J	3.70E+02	1.00E+02		3.40E+02	1.00E+02	
Lead	8.40E+00	12 / 18	8.50E-01	1.00E+00	J	1.20E+00	1.00E+00		5.30E-01	1.00E+00	J	2.80E-01	1.00E+00	J	8.40E+00	1.00E+00		1.70E+00	1.00E+00		1.20E+00	1.00E+00	
Magnesium	8.10E+04	17 / 18	3.70E+04	1.00E+03		3.60E+04	1.00E+03		3.50E+04	1.00E+03		2.80E+04	1.00E+03		4.00E+04	1.00E+03		4.50E+04	1.00E+03	J	4.30E+04	1.00E+03	
Manganese	3.70E+01	17 / 18	1.00E+01	2.00E+00		3.70E+01	2.00E+00		1.60E+01	2.00E+00		1.80E+01	2.00E+00		5.10E+00	2.00E+00		1.80E+01	2.00E+00		5.80E+00	2.00E+00	
Mercury	ND	0 / 18	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U
Nickel	2.20E+01	17 / 18	1.60E+00	1.00E+00		1.00E+00	1.00E+00		7.80E-01	1.00E+00	J	6.90E-01	1.00E+00	J	1.30E+00	1.00E+00		1.20E+00	1.00E+00		2.80E+00	1.00E+00	
Potassium	1.00E+04	17 / 18	6.40E+03	1.00E+03		6.30E+03	1.00E+03		6.00E+03	1.00E+03		5.20E+03	1.00E+03		6.90E+03	1.00E+03		7.80E+03	1.00E+03		7.60E+03	1.00E+03	
Selenium	2.00E+01	17 / 18	7.70E+00	1.00E+00		6.30E+00	1.00E+00		1.70E+00	1.00E+00		9.70E-01	1.00E+00	J	9.10E+00	1.00E+00		1.00E+01	1.00E+00	O1	1.00E+01	1.00E+00	
Silver	3.60E+00	1 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	3.60E+00	1.00E+00	O1	<	1.00E+00	U
Sodium	1.30E+05	17 / 18	5.00E+04	1.00E+03		5.00E+04	1.00E+03		5.30E+04	1.00E+03		4.40E+04	1.00E+03		5.10E+04	1.00E+03		5.70E+04	1.00E+03		5.30E+04	1.00E+03	
Thallium	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Vanadium	4.00E+01	17 / 18	3.40E+01	2.00E+00		2.70E+01	2.00E+00		3.90E+01	2.00E+00		4.00E+01	2.00E+00		2.10E+01	2.00E+00		2.10E+01	2.00E+00		1.80E+01	2.00E+00	
Zinc	3.10E+02	17 / 18	1.40E+01	1.00E+01		6.60E+00	1.00E+01	J	7.60E+00	1.00E+01	J	4.50E+00	1.00E+01	J	1.50E+01	1.00E+01		1.20E+01	1.00E+01		6.10E+01	1.00E+01	
Other Paramters (mg/L)																							
Ammonia Nitrogen	7.80E-02	10 / 18	7.80E-02	2.50E-01	J	<	2.50E-01	U	<	2.50E-01	U	<	2.50E-01	U	5.40E-02	2.50E-01	J	5.70E-02	2.50E-01	J	7.40E-02	2.50E-01	J
Chloride	2.00E+02	17 / 18	5.00E+01	1.00E+00		4.30E+01	1.00E+00		1.30E+01	1.00E+00		4.50E+00	1.00E+00		4.80E+01	1.00E+00		6.70E+01	1.00E+00		6.60E+01	1.00E+00	
Perchlorate	2.00E+00	13 / 17	1.70E+00	5.00E-01		1.70E+00	5.00E-01		<	5.00E-01	U	<	5.00E-01	U	1.80E+00	5.00E-01		1.80E+00	5.00E-01		2.00E+00	5.00E-01	
Nitrate	1.50E+01	17 / 18	1.90E+00	1.00E-01		1.30E+00	1.00E-01		2.00E+00	1.00E-01		1.30E+00	1.00E-01		1.40E+00	1.00E-01		1.20E+00	1.00E-01		1.40E+00	1.00E-01	
Nitrite	ND	0 / 18	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U
Sulfate	3.80E+02	17 / 18	7.20E+01	5.00E+00		9.30E+01	5.00E+00		4.30E+01	5.00E+00		3.00E+01	5.00E+00		1.30E+02	2.50E+01		1.50E+02	2.50E+01		1.30E+02	1.00E+01	
Total Organic Carbon	1.40E+00	16 / 18	3.50E-01	1.00E+00	J	2.40E-01	1.00E+00	J	3.20E-01	1.00E+00	J	2.20E-01	1.00E+00	J	1.20E-01	1.00E+00	J	2.60E-01	1.00E+00	J	2.30E-01	1.00E+00	J

Notes:
µg/L = microgram per liter
J = Estimated
LOQ = Limit of Quantitation
mg/L = milligram per liter
ND = Not Detected
Qual = Qualifier
U = Nondetect
UJ = Estimated Nondetect

SUMMARY OF ANALYSIS
2014 BIENNIAL SAMPLING EVENT
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID			MWH-7-14			MWNA-7-14			MWOA-7-14			MWPA-7-14			MW RB-7-14			MWS-7-14			MWT-7-14		
DATE COLLECTED			7/20/2014			7/21/2014			7/17/2014			July 17, 2014			7/20/2014			7/16/2014			7/16/2014		
	Maximum	Frequency	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
VOLATILE ORGANIC COMPOUNDS (µg/L)																							
1,1,1,2-Tetrachloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,1-Trichloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,2,2-Tetrachloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,2-Trichloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,2-Trichlorotrifluoroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1-Dichloroethane	4.60E-01	2 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	4.60E-01	1.00E+00	J
1,1-Dichloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1-Dichloropropene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,3-Trichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,3-Trichloropropane	ND	0 / 18	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U
1,2,3-Trimethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,4-Trichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,4-Trimethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dibromo-3-Chloropropane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
1,2-Dibromoethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dichloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dichloropropane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,3,5-Trimethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,3-Dichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,3-Dichloropropane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,4-Dichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
2,2-Dichloropropane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
2-Butanone (MEK)	ND	0 / 18	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U
2-Chloroethyl vinyl ether	ND	0 / 18	<	5.00E+01	U	<	5.00E+01	UJ	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U
2-Chlorotoluene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
4-Chlorotoluene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
4-Methyl-2-pentanone (MIBK)	ND	0 / 18	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U
Acetone	ND	0 / 18	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U
Acrolein	ND	0 / 18	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U
Acrylonitrile	ND	0 / 18	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U
Benzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromodichloromethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromoform	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromomethane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Carbon tetrachloride	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U

SUMMARY OF ANALYSIS
2014 BIENNIAL SAMPLING EVENT
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID			MWH-7-14			MWNA-7-14			MWOA-7-14			MWPA-7-14			MW RB-7-14			MWS-7-14			MWT-7-14		
DATE COLLECTED			7/20/2014			7/21/2014			7/17/2014			July 17, 2014			7/20/2014			7/16/2014			7/16/2014		
	Maximum	Frequency	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
Chlorodibromomethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chloroethane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Chloroform	4.00E+00	3 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	3.50E-01	5.00E+00	J
Chloromethane	ND	0 / 18	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U
cis-1,2-Dichloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
cis-1,3-Dichloropropene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Dibromomethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Dichlorodifluoromethane	1.10E+00	2 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	6.70E-01	5.00E+00	J
Di-isopropyl ether	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Ethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Hexachloro-1,3-butadiene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Isopropylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Methyl tert-butyl ether	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Methylene Chloride	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Naphthalene	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
n-Butylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
n-Propylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
p-Isopropyltoluene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00		<	1.00E+00	U	<	1.00E+00	U
sec-Butylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Styrene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
tert-Butylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Tetrachloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Toluene	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
trans-1,2-Dichloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
trans-1,3-Dichloropropene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Trichloroethene	6.50E-01	1 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Trichlorofluoromethane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Vinyl chloride	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Xylenes, Total	ND	0 / 18	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U
METALS (µg/L)																							
Aluminum	1.60E+02	15 / 18	7.20E+01	1.00E+02	J	4.80E+01	1.00E+02	J	7.00E+01	1.00E+02	J	1.40E+02	1.00E+02		5.50E+01	1.00E+02	J	<	1.00E+02	U	4.80E+01	1.00E+02	J
Antimony	6.20E-01	5 / 18	6.20E-01	1.00E+00	J	3.50E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	4.30E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U
Arsenic	6.00E+00	17 / 18	3.40E+00	1.00E+00		5.00E+00	1.00E+00		2.60E+00	1.00E+00		3.60E+00	1.00E+00		1.40E+00	1.00E+00		4.40E+00	1.00E+00		3.80E+00	1.00E+00	
Barium	9.20E+01	17 / 18	4.70E+01	2.00E+00		4.40E+01	2.00E+00		6.10E+01	2.00E+00		4.40E+01	2.00E+00		2.80E+01	2.00E+00		3.40E+01	2.00E+00		3.80E+01	2.00E+00	
Beryllium	2.70E-01	5 / 18	<	1.00E+00	U	1.80E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Cadmium	2.50E-01	7 / 18	2.30E-01	5.00E-01	J	<	5.00E-01	U	1.80E-01	5.00E-01	J	1.80E-01	5.00E-01	J	1.90E-01	5.00E-01	J	<	5.00E-01	U	<	5.00E-01	U
Calcium	9.30E+04	17 / 18	5.00E+04	1.00E+03		3.40E+04	1.00E+03		8.70E+04	1.00E+03		5.30E+04	1.00E+03		4.00E+04	1.00E+03		4.90E+04	1.00E+03		4.90E+04	1.00E+03	
Chromium	5.00E+00	15 / 18	1.20E+00	2.00E+00	J	1.90E+00	2.00E+00	J	8.90E-01	2.00E+00	J	1.40E+00	2.00E+00	J	8.00E-01	2.00E+00	J	1.70E+00	2.00E+00	J	3.00E+00	2.00E+00	
Chromium, Hexavalent	1.20E+00	16 / 17	2.10E-01	5.00E-01	J	1.10E+00	5.00E-01		6.80E-01	5.00E-01		1.10E+00	5.00E-01		5.90E-01	5.00E-01		9.90E-01	5.00E-01	J	1.20E+00	5.00E-01	J

SUMMARY OF ANALYSIS
2014 BIENNIAL SAMPLING EVENT
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID			MWH-7-14			MWNA-7-14			MWOA-7-14			MWPA-7-14			MW RB-7-14			MWS-7-14			MWT-7-14		
DATE COLLECTED			7/20/2014			7/21/2014			7/17/2014			July 17, 2014			7/20/2014			7/16/2014			7/16/2014		
	Maximum	Frequency	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
Cobalt	4.90E-01	4 / 18	<	1.00E+00	U	<	1.00E+00	U	4.20E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Copper	5.30E+00	17 / 18	4.60E+00	2.00E+00		5.30E+00	2.00E+00		1.40E+00	2.00E+00	J	1.60E+00	2.00E+00	J	1.60E+00	2.00E+00	J	2.10E+00	2.00E+00		2.30E+00	2.00E+00	
Iron	5.20E+02	17 / 18	2.50E+02	1.00E+02		2.50E+01	1.00E+02	J	6.70E+01	1.00E+02	J	1.00E+02	1.00E+02		5.00E+01	1.00E+02	J	2.80E+01	1.00E+02	J	5.20E+02	1.00E+02	
Lead	8.40E+00	12 / 18	9.60E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	5.30E-01	1.00E+00	J	<	1.00E+00	U	3.40E-01	1.00E+00	J	<	1.00E+00	U
Magnesium	8.10E+04	17 / 18	3.50E+04	1.00E+03		3.10E+04	1.00E+03		7.90E+04	1.00E+03		4.80E+04	1.00E+03		3.80E+04	1.00E+03		4.60E+04	1.00E+03		3.80E+04	1.00E+03	
Manganese	3.70E+01	17 / 18	1.80E+01	2.00E+00		3.30E+00	2.00E+00		3.60E+00	2.00E+00		5.90E+00	2.00E+00		2.00E+00	2.00E+00		3.10E+00	2.00E+00		1.50E+01	2.00E+00	
Mercury	ND	0 / 18	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U
Nickel	2.20E+01	17 / 18	2.20E+01	1.00E+00		4.70E-01	1.00E+00	J	3.00E+00	1.00E+00		1.40E+00	1.00E+00		2.40E+00	1.00E+00		1.30E+00	1.00E+00		7.30E+00	1.00E+00	
Potassium	1.00E+04	17 / 18	6.60E+03	1.00E+03		7.40E+03	1.00E+03		9.90E+03	1.00E+03		7.50E+03	1.00E+03		7.00E+03	1.00E+03		6.60E+03	1.00E+03		6.60E+03	1.00E+03	
Selenium	2.00E+01	17 / 18	9.40E+00	1.00E+00		8.10E+00	1.00E+00		9.00E+00	1.00E+00		1.10E+01	1.00E+00		1.00E+01	1.00E+00		7.00E+00	1.00E+00		1.80E+00	1.00E+00	
Silver	3.60E+00	1 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Sodium	1.30E+05	17 / 18	4.90E+04	1.00E+03		4.40E+04	1.00E+03		1.30E+05	1.00E+03		3.70E+04	1.00E+03		4.20E+04	1.00E+03		4.60E+04	1.00E+03		5.10E+04	1.00E+03	
Thallium	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Vanadium	4.00E+01	17 / 18	1.60E+01	2.00E+00		2.40E+01	2.00E+00		1.60E+01	2.00E+00		1.90E+01	2.00E+00		2.00E+01	2.00E+00		2.80E+01	2.00E+00		2.30E+01	2.00E+00	
Zinc	3.10E+02	17 / 18	3.10E+02	1.00E+01		3.70E+00	1.00E+01	J	6.00E+00	1.00E+01	J	1.30E+01	1.00E+01		7.10E+00	1.00E+01	J	7.80E+01	1.00E+01		9.80E+01	1.00E+01	
Other Paramters (mg/L)																							
Ammonia Nitrogen	7.80E-02	10 / 18	7.00E-02	2.50E-01	J	4.90E-02	2.50E-01	J	7.00E-02	2.50E-01	J	6.40E-02	2.50E-01	J	5.70E-02	2.50E-01	J	<	2.50E-01	U	<	2.50E-01	U
Chloride	2.00E+02	17 / 18	5.00E+01	1.00E+00		3.90E+01	1.00E+00		1.90E+02	5.00E+00		6.80E+01	1.00E+00		5.80E+01	1.00E+00		5.90E+01	1.00E+00		4.90E+01	1.00E+00	
Perchlorate	2.00E+00	13 / 17	1.70E+00	5.00E-01		1.50E+00	5.00E-01		<	5.00E-01	U	1.50E+00	5.00E-01		1.80E+00	5.00E-01		1.30E+00	5.00E-01		1.30E+00	5.00E-01	
Nitrate	1.50E+01	17 / 18	2.30E+00	1.00E-01		1.40E+00	1.00E-01		1.50E+01	5.00E-01		1.60E+00	1.00E-01		1.10E+00	1.00E-01		1.60E+00	1.00E-01		1.10E+00	1.00E-01	
Nitrite	ND	0 / 18	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U
Sulfate	3.80E+02	17 / 18	1.20E+02	1.00E+01		7.80E+01	5.00E+00		1.60E+02	2.50E+01		1.20E+02	1.00E+01		1.20E+02	2.50E+01		1.00E+02	1.00E+01		1.00E+02	1.00E+01	
Total Organic Carbon	1.40E+00	16 / 18	3.60E-01	1.00E+00	J	1.20E+00	1.00E+00		9.00E-01	1.00E+00	J	2.30E-01	1.00E+00	J	<	1.00E+00	U	7.40E-01	1.00E+00	J	4.40E-01	1.00E+00	J

Notes:
µg/L = microgram per liter
J = Estimated
LOQ = Limit of Quantitation
mg/L = milligram per liter
ND = Not Detected
Qual = Qualifier
U = Nondetect
UJ = Estimated Nondetect

SUMMARY OF ANALYSIS
2014 BIENNIAL SAMPLING EVENT
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID			MWU-7-14			MWV-7-14			MWW-7-14			MWX-7-14		
DATE COLLECTED			7/16/2014			7/14/2014			7/20/2014			7/15/2014		
	Maximum	Frequency	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	6	LOQ	Qual
VOLATILE ORGANIC COMPOUNDS (µg/L)														
1,1,1,2-Tetrachloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,1-Trichloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,2,2-Tetrachloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,2-Trichloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1,2-Trichlorotrifluoroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1-Dichloroethane	4.60E-01	2 / 18	3.60E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1-Dichloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,1-Dichloropropene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,3-Trichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,3-Trichloropropane	ND	0 / 18	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U
1,2,3-Trimethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,4-Trichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2,4-Trimethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dibromo-3-Chloropropane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
1,2-Dibromoethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dichloroethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,2-Dichloropropane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,3,5-Trimethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,3-Dichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,3-Dichloropropane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
1,4-Dichlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
2,2-Dichloropropane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
2-Butanone (MEK)	ND	0 / 18	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U
2-Chloroethyl vinyl ether	ND	0 / 18	<	5.00E+01	U	<	5.00E+01	UJ	<	5.00E+01	U	<	5.00E+01	U
2-Chlorotoluene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
4-Chlorotoluene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
4-Methyl-2-pentanone (MIBK)	ND	0 / 18	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U
Acetone	ND	0 / 18	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U
Acrolein	ND	0 / 18	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U	<	5.00E+01	U
Acrylonitrile	ND	0 / 18	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U	<	1.00E+01	U
Benzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromodichloromethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromoform	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Bromomethane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Carbon tetrachloride	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chlorobenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U

SUMMARY OF ANALYSIS
2014 BIENNIAL SAMPLING EVENT
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID			MWU-7-14			MWV-7-14			MWW-7-14			MWX-7-14		
DATE COLLECTED			7/16/2014			7/14/2014			7/20/2014			7/15/2014		
	Maximum	Frequency	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	6	LOQ	Qual
Chlorodibromomethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chloroethane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Chloroform	4.00E+00	3 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	3.80E-01	5.00E+00	J
Chloromethane	ND	0 / 18	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U	<	2.50E+00	U
cis-1,2-Dichloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
cis-1,3-Dichloropropene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Dibromomethane	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Dichlorodifluoromethane	1.10E+00	2 / 18	1.10E+00	5.00E+00	J	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Di-isopropyl ether	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Ethylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Hexachloro-1,3-butadiene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Isopropylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Methyl tert-butyl ether	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Methylene Chloride	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	1.40E+00	5.00E+00	J
Naphthalene	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
n-Butylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
n-Propylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
p-Isopropyltoluene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
sec-Butylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Styrene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
tert-Butylbenzene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Tetrachloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Toluene	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
trans-1,2-Dichloroethene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
trans-1,3-Dichloropropene	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Trichloroethene	6.50E-01	1 / 18	6.50E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Trichlorofluoromethane	ND	0 / 18	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Vinyl chloride	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Xylenes, Total	ND	0 / 18	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U	<	3.00E+00	U
METALS (µg/L)														
Aluminum	1.60E+02	15 / 18	<	1.00E+02	U	1.40E+02	1.00E+02		1.40E+02	1.00E+02		3.00E+02	1.00E+02	
Antimony	6.20E-01	5 / 18	<	1.00E+00	U	<	1.00E+00	U	4.20E-01	1.00E+00	J	<	1.00E+00	U
Arsenic	6.00E+00	17 / 18	4.30E+00	1.00E+00		4.60E+00	1.00E+00		2.20E+00	1.00E+00		7.80E+00	1.00E+00	
Barium	9.20E+01	17 / 18	6.10E+01	2.00E+00		2.80E+01	2.00E+00		1.40E+01	2.00E+00		8.50E+01	2.00E+00	
Beryllium	2.70E-01	5 / 18	<	1.00E+00	U	2.70E-01	1.00E+00	J	<	1.00E+00	U	2.60E-01	1.00E+00	J
Cadmium	2.50E-01	7 / 18	<	5.00E-01	U	<	5.00E-01	U	2.50E-01	5.00E-01	J	<	5.00E-01	U
Calcium	9.30E+04	17 / 18	8.10E+04	1.00E+03		9.30E+04	1.00E+03		5.90E+04	1.00E+03		3.00E+04	1.00E+03	
Chromium	5.00E+00	15 / 18	5.00E+00	2.00E+00		5.70E-01	2.00E+00	J	5.50E-01	2.00E+00	J	1.70E+00	2.00E+00	J
Chromium, Hexavalent	1.20E+00	16 / 17	1.00E+00	5.00E-01	J			R	7.50E-01	5.00E-01		6.60E-01	5.00E-01	

SUMMARY OF ANALYSIS
2014 BIENNIAL SAMPLING EVENT
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID			MWU-7-14			MWV-7-14			MWW-7-14			MWX-7-14		
DATE COLLECTED			7/16/2014			7/14/2014			7/20/2014			7/15/2014		
	Maximum	Frequency	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	6	LOQ	Qual
Cobalt	4.90E-01	4 / 18	<	1.00E+00	U	3.20E-01	1.00E+00	J	<	1.00E+00	U	2.90E-01	1.00E+00	J
Copper	5.30E+00	17 / 18	2.00E+00	2.00E+00	J	2.00E+00	2.00E+00	J	2.90E+00	2.00E+00		5.70E+00	2.00E+00	
Iron	5.20E+02	17 / 18	2.30E+01	1.00E+02	J	6.90E+01	1.00E+02	J	1.20E+02	1.00E+02		2.20E+02	1.00E+02	
Lead	8.40E+00	12 / 18	<	1.00E+00	U	4.20E-01	1.00E+00	J	3.20E-01	1.00E+00	J	8.10E-01	1.00E+00	J
Magnesium	8.10E+04	17 / 18	5.60E+04	1.00E+03		8.10E+04	1.00E+03		4.60E+04	1.00E+03		2.70E+04	1.00E+03	
Manganese	3.70E+01	17 / 18	6.40E+00	2.00E+00		3.60E+01	2.00E+00		2.00E+00	2.00E+00	J	1.30E+01	2.00E+00	
Mercury	ND	0 / 18	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U
Nickel	2.20E+01	17 / 18	4.50E+00	1.00E+00		1.40E+00	1.00E+00		2.40E+00	1.00E+00		6.80E-01	1.00E+00	J
Potassium	1.00E+04	17 / 18	7.30E+03	1.00E+03		8.40E+03	1.00E+03		1.00E+04	1.00E+03		5.80E+03	1.00E+03	
Selenium	2.00E+01	17 / 18	7.40E+00	1.00E+00		2.00E+01	1.00E+00		6.70E+00	1.00E+00		4.80E+00	1.00E+00	
Silver	3.60E+00	1 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Sodium	1.30E+05	17 / 18	5.60E+04	1.00E+03		6.70E+04	1.00E+03		1.30E+05	1.00E+03		4.70E+04	1.00E+03	
Thallium	ND	0 / 18	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Vanadium	4.00E+01	17 / 18	2.30E+01	2.00E+00		2.10E+01	2.00E+00		6.40E+00	2.00E+00		4.90E+01	2.00E+00	
Zinc	3.10E+02	17 / 18	9.20E+01	1.00E+01		4.70E+01	1.00E+01		2.00E+01	1.00E+01		5.90E+01	1.00E+01	
Other Paramters (mg/L)														
Ammonia Nitrogen	7.80E-02	10 / 18	<	2.50E-01	U	<	2.50E-01	U	7.50E-02	2.50E-01	J	<	2.50E-01	U
Chloride	2.00E+02	17 / 18	6.90E+01	1.00E+00		2.00E+02	5.00E+00		1.20E+02	5.00E+00		3.00E+01	1.00E+00	
Perchlorate	2.00E+00	13 / 17	1.30E+00	5.00E-01		<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U
Nitrate	1.50E+01	17 / 18	1.30E+00	1.00E-01		7.20E+00	1.00E-01		5.70E-01	1.00E-01		1.70E+00	1.00E-01	
Nitrite	ND	0 / 18	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U	<	1.00E-01	U
Sulfate	3.80E+02	17 / 18	1.10E+02	1.00E+01		2.30E+02	2.50E+01		3.80E+02	2.50E+01		4.70E+01	5.00E+00	
Total Organic Carbon	1.40E+00	16 / 18	3.70E-01	1.00E+00	J	1.40E+00	1.00E+00		2.00E-01	1.00E+00	J	2.20E-01	1.00E+00	J

Notes:
µg/L = microgram per liter
J = Estimated
LOQ = Limit of Quantitation
mg/L = milligram per liter
ND = Not Detected
Qual = Qualifier
U = Nondetect
UJ = Estimated Nondetect

E.2 Laboratory Sample Delivery Groups

The raw data packages were submitted to AFCEC, including Cannon AFB. Electronic copies are available upon request.

E.3 URS Data Verifications

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
MWV-7-14	7/14/2014	7/15/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
TRIP BLANK 7-14-14	7/14/2014	7/15/2014	Aq	8260C

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD-QSM deviations noted in the laboratory case narrative?	X		
Were DoD-QSM corrective actions followed if deviations were noted?	X		
Were any issues noted in the cooler receipt form?		X	

The laboratory case narrative indicated 2-chloroethyl vinyl ether MS/MSD recoveries were outside evaluation criteria. This issue is discussed further in Section 12.0.

Although it was not indicated in the laboratory case narrative, the laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. All perchlorate data were rejected. This issue is discussed further in Section 19.0. No other issues were noted in the laboratory case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?	X	
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were sample relinquished properly on the COC?	X	

3.0 Holding Time

Verification Criteria	Yes	No
Were all samples extracted and/or analyzed within the appropriate holding time?		X
Were all samples preserved appropriately?		X

Hexavalent chromium was not correctly preserved with ammonium sulfate and was analyzed 3 days outside the 1 day holding time criteria. Qualifications of data due to holding time exceedance are listed in the table below.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
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Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Field ID	Parameter	Analyte	Qualification
MWV-7-14	Hexavalent chromium	Hexavalent chromium	**R**

4.0 Instrument Performance Check (Tuning)

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/17/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/16/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/17/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

5.0 Initial Calibration

Method 7199 Initial Calibration Criteria			
Instrument:	**IC-13**		
Date of Calibration:	**7/18/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 9056A Initial Calibration Criteria			
Instrument:	**IC-8**		
Date of Calibration:	**7/14/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/17/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**TOC3**		
Date of Calibration:	**7/16/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 7470A Initial Calibration Criteria			
Instrument:	**CVAA3**		
Date of Calibration:	**7/16/2014**		
	Yes	**No**	**N/A**
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?	X		
CVAA – Was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/17/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/17/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/16/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

6.0 Initial Calibration Verification [(ICV) Second Source]

7199 Verification Criteria for ICV 7/18/2014 at 09:08, Instrument: IC-13	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9056A Verification Criteria for ICV: 7/15/2014 at 08:16, Instrument: IC-8	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

350.1 Verification Criteria for ICV on 7/17/2014 at 13:50, Instrument: FS3100-1	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9060A Verification Criteria for ICV on 7/16/2014 at 07:41, Instrument: TOC3	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

7470A Verification Criteria for ICV on 7/16/2014 16:10, Instrument: CVAA3	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6010B Verification Criteria for ICV on 7/17/2014 07:42, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6020A Verification Criteria for ICV on 7/17/2014 12:08, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

Method 8260C ICV Criteria			
Instrument:	VOCMS23		
Date of Initial Calibration Verification:	7/16/2014 18:40		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

7.0 Continuing Calibration Verification (CCV)

7199 Verification Criteria for CCV: 7/18/2014 at 12:52, Instrument: IC-13	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/15/2014 at 18:25, Instrument: IC-8	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/15/2014 at 19:29, Instrument: IC-8	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

350.1 Verification Criteria for CCV on 7/17/2014 at 14:35, Instrument: FS3100-1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/17/2014 at 15:10, Instrument: FS3100-1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9060A Verification Criteria for CCV: 7/16/2014 12:19, Instrument: TOC3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

7470A Verification Criteria for CCV: 7/16/2014 11:49, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

7470A Verification Criteria for CCV: 7/16/2014 12:41, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

6010B Verification Criteria for CCV: 7/17/2014 16:08, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/17/2014 17:29, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 17:23, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 18:05, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C CCV Criteria			
Instrument:	**VOCMS23**		
Date of Calibration Verification:	**7/17/2014 19:04**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

8.0 Blank Samples

Blank Criteria	**Yes**	**No**	**N/A**
Was a method blank analyzed with every preparatory batch?	X		
Were analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit?		X	
Were target analytes detected in method, trip or calibration blanks?		X	

9.0 Laboratory Control Sample (LCS)

LCS Criteria	**Yes**	**No**	**N/A**
Was an LCS analyzed with every preparatory batch?	X		
Were LCS recoveries within acceptance criteria listed in the UFP-QAPP?	X		

10.0 Surrogate Recoveries

Methods 8260C Surrogate Criteria	**Yes**	**No**	**N/A**
Were surrogate spikes added to all field and QC samples?	X		
Were surrogate recoveries within acceptance criteria listed in the UFP-QAPP?	X		

11.0 Internal Standard (IS) Recoveries

Methods 8260C IS Criteria	**Yes**	**No**	**N/A**
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

12.0 Matrix Spike/Matrix Spike Duplicate Recoveries/RPDs

MS/MSD Criteria	Yes	No	N/A
Were MS/MSD samples analyzed with every preparatory batch?	X		
Were MS/MSD samples collected for this SDG?	X		
Were MS/MSD recoveries/RPDs within acceptance criteria listed in the UFP-QAPP?		X	

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/ RPD Criteria
MWV-7-14	VOCs	2-Chloroethyl vinyl ether	**12.4/2.73**	**127.7**	10-155/20

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
MWV-7-14	VOCs	2-Chloroethyl vinyl ether	**UJ**

13.0 Dilution Test

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Was a dilution test sample analyzed with every preparatory batch?	X		
Were metals concentrations > 50x the LOQ?			X
Did the five-fold dilution agree within ± 10% of the original measurement?			X
If the five-fold dilution did not agree within ± 10% of the original measurement, was a post digestion spike sample analyzed?	X		

The serial dilution was completed on a sample from another SDG.

14.0 Post Digestion Spike (PDS) Recoveries

Method 6010B PDS Criteria	Yes	No	N/A
Was a PDS sample analyzed if the dilution test failed or metals concentrations were > 50 x the LOD?			X
Were the PDS recoveries within 75-125%?			X

The serial dilution was completed on a sample from another SDG.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

15.0 Interference Check Solutions (ICS)

Method 6010B/6020A ICS Criteria	Yes	No	N/A
Were ICS-A and ICSAB samples analyzed at the beginning of the analytical run and every 12 hours?	X		
Was the ICS-A absolute value concentration for all non-spiked metals < LOD (unless they are a verified trace impurity form one of the spiked metals)	X		
Was the ICS-AB recoveries within ± 20%?	X		

16.0 Laboratory Duplicate Samples

Laboratory Duplicate Criteria	Yes	No	N/A
Were laboratory duplicate samples analyzed for this SDG? (if yes, list below)	X		
Were parent sample / laboratory duplicate RPDs ≤ 20% for analytes that had concentrations > 5x the LOQ.	X		
Were the differences between the parent sample / laboratory duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ	X		

Parent Sample ID	Analysis
MWV-7-14	Hexavalent Chromium

17.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)		X	
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for soils for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / field duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

18.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

19.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?		X	
Were common laboratory contaminant concentrations < 2x the LOQ			X
Was professional judgment used to qualify data (if yes, list below)	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L709935 **URS Chemist: Steve Gragert**
Date Verified: 8/22/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

The laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. Per the DoD Perchlorate Handbook (2007 Aug), *"Methods employing IC/EC (e.g. Methods 314.0 and 314.1) are not appropriate for sampling and testing associated with environmental restoration/cleanup or range assessment projects. Only methods employing MS are to be used for environmental restoration/cleanup or range assessment projects."* All perchlorate data were rejected and listed in the table below.

Field ID	Analysis	Analyte	New LOQ	Qualification
MWV-7-14	Perchlorate	Perchlorate	--	**R**

20.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?	X		
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?		X	

As indicated in Section 3.0, hexavalent chromium was not correctly preserved with ammonium sulfate and was analyzed 3 days outside the 1 day holding time criteria. The result for sample MWV-7-14 was rejected. Hexavalent chromium is not a compound of concern at Cannon AFB.

As indicated in Section 19.0, the laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS. Two perchlorate samples were rejected as indicated in Section 19.0. Perchlorate is not a compound of concern at Cannon AFB.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
Trip Blank 7-15-14	7/15/2014	7/16/2014	Aq	8260C
MWX-7-14	7/15/2014	7/16/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWD-7-14	7/15/2014	7/16/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWC-7-14	7/15/2014	7/16/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD-QSM deviations noted in the laboratory case narrative?	X		
Were DoD-QSM corrective actions followed if deviations were noted?	X		
Were any issues noted in the cooler receipt form?		X	

The laboratory case narrative the MS recoveries for hexavalent chromium and perchlorate in sample MWD-7-14 were below evaluation criteria. This issue is discussed further in Section 12.0.

Although it was not indicated in the laboratory case narrative, the laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. All perchlorate data were rejected. This issue is discussed further in Section 19.0. No other issues pertaining to the samples in this SDG were noted in the laboratory case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?	X	
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were sample relinquished properly on the COC?	X	

3.0 Holding Time

Verification Criteria	Yes	No
Were all samples extracted and/or analyzed within the appropriate holding time?	X	
Were all samples preserved appropriately?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

4.0 Instrument Performance Check (Tuning)

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/23/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/16/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/17/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

5.0 Initial Calibration

Method 7199 Initial Calibration Criteria			
Instrument:	**IC-13**		
Date of Calibration:	**7/17/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 9056A Initial Calibration Criteria			
Instrument:	**IC-8**		
Date of Calibration:	**7/14/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/19/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**TOC3**		
Date of Calibration:	**7/19/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 7470A Initial Calibration Criteria			
Instrument:	**CVAA1**		
Date of Calibration:	**7/18/2014**		
	Yes	**No**	**N/A**
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?	X		
CVAA – Was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/17/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/16/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination r^2 ≥ 0.99?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

6.0 Initial Calibration Verification [(ICV) Second Source]

7199 Verification Criteria for ICV 7/18/2014 at 9:08, Instrument: IC-13	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9056A Verification Criteria for ICV: 7/16/2014 at 08:01, Instrument: IC-8	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

350.1 Verification Criteria for ICV on 7/19/2014 at 14:17, Instrument: FS3100-1	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9060A Verification Criteria for ICV on 7/19/2014 at 06:40, Instrument: TOC3	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

7470A Verification Criteria for ICV on 7/18/2014 16:42, Instrument: CVAA1	**Yes**	**No**
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6010B Verification Criteria for ICV on 7/17/2014 07:42, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6020A Verification Criteria for ICV on 7/23/2014 12:08, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

Method 8260C ICV Criteria			
Instrument:	VOCMS23		
Date of Initial Calibration Verification:	7/16/2014 18:40		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

7.0 Continuing Calibration Verification (CCV)

7199 Verification Criteria for CCV: 7/18/2014 at 12:52, Instrument: IC-13	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/16/2014 at 15:05, Instrument: IC-8	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/19/2014 at 15:02, Instrument: FS3100-1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9060A Verification Criteria for CCV: 7/19/2014 10:37, Instrument: TOC3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

7470A Verification Criteria for CCV: 7/18/2014 17:39, Instrument: CVAA1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6010B Verification Criteria for CCV: 7/17/2014 16:08, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/17/2014 17:29, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 17:23, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 18:05, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Method 8260C CCV Criteria			
Instrument:	VOCMS23		
Date of Calibration Verification:	7/17/2014 19:04		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

8.0 Blank Samples

Blank Criteria	Yes	No	N/A
Was a method blank analyzed with every preparatory batch?	X		
Were analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit?		X	
Were target analytes detected in method, trip or calibration blanks?		X	

9.0 Laboratory Control Sample (LCS)

LCS Criteria	Yes	No	N/A
Was an LCS analyzed with every preparatory batch?	X		
Were LCS recoveries within acceptance criteria listed in the UFP-QAPP?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

10.0 Surrogate Recoveries

Methods 8260C Surrogate Criteria	Yes	No	N/A
Were surrogate spikes added to all field and QC samples?	X		
Were surrogate recoveries within acceptance criteria listed in the UFP-QAPP?	X		

11.0 Internal Standard (IS) Recoveries

Methods 8260C IS Criteria	Yes	No	N/A
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

12.0 Matrix Spike/Matrix Spike Duplicate Recoveries/RPDs

MS/MSD Criteria	Yes	No	N/A
Were MS/MSD samples analyzed with every preparatory batch?	X		
Were MS/MSD samples collected for this SDG?	X		
Were MS/MSD recoveries/RPDs within acceptance criteria listed in the UFP-QAPP?		X	

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
MWD-7-14	Hexavalent chromium	Hexavalent chromium	**86.4**/91.4	4.93	90-110/20
MWD-7-14	Perchlorate	Perchlorate	**79.9**/81.1	1.49	80-120/15

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
MWD-7-14	Hexavalent Chromium	Hexavalent Chromium	**J**
MWD-7-14	Perchlorate	Perchlorate	**UJ**

13.0 Dilution Test

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Was a dilution test sample analyzed with every preparatory batch?	X		
Were metals concentrations > 50x the LOQ?			X
Did the five-fold dilution agree within ± 10% of the original measurement?			X

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
If the five-fold dilution did not agree within ± 10% of the original measurement, was a post digestion spike sample analyzed?	X		

The serial dilution was completed on a sample from another SDG.

14.0 Post Digestion Spike (PDS) Recoveries

Method 6010B PDS Criteria	Yes	No	N/A
Was a PDS sample analyzed if the dilution test failed or metals concentrations were > 50 x the LOD?			X
Were the PDS recoveries within 75-125%?			X

The serial dilution was completed on a sample from another SDG.

15.0 Interference Check Solutions (ICS)

Method 6010B/6020A ICS Criteria	Yes	No	N/A
Were ICS-A and ICSAB samples analyzed at the beginning of the analytical run and every 12 hours?	X		
Was the ICS-A absolute value concentration for all non-spiked metals < LOD (unless they are a verified trace impurity form one of the spiked metals)	X		
Was the ICS-AB recoveries within ± 20%?	X		

16.0 Laboratory Duplicate Samples

Laboratory Duplicate Criteria	Yes	No	N/A
Were laboratory duplicate samples analyzed for this SDG? (if yes, list below)	X		
Were parent sample / laboratory duplicate RPDs ≤ 20% for analytes that had concentrations > 5x the LOQ.	X		
Were the differences between the parent sample / laboratory duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ	X		

Parent Sample ID	Analysis
MWX-7-14	Chloride, Nitrate, Nitrite, and Sulfate
MWD-7-14	Perchlorate
MWD-7-14	TOC

17.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)		X	
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for			X

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Field Duplicate Criteria	Yes	No	N/A
soils for analytes that had concentrations > 5x the LOQ.			
Were the differences between the parent sample / field duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

18.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

19.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?	X		
Were common laboratory contaminant concentrations < 2x the LOQ	X		
Was professional judgment used to qualify data (if yes, list below)	X		

Professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations less than two times (2X) the LOQ. See table below for qualification of data.

The laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. Per the DoD Perchlorate Handbook (2007 Aug), *"Methods employing IC/EC (e.g. Methods 314.0 and 314.1) are not appropriate for sampling and testing associated with environmental restoration/cleanup or range assessment projects. Only methods employing MS are to be used for environmental restoration/cleanup or range assessment projects."* All perchlorate data were rejected and listed in the table below.

Field ID	Analysis	Analyte	New LOQ	Qualification
MWX-7-14	VOCs	Methylene chloride	--	**U**
MWD-7-14	VOCs	Methylene chloride	--	**U**
MWC-7-14	VOCs	Methylene chloride	--	**U**
MWX-7-14	Perchlorate	Perchlorate	--	**R**
MWD-7-14	Perchlorate	Perchlorate	--	**R**
MWC-7-14	Perchlorate	Perchlorate	--	**R**

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710204 **URS Chemist: Steve Gragert**
Date Verified: 8/23/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

20.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?	X		
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?		X	

As indicated in Section 19.0, the laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS. Three perchlorate samples were rejected as indicated in Section 19.0. Perchlorate is not a compound of concern at Cannon AFB.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
Trip Blank	7/16/2014	7/17/2014	Aq	8260C
MWS-7-14	7/16/2014	7/17/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWT-7-14	7/16/2014	7/17/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWB-7-14	7/16/2014	7/17/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWU-7-14	7/16/2014	7/17/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD-QSM deviations noted in the laboratory case narrative?		X	
Were DoD-QSM corrective actions followed if deviations were noted?			X
Were any issues noted in the cooler receipt form?	X		

The cooler receipt form indicated hexavalent chromium was received outside the 24 hour holding time criteria. This issue is discussed further in Section 3.0.

Although it was not indicated in the laboratory case narrative, the laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. All perchlorate data were rejected. This issue is discussed further in Section 19.0. No other issues pertaining to the samples in this SDG were noted in the laboratory case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?	X	
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were sample relinquished properly on the COC?	X	

3.0 Holding Time

Verification Criteria	Yes	No
Were all samples extracted and/or analyzed within the appropriate holding time?		X
Were all samples preserved appropriately?		X

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Hexavalent chromium samples MWS-7-14, MWT-7-14, MWB-7-14, and MWU-7-14 were not properly preserved with ammonium sulfate. The samples were analyzed 1 day outside the 24 hour holding time, but were within 2X the holding time criteria.. Qualifications of data due to holding time exceedances are listed in the table below.

Field ID	Parameter	Analyte	Qualification
MWS-7-14	Hexavalent Chromium	Hexavalent Chromium	**J**
MWT-7-14	Hexavalent Chromium	Hexavalent Chromium	**J**
MWB-7-14	Hexavalent Chromium	Hexavalent Chromium	**J**
MWU-7-14	Hexavalent Chromium	Hexavalent Chromium	**J**

4.0 Instrument Performance Check (Tuning)

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/29/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/19/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/22/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

5.0 Initial Calibration

Method 7199 Initial Calibration Criteria			
Instrument:	**IC-13**		
Date of Calibration:	**7/18/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9056A Initial Calibration Criteria			
Instrument:	**IC-10**		
Date of Calibration:	**7/17/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/19/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**TOC3**		
Date of Calibration:	**7/19/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 7470A Initial Calibration Criteria			
Instrument:	**CVAA3**		
Date of Calibration:	**7/18/2014**		
	Yes	**No**	**N/A**
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?	X		
CVAA – Was $r^2 \geq 0.99$?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/20/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/28/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/29/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/19/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/19/2014**		
	Yes	**No**	**N/A**
for chloromethane, bromoform, and 1,1-dichloroethane.)			
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

6.0 Initial Calibration Verification [(ICV) Second Source]

7199 Verification Criteria for ICV 7/18/2014 at 09:08, Instrument: IC-13	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

9056A Verification Criteria for ICV: 7/17/2014 at 07:55, Instrument: IC-10	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

350.1 Verification Criteria for ICV on 7/19/2014 at 14:17, Instrument: FS3100-1	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

9060A Verification Criteria for ICV on 7/19/2014 at 06:40, Instrument: TOC3	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

7470A Verification Criteria for ICV on 7/18/2014 16:42, Instrument: CVAA3	**Yes**	**No**
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

6010B Verification Criteria for ICV on 7/20/2014 23:26, Instrument: ICP11	**Yes**	**No**
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6010B Verification Criteria for ICV on 7/24/2014 08:22, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

6010B Verification Criteria for ICV on 7/25/2014 09:24, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

6010B Verification Criteria for ICV on 7/28/2014 08:14, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

6020A Verification Criteria for ICV on 7/29/2014 23:14, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

Method 8260C ICV Criteria			
Instrument:	**VOCMS23**		
Date of Initial Calibration Verification:	**7/19/2014 09:58**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?		X	

The ICV %D for chloromethane was +21.4%. All data were nondetect and associated with an ICV above evaluation criteria, indicating a possible high bias. Therefore, no qualification of data was required.

7.0 Continuing Calibration Verification (CCV)

7199 Verification Criteria for CCV: 7/18/2014 at 12:52, Instrument: IC-13	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

9056A Verification Criteria for CCV on 7/17/2014 at 14:28, Instrument: IC-10	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/19/2014 at 16:42, Instrument: FS3100-1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9060A Verification Criteria for CCV: 7/19/2014 10:37, Instrument: TOC3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

7470A Verification Criteria for CCV: 7/18/2014 17:00, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

6010B Verification Criteria for CCV: 7/21/2014 15:34, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/21/2014 16:42, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/24/2014 01:05, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/24/2014 02:06, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 03:07, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 04:08, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6010B Verification Criteria for CCV: 7/25/2014 05:09, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/28/2014 15:30, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/28/2014 15:50, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/30/2014 18:26, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/30/2014 19:11, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Method 8260C CCV Criteria			
Instrument:	VOCMS23		
Date of Calibration Verification:	7/22/2014 19:44		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

8.0 Blank Samples

Blank Criteria	Yes	No	N/A
Was a method blank analyzed with every preparatory batch?	X		
Were analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit?		X	
Were target analytes detected in method, trip or calibration blanks?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Blank ID	Parameter	Analyte	Concentration	LOQ	Units
CCB 7/30/2014 6:29 PM	6020A	Silver	0.002	1	µg/L
CCB 7/30/2014 6:29 PM	6020A	Chromium	0.011	2	µg/L
CCB 7/30/2014 6:29 PM	6020A	Vanadium	0.003	2	µg/L
CCB 7/30/2014 6:55 PM	6020A	Chromium	0.004	2	µg/L

All associated silver results were nondetect. All associated chromium and vanadium results were >5X the CCB contamination; therefore, no qualification of data was required.

9.0 Laboratory Control Sample (LCS)

LCS Criteria	Yes	No	N/A
Was an LCS analyzed with every preparatory batch?	X		
Were LCS recoveries within acceptance criteria listed in the UFP-QAPP?	X		

10.0 Surrogate Recoveries

Methods 8260C Surrogate Criteria	Yes	No	N/A
Were surrogate spikes added to all field and QC samples?	X		
Were surrogate recoveries within acceptance criteria listed in the UFP-QAPP?	X		

11.0 Internal Standard (IS) Recoveries

Methods 8260C IS Criteria	Yes	No	N/A
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

12.0 Matrix Spike/Matrix Spike Duplicate Recoveries/RPDs

MS/MSD Criteria	Yes	No	N/A
Were MS/MSD samples analyzed with every preparatory batch?	X		
Were MS/MSD samples collected for this SDG?	X		
Were MS/MSD recoveries/RPDs within acceptance criteria listed in the UFP-QAPP?	X		

Sample MWD-7-14 was spiked and analyzed for perchlorate.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

13.0 Dilution Test

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Was a dilution test sample analyzed with every preparatory batch?	X		
Were metals concentrations > 50x the LOQ?			X
Did the five-fold dilution agree within ± 10% of the original measurement?			X
If the five-fold dilution did not agree within ± 10% of the original measurement, was a post digestion spike sample analyzed?	X		

The serial dilution was completed on a sample from another SDG.

14.0 Post Digestion Spike (PDS) Recoveries

Method 6010B/6020A PDS Criteria	Yes	No	N/A
Was a PDS sample analyzed if the dilution test failed or metals concentrations were > 50 x the LOD?			X
Were the PDS recoveries within 75-125%?			X

The serial dilution was completed on a sample from another SDG.

15.0 Interference Check Solutions (ICS)

Method 6010B/6020A ICS Criteria	Yes	No	N/A
Were ICS-A and ICSAB samples analyzed at the beginning of the analytical run and every 12 hours?	X		
Was the ICS-A absolute value concentration for all non-spiked metals < LOD (unless they are a verified trace impurity form one of the spiked metals)	X		
Were the ICS-AB recoveries within ± 20%?	X		

16.0 Laboratory Duplicate Samples

Laboratory Duplicate Criteria	Yes	No	N/A
Were laboratory duplicate samples analyzed for this SDG? (if yes, list below)	X		
Were parent sample / laboratory duplicate RPDs ≤ 20% for analytes that had concentrations > 5x the LOQ.	X		
Were the differences between the parent sample / laboratory duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ	X		

Parent Sample ID	Analysis
MWU-7-14	TOC

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

17.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)		X	
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for soils for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / field duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

18.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

19.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?		X	
Were common laboratory contaminant concentrations < 2x the LOQ			X
Was professional judgment used to qualify data (if yes, list below)	X		

The laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. Per the DoD Perchlorate Handbook (2007 Aug), "*Methods employing IC/EC (e.g. Methods 314.0 and 314.1) are not appropriate for sampling and testing associated with environmental restoration/cleanup or range assessment projects. Only methods employing MS are to be used for environmental restoration/cleanup or range assessment projects.*" All perchlorate data were rejected and listed in the table below.

Field ID	Analysis	Analyte	New LOQ	Qualification
MWS-7-14	Perchlorate	Perchlorate	--	**R**
MWT-7-14	Perchlorate	Perchlorate	--	**R**
MWB-7-14	Perchlorate	Perchlorate	--	**R**
MWU-7-14	Perchlorate	Perchlorate	--	**R**

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L710491 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

20.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?	X		
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?		X	

As indicated in Section 19.0, the laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS. Four perchlorate samples were rejected as indicated in Section 19.0. Perchlorate is not a compound of concern at Cannon AFB.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
MWA-7-14	7/17/2014	7/18/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWOA-7-14	7/17/2014	7/18/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWOA-7-14-A	7/17/2014	7/18/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWPA-7-14	7/17/2014	7/18/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
Trip Blank	7/17/2014	7/18/2014	Aq	8260C

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD-QSM deviations noted in the laboratory case narrative?	X		
Were DoD-QSM corrective actions followed if deviations were noted?	X		
Were any issues noted in the cooler receipt form?		X	

The laboratory case narrative indicated a bromobenzene LCS recovery was outside evaluation criteria. This issue is discussed further in Section 9.0.

Although it was not indicated in the laboratory case narrative, the laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. All perchlorate data were rejected. This issue is discussed further in Section 19.0. No other issues pertaining to the samples in this SDG were noted in the laboratory case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?	X	
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were sample relinquished properly on the COC?	X	

3.0 Holding Time

Verification Criteria	Yes	No
Were all samples extracted and/or analyzed within the appropriate holding time?	X	
Were all samples preserved appropriately?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

4.0 Instrument Performance Check (Tuning)

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/23/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/29/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/21/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/23/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/24/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

5.0 Initial Calibration

Method 7199 Initial Calibration Criteria			
Instrument:	**IC-13**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9056A Initial Calibration Criteria			
Instrument:	**IC-10**		
Date of Calibration:	**7/19/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**TOC3**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 7470A Initial Calibration Criteria			
Instrument:	**CVAA3**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?	X		
CVAA – Was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP10**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/29/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/21/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/21/2014**		
	Yes	**No**	**N/A**
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq$ 0.99?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

6.0 Initial Calibration Verification [(ICV) Second Source]

7199 Verification Criteria for ICV 7/25/2014 at 09:06, Instrument: IC-13	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9056A Verification Criteria for ICV: 7/19/2014 at 06:16, Instrument: IC-10	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

350.1 Verification Criteria for ICV on 7/22/2014 at 17:29, Instrument: FS3100-1	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9060A Verification Criteria for ICV on 7/22/2014 15:45, Instrument: TOC3	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

7470A Verification Criteria for ICV on 7/22/2014 13:57, Instrument: CVAA3	**Yes**	**No**
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6010B Verification Criteria for ICV on 7/24/2014 23:26, Instrument: ICP10	**Yes**	**No**
Was the second source % recovery between 90-110%?	X	
Was the value of second source for all analyte(s) within ± 10% of true value?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6010B Verification Criteria for ICV on 7/25/2014 08:14, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6020A Verification Criteria for ICV on 7/23/2014 11:02, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6020A Verification Criteria for ICV on 7/29/2014 17:54, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

Method 8260C ICV Criteria			
Instrument:	VOCMS23		
Date of Initial Calibration Verification:	7/21/2014 09:09		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

7.0 Continuing Calibration Verification (CCV)

7199 Verification Criteria for CCV: 7/25/2014 at 12:03, Instrument: IC-13	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/19/2014 at 13:14, Instrument: IC-10	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/22/2014 at 18:11, Instrument: FS3100-1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/22/2014 at 18:46, Instrument: FS3100-1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

9060A Verification Criteria for CCV: 7/22/2014 20:21, Instrument: TOC3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9060A Verification Criteria for CCV: 7/22/2014 23:53, Instrument: TOC3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

7470A Verification Criteria for CCV: 7/22/2014 14:53, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

7470A Verification Criteria for CCV: 7/22/2014 15:55, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

6010B Verification Criteria for CCV: 7/25/2014 15:12, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 16:36, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 01:05, Instrument ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 02:06, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/28/2014 13:34, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/28/2014 14:10, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6020A Verification Criteria for CCV: 7/31/2014 16:11, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/31/2014 16:48, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Method 8260C CCV Criteria			
Instrument:	VOCMS23		
Date of Calibration Verification:	7/24/2014 08:00		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

Method 8260C CCV Criteria			
Instrument:	VOCMS23		
Date of Calibration Verification:	7/24/2014 19:31		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

8.0 Blank Samples

Blank Criteria	Yes	No	N/A
Was a method blank analyzed with every preparatory batch?	X		
Were analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit?		X	
Were target analytes detected in method, trip or calibration blanks?		X	

9.0 Laboratory Control Sample (LCS)

LCS Criteria	Yes	No	N/A
Was an LCS analyzed with every preparatory batch?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

LCS Criteria	Yes	No	N/A
Were LCS recoveries within acceptance criteria listed in the UFP-QAPP?		X	

LCS ID	Parameter	Analyte	LCS/LCSD Recovery	RPD	LCS/LCSD Criteria
WG733125	VOCs	Bromobenzene	109/**118**	8.2	78-116/20

All bromobenzene results were reported as nondetect and associated with an LCS recovery above evaluation criteria, indicating a possible high bias. Therefore, no qualification of data was required.

10.0 Surrogate Recoveries

Methods 8260C Surrogate Criteria	Yes	No	N/A
Were surrogate spikes added to all field and QC samples?	X		
Were surrogate recoveries within acceptance criteria listed in the UFP-QAPP?	X		

11.0 Internal Standard (IS) Recoveries

Methods 8260C IS Criteria	Yes	No	N/A
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

12.0 Matrix Spike/Matrix Spike Duplicate Recoveries/RPDs

MS/MSD Criteria	Yes	No	N/A
Were MS/MSD samples analyzed with every preparatory batch?	X		
Were MS/MSD samples collected for this SDG?		X	
Were MS/MSD recoveries/RPDs within acceptance criteria listed in the UFP-QAPP?			X

13.0 Dilution Test

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Was a dilution test sample analyzed with every preparatory batch?	X		
Were metals concentrations > 50x the LOQ?			X
Did the five-fold dilution agree within ± 10% of the original measurement?			X
If the five-fold dilution did not agree within ± 10% of the original measurement, was a post digestion spike sample analyzed?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

The serial dilution was completed on a sample from another SDG.

14.0 Post Digestion Spike (PDS) Recoveries

Method 6010B/6020A PDS Criteria	Yes	No	N/A
Was a PDS sample analyzed if the dilution test failed or metals concentrations were > 50 x the LOD?			X
Were the PDS recoveries within 75-125%?			X

The serial dilution was completed on a sample from another SDG.

15.0 Interference Check Solutions (ICS)

Method 6010B/6020A ICS Criteria	Yes	No	N/A
Were ICS-A and ICSAB samples analyzed at the beginning of the analytical run and every 12 hours?	X		
Was the ICS-A absolute value concentration for all non-spiked metals < LOD (unless they are a verified trace impurity form one of the spiked metals)	X		
Were the ICS-AB recoveries within ± 20%?	X		

16.0 Laboratory Duplicate Samples

Laboratory Duplicate Criteria	Yes	No	N/A
Were laboratory duplicate samples analyzed for this SDG? (if yes, list below)		X	
Were parent sample / laboratory duplicate RPDs ≤ 20% for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / laboratory duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

17.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)	X		
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for soils for analytes that had concentrations > 5x the LOQ.		X	
Were the differences between the parent sample / field duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ	X		

Parent Sample ID	Field Duplicate Sample ID
MWOA-7-14	MWOA-7-14-A

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Analytical data that required qualification based on parent sample / field duplicate RPDs and/or differences are included in the table below.

Parent Sample ID	Field Duplicate Sample ID	Parameter	Analyte	RPD or difference	Qualification
MWOA-7-14	MWOA-7-14-A	TOC	TOC	**32**	**J/J**

18.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

19.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?		X	
Were common laboratory contaminant concentrations < 2x the LOQ			X
Was professional judgment used to qualify data (if yes, list below)	X		

The laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. Per the DoD Perchlorate Handbook (2007 Aug), *"Methods employing IC/EC (e.g. Methods 314.0 and 314.1) are not appropriate for sampling and testing associated with environmental restoration/cleanup or range assessment projects. Only methods employing MS are to be used for environmental restoration/cleanup or range assessment projects."* All perchlorate data were rejected and listed in the table below.

Field ID	Analysis	Analyte	New LOQ	Qualification
MWA-7-14	Perchlorate	Perchlorate	--	**R**
MWOA-7-14	Perchlorate	Perchlorate	--	**R**
MWOA-7-14-A	Perchlorate	Perchlorate	--	**R**
MWPA-7-14	Perchlorate	Perchlorate	--	**R**

20.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?	X		
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?		X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711018 **URS Chemist: Steve Gragert**
Date Verified: 8/27/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

As indicated in Section 19.0, the laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS. Four perchlorate samples were rejected as indicated in Section 19.0. Perchlorate is not a compound of concern at Cannon AFB.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
MWNA-7-14	7/21/2014	7/22/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
TRIP BLANK	7/21/2014	7/22/2014	Aq	8260C

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD-QSM deviations noted in the laboratory case narrative?	X		
Were DoD-QSM corrective actions followed if deviations were noted?	X		
Were any issues noted in the cooler receipt form?		X	

The laboratory case narrative indicated 2-chloroethyl vinyl ether MS/MSD recoveries and RPDs were outside evaluation criteria. These issues are discussed further in Section 12.0.

Although it was not indicated in the laboratory case narrative, the laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. All perchlorate data were rejected. This issue is discussed further in Section 19.0. No other issues were noted in the laboratory case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?	X	
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were sample relinquished properly on the COC?	X	

3.0 Holding Time

Verification Criteria	Yes	No
Were all samples extracted and/or analyzed within the appropriate holding time?	X	
Were all samples preserved appropriately?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

4.0 Instrument Performance Check (Tuning)

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/23/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/22/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

5.0 Initial Calibration

Method 7199 Initial Calibration Criteria			
Instrument:	**IC-13**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9056A Initial Calibration Criteria			
Instrument:	**IC-9**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Was r ≥ 0.995?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**TOC3**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 7470A Initial Calibration Criteria			
Instrument:	**CVAA3**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?	X		
CVAA – Was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination r^2 ≥ 0.99?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

6.0 Initial Calibration Verification [(ICV) Second Source]

7199 Verification Criteria for ICV: 7/22/2014 09:45, Instrument: IC-13	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9056A Verification Criteria for ICV: 7/22/2014 08:44, Instrument: IC-9	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

350.1 Verification Criteria for ICV on 7/24/2014 17:23, Instrument: FS3100-1	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9060A Verification Criteria for ICV on 7/23/2014 12:42, Instrument: TOC3	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

7470A Verification Criteria for ICV on 7/24/2014 09:02, Instrument: CVAA3	**Yes**	**No**
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6010B Verification Criteria for ICV on 7/24/2014 08:14, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6010B Verification Criteria for ICV on 7/25/2014 08:55, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6020A Verification Criteria for ICV on 7/23/2014 11:02, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

Method 8260C ICV Criteria			
Instrument:	VOCMS23		
Date of Initial Calibration Verification:	7/22/2014 09:21		
	Yes	No	N/A
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

7.0 Continuing Calibration Verification (CCV)

7199 Verification Criteria for CCV: 7/22/2014 11:57, Instrument: IC-13	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 15:18, Instrument: IC-9	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 18:18, Instrument: IC-9	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/24/2014 at 16:55, Instrument: FS3100-1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

9060A Verification Criteria for CCV: 7/23/2014 16:40, Instrument: TOC3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

7470A Verification Criteria for CCV: 7/24/2014 11:49, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

7470A Verification Criteria for CCV: 7/24/2014 12:41, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

6010B Verification Criteria for CCV: 7/25/2014 19:11, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 20:18, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/29/2014 14:41, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/29/2014 15:43, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 21:30, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 22:40, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C CCV Criteria			
Instrument:	**VOCMS23**		
Date of Calibration Verification:	**7/22/2014 09:21 ICV**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

8.0 Blank Samples

Blank Criteria	**Yes**	**No**	**N/A**
Was a method blank analyzed with every preparatory batch?	X		
Were analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit?		X	
Were target analytes detected in method, trip or calibration blanks?		X	

9.0 Laboratory Control Sample (LCS)

LCS Criteria	**Yes**	**No**	**N/A**
Was an LCS analyzed with every preparatory batch?	X		
Were LCS recoveries within acceptance criteria listed in the UFP-QAPP?	X		

10.0 Surrogate Recoveries

Methods 8260C Surrogate Criteria	**Yes**	**No**	**N/A**
Were surrogate spikes added to all field and QC samples?	X		
Were surrogate recoveries within acceptance criteria listed in the UFP-QAPP?	X		

11.0 Internal Standard (IS) Recoveries

Methods 8260C IS Criteria	**Yes**	**No**	**N/A**
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

12.0 Matrix Spike/Matrix Spike Duplicate Recoveries/RPDs

MS/MSD Criteria	Yes	No	N/A
Were MS/MSD samples analyzed with every preparatory batch?	X		
Were MS/MSD samples collected for this SDG?	X		
Were MS/MSD recoveries/RPDs within acceptance criteria listed in the UFP-QAPP?		X	

Sample MWNA-7-14 was spiked and analyzed for perchlorate and VOCs.

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
MWNA-7-14	VOCs	2-Chloroethyl vinyl ether	**0.8/0.3**	**91.3**	10-155/20

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
MWNA-7-14	Perchlorate	Perchlorate	**J**
MWNA-7-14	VOCs	2-Chloroethyl vinyl ether	**UJ**

13.0 Dilution Test

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Was a dilution test sample analyzed with every preparatory batch?	X		
Were metals concentrations > 50x the LOQ?			X
Did the five-fold dilution agree within ± 10% of the original measurement?			X
If the five-fold dilution did not agree within ± 10% of the original measurement, was a post digestion spike sample analyzed?	X		

The serial dilution was completed on a sample from another SDG.

14.0 Post Digestion Spike (PDS) Recoveries

Method 6010B PDS Criteria	Yes	No	N/A
Was a PDS sample analyzed if the dilution test failed or metals concentrations were > 50 x the LOD?			X
Were the PDS recoveries within 75-125%?			X

The serial dilution was completed on a sample from another SDG.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

15.0 Interference Check Solutions (ICS)

Method 6010B/6020A ICS Criteria	Yes	No	N/A
Were ICS-A and ICSAB samples analyzed at the beginning of the analytical run and every 12 hours?	X		
Was the ICS-A absolute value concentration for all non-spiked metals < LOD (unless they are a verified trace impurity form one of the spiked metals)	X		
Was the ICS-AB recoveries within ± 20%?	X		

16.0 Laboratory Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were laboratory duplicate samples analyzed for this SDG? (if yes, list below)	X		
Were parent sample / laboratory duplicate RPDs ≤ 20% for analytes that had concentrations > 5x the LOQ.	X		
Were the differences between the parent sample / laboratory duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ	X		

Parent Sample ID	Analysis
MWNA-7-14	Chloride, Nitrate, Nitrite, and Sulfate
MWNA-7-14	Hexavalent chromium

17.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)		X	
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for soils for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / field duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

18.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

19.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?		X	
Were common laboratory contaminant concentrations < 2x the LOQ			X
Was professional judgment used to qualify data (if yes, list below)	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711295 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

The laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. Per the DoD Perchlorate Handbook (2007 Aug), *"Methods employing IC/EC (e.g. Methods 314.0 and 314.1) are not appropriate for sampling and testing associated with environmental restoration/cleanup or range assessment projects. Only methods employing MS are to be used for environmental restoration/cleanup or range assessment projects."* All perchlorate data were rejected and listed in the table below.

Field ID	Analysis	Analyte	New LOQ	Qualification
MWNA-7-14	Perchlorate	Perchlorate	--	**R**

20.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?	X		
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?		X	

As indicated in Section 19.0, the laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS. One perchlorate sample was rejected as indicated in Section 19.0. Perchlorate is not a compound of concern at Cannon AFB.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711300 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
MWF-7-14	7/21/2014	7/22/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
TRIP BLANK-7-21-14	7/21/2014	7/22/2014	Aq	8260C

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD-QSM deviations noted in the laboratory case narrative?	X		
Were DoD-QSM corrective actions followed if deviations were noted?	X		
Were any issues noted in the cooler receipt form?		X	

The laboratory case narrative indicated calcium, magnesium, and 2-chloroethyl vinyl ether MS/MSD recoveries were outside evaluation criteria. These issues are discussed further in Section 12.0. Antimony, selenium, and silver post digestion spike recoveries were outside evaluation criteria. This issue is discussed further in Section 14.0.

Although it was not indicated in the laboratory case narrative, the laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. All perchlorate data were rejected. This issue is discussed further in Section 19.0. No other issues were noted in the laboratory case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?	X	
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were sample relinquished properly on the COC?	X	

3.0 Holding Time

Verification Criteria	Yes	No
Were all samples extracted and/or analyzed within the appropriate holding time?	X	
Were all samples preserved appropriately?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711300 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

4.0 Instrument Performance Check (Tuning)

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/23/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/24/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS18**		
Date of Tuning:	**7/29/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

5.0 Initial Calibration

Method 7199 Initial Calibration Criteria			
Instrument:	**IC-13**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711300 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 9056A Initial Calibration Criteria			
Instrument:	**IC-9**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**TOC3**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 7470A Initial Calibration Criteria			
Instrument:	**CVAA3**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?	X		
CVAA – Was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711300 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS18**		
Date of Calibration:	**7/29/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711300 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6.0 Initial Calibration Verification [(ICV) Second Source]

7199 Verification Criteria for ICV: 7/22/2014 09:45, Instrument: IC-13	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

9056A Verification Criteria for ICV: 7/22/2014 08:44, Instrument: IC-9	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

350.1 Verification Criteria for ICV on 7/24/2014 17:23, Instrument: FS3100-1	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

9060A Verification Criteria for ICV on 7/23/2014 12:42, Instrument: TOC3	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

7470A Verification Criteria for ICV on 7/24/2014 09:02, Instrument: CVAA3	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

6010B Verification Criteria for ICV on 7/23/2014 12:08, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

6010B Verification Criteria for ICV on 7/25/2014 11:08, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

6020A Verification Criteria for ICV on 7/23/2014 11:02, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711300 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C ICV Criteria			
Instrument:	**VOCMS23**		
Date of Initial Calibration Verification:	**7/24/2014 08:00**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

Method 8260C ICV Criteria			
Instrument:	**VOCMS18**		
Date of Initial Calibration Verification:	**7/29/2014 09:47**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

7.0 Continuing Calibration Verification (CCV)

7199 Verification Criteria for CCV: 7/22/2014 11:57, Instrument: IC-13	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 15:18, Instrument: IC-9	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 18:18, Instrument: IC-9	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/24/2014 at 16:55, Instrument: FS3100-1	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9060A Verification Criteria for CCV: 7/23/2014 16:40, Instrument: TOC3	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711300 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

7470A Verification Criteria for CCV: 7/24/2014 11:49, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

7470A Verification Criteria for CCV: 7/24/2014 12:41, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

6010B Verification Criteria for CCV: 7/23/2014 18:05, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/23/2014 19:32, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 15:37, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 16:38, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 18:05, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 19:32, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Method 8260C CCV Criteria			
Instrument:	VOCMS23		
Date of Calibration Verification:	7/24/2014 08:00 ICV		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711300 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C CCV Criteria			
Instrument:	**VOCMS23**		
Date of Calibration Verification:	**7/24/2014 08:00 ICV**		
	Yes	**No**	**N/A**
response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)			
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

Method 8260C CCV Criteria			
Instrument:	**VOCMS18**		
Date of Calibration Verification:	**7/29/2014 09:47 ICV**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

8.0 Blank Samples

Blank Criteria	**Yes**	**No**	**N/A**
Was a method blank analyzed with every preparatory batch?	X		
Were analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit?		X	
Were target analytes detected in method, trip or calibration blanks?	X		

Blank ID	**Parameter**	**Analyte**	**Concentration**	**LOQ**	**Units**
CCB 7/30/2014 6:29 PM	6020A	Silver	0.002	1	µg/L

All associated silver results were nondetect. All associated chromium and vanadium results were >5X the CCB contamination; therefore, no qualification of data was required.

9.0 Laboratory Control Sample (LCS)

LCS Criteria	**Yes**	**No**	**N/A**
Was an LCS analyzed with every preparatory batch?	X		
Were LCS recoveries within acceptance criteria listed in the UFP-QAPP?	X		

Cannon AFB PBR Data Verification

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Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
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Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

10.0 Surrogate Recoveries

Methods 8260C Surrogate Criteria	Yes	No	N/A
Were surrogate spikes added to all field and QC samples?	X		
Were surrogate recoveries within acceptance criteria listed in the UFP-QAPP?	X		

11.0 Internal Standard (IS) Recoveries

Methods 8260C IS Criteria	Yes	No	N/A
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

12.0 Matrix Spike/Matrix Spike Duplicate Recoveries/RPDs

MS/MSD Criteria	Yes	No	N/A
Were MS/MSD samples analyzed with every preparatory batch?	X		
Were MS/MSD samples collected for this SDG?	X		
Were MS/MSD recoveries/RPDs within acceptance criteria listed in the UFP-QAPP?		X	

Sample MWF-7-14 was spiked and analyzed for hexavalent chromium, perchlorate, TOC, ammonia, mercury, and ICP-AES/MS metals.

MS/MSD ID	Parameter	Analyte	MS/MSD Recovery	RPD	MS/MSD/RPD Criteria
MWF-7-14	Metals	Calcium	**53/40**	2	75-125/20
MWF-7-14	Metals	Magnesium	**72/35**	7	75-125/20
MWF-7-14	VOCs	2-Chloroethyl vinyl ether	**4.79/1.27**	**116.2**	10-155/20

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
MWF-7-14	Metals	Calcium	**J**
MWF-7-14	Metals	Magnesium	**J**
MWF-7-14	VOCs	2-Chloroethyl vinyl ether	**UJ**

Cannon AFB PBR Data Verification

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Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

13.0 Dilution Test

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Was a dilution test sample analyzed with every preparatory batch?	X		
Were metals concentrations > 50x the LOQ?		X	
Did the five-fold dilution agree within ± 10% of the original measurement?		X	
If the five-fold dilution did not agree within ± 10% of the original measurement, was a post digestion spike sample analyzed?	X		

The serial dilution was performed on sample MWF-7-14. Analytes with RPDs outside evaluation criteria are listed in the table below.

Field ID	Parameter	Analyte	RPD
MWNA-7-14	6010B	Aluminum	**36%**
MWNA-7-14	6020A	Arsenic	**20%**
MWNA-7-14	6020A	Beryllium	**311%**
MWNA-7-14	6020A	Chromium	**20%**
MWNA-7-14	6020A	Cobalt	**116**
MWNA-7-14	6020A	Copper	**62%**
MWNA-7-14	6020A	Lead	**33%**
MWNA-7-14	6020A	Nickel	**146%**
MWNA-7-14	6020A	Silver	**27%**
MWNA-7-14	6020A	Zinc	**203%**

14.0 Post Digestion Spike (PDS) Recoveries

Method 6010B/6020A PDS Criteria	Yes	No	N/A
Was a PDS sample analyzed if the dilution test failed or metals concentrations were > 50 x the LOD?	X		
Were the PDS recoveries within 75-125%?		X	

The serial dilution was performed on sample MWF-7-14. Antimony (117%), selenium (117%), and silver (75%) had recoveries outside evaluation criteria.

15.0 Interference Check Solutions (ICS)

Method 6010B/6020A ICS Criteria	Yes	No	N/A
Were ICS-A and ICSAB samples analyzed at the beginning of the analytical run and every 12 hours?	X		
Was the ICS-A absolute value concentration for all non-spiked metals < LOD (unless they are a verified trace impurity form one of the spiked metals)	X		
Was the ICS-AB recoveries within ± 20%?	X		

Cannon AFB PBR Data Verification

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Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

16.0 Laboratory Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were laboratory duplicate samples analyzed for this SDG? (if yes, list below)	X		
Were parent sample / laboratory duplicate RPDs ≤ 20% for analytes that had concentrations > 5x the LOQ.	X		
Were the differences between the parent sample / laboratory duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ	X		

Parent Sample ID	Analysis
MWF-7-14	Chloride, Nitrate, Nitrite, and Sulfate
MWF-7-14	Mercury

17.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)		X	
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for soils for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / field duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

18.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

19.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?		X	
Were common laboratory contaminant concentrations < 2x the LOQ			X
Was professional judgment used to qualify data (if yes, list below)	X		

The laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. Per the DoD Perchlorate Handbook (2007 Aug), *"Methods employing IC/EC (e.g. Methods 314.0 and 314.1) are not appropriate for sampling and testing associated with environmental restoration/cleanup or range assessment projects. Only methods employing MS are to be used for environmental restoration/cleanup or range assessment projects."* All perchlorate data were rejected and listed in the table below.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711300 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Field ID	Analysis	Analyte	New LOQ	Qualification
MWF-7-14	Perchlorate	Perchlorate	--	**R**

20.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?	X		
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?		X	

As indicated in Section 19.0, the laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS. One perchlorate sample was rejected as indicated in Section 19.0. Perchlorate is not a compound of concern at Cannon AFB.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
MWE-7-14	7/21/2014	7/22/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWF-7-14	7/21/2014	7/22/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
TRIP BLANK	7/21/2014	7/22/2014	Aq	8260C

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD-QSM deviations noted in the laboratory case narrative?		X	
Were DoD-QSM corrective actions followed if deviations were noted?			X
Were any issues noted in the cooler receipt form?		X	

Although it was not indicated in the laboratory case narrative, the laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. All perchlorate data were rejected. This issue is discussed further in Section 19.0. No issues pertaining to the samples in this SDG were noted in the laboratory case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?	X	
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were sample relinquished properly on the COC?	X	

3.0 Holding Time

Verification Criteria	Yes	No
Were all samples extracted and/or analyzed within the appropriate holding time?	X	
Were all samples preserved appropriately?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

4.0 Instrument Performance Check (Tuning)

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/23/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/24/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS18**		
Date of Tuning:	**7/29/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

5.0 Initial Calibration

Method 7199 Initial Calibration Criteria			
Instrument:	**IC-13**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 9056A Initial Calibration Criteria			
Instrument:	**IC-9**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**TOC3**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 7470A Initial Calibration Criteria			
Instrument:	**CVAA3**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?	X		
CVAA – Was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination r^2 ≥ 0.99?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS18**		
Date of Calibration:	**7/29/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination r^2 ≥ 0.99?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

6.0 Initial Calibration Verification [(ICV) Second Source]

7199 Verification Criteria for ICV: 7/22/2014 09:45, Instrument: IC-13	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

9056A Verification Criteria for ICV: 7/22/2014 08:44, Instrument: IC-9	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

350.1 Verification Criteria for ICV on 7/24/2014 17:23, Instrument: FS3100-1	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

9060A Verification Criteria for ICV on 7/23/2014 12:42, Instrument: TOC3	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%	X	

7470A Verification Criteria for ICV on 7/24/2014 09:02, Instrument: CVAA3	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

6010B Verification Criteria for ICV on 7/25/2014 11:08, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

6020A Verification Criteria for ICV on 7/23/2014 11:02, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%	X	

Method 8260C ICV Criteria			
Instrument:	**VOCMS23**		
Date of Initial Calibration Verification:	**7/24/2014 08:00**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

Method 8260C ICV Criteria			
Instrument:	**VOCMS18**		
Date of Initial Calibration Verification:	**7/29/2014 09:47**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

7.0 Continuing Calibration Verification (CCV)

7199 Verification Criteria for CCV: 7/22/2014 11:57, Instrument: IC-13	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 15:18, Instrument: IC-9	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 18:18, Instrument: IC-9	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/24/2014 at 16:55, Instrument: FS3100-1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9060A Verification Criteria for CCV: 7/23/2014 16:40, Instrument: TOC3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

7470A Verification Criteria for CCV: 7/24/2014 11:49, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 800-120%?	X	

7470A Verification Criteria for CCV: 7/24/2014 12:41, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 800-120%?	X	

6010B Verification Criteria for CCV: 7/25/2014 12:16, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 13:17, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6020A Verification Criteria for CCV: 7/23/2014 13:59, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 14:17, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 15:30, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 16:43, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Method 8260C CCV Criteria			
Instrument:	VOCMS23		
Date of Calibration Verification:	7/24/2014 08:00 ICV		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

Method 8260C CCV Criteria			
Instrument:	VOCMS18		
Date of Calibration Verification:	7/29/2014 09:47 ICV		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

8.0 Blank Samples

Blank Criteria	Yes	No	N/A
Was a method blank analyzed with every preparatory batch?	X		
Were analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit?		X	
Were target analytes detected in method, trip or calibration blanks?		X	

9.0 Laboratory Control Sample (LCS)

LCS Criteria	Yes	No	N/A
Was an LCS analyzed with every preparatory batch?	X		
Were LCS recoveries within acceptance criteria listed in the UFP-QAPP?	X		

10.0 Surrogate Recoveries

Methods 8260C Surrogate Criteria	Yes	No	N/A
Were surrogate spikes added to all field and QC samples?	X		
Were surrogate recoveries within acceptance criteria listed in the UFP-QAPP?	X		

11.0 Internal Standard (IS) Recoveries

Methods 8260C IS Criteria	Yes	No	N/A
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

12.0 Matrix Spike/Matrix Spike Duplicate Recoveries/RPDs

MS/MSD Criteria	Yes	No	N/A
Were MS/MSD samples analyzed with every preparatory batch?	X		
Were MS/MSD samples collected for this SDG?	X		
Were MS/MSD recoveries/RPDs within acceptance criteria listed in the UFP-QAPP?	X		

Sample MWF-7-14 was spiked and analyzed for ICP-AES metals.

13.0 Dilution Test

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Was a dilution test sample analyzed with every preparatory batch?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Were metals concentrations > 50x the LOQ?	X		
Did the five-fold dilution agree within ± 10% of the original measurement?	X		
If the five-fold dilution did not agree within ± 10% of the original measurement, was a post digestion spike sample analyzed?			X

The serial dilution was performed on a sample from another SDG.

14.0 Post Digestion Spike (PDS) Recoveries

Method 6010B/6020A PDS Criteria	Yes	No	N/A
Was a PDS sample analyzed if the dilution test failed or metals concentrations were > 50 x the LOD?	X		
Were the PDS recoveries within 75-125%?	X		

The serial dilution was performed on a sample from another SDG.

15.0 Interference Check Solutions (ICS)

Method 6010B/6020A ICS Criteria	Yes	No	N/A
Were ICS-A and ICSAB samples analyzed at the beginning of the analytical run and every 12 hours?	X		
Was the ICS-A absolute value concentration for all non-spiked metals < LOD (unless they are a verified trace impurity form one of the spiked metals)	X		
Was the ICS-AB recoveries within ± 20%?	X		

16.0 Laboratory Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were laboratory duplicate samples analyzed for this SDG? (if yes, list below)		X	
Were parent sample / laboratory duplicate RPDs ≤ 20% for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / laboratory duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

17.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)		X	
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for soils for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / field duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711329 **URS Chemist: Steve Gragert**
Date Verified: 8/26/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

18.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

19.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?		X	
Were common laboratory contaminant concentrations < 2x the LOQ			X
Was professional judgment used to qualify data (if yes, list below)	X		

The laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. Per the DoD Perchlorate Handbook (2007 Aug), *"Methods employing IC/EC (e.g. Methods 314.0 and 314.1) are not appropriate for sampling and testing associated with environmental restoration/cleanup or range assessment projects. Only methods employing MS are to be used for environmental restoration/cleanup or range assessment projects."* All perchlorate data were rejected and listed in the table below.

Field ID	Analysis	Analyte	New LOQ	Qualification
MWE-7-14	Perchlorate	Perchlorate	--	**R**
MWF-7-14	Perchlorate	Perchlorate	--	**R**

20.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?	X		
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?		X	

As indicated in Section 19.0, the laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS. Two perchlorate samples were rejected as indicated in Section 19.0. Perchlorate is not a compound of concern at Cannon AFB.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
Trip Blank 7-20-14	7/20/2014	7/21/2014	Aq	8260C
MWRb-7-14	7/20/2014	7/21/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWW-7-14	7/20/2014	7/21/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD-QSM deviations noted in the laboratory case narrative?	X		
Were DoD-QSM corrective actions followed if deviations were noted?	X		
Were any issues noted in the cooler receipt form?		X	

Although it was not indicated in the laboratory case narrative, the laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. All perchlorate data were rejected. This issue is discussed further in Section 19.0. No issues pertaining to the samples in this SDG were noted in the laboratory case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?	X	
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were sample relinquished properly on the COC?	X	

3.0 Holding Time

Verification Criteria	Yes	No
Were all samples extracted and/or analyzed within the appropriate holding time?	X	
Were all samples preserved appropriately?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

4.0 Instrument Performance Check (Tuning)

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/23/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/24/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS16**		
Date of Tuning:	**7/29/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

5.0 Initial Calibration

Method 7199 Initial Calibration Criteria			
Instrument:	**IC-13**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 9056A Initial Calibration Criteria			
Instrument:	**IC-9**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was $r \geq 0.995$?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was $r \geq 0.995$?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**TOC3**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was $r \geq 0.995$?	X		

Method 7470A Initial Calibration Criteria			
Instrument:	**CVAA3**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?	X		
CVAA – Was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/29/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS16**		
Date of Calibration:	**7/29/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6.0 Initial Calibration Verification [(ICV) Second Source]

7199 Verification Criteria for ICV: 7/25/2014 09:06 , Instrument: IC-13	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9056A Verification Criteria for ICV: 7/22/2014 08:44, Instrument: IC-9	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

350.1 Verification Criteria for ICV on 7/24/2014 17:23, Instrument: FS3100-1	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9060A Verification Criteria for ICV on 7/23/2014 12:42, Instrument: TOC3	Yes	No
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

7470A Verification Criteria for ICV on 7/24/2014 09:02, Instrument: CVAA3	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6010B Verification Criteria for ICV on 7/25/2014 08:55, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6010B Verification Criteria for ICV on 7/29/2014 08:22, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6020A Verification Criteria for ICV on 7/23/2014 11:02, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C ICV Criteria			
Instrument:	**VOCMS23**		
Date of Initial Calibration Verification:	**7/24/2014 19:42**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

Method 8260C ICV Criteria			
Instrument:	**VOCMS16**		
Date of Initial Calibration Verification:	**7/29/2014 09:31**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

7.0 Continuing Calibration Verification (CCV)

7199 Verification Criteria for CCV: 7/25/2014 12:03, Instrument: IC-13	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

7199 Verification Criteria for CCV: 7/25/2014 14:13, Instrument: IC-13	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 15:18, Instrument: IC-9	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 18:18, Instrument: IC-9	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/24/2014 at 18:06, Instrument: FS3100-1	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9060A Verification Criteria for CCV: 7/23/2014 16:40, Instrument: TOC3	**Yes**	**No**
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Was the CCV % recovery between 90-110%?	X	

7470A Verification Criteria for CCV: 7/24/2014 11:49, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

7470A Verification Criteria for CCV: 7/24/2014 12:41, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

6010B Verification Criteria for CCV: 7/25/2014 12:16, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 13:17, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/29/2014 14:41, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/29/2014 15:43, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 21:30, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/23/2014 22:40, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C CCV Criteria			
Instrument:	**VOCMS23**		
Date of Calibration Verification:	**7/24/2014 19:42**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

Method 8260C CCV Criteria			
Instrument:	**VOCMS16**		
Date of Calibration Verification:	**7/29/2014 09:31**		
	Yes	**No**	**N/A**
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

8.0 Blank Samples

Blank Criteria	**Yes**	**No**	**N/A**
Was a method blank analyzed with every preparatory batch?	X		
Were analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit?		X	
Were target analytes detected in method, trip or calibration blanks?		X	

9.0 Laboratory Control Sample (LCS)

LCS Criteria	**Yes**	**No**	**N/A**
Was an LCS analyzed with every preparatory batch?	X		
Were LCS recoveries within acceptance criteria listed in the UFP-QAPP?	X		

10.0 Surrogate Recoveries

Methods 8260C Surrogate Criteria	**Yes**	**No**	**N/A**
Were surrogate spikes added to all field and QC samples?	X		
Were surrogate recoveries within acceptance criteria listed in the UFP-QAPP?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
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Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

11.0 Internal Standard (IS) Recoveries

Methods 8260C IS Criteria	Yes	No	N/A
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

12.0 Matrix Spike/Matrix Spike Duplicate Recoveries/RPDs

MS/MSD Criteria	Yes	No	N/A
Were MS/MSD samples analyzed with every preparatory batch?	X		
Were MS/MSD samples collected for this SDG?		X	
Were MS/MSD recoveries/RPDs within acceptance criteria listed in the UFP-QAPP?			X

13.0 Dilution Test

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Was a dilution test sample analyzed with every preparatory batch?	X		
Were metals concentrations > 50x the LOQ?			X
Did the five-fold dilution agree within ± 10% of the original measurement?			X
If the five-fold dilution did not agree within ± 10% of the original measurement, was a post digestion spike sample analyzed?	X		

The serial dilution was completed on a sample from another SDG.

14.0 Post Digestion Spike (PDS) Recoveries

Method 6010B PDS Criteria	Yes	No	N/A
Was a PDS sample analyzed if the dilution test failed or metals concentrations were > 50 x the LOD?			X
Were the PDS recoveries within 75-125%?			X

The PDS was completed on a sample from another SDG.

15.0 Interference Check Solutions (ICS)

Method 6010B/6020A ICS Criteria	Yes	No	N/A
Were ICS-A and ICSAB samples analyzed at the beginning of the analytical run and every 12 hours?	X		
Was the ICS-A absolute value concentration for all non-spiked metals < LOD	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 6010B/6020A ICS Criteria	Yes	No	N/A
(unless they are a verified trace impurity form one of the spiked metals)			
Was the ICS-AB recoveries within ± 20%?	X		

16.0 Laboratory Duplicate Samples

Laboratory Duplicate Criteria	Yes	No	N/A
Were laboratory duplicate samples analyzed for this SDG? (if yes, list below)		X	
Were parent sample / laboratory duplicate RPDs ≤ 20% for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / laboratory duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

17.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)		X	
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for soils for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / field duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

18.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

19.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?		X	
Were common laboratory contaminant concentrations < 2x the LOQ			X
Was professional judgment used to qualify data (if yes, list below)	X		

The laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. Per the DoD Perchlorate Handbook (2007 Aug), *"Methods employing IC/EC (e.g. Methods 314.0 and 314.1) are not appropriate for sampling and testing associated with environmental restoration/cleanup or range assessment projects. Only methods employing MS are to be used for environmental restoration/cleanup or range assessment projects."* All perchlorate data were rejected and listed in the table below.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711384 **URS Chemist: Steve Gragert**
Date Verified: 8/21/2014 **URS ITR: Jeff Aust 9/3/2014**
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Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Field ID	Analysis	Analyte	New LOQ	Qualification
MWRb-7-14	Perchlorate	Perchlorate	--	**R**
MWW-7-14	Perchlorate	Perchlorate	--	**R**

20.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?	X		
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?		X	

As indicated in Section 19.0, the laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS. Two perchlorate samples were rejected as indicated in Section 19.0. Perchlorate is not a compound of concern at Cannon AFB.

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Sample Identification #	Date Collected	Date Received	Matrix	Analysis
TRIP BLANK 7-20-14	7/20/2014	7/21/2014	Aq	8260C
MWH-7-14	7/20/2014	7/21/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C
MWG-7-14	7/20/2014	7/21/2014	Aq	7199, 9056, 350.1, 9060A, 7470A/6010B/6020A, and 8260C

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any DoD-QSM deviations noted in the laboratory case narrative?		X	
Were DoD-QSM corrective actions followed if deviations were noted?			X
Were any issues noted in the cooler receipt form?		X	

Although it was not indicated in the laboratory case narrative, the laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. All perchlorate data were rejected. This issue is discussed further in Section 19.0. No issues pertaining to the samples in this SDG were noted in the laboratory case narrative or cooler receipt form.

2.0 Sample Documentation

Verification Criteria	Yes	No
Were all samples documented correctly on the chain-of-custody (COC) and samples labels?	X	
Were all sample identifications (IDs) documented correctly on sample labels?	X	
Did samples listed on COCs match the sample labels?	X	
Were sample relinquished properly on the COC?	X	

3.0 Holding Time

Verification Criteria	Yes	No
Were all samples extracted and/or analyzed within the appropriate holding time?	X	
Were all samples preserved appropriately?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
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Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

4.0 Instrument Performance Check (Tuning)

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/25/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 6020A Instrument Tuning Criteria			
Instrument:	**ICPMS4**		
Date of Tuning:	**7/29/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Was the mass calibration ≤ 0.1amu from the true value?	X		
Was the resolution < 0.9 amu full width at 10% peak height?	X		
For stability, was the RSD ≤ 5% for at least 4 replicate analyses?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS16**		
Date of Tuning:	**7/29/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Method 8260C Instrument Tuning Criteria			
Instrument:	**VOCMS23**		
Date of Tuning:	**7/24/2014**		
	Yes	**No**	**N/A**
Was instrument tuning completed prior to calibration?	X		
Were all samples analyzed under an acceptable 12 hour clock tune?	X		
Were ion relative abundance for each target mass within the required intensities limits listed in Table 3 of SW-846 Method 8260C?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

5.0 Initial Calibration

Method 7199 Initial Calibration Criteria			
Instrument:	**IC-13**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9056A Initial Calibration Criteria			
Instrument:	**IC-10**		
Date of Calibration:	**7/22/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 350.1 Initial Calibration Criteria			
Instrument:	**FS3100-1**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 9060A Initial Calibration Criteria			
Instrument:	**TOC3**		
Date of Calibration:	**7/23/2014**		
	Yes	**No**	**N/A**
Was a minimum of two standards and a calibration blank used for ICAL?	X		
Was r ≥ 0.995?	X		

Method 7470A Initial Calibration Criteria			
Instrument:	**CVAA3**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?	X		
CVAA – Was $r^2 \geq 0.99$?	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6010B Initial Calibration Criteria			
Instrument:	**ICP11**		
Date of Calibration:	**7/29/2014**		
	Yes	**No**	**N/A**
ICP-AES– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-AES– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/25/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 6020A Initial Calibration Criteria			
Instrument:	**ICPMS4**		
Date of Calibration:	**7/29/2014**		
	Yes	**No**	**N/A**
ICP-MS– Was a minimum one high standard and a calibration blank used for ICAL?	X		
ICP-MS– If more than one standard was used, was $r^2 \geq 0.99$?	X		

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS23**		
Date of Calibration:	**7/24/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination $r^2 \geq 0.99$?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C Initial Calibration Criteria			
Instrument:	**VOCMS16**		
Date of Calibration:	**7/29/2014**		
	Yes	**No**	**N/A**
Are the average response factors (RFs) for SPCCs above the minimum DoD-QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Are the RSDs for CCCs (1,1-Dichloroethene; Chloroform; 1,2-Dichloropropane; Toluene; Ethylbenzene and Vinyl Chloride) for VOCs ≤ 30%? and one option below?	X		
Option 1: RSD for each analyte ≤ 15%?	X		
Option 2: If linear least squares regression was used was the r ≥ 0.995?	X		
Option 3: If non-linear regression was used was the coefficient of determination r^2 ≥ 0.99?			X
If non-linear regression was used were 6 points used for second order and 7 points for third order?			X

6.0 Initial Calibration Verification [(ICV) Second Source]

7199 Verification Criteria for ICV 7/25/2014 at 09:06, Instrument: IC-13	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9056A Verification Criteria for ICV: 7/22/2014 at 08:56, Instrument: IC-10	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

350.1 Verification Criteria for ICV on 7/24/2014 at 17:23, Instrument: FS3100-1	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

9060A Verification Criteria for ICV on 7/23/2014 at 12:42, Instrument: TOC3	**Yes**	**No**
Was the second source analyzed after each calibration?	X	
Was the second source % recovery between 90-110%?	X	

7470A Verification Criteria for ICV on 7/24/2014 at 09:58, Instrument: CVAA3	**Yes**	**No**
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6010B Verification Criteria for ICV on 7/25/2014 08:55, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6010B Verification Criteria for ICV on 7/29/2014 08:22, Instrument: ICP11	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6020A Verification Criteria for ICV on 7/25/2014 23:14, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

6020A Verification Criteria for ICV on 7/29/2014 21:54, Instrument: ICPMS4	Yes	No
Was the second source analyzed after once after each ICAL, prior to beginning a sample run?	X	
Was the second source % recovery between 90-110%?	X	

Method 8260C ICV Criteria			
Instrument:	**VOCMS23**		
Date of Initial Calibration Verification:	**7/24/2014 0800**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

Method 8260C ICV Criteria			
Instrument:	**VOCMS16**		
Date of Initial Calibration Verification:	**7/29/2014 09:31**		
	Yes	**No**	**N/A**
Was the ICV analyzed after each calibration?	X		
Was the ICV %difference (%D) for all analytes within ± 20% of the expected value (initial source)?	X		

7.0 Continuing Calibration Verification (CCV)

7199 Verification Criteria for CCV: 7/25/2014 at 12:03, Instrument: IC-13	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

7199 Verification Criteria for CCV: 7/25/2014 at 14:13, Instrument: IC-13	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 15:43, Instrument: IC-10	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9056A Verification Criteria for CCV on 7/22/2014 at 23:20, Instrument: IC-10	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

350.1 Verification Criteria for CCV on 7/24/2014 at 18:06, Instrument: FS3100-1	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

9060A Verification Criteria for CCV: 7/23/2014 at 16:40, Instrument: TOC3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

7470A Verification Criteria for CCV: 7/24/2014 11:49, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

7470A Verification Criteria for CCV: 7/24/2014 12:38, Instrument: CVAA3	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 80-120%?	X	

6010B Verification Criteria for CCV: 7/25/2014 12:16, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/25/2014 13:17, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6010B Verification Criteria for CCV: 7/29/2014 14:41, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

6010B Verification Criteria for CCV: 7/29/2014 15:43, Instrument: ICP11	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/28/2014 2130, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/28/2014 22:40, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/31/2014 12:13, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

6020A Verification Criteria for CCV: 7/31/2014 13:47, Instrument: ICPMS4	Yes	No
Was the CCV analyzed every 10 samples and at the end of the sequence?	X	
Was the CCV % recovery between 90-110%?	X	

Method 8260C CCV Criteria			
Instrument:	VOCMS23		
Date of Calibration Verification:	7/24/2014 19:42		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane, ≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)	X		
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

Method 8260C CCV Criteria			
Instrument:	VOCMS16		
Date of Calibration Verification:	7/29/2014 09:31		
	Yes	No	N/A
Was the CCV analyzed daily before sample analysis?	X		
Was the CCV analyzed every 12 hours of analysis time?	X		
Are the average response factors (RFs) for SPCCs above the minimum DoD QSM response factor? (VOCs - ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane,	X		

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Method 8260C CCV Criteria			
Instrument:	**VOCMS16**		
Date of Calibration Verification:	**7/29/2014 09:31**		
	Yes	**No**	**N/A**
≥ 0.1 for chloromethane, bromoform, and 1,1-dichloroethane.)			
Was the CCV %difference (%D) or %drift for all target compounds ≤ 20%?	X		

8.0 Blank Samples

Blank Criteria	**Yes**	**No**	**N/A**
Was a method blank analyzed with every preparatory batch?	X		
Were analytes detected > ½ the LOQ and > 1/10 the amount measured in any sample or 1/10 the regulatory limit?		X	
Were target analytes detected in method, trip or calibration blanks?		X	

9.0 Laboratory Control Sample (LCS)

LCS Criteria	**Yes**	**No**	**N/A**
Was an LCS analyzed with every preparatory batch?	X		
Were LCS recoveries within acceptance criteria listed in the UFP-QAPP?	X		

10.0 Surrogate Recoveries

Methods 8260C Surrogate Criteria	**Yes**	**No**	**N/A**
Were surrogate spikes added to all field and QC samples?	X		
Were surrogate recoveries within acceptance criteria listed in the UFP-QAPP?	X		

11.0 Internal Standard (IS) Recoveries

Methods 8260C IS Criteria	**Yes**	**No**	**N/A**
Were internal standards spiked for all samples and standards?	X		
Were internal standard areas within -50% to + 100% of the ICAL midpoint standard area?	X		
Were retention time ± 30 seconds from the retention time of the midpoint standard of the ICAL?	X		

12.0 Matrix Spike/Matrix Spike Duplicate Recoveries/RPDs

MS/MSD Criteria	**Yes**	**No**	**N/A**
Were MS/MSD samples analyzed with every preparatory batch?	X		
Were MS/MSD samples collected for this SDG?		X	
Were MS/MSD recoveries/RPDs within acceptance criteria listed in the UFP-QAPP?			X

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

13.0 Dilution Test

Method 6010B/6020A Dilution Test Criteria	Yes	No	N/A
Was a dilution test sample analyzed with every preparatory batch?	X		
Were metals concentrations > 50x the LOQ?			X
Did the five-fold dilution agree within ± 10% of the original measurement?			X
If the five-fold dilution did not agree within ± 10% of the original measurement, was a post digestion spike sample analyzed?	X		

The serial dilution was completed on a sample from another SDG.

14.0 Post Digestion Spike (PDS) Recoveries

Method 6010B PDS Criteria	Yes	No	N/A
Was a PDS sample analyzed if the dilution test failed or metals concentrations were > 50 x the LOD?			X
Were the PDS recoveries within 75-125%?			X

The serial dilution was completed on a sample from another SDG.

15.0 Interference Check Solutions (ICS)

Method 6010B/6020A ICS Criteria	Yes	No	N/A
Were ICS-A and ICSAB samples analyzed at the beginning of the analytical run and every 12 hours?	X		
Was the ICS-A absolute value concentration for all non-spiked metals < LOD (unless they are a verified trace impurity form one of the spiked metals)	X		
Were the ICS-AB recoveries within ± 20%?	X		

16.0 Laboratory Duplicate Samples

Laboratory Duplicate Criteria	Yes	No	N/A
Were laboratory duplicate samples analyzed for this SDG? (if yes, list below)		X	
Were parent sample / laboratory duplicate RPDs ≤ 20% for analytes that had concentrations > 5x the LOQ.			X
Were the differences between the parent sample / laboratory duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

17.0 Field Duplicate Samples

Field Duplicate Criteria	Yes	No	N/A
Were field duplicate samples collected for this SDG? (if yes, list below)		X	
Were parent sample / field duplicate RPDs ≤ 30% for water samples and ≤ 50% for			X

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

Field Duplicate Criteria	Yes	No	N/A
soils for analytes that had concentrations > 5x the LOQ.			
Were the differences between the parent sample / field duplicate > 2x the LOQ for analytes that had concentrations < 5x the LOQ			X

18.0 Sensitivity

Sensitivity Criteria	Yes	No	N/A
Was the laboratory sensitivity consistent with project (QAPP) requirements?	X		
Did all analytes meet sensitivity requirements?	X		

19.0 Additional Qualifications

Additional Qualification Criteria	Yes	No	N/A
Were common laboratory contaminants detected?	X		
Were common laboratory contaminant concentrations < 2x the LOQ	X		
Was professional judgment used to qualify data (if yes, list below)	X		

Professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations less than two times (2X) the LOQ. See table below for qualification of data.

The laboratory analyzed perchlorate via USEPA Method 314.0 rather than SW-846 6850 as requested by URS in the contract, bottle order, and CoC. Per the DoD Perchlorate Handbook (2007 Aug), *"Methods employing IC/EC (e.g. Methods 314.0 and 314.1) are not appropriate for sampling and testing associated with environmental restoration/cleanup or range assessment projects. Only methods employing MS are to be used for environmental restoration/cleanup or range assessment projects."* All perchlorate data were rejected and listed in the table below.

Field ID	Analysis	Analyte	New LOQ	Qualification
MWG-7-14	VOCs	Acetone	--	**U**
MWH-7-14	Perchlorate	Perchlorate	--	**R**
MWG-7-14	Perchlorate	Perchlorate	--	**R**

Cannon AFB PBR Data Verification

Laboratory and SDG#: ESC L711387 **URS Chemist: Steve Gragert**
Date Verified: 8/25/2014 **URS ITR: Jeff Aust 9/3/2014**
Guidance: DoD-QSM, Version 4.2
Applicable QAPP: Cannon PBR UFP-QAPP (URS, 2014)
Applicable Analytical Methods: 7199, 9056, 350.1, 9060A, 7470A, 6010B, 6020A, and 8260C

20.0 Completeness

Completeness Criteria	Yes	No	N/A
Were any data rejected during the verification process?	X		
Were any samples lost, broken, or in any other manner in not verified?		X	
Were samples analyses requested performed, the correct analyte lists used and correct sample preparation and analyses methods and units utilized?		X	

As indicated in Section 19.0, the laboratory analyzed perchlorate via USEPA method 314.0 rather than SW-846 6850 as requested by URS. Two perchlorate samples were rejected as indicated in Section 19.0. Perchlorate is not a compound of concern at Cannon AFB.

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List of Acronyms

µg/L	micrograms per liter
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
amsl	above mean sea level
BTOC	below top of casing
CoC	chain of custody
DQCR	Daily Quality Control Report
FPM	FPM Remediations, Inc.
IDW	Investigation-Derived Waste
J	estimated
LOQ	limit of quantification
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MS/MSD	matrix spike/matrix spike duplicate
NMED	New Mexico Environmental Department
NMGWQS	New Mexico Groundwater Quality Standards
No.	number
ORP	oxidation-reduction potential
PBR	Performance Based Remediation
TOC	top of casing
U	nondetect
URS	URS Group, Inc.
USEPA	United States Environmental Protection Agency
WPA	Work Plan Addendum

This document is a Biennial Groundwater Monitoring Well and Annual Landfill Inspection Report for six sites at Cannon Air Force Base (AFB), New Mexico.

1.1 LOCATION

Cannon AFB is in Curry County, New Mexico, approximately 7 miles west of the City of Clovis. Cannon AFB occupies 4,320 acres, consisting primarily of the airfield and associated operations, maintenance, and support facilities that are located northwest of the airfield. Housing facilities are located in the northwestern portion of the Base, west of New Mexico Highway 311 and north of U.S. Highway 60. Additional Cannon AFB support facilities, such as the munitions storage area and current fire department training area, are located south and east of the airfield (**Figure 1-1**).

1.2 AUTHORITY

FPM Remediations, Inc. (FPM) has been awarded a Performance Based Remediation (PBR) contract by the Air Force Civil Engineer Center (AFCEC) under Contract Number (No.) FA8903-13-C-0008 to complete remediation activities at Cannon AFB. URS Group, Inc. (URS), as a subcontractor to FPM, has completed this Biennial Groundwater Monitoring Well and Annual Landfill Inspection Report under the Environmental Restoration Program at Cannon AFB. The sites identified in this report are subject to corrective action requirements under the Cannon AFB Hazardous Waste Facility Permit No. NM7572124454.

1.3 PURPOSE AND SCOPE

This report has been prepared to document field activities completed during June and July 2014 in accordance with the Work Plan Addendum (WPA) at Cannon AFB, New Mexico (FPM/URS 2014a). The WPA includes groundwater monitoring at 18 monitoring wells (MW-A, MW-B, MW-C, MW-D, MW-E, MW-F, MW-G, MW-H, MW-Na, MW-Oa, MW-Pa, MW-Rb, MW-S, MW-T, MW-U, MW-V, MW-W, and MW-X) and inspections at six landfills (LF002, LF003, LF004, LF005, LF025, and SI101), all of which are located on Cannon AFB.

1.4 REPORT ORGANIZATION

This report is organized as follows:

Section 1 describes the authority, purpose and scope, and report organization.

Section 2 summarizes landfill inspection and maintenance activities completed at LF002, LF003, LF004, LF005, LF025, and SI101.

Section 3 summarizes monitoring well maintenance and surveying activities.

Section 4 presents groundwater monitoring procedures, hydrogeology, and groundwater sampling analytical results.

Section 5 describes the laboratory chemical data quality review and analytical result qualification conclusions.

Section 6 presents the conclusions and recommendations of this report.

Section 7 lists the references used to develop this report.

This section presents details regarding the inspections and maintenance activities completed at the landfill sites.

2.1 LANDFILL INSPECTIONS

Landfill inspections were completed at six landfills (LF002, LF003, LF004, LF005, LF025, and SI101) at Cannon AFB. The 2013 inspections were completed between December 17, 2013 and December 18, 2013. The 2014 inspections were completed between June 16, 2014 and June 18, 2014. Observations regarding the condition of the landfills were consistent between the 2013 and 2014 inspection events. Daily activities are documented in Daily Quality Control Reports (DQCRs) included in **Appendix A**. Landfill Inspection Sheets presenting the observations during the 2013 and 2014 inspection event are provided in **Appendix B**. **Figure 2-1** provides the location of each landfill, along with monitoring well locations.

A summary of major issues for each landfill is provided below:

- LF003: A 10-foot by 5-foot by approximately 3-foot deep sinkhole was observed within the landfill; likely due to subsidence.
- LF004: Washouts observed on the south side of the landfill were subsequently repaired by Cannon AFB.
- LF005: Multiple areas of fence are in need of repair. Additionally, various debris items were observed within the approximately 30-acre portion of LF005 that is fenced with barbed wire. Debris observed included concrete, telephone pole, scrap metal, and other materials. Several small trees were observed within this fenced portion. The east gate to Cell No. 3 of LF005 did not close properly and a chain and lock were missing from this access gate. An undetermined number of tumble weeds were observed within the larger fenced portion of LF005.
- LF025: The barbed wire perimeter fence surrounding LF0025 was observed to be in need of repairs at some locations. Additionally, a sign at the entrance that identified the site was missing at the time of the inspections. Numerous small to large trees, both dead and living, are present across the site with many located just inside the perimeter fence.
- SI101: Portions of the barbed wire perimeter fence were observed to be in need of repair. Several small trees and shrubs were identified along the west side of the site. Tumble weeds were observed within the landfill.

2.2 LANDFILL MAINTENANCE

Landfill maintenance activities were completed during site visits to Cannon AFB in June, July, and October 2014. Maintenance activities were completed at LF005, LF025, and SI101, and included:

- Fallen trees and tree limbs were removed from along the fence line at LF005 and LF025 on June 18, 2014.

- Barbed wire fence repairs were completed at LF025 and SI101 on June 19, 2014.
- Four trees were cut down within the LF005 boundary on July 19, 2014.
- New padlocks were placed at the south and northeast entry gate to LF005 and the entry gate at SI101 on July 19, 2014.
- An estimate of the amount of fencing at LF005 in need of repair as well as dimensions for a sign for the entrance to LF005 were measured for replacement purposes on July 19, 2014.
- All remaining trees and bushes were removed from within the boundaries at SI101 and LF005 on October 28 and 29, 2014.
- The east access gate of Cell No. 3, within LF005 was straightened, and a padlock and chain was added to the gate. Additionally, a chain and padlock was added to the north access gate of Cell 3 on October 31, 2014.

The sinkhole previously identified at LF003 was filled in with soil prior to the October 2014 field activities. The sinkhole was reportedly filled by Cannon AFB personnel. The debris observed at LF005 is known to Cannon AFB but is not within the scope of this task order. A request for bids to complete tree removal at LF025 was issued and bids were received. The bids were provided to Cannon AFB and AFCEC to decide a path forward.

This section presents monitoring well maintenance and surveying activities.

3.1 MONITORING WELL MAINTENANCE ACTIVITIES

Initial monitoring well maintenance activities were completed on June 18 and 19, 2014, and again on October 31, 2014. As part of the well maintenance activities, field personnel:

- Removed all existing dedicated tubing from each monitoring well and dedicated pumps from two wells, MW-Oa and MW-Pa. These pumps were shipped to the manufacturer for refurbishing and reinstalled on October 31, 2014. The dedicated pump and tubing could not be removed from MW-Na.
- Repainted all steel protective well casing and bollards Cannon Brown/Interface Tan.
- Installed new concrete pads at MW-A and MW-B.
- Sealed cracks in concrete pads with concrete crack seal at wells MW-C, MW-D, and MW-F.

Well maintenance activities were also completed on July 18 and 19, 2014. Field personnel:

- Located the correct key to access MW-Rb, and completed an inspection of the well.
- Cut the well riser at four wells such that the riser pipe would fit inside the protective steel casing of each well. Approximately four, nine, one, and six inches of well riser were removed at MW-E, MW-F, MW-G, and MW-H, respectively.
- Installed new locking lids on the steel protective casings at MW-E, MW-F, MW-G, and MW-H, which will allow the wells to be secured with a lock.
- Placed new keyed alike padlocks at all 18 monitoring wells and the access gates to LF005 and SI101. All 18 monitoring wells and the access gates to LF005 and SI101 can be accessed with the same key.
- Installed 4-inch j-plug type well caps at MW-A, MW-E, MW-F, MW-G, MW-H, MW-Oa, and MW-Pa. Currently all 18 wells are sealed with a j-plug.

The maintenance work performed is documented on the DQCRs in **Appendix A**. A summary of monitoring well construction details and comments regarding observed conditions is presented in Table 2 of the Annual Land Use Control Inspections Report (FPM/URS 2014b).

3.2 MONITORING WELL SURVEY

Lydick Engineering of Clovis, New Mexico (licensed surveyor in New Mexico) surveyed the locations and elevations of both the concrete pad and top of casing (TOC) for all 18 monitoring wells. Surveying was completed on September 11, 2014. The survey results are summarized in **Table 3-1**. Horizontal coordinates are reported in New Mexico East State Plan Coordinates, which are referenced to the North American Datum of 1983 to an accuracy of 0.1 feet. Elevations are referenced to the North American Vertical Datum 1988. The surveyor's data submission is included in **Appendix D**.

No major variances were noted between the September 2014 survey data survey and the data reported in the 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013), with four exceptions; the TOC elevations for MW-E, MW-F, MW-G, and MW-H, which were altered during the monitoring well maintenance activities completed in July.

The location of MW-B, which has been historically placed directly adjacent to MW-T, was inaccurate. The September 2014 survey data indicated the location of MW-B is between MW-T and MW-U. Based on observation by field personnel, this is the correct location for MW-B. Figures in this report and future reports will show the location of all monitoring wells based on September 2014 survey data.

The total depth of each monitoring well was measured during the collection of the groundwater samples. The purpose of the measurement was to collect data to be utilized in conjunction with the 2014 monitoring well survey data to form a baseline of information that would be utilized for all future groundwater monitoring reports at Cannon AFB. The total depth of the well was calculated using the survey data and information from historical boring logs. This revised information is included in Table 4-1 of this report.

This section presents the groundwater monitoring activities including water level measurements, potentiometric surface mapping, monitoring well sampling, and analytical results.

4.1 WATER LEVEL MEASUREMENTS

Water levels were measured by URS during two separate events. The first event was completed on June 17 and 18, 2014 and the second event was completed on July 14 through the 21, 2014, when the wells were sampled. Water level measurements were not collected by URS during the 2013 landfill inspections. However, water level measurements were collected by the USGS in July 2013 and are included in **Table 4-1**. Well locations are shown on **Figure 2-1.**

Monitoring wells MW-B and MW-D were not sampled in 2012 due to excessive silt accumulation in the bottom of the wells. It was recommended that those wells be redeveloped and a determination made regarding their integrity and viability as groundwater quality sampling points. This work was to be performed in advance of the October 2014 sampling event. No evidence of siltation was observed by URS at the time the field work was completed. Water levels and groundwater samples were collected without issues during the 2014 sampling event. Water levels measured during the completion of field work are provided in **Table 4-1**.

Water levels were measured at 16 of 18 monitoring wells during the June event. The water level at MW-Na could not be measured because the dedicated pump installed in the well could not be removed and due to an undetermined obstruction at 238 feet below top of casing (BTOC). A water level at MW-Rb was not measured because the key to access the well could not be located.

Water levels were measured at all 18 wells during the July event. At MW-Na, a tubing extension provided by Cannon AFB allowed the dedicated pump in the well to be lowered into the water column such that a water level measurement could be taken. The key for MW-Rb, provided by Cannon AFB, allowed access to the well for a water level measurement. Water level measurements for both events, along with historic TOC elevations for the monitoring wells are provided in **Table 4-1**. Water level measurement activities are documented on the DQCRs in **Appendix A**.

Water levels measured in June ranged from 286.60 to 349.31 feet BTOC, while June groundwater elevations ranged from 3,931.90 feet above mean seal level (amsl) at MW-T to 3,982.60 feet amsl at MW-X. Water levels measured in July ranged from 287.04 to 349.79 feet BTOC, with groundwater elevations ranging from 3,930.12 amsl to 3,982.19 amsl. Water levels dropped between the two events, with a geometric mean decline of 0.83 feet. Historical reports for this area report that local groundwater levels have dropped an average of two to three feet per year due to groundwater extraction for agricultural (primarily irrigation), municipal, and domestic use.

The potentiometric surface for June is presented in **Figure 4-1**. Groundwater elevations for **Figure 4-1** were calculated using the June water level data and monitoring well TOC elevations from the 2012 Biennial Groundwater report (Bhate 2013). Future groundwater elevations will be

calculated using the September 2014 survey data. The September 2014 survey data are also provided in **Table 4-1**.

As shown on **Figure 4-1**, the direction of groundwater flow is to the east in the western part of the Base, near MW-V. In the vicinity of MW-E, groundwater flow changes direction, resulting in a southeast trend towards MW-S. Interpreted groundwater elevations near MW-Oa, MW-Na, and MW-Pa depict a distinct change in groundwater flow to due south.

Figure 1-1 shows the distinct circular patterns associated with center pivot irrigation systems that are abundant around Cannon AFB, with the greatest density of center pivot systems southeast of the Base. This concentration of center pivot systems likely explains the sharp southern turn of groundwater flow direction in the vicinity of MW-Oa.

4.2 GROUNDWATER SAMPLING

In accordance with the WPA (FPM/URS 2014a), groundwater samples were collected at 18 monitoring wells from July 14 to 21, 2014. All 18 groundwater samples were collected from the middle of the screened interval of each well. Additionally, one duplicate sample and one matrix spike/matrix spike duplicate (MS/MSD) sample were collected at MW-Oa and MW-F, respectively. The monitoring well locations are shown on **Figure 2-1**. The DQCRs describing the work completed during the sampling event are provided in **Appendix A.**

4.2.1 Groundwater Sampling Procedures

Well purging and sampling were completed using low flow sampling procedures. Purging and sampling were completed using a Geotech bladder pump at a discharge rate of less than 500 milliliters per minute. Compressed nitrogen supplied in K cylinders was used to operate the bladder pumps. Purging and sampling of well MW-Na were completed using the dedicated bladder pump and tubing that were present in the well.

During purging, groundwater quality parameters were monitored to determine the presence of formation water in the well casing. Monitored groundwater quality parameters included pH, specific conductance, dissolved oxygen, oxidation-reduction potential (ORP), and temperature, and were measured using a YSI-556 multi-parameter probe and flow-through cell. Turbidity was measured using a LaMotte 2020e portable turbidity meter. Purging continued until three stabilized water quality parameters readings were recorded. Once purging was completed, the discharge line was disconnected from the flow through cell and samples were collected from the discharge line.

After purging and sampling activities were complete, the pump and tubing were removed from the well and the tubing was reinstalled for future use. The pump was decontaminated before moving to the next well.

A summary of sample identifications, sampling dates, and laboratory analytical parameters are presented in **Table 4-2.** Groundwater Sample Collection Field Sheets, which document field

water quality parameter measurements, sampling dates and time, sample identification, associated Quality Control/Quality Assurance sampling, sample container types and preservatives, and sampling equipment, are presented in **Appendix C**.

4.2.2 Field Documentation

Observations and data acquired in the field were documented to provide information on the acquisition of the samples and provide a permanent record of field activities. The observations and data were recorded with waterproof ink in a permanently bound, weatherproof field logbook with consecutively numbered pages.

Field water quality measurements, including temperature, pH, specific conductance, dissolved oxygen, ORP, and turbidity were recorded on Sample Collection Field Sheets which are included in **Appendix C**.

Samples were tracked from the time they were collected until the samples reached the analytical laboratory. Information on the dates of sampling, sample types, required analysis, handling, custody transfer and shipping of samples to the laboratory was recorded on the chain of custody (CoC) form.

4.2.3 Sample Handling

Samples were collected in laboratory-supplied containers with required preservatives. An identification label was attached to each sample container and completed using waterproof, permanent ink with the following information: sampler's initials, sample identification number, date and time of sample collection, preservative type, and analysis required. During daily sampling activities and for shipment, sample containers were placed into laboratory-cleaned coolers and packed on ice.

A copy of the CoC for the samples was included in each cooler for laboratory use upon receipt. Sample coolers were sealed with tape and custody seals to ensure security during shipping. A copy of the CoC form was maintained to document sample handling between the field and laboratory. Sample coolers were generally shipped daily via overnight courier service to the contracted laboratory.

4.2.4 Decontamination

A temporary decontamination area was set up at each sampling location. Sampling equipment was decontaminated between use in a five-gallon bucket containing Liquinox soap and potable water by scrubbing with a bristle brush. Equipment was then rinsed with potable water in an additional bucket followed by a deionized water rinse. Rinse and detergent water were replaced with new solutions between sampling locations. Investigation-Derived Waste (IDW) handling procedures are described below.

4.2.5 Investigation-Derived Waste

IDW included monitoring well purge water and decontamination water. All IDW collected during groundwater sampling was temporarily stored in five-gallon buckets then transferred to bulk liquid storage tanks located adjacent to each monitoring well. If a bulk liquid storage tank was not present at the monitoring well, the IDW was transferred to the closest available storage tank.

Some investigative groundwater samples associated with the IDW exceeded the screening criteria (United States Environmental Protection Agency [USEPA] Maximum Contaminant Levels [MCL], New Mexico Groundwater Quality Standards [NMGWQS] or New Mexico Tap Water) as presented in **Table 4-3**. As a result, all IDW associated with the exceedances will be consolidated into drums. These drums will be sampled and the samples analyzed for the compounds that exceeded their respective screening criteria. The results will be compared to the Toxicity Characteristic Leaching Procedure Regulatory Limits (40 CFR 261.24). New Mexico Environmental Department (NMED) will be contacted with the IDW characterization results to determine disposal options.

4.3 ANALYTICAL RESULTS

The groundwater sampling analytical results were compared to current USEPA MCLs, and NMGWQS (20 New Mexico Administrative Code 6.2). If no screening criteria are listed for an analyte in the USEPA MCLs or the NMGWQS, the results were compared to the criteria specified in the NMED Risk Assessment Guidance (NMED 2012). Reported detections and comparisons to MCLs, NMGWQSs, or the NMED Risk Assessment Guidance, are provided in **Table 4-3**.

Groundwater analytical results from three previous groundwater sampling events in 2008 (Tetra Tech 2008), 2010 (Trinity 2010), and 2012 (Bhate 2013) are provided in **Table 4-4**, **Table 4-5**, and **Table 4-6**, respectively. The current screening criteria (USEPA MCLs, NMGWQS, and NMED Tap Water) are also listed on these historical results tables for comparison.

Volatile Organic Compounds, Target Analyte List metals, perchlorate, chloride, sulfate, nitrite, and ammonia were not detected above screening criteria. Nitrite was reported as nondetect for all samples. Reported concentrations for hexavalent chromium and nitrate were detected above at least one screening criteria. Reported total organic carbon concentrations ranged from 0.2 micrograms per liter (µg/L) to 1.4 µg/L.

Hexavalent chromium was detected in 16 of 17 groundwater samples with reported concentrations ranging from 0.20 µg/L to 1.20 µg/L. The sample from well MW-V was rejected due to exceedance of the holding time. No MCL or NMGWQS has been established for hexavalent chromium. Hexavalent chromium exceeded its New Mexico Tap Water screening level of 0.431 µg/L in 14 of 17 wells (**Table 4-3**). The distribution of reported concentrations does not indicate any distinct trends or patterns indicating a point source or a release. Additionally, two of the exceedances were in background wells (MW-X and MW-W) indicating

the hexavalent chromium is naturally occurring. Publications from the State of California have identified hexavalent chromium as naturally occurring in groundwater in California, Nevada, New Mexico, and Arizona.

Hexavalent chromium concentrations in 2010 ranged from 4.1 µg/L to 19.0 µg/L in MW-F, MW-G, and MW-H and exceeded the hexavalent chromium New Mexico Tap Water screening level of 0.431 µg/L. Analytical results from 2008 and 2012 resulted in no groundwater samples exceeding the New Mexico Tap Water screening level for hexavalent chromium. A review of the analytical results from previous reports (**Table 4-4**, **Table 4-5**, and **Table 4-6**) indicated analytical reporting limits for hexavalent chromium were 20 µg/L in 2008 and 2010, and 4 µg/L in 2012. The limit of quantification (LOQ), for the June 2014 sampling round was 0.5 µg/L. The reduced LOQ would account for the detection of hexavalent chromium in 2014 that was not identified by previous sampling events.

The 2012 report (Bhate 2013) recommended future hexavalent chromium samples should be analyzed via EPA method 218.6. However, this method is not a Department of Defense approved method. Discussions with the laboratory determined that USEPA Method 7199 is equivalent to EPA Method 218.6 when preservatives are added to the samples. Therefore, the laboratory agreed to a modification of the method to allow preservatives to be added to 7199 to extend the hold time equivalent to EPA Method 218.6. Preservatives were intended to be added to the laboratory samples during the collection of the field work. No preservatives were included in the first nine samples collected during the field work (MW-B, MW-C, MW-D, MW-Na, MW-S, MW-T, MW-U, MW-V, and MW-X) due to an oversight by field sampling personnel. The preservative was included in the remaining nine samples collected by the field crew. The hexavalent chromium results for eight of the nine affected samples were analyzed within two times the holding time criteria and therefore were qualified estimated (J). Sample MW-V was the only hexavalent chromium result that was rejected due to analysis at more than two times the holding time.

The 2014 groundwater sampling data indicates the range of hexavalent chromium concentrations present in the preserved samples (0.21 µg/L to 1.1 µg/L) is comparable to the unpreserved samples (0.2 µg/L to 1.2 µg/L). This includes exceedances in background wells MW-W (0.75 µg/L) and MW-X (0.66 µg/L). Based on a review of the data, the exceedance of the holding time does not appear to have impacted the data. As discussed previously in this section of the report, there is no indication of a point source or a release of hexavalent chromium and two of the exceedances were in background wells (MW-X and MW-W) indicating the hexavalent chromium is naturally occurring. Based on the detections of hexavalent chromium at the site, the exceedance of the holding time does not alter the conclusions regarding hexavalent chromium in this report.

Nitrate was detected above at least one screening criterion in MW-Oa, which is located south of the former sewage lagoon overflow pond (SWMU 103). Nitrate has been reported in this well in previous rounds of sampling. An upward trend in nitrate concentrations at MW-Oa is apparent when reviewing historical and current data.

Perchlorate was detected in 13 of 18 wells, with reported concentrations ranging from nondetect to 2.0 µg/L. All reported concentrations for perchlorate were an order of magnitude below the NMED Tap Water screening criteria of 25.6 µg/L (see **Table 4-3**). The laboratory analyzed for perchlorate using USEPA Method 314.0 rather than SW-846 Method 6860 as requested. Method 6860 will be used for future sampling events.

As shown in **Tables 4-4 through 4-6**, some exceedances of current screening levels are apparent when screened against historical groundwater analytical results. However, nitrates in MW-Oa are the only consistent detections above screening criteria. Sporadic reported detections of lead, arsenic, and vanadium in previous sampling events may be related to turbidity issues or laboratory errors.

5.1 DATA REVIEW PROCESS

Analytical data were reviewed and verified by URS in accordance with the Work Plan Addendum for Landfill and Institutional Control inspections Report (FPM/URS 2014a). The data review process included evaluations of the following elements and verification of raw data by a URS chemist:

- Laboratory case narrative/cooler receipt form
- Sample documentation
- Sample preservation and holding time compliance
- Instrument performance check (tuning)
- Initial calibration
- Initial calibration verification second source
- Continuing calibration verification
- Blank samples
- Laboratory control samples
- Surrogate compounds
- Internal standards
- MS/MSD
- Dilution tests
- Post digestion spikes
- Interference check solutions
- Laboratory duplicates
- Field duplicates
- Sensitivity
- Additional qualifications (professional judgment)

5.2 COMPLETENESS AND ANALYTICAL RESULTS VERIFICATION

The laboratory data reports and URS data verification reports are provided in **Appendix E**. **Table 5-1** presents all qualifications in tabular format. Qualifications applied to the analytical results based on the data review findings are summarized as follows.

- For results less than two times the limit of quantitation, professional judgment was used to qualify the common laboratory contaminants acetone in one sample and methylene chloride in three samples as nondetect (**U**).

- The total organic carbon results for the parent sample / field duplicate pair MWOA-7-14 / MWOA-7-14-A were qualified as estimated (**J**) due to field duplicate relative percent difference above evaluation criteria.
- The hexavalent chromium result for sample MWV-7-14 was rejected due to analysis 72 hours outside the 24 hour holding time criteria.
- The hexavalent chromium results for four samples were qualified as **J** due to analysis less than 24 hours outside the 24 hour holding time criteria.
- The 2-chloroethyl vinyl ether results for three samples, the hexavalent chromium result for one sample, the calcium result for one sample, and the magnesium result for one sample were qualified as **J** due to MS/MSD recoveries below evaluation criteria.

5.3 CONCLUSIONS OF DATA QUALITY REVIEW

The analytical data were found to be acceptable for their intended use based on the data reviews. Completeness, defined to be the percentage of analytical results judged to be valid, including estimated (**J/U**) data, was 98.9 percent for the July 2014 groundwater samples from Cannon AFB.

6.1 CONCLUSIONS

The nitrate/nitrite concentrations have historically exceeded the MCL of 10 milligrams per liter (mg/L) at MW-Oa, according to the 2010 (Trinity 2010) and the 2012 (Bhate 2013) Biennial Groundwater Monitoring and Annual Landfill Inspection Report. Nitrate/nitrite analytical results from MW-Oa in July 2014 indicated an increase in concentration from 11.8 mg/L in 2012 to 15.0 mg/L in 2014. Groundwater depicts an interpreted groundwater flow direction to the south in the vicinity of MW-Oa. This is likely due to groundwater being pulled south from beneath the Playa Lake by irrigation and residual nitrate contamination related to sanitary waste treatment practices associated with the Playa Lake.

Hexavalent chromium concentrations from July 2014 were above the NMED Risk Assessment Guidance screening criteria of 0.431 µg/L in 14 monitoring wells. Historically, the detection of hexavalent chromium above screening criteria was limited to MW-F, MW-G, and MW-H. The increase in detections could be the result of using USEPA hexavalent chromium method 7196A and a high historical reporting limit of 20.0 µg/L in 2008 (Tetra Tech 2008) and in 2010 (Trinity 2010). The 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013) also utilized USEPA hexavalent chromium method 7196A and a reporting limit of 4.0 µg/L for analysis. Hexavalent chromium has been shown to be naturally occurring in some areas and these low levels, including in background wells, indicate that hexavalent chromium in groundwater is not related to activities at Cannon AFB.

Low levels of perchlorate below screening criteria and in background wells indicates the low levels of perchlorate reported in groundwater samples is naturally occurring and is not related to site activities. Also, previous reports used higher reporting limits which likely explains why it was not detected in previous sampling events.

Groundwater sampling analytical results from July 2014 indicated that there are no new contaminant releases to groundwater. Furthermore, proposed new or current Base activities do not pose a threat to groundwater.

6.2 RECOMMENDATIONS

Water levels will be collected in conjunction with the annual landfill and institutional controls inspection to meet NMED requirements. Biennial groundwater sampling will continue in accordance with the WPA (FPM/URS 2014a).

Monitoring well identification tags will be installed for all 18 wells and a sign identifying LF025 with be installed during the 2015 annual inspections. Corrected issues will be documented in future Biennial Groundwater Monitoring Well and Annual Landfill Inspection Reports.

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Department of Defense (DoD). 2007. The Department of Defense Environmental Data Quality Workgroup. Perchlorate Handbook, Rev 1. August.

FPM Remediations, Inc./URS Group, Inc. (FPM/URS). 2014a. Work Plan Addendum for Landfill and Institutional Control Inspection Sites. Cannon Air Force Base, New Mexico. June.

FPM/URS. 2014b. Annual Land Use Control Inspections Report. Cannon Air Force Base, New Mexico. June.

New Mexico Environmental Department (NMED). 2012. Risk Assessment Guidance for Site Investigations and Remediation, Volume 2. New Mexico Environmental Department, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program. June.

Tetra Tech EC, Inc. and Brown, Burdine, & Associates, LLC (Tetra Tech). 2008. 2008 Biennial Groundwater Monitoring and Annual Landfill Inspection Report Landfill No. 3 (LF-03/SWMU 105), Landfill No. 4 (LF-04/SWMU 104), and Landfill No. 25 (LF-25/SWMU 97). Cannon Air Force Base, New Mexico. Final. December.

Tetra Tech EC, Inc. and Trinity Analysis & Development Corp. (Trinity) 2010. 2010 Biennial Groundwater Monitoring and Annual Landfill Inspection Report Landfill No. 3 (LF-03/SWMU 105), Landfill No. 4 (LF-04/SWMU 104), Landfill No. 25 (LF-25/SWMU 97), and Sewage Lagoons (SWMU 101). Cannon Air Force Base, New Mexico. Final. December.

E.1 Summary of Analytical Results (Dump Table)

E.2 Laboratory Sample Delivery Groups

The raw data packages were submitted to AFCEC, including Cannon AFB. Electronic copies are available upon request.

E.3 URS Data Verifications

TABLE 3-1
MONITORING WELL SURVEY DATA - SEPTEMBER 2014
CANNON AFB, NEW MEXICO

Well Identification	Site Association	Northing (NAD 83)	Easting (NAD 83)	Top of Casing Elevation (feet amsl) (NAVD 88)	Concrete Pad Elevation (feet amsl) (NAVD 88)
MW-A	LF005	1228291.09	850513.24	4268.72	4267.01
MW-B	LF005	1226666.34	852296.60	4266.80	4265.19
MW-C	LF005	1226056.10	851789.72	4268.90	4267.00
MW-D	LF005	1226095.85	851123.70	4266.90	4265.20
MW-E	SI101	1235128.43	850881.46	4284.96	4282.92
MW-F	SI101	1234609.98	851885.22	4280.84	4278.09
MW-G	SI101	1233761.42	852082.68	4281.55	4279.65
MW-H	SI101	1233235.68	851638.44	4281.18	4279.18
MW-Na	LF004	1234314.82	854201.76	4270.51	4269.42
MW-Oa	LF003	1232514.40	853895.37	4273.96	4273.29
MW-Pa	LF025	1233526.85	852403.88	4274.73	4274.07
MW-Rb	LF025	1234803.21	852390.66	4277.73	4275.41
MW-S	LF005	1226092.46	852274.85	4265.75	4263.81
MW-T	LF005	1226404.02	852375.33	4265.72	4263.90
MW-U	LF005	1226884.20	852330.10	4267.30	4265.43
MW-V	Background	1240246.97	841913.74	4329.90	4328.27
MW-W	Background	1237389.20	853254.21	4302.22	4300.15
MW-X	Background	1228560.00	844498.66	4269.23	4268.02

Notes:

1) Wells were surveyed on September 11, 2014 by Lydick Engineering, Clovis, New Mexico.

2) Location data are reported in the New Mexico East State Plane coordinate system.

AFB = Air Force Base

amsl = above mean sea level

NAD 83 = North American Horizontal Datum 1983

NAVD 88 = North American Vertical Datum 1988

TABLE 4-1
WATER LEVELS - JUNE AND JULY 2014
CANNON AFB, NEW MEXICO

Well Identification	Site Association	Screen Interval (feet BTOC)	Historical TOC Elevation (feet amsl) (NAVD 88)[1]	Date Water Level Measured	July 2013 Depth to Water (feet BTOC)[7]	July 2013 Water Elevation (feet amsl)[7]	Date Water Level Measured	June 2014 Depth to Water (feet BTOC)	June 2014 Water Elevation (feet amsl)[2]	September 2014 TOC Elevation (feet amsl) (NAVD 88)	Date Water Level Measured	July 2014 Depth to Water (feet BTOC)	July 2014 Water Elevation (feet amsl)[3]
MW-A	LF005	341.84-326.84	4269.2	--	NM	NM	6/18/2014	318.42	3950.30	4268.72	7/17/2014	318.77	3949.95
MW-B	LF005	364.50-349.50	4268.1	7/22/2013	330.78	3936.20	6/17/2014	330.35	3936.45	4266.80	7/16/2014	330.49	3936.31
MW-C	LF005	363.50-348.50	4269.2	7/22/2013	334.15	3934.88	6/17/2014	333.42	3935.48	4268.90	7/15/2014	333.87	3935.03
MW-D	LF005	356.70-341.70	4267.6	7/22/2013	327.08	3939.98	6/17/2014	327.53	3939.37	4266.90	7/15/2014	327.71	3939.19
MW-E [4]	SI101	351.14-336.14	4285.9	7/22/2013	318.26	3966.71	6/18/2014	319.50	3965.46	4284.96	7/21/2014	319.65	3965.31
MW-F [4]	SI101	372.30-357.30	4282.3	7/22/2013	316.93	3964.07	6/18/2014	317.32	3963.52	4280.84	7/21/2014	317.80	3963.04
MW-G [4]	SI101	367.80-352.80	4283.1	7/22/2013	320.81	3960.80	6/18/2014	321.56	3959.99	4281.55	7/20/2014	321.16	3960.39
MW-H [4]	SI101	351.80-331.80	4282.6	7/22/2013	320.68	3960.55	6/18/2014	320.95	3960.23	4281.18	7/20/2014	321.44	3959.74
MW-Na	LF004	356.90 - 296-90	4271.0	7/22/2013	311.43	3959.15	6/18/2014	NM [5]	NA	4270.51	7/21/2014	312.35	3958.16
MW-Oa	LF003	366.87-306.87	4273.7	7/22/2013	325.51	3948.68	6/18/2014	324.66	3949.30	4273.96	7/17/2014	325.12	3948.84
MW-Pa	LF025	362.20-302.20	4274.8	7/22/2013	314.35	3960.50	6/18/2014	315.31	3959.42	4274.73	7/17/2014	315.60	3959.13
MW-Rb	LF025	333.71-303.71	4278.4	--	NM	NM	6/18/2014	NM [6]	NA	4277.73	7/20/2014	315.14	3962.59
MW-S	LF005	366.80-326.80	4266.7	--	NM	NM	6/17/2014	332.60	3933.15	4265.75	7/16/2014	332.98	3932.77
MW-T	LF005	366.40-326.40	4266.6	7/22/2013	335.15	3930.94	6/17/2014	334.70	3931.02	4265.72	7/16/2014	335.60	3930.12
MW-U	LF005	366.00-326.00	4267.9	7/22/2013	333.24	3934.12	6/17/2014	330.73	3936.57	4267.30	7/16/2014	330.95	3936.35
MW-V	Background	371.74-311.74	4329.8	7/22/2013	347.48	3983.53	6/17/2014	349.31	3980.59	4329.90	7/14/2014	349.79	3980.11
MW-W	Background	368.00-308.00	4302.1	7/22/2013	332.90	3969.44	6/17/2014	334.74	3967.48	4302.22	7/20/2014	335.50	3966.72
MW-X	Background	337.85-277.85	4269.2	7/22/2013	286.25	3983.31	6/17/2014	286.60	3982.63	4269.23	7/15/2014	287.04	3982.19

Notes:

[1] = Historical top of casing elevation from the 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013).

[2] = June 2014 water elevation was calculated using top of casing elevations from the September 2014 TOC elevation data.

[3] = July 2014 water elevation was calculated using top of casing elevation collected in September 2014.

[4] = Top of casing elevation was altered during the July 2014 maintenance activities. Depth to water in July 2014 was measured after the alteration.

[5] = Dedicated pump could not be removed and water level indicator could not be lowered past a depth of 268 feet BTOC.

[6] = Did not have key to access at time of June 2014 maintenance activities.

[7] = Data was provided by the United States Geological Survey

AFB = Air Force Base

amsl = above mean sea level

BTOC = below top of casing

NA = not applicable

NAVD 88 = North American Vertical Datum 1988

NM = not measured

TOC = top of casing

TABLE 4-2
GROUNDWATER SAMPLE SUMMARY
CANNON AFB, NEW MEXICO

				Analysis									
Well Identification	**Sample Identification [1]**	**Site Association**	**Sample Date**	**Water Level**	**VOCs (USEPA Method 8260C)**	**TAL Metals (USEPA Method 7470A/6020A)**	**Hexavalent Chromium (USEPA Method 7199)**	**Perchlorate (Method 314.0)**	**Chloride, Sulfate, Nitrate, Nitrite (USEPA Method 9056)**	**Ammonia (USEPA Method SM 4500 NH3)**	**Total Organic Carbon (USEPA Method 9060A)**	**Duplicate**	**MS/MSD**
MW-A	MWA-7-14	LF005	7/17/2014	X	X	X	X	X	X	X	X		
MW-B	MWB-7-14	LF005	7/16/2014	X	X	X	X	X	X	X	X		
MW-C	MWC-7-14	LF005	7/15/2014	X	X	X	X	X	X	X	X		
MW-D	MWD-7-14	LF005	7/15/2014	X	X	X	X	X	X	X	X		
MW-E	MWE-7-14	SI101	7/21/2014	X	X	X	X	X	X	X	X		
MW-F	MWF-7-14	SI101	7/21/2014	X	X	X	X	X	X	X	X		X
MW-G	MWG-7-14	SI101	7/20/2014	X	X	X	X	X	X	X	X		
MW-H	MWH-7-14	SI101	7/20/2014	X	X	X	X	X	X	X	X		
MW-Na	MWNa-7-14	LF004	7/21/2014	X	X	X	X	X	X	X	X		
MW-Oa	MWOa-7-14	LF003	7/17/2014	X	X	X	X	X	X	X	X	X	
MW-Pa	MWPa-7-14	LF025	7/17/2014	X	X	X	X	X	X	X	X		
MW-Rb	MWRb-7-14	LF025	7/20/2014	X	X	X	X	X	X	X	X		
MW-S	MWS-7-14	LF005	7/16/2014	X	X	X	X	X	X	X	X		
MW-T	MWT-7-14	LF005	7/16/2014	X	X	X	X	X	X	X	X		
MW-U	MWU-7-14	LF005	7/16/2014	X	X	X	X	X	X	X	X		
MW-V	MWV-7-14	Background	7/14/2014	X	X	X	X	X	X	X	X		
MW-W	MWW-7-14	Background	7/20/2014	X	X	X	X	X	X	X	X		
MW-X	MWX-7-14	Background	7/15/2014	X	X	X	X	X	X	X	X		

Notes:

[1] Sample identification uses the following naming scheme : well identification-sample month-sample year

AFB = Air Force Base

MS/MSD = Matrix Spike/Matrix Spike Duplicate

TAL = Target Analyte List

USEPA = United States Environmental Protection Agency

VOC = volatile organic compound

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS – JULY 2014
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION						MW-A			MW-B			MW-C			MW-D			MW-E			MW-F		
FIELD IDENTIFICATION						MWA-7-14			MWB-7-14			MWC-7-14			MWD-7-14			MWE-7-14			MWF-7-14		
DATE COLLECTED						July 17, 2014			July 16, 2014			July 15, 2014			July 15, 2014			July 21, 2014			July 21, 2014		
	Maximum	Frequency	USEPA MCL	NMGWQS[2]	New Mexico Tap Water[3]	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260C (µg/L)																							
1,1-Dichloroethane	4.60E-01	2 / 18	NE	2.50E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chloroform	4.00E-01	3 / 18	NE	1.00E+02	NA	<	5.00E+00	U	<	5.00E+00	U	4.00E-01	5.00E+00	J	3.90E-01	5.00E+00	J	<	5.00E+00	U	<	5.00E+00	U
Dichlorodifluoromethane	1.10E+00	2 / 18	NE	NE	2.03E+02	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Trichloroethene	6.50E-01	1 / 18	5.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
METALS - USEPA Method 7470A/6010B/6020A (µg/L)																							
Aluminum	3.00E+02	15 / 18	NE	NE	3.65E+04	1.30E+02	1.00E+02		5.30E+01	1.00E+02	J	7.80E+01	1.00E+02	J	7.10E+01	1.00E+02	J	5.50E+01	1.00E+02	J	1.60E+02	1.00E+02	
Antimony	6.20E-01	5 / 18	6.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Arsenic	7.80E+00	17 / 18	1.00E+01	1.00E+02	NA	5.10E+00	1.00E+00		4.90E+00	1.00E+00		5.70E+00	1.00E+00		6.00E+00	1.00E+00		3.50E+00	1.00E+00		4.40E+00	1.00E+00	
Barium	9.20E+01	17 / 18	2.00E+03	1.00E+03	NA	5.50E+01	2.00E+00		5.40E+01	2.00E+00		8.00E+01	2.00E+00		9.20E+01	2.00E+00		3.50E+01	2.00E+00		4.70E+01	2.00E+00	
Beryllium	2.70E-01	5 / 18	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	2.00E-01	1.00E+00	J	2.10E-01	1.00E+00	J	<	1.00E+00	U	1.80E-01	1.00E+00	J
Cadmium	2.50E-01	7 / 18	5.00E+00	1.00E+01	NA	1.80E-01	5.00E-01	J	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U
Calcium	9.30E+04	17 / 18	NE	NE	NE	3.90E+04	1.00E+03		3.80E+04	1.00E+03		3.60E+04	1.00E+03		2.80E+04	1.00E+03		4.40E+04	1.00E+03		4.90E+04	1.00E+03	J
Chromium	5.00E+00	15 / 18	1.00E+02	5.00E+01	NA	1.80E+00	2.00E+00	J	1.50E+00	2.00E+00	J	8.90E-01	2.00E+00	J	<	2.00E+00	U	<	2.00E+00	U	4.80E+00	2.00E+00	
Cobalt	4.90E-01	4 / 18	NE	5.00E+01	NE	4.10E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	4.90E-01	1.00E+00	J
Copper	5.30E+00	17 / 18	1.30E+03	1.00E+03	NA	1.20E+00	2.00E+00	J	1.80E+00	2.00E+00	J	1.20E+00	2.00E+00	J	8.20E-01	2.00E+00	J	1.20E+00	2.00E+00	J	1.90E+00	2.00E+00	J
Iron	5.20E+02	17 / 18	NE	1.00E+03	NA	1.40E+02	1.00E+02		3.50E+02	1.00E+02		1.60E+02	1.00E+02		1.00E+02	1.00E+02		7.20E+01	1.00E+02	J	3.70E+02	1.00E+02	
Lead	8.40E+00	12 / 18	1.50E+01	5.00E+01	NE	8.50E-01	1.00E+00	J	1.20E+00	1.00E+00		5.30E-01	1.00E+00	J	2.80E-01	1.00E+00	J	8.40E+00	1.00E+00		1.70E+00	1.00E+00	
Magnesium	8.10E+04	17 / 18	NE	NE	NE	3.70E+04	1.00E+03		3.60E+04	1.00E+03		3.50E+04	1.00E+03		2.80E+04	1.00E+03		4.00E+04	1.00E+03		4.50E+04	1.00E+03	J
Manganese	3.70E+01	17 / 18	NE	2.00E+02	NA	1.00E+01	2.00E+00		3.70E+01	2.00E+00		1.60E+01	2.00E+00		1.80E+01	2.00E+00		5.10E+00	2.00E+00		1.80E+01	2.00E+00	
Nickel	2.20E+01	17 / 18	NE	2.00E+02	NA	1.60E+00	1.00E+00		1.00E+00	1.00E+00		7.80E-01	1.00E+00	J	6.90E-01	1.00E+00	J	1.30E+00	1.00E+00		1.20E+00	1.00E+00	
Potassium	1.00E+04	17 / 18	NE	NE	NE	6.40E+03	1.00E+03		6.30E+03	1.00E+03		6.00E+03	1.00E+03		5.20E+03	1.00E+03		6.90E+03	1.00E+03		7.80E+03	1.00E+03	
Selenium	2.00E+01	17 / 18	5.00E+01	5.00E+01	NA	7.70E+00	1.00E+00		6.30E+00	1.00E+00		1.70E+00	1.00E+00		9.70E-01	1.00E+00	J	9.10E+00	1.00E+00		1.00E+01	1.00E+00	
Silver	3.60E+00	1 / 18	NE	5.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	3.60E+00	1.00E+00	
Sodium	1.30E+05	17 / 18	NE	NE	NE	5.00E+04	1.00E+03		5.00E+04	1.00E+03		5.30E+04	1.00E+03		4.40E+04	1.00E+03		5.10E+04	1.00E+03		5.70E+04	1.00E+03	
Vanadium	4.90E+01	17 / 18	NE	NE	1.83E+02	3.40E+01	2.00E+00		2.70E+01	2.00E+00		3.90E+01	2.00E+00		4.00E+01	2.00E+00		2.10E+01	2.00E+00		2.10E+01	2.00E+00	
Zinc	3.10E+02	17 / 18	NE	1.00E+04	NA	1.40E+01	1.00E+01		6.60E+00	1.00E+01	J	7.60E+00	1.00E+01	J	4.50E+00	1.00E+01	J	1.50E+01	1.00E+01		1.20E+01	1.00E+01	
Other Parameters (mg/L)																							
Chromium, Hexavalent - USEPA Method 7199 (µg/L)	1.20E+00	16 / 17	NE	NE	4.31E-01	9.20E-01	5.00E-01		8.10E-01	5.00E-01	J	2.00E-01	5.00E-01	J	3.20E-01	5.00E-01	J	8.90E-01	5.00E-01		9.00E-01	5.00E-01	
Perchlorate - EPA Method 314.0 (µg/L)	2.00E+00	13 / 17	NE	NE	2.56E+01	1.70E+00	5.00E-01		1.70E+00	5.00E-01		<	5.00E-01	U	<	5.00E-01	U	1.80E+00	5.00E-01		1.80E+00	5.00E-01	
Ammonia as Nitrogen - EPA Method 350.1	7.80E-02	10 / 18	NE	1.00E+01	NE	7.80E-02	2.50E-01	J	<	2.50E-01	U	<	2.50E-01	U	<	2.50E-01	U	5.40E-02	2.50E-01	J	5.70E-02	2.50E-01	J
Nitrate - USEPA Method 9056	1.50E+01	17 / 18	1.00E+01	1.00E+01	NA	1.90E+00	1.00E-01		1.30E+00	1.00E-01		2.00E+00	1.00E-01		1.30E+00	1.00E-01		1.40E+00	1.00E-01		1.20E+00	1.00E-01	
Chloride - USEPA Method 9056	2.00E+02	17 / 18	NE	2.50E+02	NE	5.00E+01	1.00E+00		4.30E+01	1.00E+00		1.30E+01	1.00E+00		4.50E+00	1.00E+00		4.80E+01	1.00E+00		6.70E+01	1.00E+00	
Sulfate - USEPA Method 9056	3.80E+02	17 / 18	NE	6.00E+02	NE	7.20E+01	5.00E+00		9.30E+01	5.00E+00		4.30E+01	5.00E+00		3.00E+01	5.00E+00		1.30E+02	2.50E+01		1.50E+02	2.50E+01	
Total Organic Carbon - USEPA Method 9060A	1.40E+00	16 / 18	NE	NE	NE	3.50E-01	1.00E+00	J	2.40E-01	1.00E+00	J	3.20E-01	1.00E+00	J	2.20E-01	1.00E+00	J	1.20E-01	1.00E+00	J	2.60E-01	1.00E+00	J

Notes:
[1] = USEPA Maximum Contaminant Levels (May 2009).
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Screening Levels for tap water.

µg/L = microgram per liter
< = Not Detected
J = Estimated
LOQ = Limit of Quantitation
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
R = Rejected
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS – JULY 2014
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION						MW-G			MW-H			MW-Na			MW-Oa			MW-Pa			MW-Rb		
FIELD IDENTIFICATION						MWG-7-14			MWH-7-14			MWNA-7-14			MWOA-7-14			MWPA-7-14			MWRB-7-14		
DATE COLLECTED						July 20, 2014			July 20, 2014			July 21, 2014			July 17, 2014			July 17, 2014			July 20, 2014		
	Maximum	Frequency	USEPA MCL	NMGWQS[2]	New Mexico Tap Water[3]	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260C (µg/L)																							
1,1-Dichloroethane	4.60E-01	2 / 18	NE	2.50E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chloroform	4.00E-01	3 / 18	NE	1.00E+02	NA	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Dichlorodifluoromethane	1.10E+00	2 / 18	NE	NE	2.03E+02	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Trichloroethene	6.50E-01	1 / 18	5.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
METALS - USEPA Method 7470A/6010B/6020A (µg/L)																							
Aluminum	3.00E+02	15 / 18	NE	NE	3.65E+04	7.20E+01	1.00E+02	J	7.20E+01	1.00E+02	J	4.80E+01	1.00E+02	J	7.00E+01	1.00E+02	J	1.40E+02	1.00E+02		5.50E+01	1.00E+02	J
Antimony	6.20E-01	5 / 18	6.00E+00	NE	NA	3.50E-01	1.00E+00	J	6.20E-01	1.00E+00	J	3.50E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	4.30E-01	1.00E+00	J
Arsenic	7.80E+00	17 / 18	1.00E+01	1.00E+02	NA	3.80E+00	1.00E+00		3.40E+00	1.00E+00		5.00E+00	1.00E+00		2.60E+00	1.00E+00		3.60E+00	1.00E+00		1.40E+00	1.00E+00	
Barium	9.20E+01	17 / 18	2.00E+03	1.00E+03	NA	3.00E+01	2.00E+00		4.70E+01	2.00E+00		4.40E+01	2.00E+00		6.10E+01	2.00E+00		4.40E+01	2.00E+00		2.80E+01	2.00E+00	
Beryllium	2.70E-01	5 / 18	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	1.80E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Cadmium	2.50E-01	7 / 18	5.00E+00	1.00E+01	NA	1.80E-01	5.00E-01	J	2.30E-01	5.00E-01	J	<	5.00E-01	U	1.80E-01	5.00E-01	J	1.80E-01	5.00E-01	J	1.90E-01	5.00E-01	J
Calcium	9.30E+04	17 / 18	NE	NE	NE	4.70E+04	1.00E+03		5.00E+04	1.00E+03		3.40E+04	1.00E+03		8.70E+04	1.00E+03		5.30E+04	1.00E+03		4.00E+04	1.00E+03	
Chromium	5.00E+00	15 / 18	1.00E+02	5.00E+01	NA	1.80E+00	2.00E+00	J	1.20E+00	2.00E+00	J	1.90E+00	2.00E+00	J	8.90E-01	2.00E+00	J	1.40E+00	2.00E+00	J	8.00E-01	2.00E+00	J
Cobalt	4.90E-01	4 / 18	NE	5.00E+01	NE	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	4.20E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U
Copper	5.30E+00	17 / 18	1.30E+03	1.00E+03	NA	2.80E+00	2.00E+00		4.60E+00	2.00E+00		5.30E+00	2.00E+00		1.40E+00	2.00E+00	J	1.60E+00	2.00E+00	J	1.60E+00	2.00E+00	J
Iron	5.20E+02	17 / 18	NE	1.00E+03	NA	3.40E+02	1.00E+02		2.50E+02	1.00E+02		2.50E+01	1.00E+02	J	6.70E+01	1.00E+02	J	1.00E+02	1.00E+02		5.00E+01	1.00E+02	J
Lead	8.40E+00	12 / 18	1.50E+01	5.00E+01	NE	1.20E+00	1.00E+00		9.60E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	5.30E-01	1.00E+00	J	<	1.00E+00	U
Magnesium	8.10E+04	17 / 18	NE	NE	NE	4.30E+04	1.00E+03		3.50E+04	1.00E+03		3.10E+04	1.00E+03		7.90E+04	1.00E+03		4.80E+04	1.00E+03		3.80E+04	1.00E+03	
Manganese	3.70E+01	17 / 18	NE	2.00E+02	NA	5.80E+00	2.00E+00		1.80E+01	2.00E+00		3.30E+00	2.00E+00		3.60E+00	2.00E+00		5.90E+00	2.00E+00		2.00E+00	2.00E+00	
Nickel	2.20E+01	17 / 18	NE	2.00E+02	NA	2.80E+00	1.00E+00		2.20E+01	1.00E+00		4.70E-01	1.00E+00	J	3.00E+00	1.00E+00		1.40E+00	1.00E+00		2.40E+00	1.00E+00	
Potassium	1.00E+04	17 / 18	NE	NE	NE	7.60E+03	1.00E+03		6.60E+03	1.00E+03		7.40E+03	1.00E+03		9.90E+03	1.00E+03		7.50E+03	1.00E+03		7.00E+03	1.00E+03	
Selenium	2.00E+01	17 / 18	5.00E+01	5.00E+01	NA	1.00E+01	1.00E+00		9.40E+00	1.00E+00		8.10E+00	1.00E+00		9.00E+00	1.00E+00		1.10E+01	1.00E+00		1.00E+01	1.00E+00	
Silver	3.60E+00	1 / 18	NE	5.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Sodium	1.30E+05	17 / 18	NE	NE	NE	5.30E+04	1.00E+03		4.90E+04	1.00E+03		4.40E+04	1.00E+03		1.30E+05	1.00E+03		3.70E+04	1.00E+03		4.20E+04	1.00E+03	
Vanadium	4.90E+01	17 / 18	NE	NE	1.83E+02	1.80E+01	2.00E+00		1.60E+01	2.00E+00		2.40E+01	2.00E+00		1.60E+01	2.00E+00		1.90E+01	2.00E+00		2.00E+01	2.00E+00	
Zinc	3.10E+02	17 / 18	NE	1.00E+04	NA	6.10E+01	1.00E+01		3.10E+02	1.00E+01		3.70E+00	1.00E+01	J	6.00E+00	1.00E+01	J	1.30E+01	1.00E+01		7.10E+00	1.00E+01	J
Other Parameters (mg/L)																							
Chromium, Hexavalent - USEPA Method 7199 (µg/L)	1.20E+00	16 / 17	NE	NE	4.31E-01	1.10E+00	5.00E-01		2.10E-01	5.00E-01	J	1.10E+00	5.00E-01		6.80E-01	5.00E-01		1.10E+00	5.00E-01		5.90E-01	5.00E-01	
Perchlorate - EPA Method 314.0 (µg/L)	2.00E+00	13 / 17	NE	NE	2.56E+01	2.00E+00	5.00E-01		1.70E+00	5.00E-01		1.50E+00	5.00E-01		<	5.00E-01	U	1.50E+00	5.00E-01		1.80E+00	5.00E-01	
Ammonia as Nitrogen - EPA Method 350.1	7.80E-02	10 / 18	NE	1.00E+01	NE	7.40E-02	2.50E-01	J	7.00E-02	2.50E-01	J	4.90E-02	2.50E-01	J	7.00E-02	2.50E-01	J	6.40E-02	2.50E-01	J	5.70E-02	2.50E-01	J
Nitrate - USEPA Method 9056	1.50E+01	17 / 18	1.00E+01	1.00E+01	NA	1.40E+00	1.00E-01		2.30E+00	1.00E-01		1.40E+00	1.00E-01		1.50E+01	5.00E-01		1.60E+00	1.00E-01		1.10E+00	1.00E-01	
Chloride - USEPA Method 9056	2.00E+02	17 / 18	NE	2.50E+02	NE	6.60E+01	1.00E+00		5.00E+01	1.00E+00		3.90E+01	1.00E+00		1.90E+02	5.00E+00		6.80E+01	1.00E+00		5.80E+01	1.00E+00	
Sulfate - USEPA Method 9056	3.80E+02	17 / 18	NE	6.00E+02	NE	1.30E+02	1.00E+01		1.20E+02	1.00E+01		7.80E+01	5.00E+00		1.60E+02	2.50E+01		1.20E+02	1.00E+01		1.20E+02	2.50E+01	
Total Organic Carbon - USEPA Method 9060A	1.40E+00	16 / 18	NE	NE	NE	2.30E-01	1.00E+00	J	3.60E-01	1.00E+00	J	1.20E+00	1.00E+00		9.00E-01	1.00E+00	J	2.30E-01	1.00E+00	J	<	1.00E+00	U

Notes:
[1] = USEPA Maximum Contaminant Levels (May 2009).
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Scr

µg/L = microgram per liter
< = Not Detected
J = Estimated
LOQ = Limit of Quantitation
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
R = Rejected
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS – JULY 2014
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION						MW-S			MW-T			MW-U			MW-V			MW-W			MW-X		
FIELD IDENTIFICATION						MWS-7-14			MWT-7-14			MWU-7-14			MWV-7-14			MWW-7-14			MWX-7-14		
DATE COLLECTED						July 16, 2014			July 16, 2014			July 16, 2014			July 14, 2014			July 20, 2014			July 15, 2014		
	Maximum	Frequency	USEPA MCL	NMGWQS[2]	New Mexico Tap Water[3]	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	Result	LOQ	Qual	6.00E+00	LOQ	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260C (µg/L)																							
1,1-Dichloroethane	4.60E-01	2 / 18	NE	2.50E+01	NA	<	1.00E+00	U	4.60E-01	1.00E+00	J	3.60E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Chloroform	4.00E-01	3 / 18	NE	1.00E+02	NA	<	5.00E+00	U	3.50E-01	5.00E+00	J	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	3.80E-01	5.00E+00	J
Dichlorodifluoromethane	1.10E+00	2 / 18	NE	NE	2.03E+02	<	5.00E+00	U	6.70E-01	5.00E+00	J	1.10E+00	5.00E+00	J	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U
Trichloroethene	6.50E-01	1 / 18	5.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	6.50E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
METALS - USEPA Method 7470A/6010B/6020A (µg/L)																							
Aluminum	3.00E+02	15 / 18	NE	NE	3.65E+04	<	1.00E+02	U	4.80E+01	1.00E+02	J	<	1.00E+02	U	1.40E+02	1.00E+02		1.40E+02	1.00E+02		3.00E+02	1.00E+02	
Antimony	6.20E-01	5 / 18	6.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	4.20E-01	1.00E+00	J	<	1.00E+00	U
Arsenic	7.80E+00	17 / 18	1.00E+01	1.00E+02	NA	4.40E+00	1.00E+00		3.80E+00	1.00E+00		4.30E+00	1.00E+00		4.60E+00	1.00E+00		2.20E+00	1.00E+00		7.80E+00	1.00E+00	
Barium	9.20E+01	17 / 18	2.00E+03	1.00E+03	NA	3.40E+01	2.00E+00		3.80E+01	2.00E+00		6.10E+01	2.00E+00		2.80E+01	2.00E+00		1.40E+01	2.00E+00		8.50E+01	2.00E+00	
Beryllium	2.70E-01	5 / 18	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	2.70E-01	1.00E+00	J	<	1.00E+00	U	2.60E-01	1.00E+00	J
Cadmium	2.50E-01	7 / 18	5.00E+00	1.00E+01	NA	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U	2.50E-01	5.00E-01	J	<	5.00E-01	U
Calcium	9.30E+04	17 / 18	NE	NE	NE	4.90E+04	1.00E+03		4.90E+04	1.00E+03		8.10E+04	1.00E+03		9.30E+04	1.00E+03		5.90E+04	1.00E+03		3.00E+04	1.00E+03	
Chromium	5.00E+00	15 / 18	1.00E+02	5.00E+01	NA	1.70E+00	2.00E+00	J	3.00E+00	2.00E+00		5.00E+00	2.00E+00		5.70E-01	2.00E+00	J	5.50E-01	2.00E+00	J	1.70E+00	2.00E+00	J
Cobalt	4.90E-01	4 / 18	NE	5.00E+01	NE	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	3.20E-01	1.00E+00	J	<	1.00E+00	U	2.90E-01	1.00E+00	J
Copper	5.30E+00	17 / 18	1.30E+03	1.00E+03	NA	2.10E+00	2.00E+00		2.30E+00	2.00E+00		2.00E+00	2.00E+00	J	2.00E+00	2.00E+00	J	2.90E+00	2.00E+00		5.70E+00	2.00E+00	
Iron	5.20E+02	17 / 18	NE	1.00E+03	NA	2.80E+01	1.00E+02	J	5.20E+02	1.00E+02		2.30E+01	1.00E+02	J	6.90E+01	1.00E+02	J	1.20E+02	1.00E+02		2.20E+02	1.00E+02	
Lead	8.40E+00	12 / 18	1.50E+01	5.00E+01	NE	3.40E-01	1.00E+00	J	<	1.00E+00	U	<	1.00E+00	U	4.20E-01	1.00E+00	J	3.20E-01	1.00E+00	J	8.10E-01	1.00E+00	J
Magnesium	8.10E+04	17 / 18	NE	NE	NE	4.60E+04	1.00E+03		3.80E+04	1.00E+03		5.60E+04	1.00E+03		8.10E+04	1.00E+03		4.60E+04	1.00E+03		2.70E+04	1.00E+03	
Manganese	3.70E+01	17 / 18	NE	2.00E+02	NA	3.10E+00	2.00E+00		1.50E+01	2.00E+00		6.40E+00	2.00E+00		3.60E+01	2.00E+00		2.00E+00	2.00E+00	J	1.30E+01	2.00E+00	
Nickel	2.20E+01	17 / 18	NE	2.00E+02	NA	1.30E+00	1.00E+00		7.30E+00	1.00E+00		4.50E+00	1.00E+00		1.40E+00	1.00E+00		2.40E+00	1.00E+00		6.80E-01	1.00E+00	J
Potassium	1.00E+04	17 / 18	NE	NE	NE	6.60E+03	1.00E+03		6.60E+03	1.00E+03		7.30E+03	1.00E+03		8.40E+03	1.00E+03		1.00E+04	1.00E+03		5.80E+03	1.00E+03	
Selenium	2.00E+01	17 / 18	5.00E+01	5.00E+01	NA	7.00E+00	1.00E+00		1.80E+00	1.00E+00		7.40E+00	1.00E+00		2.00E+01	1.00E+00		6.70E+00	1.00E+00		4.80E+00	1.00E+00	
Silver	3.60E+00	1 / 18	NE	5.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Sodium	1.30E+05	17 / 18	NE	NE	NE	4.60E+04	1.00E+03		5.10E+04	1.00E+03		5.60E+04	1.00E+03		6.70E+04	1.00E+03		1.30E+05	1.00E+03		4.70E+04	1.00E+03	
Vanadium	4.90E+01	17 / 18	NE	NE	1.83E+02	2.80E+01	2.00E+00		2.30E+01	2.00E+00		2.30E+01	2.00E+00		2.10E+01	2.00E+00		6.40E+00	2.00E+00		4.90E+01	2.00E+00	
Zinc	3.10E+02	17 / 18	NE	1.00E+04	NA	7.80E+01	1.00E+01		9.80E+01	1.00E+01		9.20E+01	1.00E+01		4.70E+01	1.00E+01		2.00E+01	1.00E+01		5.90E+01	1.00E+01	
Other Parameters (mg/L)																							
Chromium, Hexavalent - USEPA Method 7199 (µg/L)	1.20E+00	16 / 17	NE	NE	4.31E-01	9.90E-01	5.00E-01	J	1.20E+00	5.00E-01	J	1.00E+00	5.00E-01	J			R	7.50E-01	5.00E-01		6.60E-01	5.00E-01	
Perchlorate - EPA Method 314.0 (µg/L)	2.00E+00	13 / 17	NE	NE	2.56E+01	1.30E+00	5.00E-01		1.30E+00	5.00E-01		1.30E+00	5.00E-01		<	5.00E-01	U	<	5.00E-01	U	<	5.00E-01	U
Ammonia as Nitrogen - EPA Method 350.1	7.80E-02	10 / 18	NE	1.00E+01	NE	<	2.50E-01	U	<	2.50E-01	U	<	2.50E-01	U	<	2.50E-01	U	7.50E-02	2.50E-01	J	<	2.50E-01	U
Nitrate - USEPA Method 9056	1.50E+01	17 / 18	1.00E+01	1.00E+01	NA	1.60E+00	1.00E-01		1.10E+00	1.00E-01		1.30E+00	1.00E-01		7.20E+00	1.00E-01		5.70E-01	1.00E-01		1.70E+00	1.00E-01	
Chloride - USEPA Method 9056	2.00E+02	17 / 18	NE	2.50E+02	NE	5.90E+01	1.00E+00		4.90E+01	1.00E+00		6.90E+01	1.00E+00		2.00E+02	5.00E+00		1.20E+02	5.00E+00		3.00E+01	1.00E+00	
Sulfate - USEPA Method 9056	3.80E+02	17 / 18	NE	6.00E+02	NE	1.00E+02	1.00E+01		1.00E+02	1.00E+01		1.10E+02	1.00E+01		2.30E+02	2.50E+01		3.80E+02	2.50E+01		4.70E+01	5.00E+00	
Total Organic Carbon - USEPA Method 9060A	1.40E+00	16 / 18	NE	NE	NE	7.40E-01	1.00E+00	J	4.40E-01	1.00E+00	J	3.70E-01	1.00E+00	J	1.40E+00	1.00E+00		2.00E-01	1.00E+00	J	2.20E-01	1.00E+00	J

Notes:
[1] = USEPA Maximum Contaminant Levels (May 2009).
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Scr

µg/L = microgram per liter
< = Not Detected
J = Estimated
LOQ = Limit of Quantitation
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
R = Rejected
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-4
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2008
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-Oa			MW-Na			MW-Pa			MW-Ra		
DATE COLLECTED				October-08			October-08			October-08			October-08		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS-USEPA Method 8260B (µg/L)															
Tetrachloroethene	5.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	2.80E-01	1.00E+00	J	<	1.00E+00	U
All other analytes	Various	Various	Various	<	NA	U	<	NA	U	<	NA	U	<	NA	U
TOTAL METALS- USEPA Method 6020 (µg/L)															
Antimony	6.00E+00	NE	NA	<	6.00E+00	U	<	6.00E+00	U	<	6.00E+00	U	<	6.00E+00	U
Arsenic	1.00E+01	1.00E+02	NA	2.20E+00	5.00E+00	J	4.10E+00	5.00E+00	J	2.60E+00	5.00E+00	J	3.80E+00	5.00E+00	J
Barium	2.00E+03	1.00E+03	NA	5.30E+01	3.00E+00		4.40E+01	3.00E+00		3.70E+01	3.00E+00		6.90E+01	3.00E+00	
Beryllium	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Cadmium	5.00E+00	1.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	1.20E-01	1.00E+00	J	6.50E-01	1.00E+00	J
Copper	1.30E+03	1.00E+03	NA	8.00E-01	2.00E+00	J	<	2.00E+00	U	2.40E+00	2.00E+00		<	2.00E+00	U
Lead	1.50E+01	5.00E+01	NE	<	3.00E+00	U	<	3.00E+00	U	3.10E-01	3.00E+00	J	6.80E-01	3.00E+00	J
Nickel	NE	2.00E+02	NA	4.70E+00	3.00E+00		7.90E-01	3.00E+00	J	2.50E+00	3.00E+00	J	2.30E+00	3.00E+00	J
Mercury- USEPS Method 7470A	2.00E+00	2.00E+00	NA	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U
Selenium	5.00E+01	5.00E+01	NA	3.60E+00	5.00E+00	J	6.90E+00	5.00E+00		4.30E+00	5.00E+00	J	1.00E+01	5.00E+00	
Silver	NE	5.00E+01	NA	<	5.00E+00	U	<	5.00E+00	U	2.10E-01	5.00E+00	J	<	5.00E+00	U
Thallium	2.00E+00	NE	Na	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Zinc	NE	1.00E+04	NA	5.40E+00	2.00E+01	J	5.60E+00	2.00E+01	J	1.10E+01	2.00E+01	J	4.90E+02	2.00E+01	
Trivalent Chromium	NE	NE	NE	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U
Other Parameters (mg/L)															
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NA	7.60E+00	5.00E-01		1.30E+00	5.00E-01		1.90E+00	5.00E-01		1.70E+00	5.00E-01	
Nitrate/Nitrite (Nitrogen)- USEPA Method 353.2	1.00E+01	NE	NA	6.60E+00	1.00E-01		1.20E+00	1.00E-01		1.70E+00	1.00E-01		1.60E+00	1.00E-01	
Perchlorate- USEPA Method 6860 (µg/L)	NE	NE	2.56E+01	6.90E-01	5.00E-02		2.10E+00	5.00E-02		1.70E+00	5.00E-02		2.70E+00	5.00E-02	

Notes:
Groundwater analytical result from 2008 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Tetra Tech 2008).
[1] = USEPA Maximum Contaminant Levels (May 2009).
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Screening Levels for tap water.

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-5
SUMMARY OF ANALYTICAL RESULTS – NOVEMBER 2010
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-Oa			MW-Na			MW-Pa			MW-E			MW-F		
DATE COLLECTED				November-10			November-10			November-10			November-10			November-10		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS-USEPA Method 8260B (µg/L)																		
1,2,4-trimethylbenzene	NE	NE	NE	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Naphthalene	NE	NE	1.43E+00	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Toluene	1.00E+03	7.50E+02	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	2.80E-01	1.00E+00	J	<	1.00E+00	U
All other analytes	Various	Various	Various	<	NA	U	<	NA	U	<	NA	U	<	NA	U	<	NA	U
TOTAL METALS- USEPA Method 6020 (µg/L)																		
Antimony	6.00E+00	NE	NA	<	6.00E+00	U	1.40E-01	6.00E+00	J	<	6.00E+00	U	7.10E-02	6.00E+00	J	<	6.00E+00	U
Arsenic	1.00E+01	1.00E+02	NA	2.20E+00	5.00E+00	J	4.20E+00	5.00E+00	J	2.60E+00	5.00E+00	J	3.10E+00	5.00E+00	J	3.30E+00	5.00E+00	J
Barium	2.00E+03	1.00E+03	NA	5.50E+01	3.00E+00		4.70E+01	3.00E+00		3.50E+01	3.00E+00		4.60E+01	3.00E+00		3.80E+01	3.00E+00	
Beryllium	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Cadmium	5.00E+00	1.00E+01	NA	<	1.00E+00	U	<	1.00E+00	U	<	1.00E+00	U	5.70E-02	1.00E+00	J	<	1.00E+00	U
Copper	1.30E+03	1.00E+03	NA	<	2.00E+00	U	3.50E+00	2.00E+00		<	2.00E+00	U	1.51E+00	1.00E+00	J	<	1.00E+00	U
Lead	1.50E+01	5.00E+01	NE	<	3.00E+00	U	4.90E-01	3.00E+00	J	<	3.00E+00	U	2.00E+01	3.00E+00	J	4.40E-01	3.00E+00	J
Nickel	NE	2.00E+02	NA	3.20E+00	3.00E+00		6.80E-01	3.00E+00	J	5.40E-01	3.00E+00	J	2.40E+00	3.00E+00	J	1.10E+00	3.00E+00	J
Mercury-USEPS Method 7470A	2.00E+00	2.00E+00	NA	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U	<	2.00E-01	U
Selenium	5.00E+01	5.00E+01	NA	3.30E+00	5.00E+00	J	5.50E+00	5.00E+00		4.50E+00	5.00E+00	J	7.60E+00	5.00E+00		7.50E+00	5.00E+00	
Silver	NE	5.00E+01	NA	<	5.00E+00	U	<	5.00E+00	U	<	5.00E+00	U	<	1.00E+00	U	<	1.00E+00	U
Thallium	2.00E+00	NE	NA	<	1.00E+00	U	3.70E-02	1.00E+00	J	<	1.00E+00	U	2.30E-02	1.00E+00	J	<	1.00E+00	U
Zinc	NE	1.00E+04	NA	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	1.20E+02	2.00E+01		8.10E+01	2.00E+01	
Trivalent Chromium	NE	NE	NE	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U	<	2.00E+01	U
Other Parameters (mg/L)																		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	2.00E+01	U	<	2.00E+01	J	<	2.00E+01	U	<	2.00E+01	U	4.10E+00	2.00E+01	J
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	1.10E+01	5.00E-01	J	1.30E+00	5.00E-01		1.80E+00	5.00E-01		1.70E+00	5.00E-01		1.30E+00	5.00E-01	
Nitrate/Nitrite (Nitrogen)- USEPA Method 353.2	1.00E+01	NE	NA	1.10E+01	1.00E-01		1.40E+00	1.00E-01		2.00E+00	1.00E-01		1.80E+00	1.00E-01		1.40E+00	1.00E-01	
Perchlorate- USEPA Method 6860 (µg/L)	NE	NE	2.56E+01	9.10E-01	5.00E-02		2.00E+00	5.00E-02		1.70E+00	5.00E-02		3.10E+00	5.00E-02		2.80E+00	5.00E-02	

Notes:
Groundwater analytical result from 2010 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Trinity 2010).
[1] = USEPA Maximum Contaminant Levels (May 2009).
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Screening Levels for tap water.

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-5
SUMMARY OF ANALYTICAL RESULTS – NOVEMBER 2010
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-G			MW-H		
DATE COLLECTED				November-10			November-10		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS-USEPA Method 8260B (µg/L)									
1,2,4-trimethylbenzene	NE	NE	NE	1.70E-01	1.00E+00	J	<	1.00E+00	U
Naphthalene	NE	NE	1.43E+00	6.30E-01	1.00E+00	J	<	1.00E+00	U
Toluene	1.00E+03	7.50E+02	NA	3.30E-01	1.00E+00	J	1.80E+00	1.00E+00	
All other analytes	Various	Various	Various	<	NA	U	<	NA	U
TOTAL METALS- USEPA Method 6020 (µg/L)									
Antimony	6.00E+00	NE	NA	1.30E-01	6.00E+00	J	2.10E-01	6.00E+00	J
Arsenic	1.00E+01	1.00E+02	NA	3.80E+00	5.00E+00	J	4.20E+00	5.00E+00	J
Barium	2.00E+03	1.00E+03	NA	3.90E+01	3.00E+00		4.40E+01	3.00E+00	
Beryllium	4.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U
Cadmium	5.00E+00	1.00E+01	NA	4.90E-02	1.00E+00	J	1.40E-01	1.00E+00	J
Copper	1.30E+03	1.00E+03	NA	1.00E+01	1.00E+00		1.10E+01	1.00E+00	
Lead	1.50E+01	5.00E+01	NE	5.10E+00	3.00E+00		6.20E+00	3.00E+00	
Nickel	NE	2.00E+02	NA	9.00E+00	3.00E+00		2.50E+01	3.00E+00	
Mercury-USEPS Method 7470A	2.00E+00	2.00E+00	NA	<	2.00E-01	U	<	2.00E-01	U
Selenium	5.00E+01	5.00E+01	NA	6.60E+00	5.00E+00		6.80E+00	5.00E+00	
Silver	NE	5.00E+01	NA	2.00E-01	5.00E+00	J	1.10E-01	5.00E+00	J
Thallium	2.00E+00	NE	NA	<	1.00E+00	U	<	1.00E+00	U
Zinc	NE	1.00E+04	NA	9.90E+01	2.00E+01		3.80E+02	2.00E+01	
Trivalent Chromium	NE	NE	NE	<	2.00E+01	U	<	2.00E+01	U
Other Parameters (mg/L)									
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	7.50E+00	2.00E+01	J	1.90E+01	2.00E+01	J
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	1.30E+00	5.00E-01		1.70E+00	5.00E-01	
Nitrate/Nitrite (Nitrogen)- USEPA Method 353.2	1.00E+01	NE	NA	1.40E+00	1.00E-01		1.90E+00	1.00E-01	
Perchlorate- USEPA Method 6860 (µg/L)	NE	NE	2.56E+01	2.40E+00	5.00E-02		2.60E+00	5.00E-02	

Notes:
Groundwater analytical result from 2010 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Trinity 2010).
[1] = USEPA Maximum Contaminant Levels (May 2009).
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2).
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-A Total			MW-A Dissolved			MW-C Total			MW-C Dissolved			MW-E Total			MW-E Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 19, 2012			October 19, 2012			October 29, 2012			October 29, 2012			October 1, 2012			October 1, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	<	1.45E-01	U	NA			<	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	<	1.57E-01	U	NA			<	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	<	3.03E+01	U	<	3.03E+01	U	<	6.83E+01	UB	<	5.84E+01	UB	<	4.33E+01	UB	<	3.03E+01	U
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	4.55E+00		J	<	3.59E+00	U	<	3.59E+00	U	4.75E+00		J	5.55E+00		J
Barium	2.00E+03	1.00E+03	NA	5.56E+01			5.27E+01			8.01E+01			8.40E+01			3.39E+01	3.39E+01	UB	<	3.52E+01	UB
Cadmium	5.00E+00	1.00E+01	NA	<	1.07E+00	UB	7.80E-01		J	8.10E-01		J	7.80E-01		J	6.10E-01	6.10E-01	UB	<	6.40E-01	UB
Calcium	NE	NE	NE	3.48E+04			3.46E+04			3.58E+04			3.76E+04			4.83E+04			5.11E+04		
Chromium	1.00E+02	5.00E+01	NA	3.09E+00		J	1.09E+00		J	1.32E+00		J	1.00E+00		J	2.32E+00		J	<	1.71E+00	UB
Cobalt	NE	5.00E+01	NE	1.85E+00		J	1.07E+00		J	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U
Copper	1.30E+03	1.00E+03	NA	8.47E+00		J	6.37E+00		J	8.17E+00		J	7.90E+00		J	7.53E+00		J	7.93E+00		J
Iron	NE	1.00E+03	NA	1.67E+02			<	1.26E+01	U	1.48E+02			<	1.26E+01	U	7.75E+01		J	<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	3.76E+00		J	<	1.96E+00	U
Magnesium	NE	NE	NE	3.19E+04			3.07E+04			3.46E+04			3.76E+04			4.44E+04			4.67E+04		
Manganese	NE	2.00E+02	NA	3.16E+01			7.10E+00		J	2.49E+01			<	1.31E+00	U	<	6.39E+00	UB	<	3.26E+00	UB
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	6.91E-02		J	9.49E-02		J	<	6.80E-02	U	<	6.80E-02	U
Nickel	NE	2.00E+02	NA	<	2.80E+00	UB	<	2.40E+00	UB	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U
Potassium	NE	NE	NE	6.90E+03			6.70E+03			6.57E+03			6.91E+03			7.41E+03			7.82E+03		
Selenium	5.00E+01	5.00E+01	NA	4.69E+00		J	5.70E+00		J	<	4.42E+00	U	4.72E+00		J	1.28E+01		J	1.16E+01		J
Sodium	NE	NE	NE	5.14E+04			5.14E+04			5.14E+04			5.60E+04			<	5.79E+04	UB	<	6.06E+04	UB
Thallium	2.00E+00	NE	NA	<	3.04E+00	U	5.77E+00		J	<	3.04E+00	U	3.51E+00		J	<	3.04E+00	U	<	3.04E+00	U
Vanadium	NE	NE	1.83E+02	4.13E+01			4.14E+01			4.84E+01			5.22E+01			2.81E+01			2.84E+01		
Zinc	NE	1.00E+04	NA	1.04E+03			9.39E+02			1.11E+02			1.29E+02			2.76E+02			2.85E+02		
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	8.60E-01		J	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	3.79E+01			NA			1.97E+01			NA			6.16E+01			NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	UJ	NA			<	4.00E+00	U	NA			<	4.00E+00	UJ	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	1.00E-02			NA			<	1.50E-02	U	NA			<	2.00E-03	U	NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.55E+00			NA			1.80E+00			NA			1.29E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	2.03E-03			NA			5.89E-04			NA			2.92E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	5.37E+01			NA			3.85E+01			NA			1.38E+02			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	4.60E+00			NA			3.20E+00			NA			<	3.10E+00	UB	NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened against New Mexico Soil Screening Levels for tap water

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
UB = analyte also found in associated laboratory or field blank, probable blank contaminant
UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-F Total			MW-F Dissolved			MW-G Total			MW-G Dissolved			MW-H Total			MW-H Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 1, 2012			October 1, 2012			October 1, 2012			October 1, 2012			October 1, 2012			October 1, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	<	0.145	U	NA			<	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	<	1.57E-01	U	NA			<	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	<	3.03E+01	U	<	3.03E+01	U	3.20E+01		J	<	3.03E+01	U	3.46E+01		J	3.03E+01		J
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	3.42E+00		J	<	3.11E+00	U	3.11E+00		J
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	3.59E+00		J
Barium	2.00E+03	1.00E+03	NA	3.60E+01			3.76E+01			3.06E+01			2.91E+01			3.88E+01			3.19E+01		
Cadmium	5.00E+00	1.00E+01	NA	<	9.30E-01	UB	7.00E-01		J	<	1.06E+00	UB	7.10E-01		J	1.03E+00			6.80E-01		J
Calcium	NE	NE	NE	4.45E+04			4.69E+04			4.41E+04			4.48E+04			4.73E+04			4.48E+04		
Chromium	1.00E+02	5.00E+01	NA	1.68E+00		J	1.05E+00			2.33E+00		J	1.04E+00		J	7.55E+00		J	1.06E+00		J
Cobalt	NE	5.00E+01	NE	6.10E-01		J	1.06E+00		J	<	1.47E+00	UB	6.30E-01		J	7.70E-01		J	6.80E-01		J
Copper	1.30E+03	1.00E+03	NA	7.64E+00		J	8.62E+00		J	1.20E+01			8.61E+00		J	1.36E+01			9.24E+00		J
Iron	NE	1.00E+03	NA	5.56E+01		J	2.51E+01		J	5.87E+02			<	1.26E+01	U	6.51E+02			<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U
Magnesium	NE	NE	NE	3.82E+04			3.97E+04			4.09E+04			4.09E+04			4.03E+04			3.55E+04		
Manganese	NE	2.00E+02	NA	<	1.31E+00	U	<	1.31E+00	U	1.63E+01			<	1.31E+00	U	1.29E+01		J	<	1.31E+00	U
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U
Nickel	NE	2.00E+02	NA	<	1.51E+00	UB	<	3.55E+00	UB	<	4.06E+00	UB	1.75E+00		J	1.04E+01		J	<	5.30E+00	UB
Potassium	NE	NE	NE	7.47E+03			7.81E+03			7.20E+03			7.31E+03			7.31E+03			6.84E+03		
Selenium	5.00E+01	5.00E+01	NA	9.77E+00		J	6.24E+00		J	<	4.42E+00	U	7.99E+00		J	8.63E+00		J	7.96E+00		J
Sodium	NE	NE	NE	5.38E+04			5.66E+04			4.99E+04			5.10E+04			5.83E+04			5.44E+04		
Thallium	2.00E+00	NE	NA	3.22E+00		J	4.65E+00		J	3.69E+00		J	3.45E+00		J	<	3.04E+00	U	3.06E+00		J
Vanadium	NE	NE	1.83E+02	2.60E+01			2.66E+01			2.86E+01			2.62E+01			2.91E+01			2.65E+01		
Zinc	NE	1.00E+04	NA	1.70E+02			2.54E+02			1.75E+02			1.61E+02			2.17E+02			1.28E+02		
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	<	2.40E-01	U	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	6.03E+01			NA			6.97E+01			NA			7.13E+01			NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	U	NA			<	4.00E+00	U	NA			<	4.00E+00	UJ	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	<	2.00E-03	U	NA			7.00E-03			NA			<	1.00E-02	UB	NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.21E+00			NA			1.02E+00			NA			1.33E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	2.86E-03			NA			2.48E-03			NA			2.85E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	1.38E+02			NA			1.32E+02			NA			2.72E+03			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	2.50E+00			NA			1.80E+00		J	NA			3.40E+00			NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened a

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
UB = analyte also found in associated laboratory or field blank, probable blank contaminant
UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-Na Total			MW-Na Dissolved			MW-Oa Total			MW-Oa Dissolved			MW-Pa Total			MW-Pa Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 1, 2012			October 1, 2012			October 17, 2012			October 17, 2012			October 1, 2012			October 1, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	<	0.145	U	NA			0.145	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	<	1.57E-01	U	NA			1.57E-01	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	2.01E+02			<	3.03E+01	U	<	3.03E+01	U	<	3.03E+01	U	<	3.03E+01	U	<	3.03E+01	U
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	3.25E+00		J	<	3.11E+00	U
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U
Barium	2.00E+03	1.00E+03	NA	4.44E+01			3.70E+01			6.03E+01			6.15E+01			3.09E+01			2.99E+01		
Cadmium	5.00E+00	1.00E+01	NA	8.30E-01		J	7.00E-01		J	7.80E-01		J	6.10E-01		J	<	7.90E-01	UB	6.30E-01		
Calcium	NE	NE	NE	3.16E+04			3.03E+04			7.11E+04			7.15E+04			4.40E+04			4.44E+04		J
Chromium	1.00E+02	5.00E+01	NA	1.69E+00		J	1.29E+00		J	1.78E+00		J	1.91E+00		J	2.06E+00		J	1.88E+00		J
Cobalt	NE	5.00E+01	NE	7.00E-01		J	<	7.90E-01	UB	1.12E+00		J	<	1.27E+00	UB	<	1.05E+00	UB	<	8.50E-01	UB
Copper	1.30E+03	1.00E+03	NA	1.36E+01			1.13E+01			1.19E+01			1.17E+01			8.68E+00		J	7.35E+00		J
Iron	NE	1.00E+03	NA	1.11E+02			<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U
Magnesium	NE	NE	NE	2.81E+04			2.75E+04			6.51E+04			6.53E+04			4.11E+04			4.27E+04		
Manganese	NE	2.00E+02	NA	1.05E+01		J	<	1.31E+00	U	<	1.31E+00	U	<	1.31E+00	U	<	1.31E+00	U	<	1.31E+00	U
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	7.65E-02	UB	<	8.57E-02	UB
Nickel	NE	2.00E+02	NA	<	1.13E+00	U	1.21E+00		J	<	1.13E+00	U	<	6.80E-02	U	<	1.13E+00	U	<	1.13E+00	U
Potassium	NE	NE	NE	6.91E+03			6.90E+03			9.24E+03			9.56E+03			6.89E+03			7.08E+03		
Selenium	5.00E+01	5.00E+01	NA	5.50E+00		J	5.07E+00		J	8.00E+00		J	5.05E+00		J	<	4.42E+00	U	9.72E+00		J
Sodium	NE	NE	NE	4.37E+04			4.45E+04			1.31E+05			1.28E+05			3.90E+04			3.92E+04		
Thallium	2.00E+00	NE	NA	<	3.04E+00	U	5.06E+00		J	4.58E+00		J	4.18E+00		J	4.89E+00		J	<	3.04E+00	U
Vanadium	NE	NE	1.83E+02	3.37E+01			3.41E+01			3.23E+01			3.51E+01			3.41E+01			2.49E+01		
Zinc	NE	1.00E+04	NA	9.16E+00		J	<	4.51E+00	U	<	4.51E+00	U	<	4.51E+00	U	<	4.51E+00	U	<	4.51E+00	U
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	<	2.40E-01	U	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	3.89E+01			NA			1.85E+02			NA			7.30E+01			NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	U	NA			<	4.00E+00	UJ	NA			<	4.00E+00	U	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	8.00E-03		J	NA			1.00E-02			NA			1.00E-02			NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.41E+00			NA			1.18E+01			NA			1.37E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	2.08E-03			NA			1.47E-03			NA			2.17E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	7.99E+01			NA			1.99E+02			NA			1.17E+02			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	5.00E+00			NA			6.80E+00			NA			3.20E+00			NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened a

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
UB = analyte also found in associated laboratory or field blank, probable blank contaminant
UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-Rb Total			MW-Rb Dissolved			MW-S Total			MW-S Dissolved			MW-T Total			MW-T Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 1, 2012			October 1, 2012			October 30, 2012			October 30, 2012			October 16, 2012			October 16, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	<	0.145	U	NA			<	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	<	1.57E-01	U	NA			<	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	<	3.03E+01	U	<	4.68E+01	UB	<	5.68E+01	UB	<	4.55E+01	UB	<	6.10E+01	UB	<	3.05E+01	UB
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	UB	<	3.11E+00	U
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	<	3.59E+00	U	3.90E+00		J	<	3.59E+00	U	5.39E+00		J	7.50E+00		J
Barium	2.00E+03	1.00E+03	NA	3.51E+01			3.46E+01			3.90E+01			3.80E+01			<	3.38E+01	UB	<	3.47E+01	UB
Cadmium	5.00E+00	1.00E+01	NA	5.30E-01		J	3.80E-01		J	9.70E-01		J	5.90E-01		J	<	5.10E-01	UB	4.10E-01		J
Calcium	NE	NE	NE	4.20E+04		J	4.22E+04		J	5.17E+04			5.16E+04			3.79E+04			4.07E+04		
Chromium	1.00E+02	5.00E+01	NA	1.36E+00		J	1.32E+00		J	2.99E+00		J	2.32E+00		J	3.33E+00		J	2.24E+00		J
Cobalt	NE	5.00E+01	NE	8.60E-01		J	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U
Copper	1.30E+03	1.00E+03	NA	8.08E+00		J	6.83E+00		J	9.62E+00		J	9.35E+00		J	7.84E+00		J	7.04E+00		J
Iron	NE	1.00E+03	NA	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	1.39E+02			<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U
Magnesium	NE	NE	NE	4.08E+04		J	4.10E+04			4.85E+04			4.90E+04			3.51E+04			3.77E+04		
Manganese	NE	2.00E+02	NA	1.98E+00		J	<	1.31E+00	U	4.45E+00		J	<	1.31E+00	U	<	3.28E+00	UB	<	1.31E+00	U
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	7.02E-02		J	7.70E-02		J	<	6.80E-02	U	<	6.80E-02	U
Nickel	NE	2.00E+02	NA	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U	5.41E+00		J	4.86E+00		J
Potassium	NE	NE	NE	7.07E+03			7.29E+03			7.65E+03			7.70E+03			6.48E+03			6.97E+03		
Selenium	5.00E+01	5.00E+01	NA	7.75E+00		J	1.12E+01		J	7.84E+00		J	7.14E+00		J	<	4.42E+00	U	<	4.42E+00	U
Sodium	NE	NE	NE	4.14E+04			4.18E+04			5.47E+04			5.49E+04			<	5.37E+04	UB	<	5.70E+04	UB
Thallium	2.00E+00	NE	NA	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U	3.43E+00		J
Vanadium	NE	NE	1.83E+02	3.02E+01			2.67E+01			4.76E+01			4.89E+01			3.77E+01			3.80E+01		
Zinc	NE	1.00E+04	NA	1.38E+03		J	1.16E+03			8.79E+01			8.42E+01			8.83E+01			9.10E+01		
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	<	2.40E-01	U	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	6.86E+01			NA			6.64E+01			NA			<	4.85E+01	UB	NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	UJ	NA			<	4.00E+00	U	NA			<	4.00E+00	U	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	<	1.50E-02	U	NA			<	1.50E-02	U	NA			<	1.50E-02	UB	NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.02E+00			NA			1.59E+00			NA			1.20E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	1.98E-03			NA			2.20E-03			NA			2.02E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	1.01E+02			NA			1.03E+02			NA			9.85E+01			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	5.20E+00			NA			<	3.00E-01	U	NA			<	3.30E+00	UB	NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened a

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
UB = analyte also found in associated laboratory or field blank, probable blank contaminant
UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS – OCTOBER 2012
CANNON AFB, NEW MEXICO

LOCATION IDENTIFICATION				MW-U Total			MW-U Dissolved			MW-V Total			MW-V Dissolved			MW-X Total			MW-X Dissolved		
SAMPLE IDENTIFICATION																					
DATE COLLECTED				October 30, 2012			October 30, 2012			October 30, 2012			October 30, 2012			October 30, 2012			October 30, 2012		
	USEPA MCL[1]	NMGWQS[2]	New Mexico Tap Water[3]	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual	Result	Reporting Limit	Qual
VOLATILE ORGANIC COMPOUNDS- USEPA Method 8260B (µg/L)																					
Dichlorodifluoromethane	NE	NE	2.03E+02	0.832		J	NA			<	0.145	U	NA			<	0.145	U	NA		
Trichlorofluoromethane	NE	NE	1.29E+03	5.59E-01		J	NA			<	1.57E-01	U	NA			<	1.57E-01	U	NA		
METALS- USEPA 6010C/7470A Method (µg/L)																					
Aluminum	NE	NE	3.65E+04	<	4.41E+01	UB	<	4.17E+01	UB	<	3.03E+01	U	<	3.58E+01	UB	<	1.14E+02	UB	<	3.87E+01	UB
Antimony	6.00E+00	NE	NA	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U	<	3.11E+00	U
Arsenic	1.00E+01	1.00E+02	NA	<	3.59E+00	U	<	3.59E+00	U	<	3.59E+00	U	5.52E+00		J	8.84E+00		J	1.14E+01		
Barium	2.00E+03	1.00E+03	NA	4.40E+01			4.19E+01			<	2.03E+01	UB	<	1.98E+01	UB	6.24E+01			6.29E+01		
Cadmium	5.00E+00	1.00E+01	NA	8.40E-01		J	6.50E-01		J	<	4.60E-01	UB	4.10E-01		J	<	6.20E-01	UB	<	6.30E-01	UB
Calcium	NE	NE	NE	5.98E+04			5.82E+04			9.64E+04			9.41E+04			2.79E+04		J	2.92E+04		
Chromium	1.00E+02	5.00E+01	NA	4.86E+00		J	2.14E+00		J	1.26E+00		J	1.28E+00		J	1.64E+00		J	<	1.39E+00	UB
Cobalt	NE	5.00E+01	NE	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U	<	5.80E-01	U
Copper	1.30E+03	1.00E+03	NA	1.02E+01			1.02E+01			9.97E+00		J	9.69E+00		J	8.62E+00		J	<	6.52E+00	UB
Iron	NE	1.00E+03	NA	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	<	1.26E+01	U	5.83E+01		J	<	1.26E+01	U
Lead	1.50E+01	5.00E+01	NE	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U	<	1.96E+00	U
Magnesium	NE	NE	NE	5.47E+04			5.42E+04			8.10E+04			7.91E+04			2.31E+04		J	2.52E+04		
Manganese	NE	2.00E+02	NA	2.04E+01			1.66E+01			<	1.31E+00	U	<	1.31E+00	U	<	4.15E+00	UB	<	1.31E+00	U
Mercury	2.00E+00	2.00E+00	NA	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U	<	6.80E-02	U
Nickel	NE	2.00E+02	NA	3.97E+00		J	3.19E+00		J	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U	<	1.13E+00	U
Potassium	NE	NE	NE	8.25E+03			8.11E+03			9.79E+03			9.47E+03			5.70E+03			6.10E+03		
Selenium	5.00E+01	5.00E+01	NA	9.93E+00		J	7.82E+00		J	2.41E+01		J	2.43E+01			7.89E+00		J	7.34E+00		J
Sodium	NE	NE	NE	6.12E+04			6.00E+04			<	8.46E+04	UB	<	8.12E+04	UB	<	4.42E+04	UB	<	4.69E+04	UB
Thallium	2.00E+00	NE	NA	<	3.04E+00	U	3.40E+00		J	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U	<	3.04E+00	U
Vanadium	NE	NE	1.83E+02	4.24E+01			4.27E+01			<	3.44E+01	UB	3.30E+01			5.33E+01			5.99E+01		
Zinc	NE	1.00E+04	NA	3.35E+02			3.30E+02			5.29E+02			5.49E+02			2.21E+02			2.48E+02		
Other Parameters (mg/L)																					
Ammonia as N- USEPA Method SM 4500 NH3	NE	NE	NE	<	2.40E-01	U	NA			<	2.40E-01	U	NA			<	2.40E-01	U	NA		
Chloride- USEPA Method 300.0	NE	2.50E+02	NE	8.27E+01			NA			1.92E+02			NA			<	2.47E+01	UB	NA		
Chromium, Hexavalent- USEPA Method 7196A (µg/L)	NE	NE	4.31E-01	<	4.00E+00	UJ	NA			<	4.00E+00	UJ	NA			<	4.00E+00	U	NA		
Nitrogen (Nitrate)- USEPA Method 300.0	NE	1.00E+01	NE	<	1.50E-02	U	NA			<	3.00E-02	U	NA			<	7.00E-03	UB	NA		
Nitrate/Nitrite (Nitrogen)- USEPA Method 300.0	1.00E+01	NE	NA	1.57E+00			NA			8.35E+00			NA			1.39E+00			NA		
Perchlorate- USEPA Method 6860	NE	NE	2.56E+01	2.47E-03			NA			6.82E-03			NA			1.51E-03			NA		
Sulfate as SO_4- USEPA Method 300.0	NE	6.00E+02	NE	1.05E+02			NA			2.61E+02			NA			4.39E+01			NA		
Total Organic Carbon- USEPA Method 5310B	NE	NE	NE	1.30E+00			NA			<	4.80E+00	UB	NA			<	2.00E+00	UB	NA		

Notes:
Groundwater analytical result from 2012 Biennial Groundwater Monitoring and Annual Landfill Inspection Report (Bhate 2013)
Data reported as detected did not include reporting limits.
[1] = USEPA Maximum Contaminant Levels (May 2009)
[2] = New Mexico Standards for Groundwater of 10,000 mg/L Total Dissolved Solids Concentration or Less (20 New Mexico Administrative Code 6.2)
[3] = New Mexico Environment Department Risk Assessment Guidance for Investigations and Remediation, Appendix A, Table A-1 June 2012

Shading indicates the value is greater than the MCL or NMGWQS. If no evaluation criteria is listed for MCL or NMGWQS, the value is screened a

µg/L = microgram per liter
< = Not Detected
J = Estimated
MCL = Maximum Contaminant Level
mg/L = milligram per liter
NA = Not Applicable
NE = Not Established
NMGWQS = New Mexico Groundwater Quality Standards
Qual = Qualifier
U = Nondetect
UB = analyte also found in associated laboratory or field blank, probable blank contaminant
UJ = Estimated Nondetect
USEPA = United States Environmental Protection Agency

TABLE 5-1
SUMMARY OF ANALYTICAL DATA QUALIFICATIONS - JULY 2014
CANNON AFB, NEW MEXICO

SDG	Field ID	Matrix	Analysis	Analyte	URS Qual.	Comments
L709935	MWV-7-14	Aq	VOCs	2-Chloroethyl vinyl ether	UJ	Low MS/MSD recovery
L709935	MWV-7-14	Aq	Hexavalent chromium	Hexavalent chromium	R	Analyzed 3 days outside 24 hour criteria
L709935	MWV-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710204	MWC-7-14	Aq	VOCs	Methylene chloride	U	Common laboratory contaminant
L710204	MWC-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710204	MWD-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Low MS/MSD recovery
L710204	MWD-7-14	Aq	VOCs	Methylene chloride	U	Common laboratory contaminant
L710204	MWD-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710204	MWX-7-14	Aq	VOCs	Methylene chloride	U	Common laboratory contaminant
L710204	MWX-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710491	MWB-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Analyzed 1 day outside 24 hour criteria
L710491	MWB-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710491	MWS-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Analyzed 1 day outside 24 hour criteria
L710491	MWS-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710491	MWT-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Analyzed 1 day outside 24 hour criteria
L710491	MWT-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L710491	MWU-7-14	Aq	Hexavalent Chromium	Hexavalent Chromium	J	Analyzed 1 day outside 24 hour criteria
L710491	MWU-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711018	MWA-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711018	MWOA-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711018	MWOA-7-14	Aq	TOC	TOC	J	Field duplicate RPD >30%
L711018	MWOA-7-14-A	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711018	MWOA-7-14-A	Aq	TOC	TOC	J	Field duplicate RPD >30%
L711018	MWPA-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711295	MWNA-7-14	Aq	VOCs	2-Chloroethyl vinyl ether	UJ	Low MS/MSD recovery
L711295	MWNA-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711300	MWF-7-14	Aq	VOCs	2-Chloroethyl vinyl ether	UJ	Low MS/MSD recovery
L711300	MWF-7-14	Aq	Metals	Calcium	J	Low MS/MSD recovery
L711300	MWF-7-14	Aq	Metals	Magnesium	J	Low MS/MSD recovery
L711300	MWF-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711329	MWE-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711384	MWRb-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711384	MWW-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711387	MWG-7-14	Aq	VOCs	Acetone	U	Common laboratory contaminant
L711387	MWG-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850
L711387	MWH-7-14	Aq	Perchlorate	Perchlorate	R	Analyzed via Method 314.0, not 6850

Notes:

AFB = Air Force Base
Aq = Aqueous
ID = Identification
J = Estimated
LOQ = Limit of Quantitation
MS/MSD = Matrix Spike/Matrix Spike Duplicate
R = Rejected
RPD = Relative Percent Difference
SDG = Sample Delivery Group
TOC = Total Organic Carbon
Qual = Qualifier
U = Estimated
UJ = Estimated Nondetect
URS = URS Group Inc.
VOCs = Volatile Organic Compound