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TO: New Mexico Environment Department

ATTN: Dave Cobrain, Hazardous Waste Department

RE: Two copies of the Final Playa Lake (SWMU 103) Phase III RCRA Facility Investigation Report

ENCLOSED ARE THE FOLLOWING:

- ☐ Daily Field Report(s) No.(s) For Period
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REMARKS:

Mr. Cobrain,

At the request of Cannon AFB (Matthew Higginbotham, Environmental Restoration Program Manager), we are sending you two copies (including CDs with pdf and native files) of the Final Playa Lake (SWMU 103) Phase III RCRA Facility Investigation Report.

Thanks,

Corey Anderson
URS Corporation
402-952-2551

PLEASE NOTIFY US IF ENCLOSURES LISTED ARE NOT RECEIVED.

FROM: URS Corporation (Corey Anderson)

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PLAYA LAKE (SWMU 103)
PHASE III RCRA FACILITY INVESTIGATION REPORT

CANNON AIR FORCE BASE
NEW MEXICO

October 2011

Prepared for:

Air Force Special Operations Command

27th Special Operations Wing

Under contract to:

U.S. Army Corps of Engineers
Omaha District

URS
12120 Shamrock Plaza, Suite 300
Omaha, Nebraska 68154

PLAYA LAKE (SWMU 103)
PHASE III RCRA FACILITY INVESTIGATION REPORT
CANNON AIR FORCE BASE, NEW MEXICO

October 2011

Prepared by:

United States Army Corps of Engineers
Omaha District
and
URS Group, Inc.
12120 Shamrock Plaza
Omaha, Nebraska 68154

Contract Number W9128F-04-D-0001
Task Order 0071
Modification 01

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°C	degrees Celsius
°F	degrees Fahrenheit
µg/kg	microgram per kilogram
µg/L	micrograms per liter
ADD	average daily dose
ADR	automated data review
AFB	Air Force Base
AFSOC	Air Force Special Operations Command
APPL	Agriculture & Priority Pollutants Laboratories, Inc.
bgs	below ground surface
B.P.	Before Present
BRA	baseline risk assessment
BSAF	Biota-sediment accumulation factor
CAC	Corrective Action Complete
CEC	cation exchange capacities
cm	centimeter
cm/sec	centimeters per second
cm/yr	centimeters per year
COC	chain-of-custody
COPCs	chemicals of potential concern
COPECs	chemicals of potential ecological concern
DoD ELAP	Department of Defense Environmental Laboratory Accreditation Program
DoD QSM	Department of Defense Quality Systems Manual
DQCRs	Daily Quality Control Reports
DQO	Data Quality Objective
DRO	diesel range organics
EDL	estimated detection limit
EMPC	estimated maximum potential concentration
EPCs	Exposure point concentrations
ERAs	ecological risk assessments

ESQs	ecological screening quotients
ESVs	ecological screening values
ft/mi	feet per mile
ft/yr	feet per year
g	gram
gal/ft	gallons per foot
gpm	gallons per minute
GPS	global positioning system
GRO	gasoline range organics
HQ	hazard quotient
HWB	Hazardous Waste Bureau
ID	identification
in/yr	inches per year
IRP	Installation Restoration Program
J	estimated
km/hr	kilometers per hour
L/min	liters per minute
LCS	laboratory control sample
LOAEL	Lowest-observed-adverse-effects level
LOECS	Lowest observed effects concentrations
m	meters
m/m	meters per meter
m/yr	meters per year
m^3/m	cubic meters per meter
MCLs	Maximum Contaminant Levels
MDL	method detection limit
mg/kg	milligrams per kilogram
mg/kgBW/d	milligram per kilogram body weight per day
mg/L	milligrams per liter
mm	millimeter
mph	miles per hour

MS/MSD	matrix spike/matrix spike duplicate
msl	mean sea level
NA	Not Applicable
ND	not detected
NFA	no further action
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NOAEL	no-observed-adverse-effects level
NOECS	No observed effects concentrations
NWRs	National Wildlife Refuges
ORO	oil range organics
PCB	polychlorinated biphenyl
pg	picogram
pH	hydrion ion exponent
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans
PEC	probable effects concentration
Qual	qualifier
QC	quality control
QAPP	Quality Assurance Project Plan
RBCs	Risk-Based Concentrations
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RFI	RCRA Facility Investigation
RL	reporting limit
RPDs	relative percent differences
RSLs	Regional screening Levels
SC	clayey sand
SCEM	site conceptual exposure model
SCFSs	Sample Collection Field Sheets
SCS	Soil Conservation Service

SM	silty sand
SOPs	standard operating procedures
SSLs	Soil Screening Levels
SSTLs	site-specific target levels
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
SWSLs	Surface Water Screening Levels
TCDD	tetrachlorodibenzo-p-dioxin
TEC	threshold effect concentration
TEFs	Toxicity equivalency factors
TEQs	toxic equivalents
TPH	Total Petroleum Hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
TRVs	toxicity reference values
U	Nondetect
UCL	upper confidence limit
UJ	estimated nondetect
URS	URS Group, Inc.
U.S.	United States
USACE	United States Army Corp of Engineers
USCS	Unified Soil Classification System
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
UTL	upper tolerance limit
VOCs	volatile organic compounds
W-C	Woodward-Clyde Consultants, Inc.
WP	Work Plan
WWTP	waste water treatment plant

EXECUTIVE SUMMARY

This Phase III Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report addresses Playa Lake (Solid Waste Management Unit [SWMU] 103) at Cannon Air Force Base (AFB) near Clovis, New Mexico, which required additional investigation to determine the nature and extent of potential contamination in surface water and sediment.

The Phase III RFI sediment analytical results were evaluated using current New Mexico Environment Department (NMED) Soil Screening Levels (SSLs) (NMED 2009), NMED Total Petroleum Hydrocarbons (TPH) screening guidelines for unknown oil (NMED 2006b) and sediment ecological screening values (ESVs) (NMED 2008). Surface water analytical results were evaluated using current New Mexico Administrative Code (NMAC) Surface Water Screening Levels (SWSLs) (NMAC 2009) and surface water ESVs (NMED 2008). Sediment analytical results were also compared to Cannon AFB background values. United States Environmental Protection Agency (USEPA) residential soil and tap water Regional Screening Levels (RSLs) (USEPA 2010) were used for human health screening if associated NMED or NMAC screening levels were not available. An NMAC SWSL (NMAC 2009) was available for dissolved selenium only; USEPA RSLs (USEPA 2010) were available for total selenium and silver and were used for human health screening. NMAC SWSLs and USEPA RSLs were unavailable for lead; therefore, lead results were evaluated using the Maximum Contaminant Level (MCL) for human health screening. This Phase III RFI report presents analytical results, compares the results to current NMED SSLs, NMED TPH screening guidelines, NMAC SWSLs, USEPA RSLs, sediment to Cannon AFB background values, includes further human health and ecological risk evaluations; as necessary, and provides recommendations for Playa Lake (SWMU 103).

As part of the work planning stage, data collected during the Phase I and II RFIs were re-evaluated for potential risk to humans and the Playa Lake (SWMU 103) environment. The human health and ecological risk reassessments identified surface water and sediment as the media of concern for the Phase III RFI.

Overall, twenty-one sediment samples (18 samples and three field duplicates) and seven surface water samples (six samples and one field duplicate) were collected and submitted for chemical analysis during the 2010 Phase III RFI field effort. Sediment samples were collected and analyzed for TPH-diesel range organics (DRO), TPH-gasoline range organics (GRO), TPH-oil range organics (ORO), arsenic, selenium, silver and vanadium. Surface water samples were collected and analyzed for total and dissolved lead, selenium and silver. Although polychlorinated dibenzodioxins/polychlorinated dibenzofurans (dioxins/furans) and polychlorinated biphenyl (PCB) congeners were not previously sampled and not addressed in the human health and ecological risk re-evaluations, Cannon AFB agreed to analyze six surface water and sediment samples for dioxins/furans and PCB congeners. The analytical data underwent 100 percent data verification that included automated data review (ADR). One-hundred percent of the analytical data from the samples collected at Playa Lake (SWMU 103) was determined to be acceptable for their intended use, including estimated/estimated nondetect (**J/UJ**) data.

The extent of contamination has been defined and no unacceptable risks to human health or the environment were identified based on the risk evaluation process, which included a qualitative human health screen and an ecological risk assessment (ERA). Therefore, Corrective Action Complete (CAC) without Controls is recommended for Playa Lake (SWMU 103).

This document presents the Phase III Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report for the Playa Lake (Solid Waste Management Unit [SWMU] 103) at Cannon Air Force Base (AFB) near Clovis, New Mexico.

1.1 AUTHORITY

The United States Army Corps of Engineers (USACE) Omaha District contracted URS Group, Inc. (URS) under Contract Number W9128F-04-D-0001, Task Order 0071, Modification 01 to complete a Phase III RFI at the Playa Lake (SWMU 103) at Cannon AFB, New Mexico.

1.2 PURPOSE AND SCOPE

This Phase III RFI report describes the fieldwork completed at the Playa Lake (SWMU 103) to determine the nature and extent of potential contamination at Playa Lake (SWMU 103). A map showing the location of Cannon AFB is shown on **Figure 1-1**. A site map of the location of Playa Lake (SWMU 103) is shown on **Figure 1-2**.

1.2.1 Project Background

The data collected during the previous Phase I RFI (W-C 1994) and Phase II RFI (W-C 1997b) at Playa Lake (SWMU 103) was re-evaluated for potential risks to human health and the environment, and the results were presented in Appendix F of the Phase III Work Plan (WP) (URS 2010). The previous human health and ecological risk assessments (ERAs) identified sediment and surface water as the media of concern for the Phase III RFI. The Phase III RFI field investigation included the collection of surface water and sediment samples to determine the nature and extent of potential contamination in surface water and sediment. Following sample collection and laboratory analysis, the data were reviewed and verified. This Phase III RFI report presents the analytical results; compares surface water and sediment results to current screening levels; compares sediment to Cannon AFB background values; includes further human health and ecological risk evaluations, as necessary; and provides recommendations.

1.2.2 Previous Environmental Investigations

Playa Lake (SWMU 103) has been the subject of a Phase I RFI, a Phase II RFI, and human health and ecological risk evaluations. The Phase I RFI for Playa Lake (SWMU 103) included the collection and analysis of surface water and sediment samples (W-C 1994). The Phase II RFI investigation for Playa Lake (SWMU 103) (W-C 1997b) included the collection and analysis of soil samples and subsurface sediment samples to further assess the vertical and horizontal extent of potential site related contamination at Playa Lake (SWMU 103).

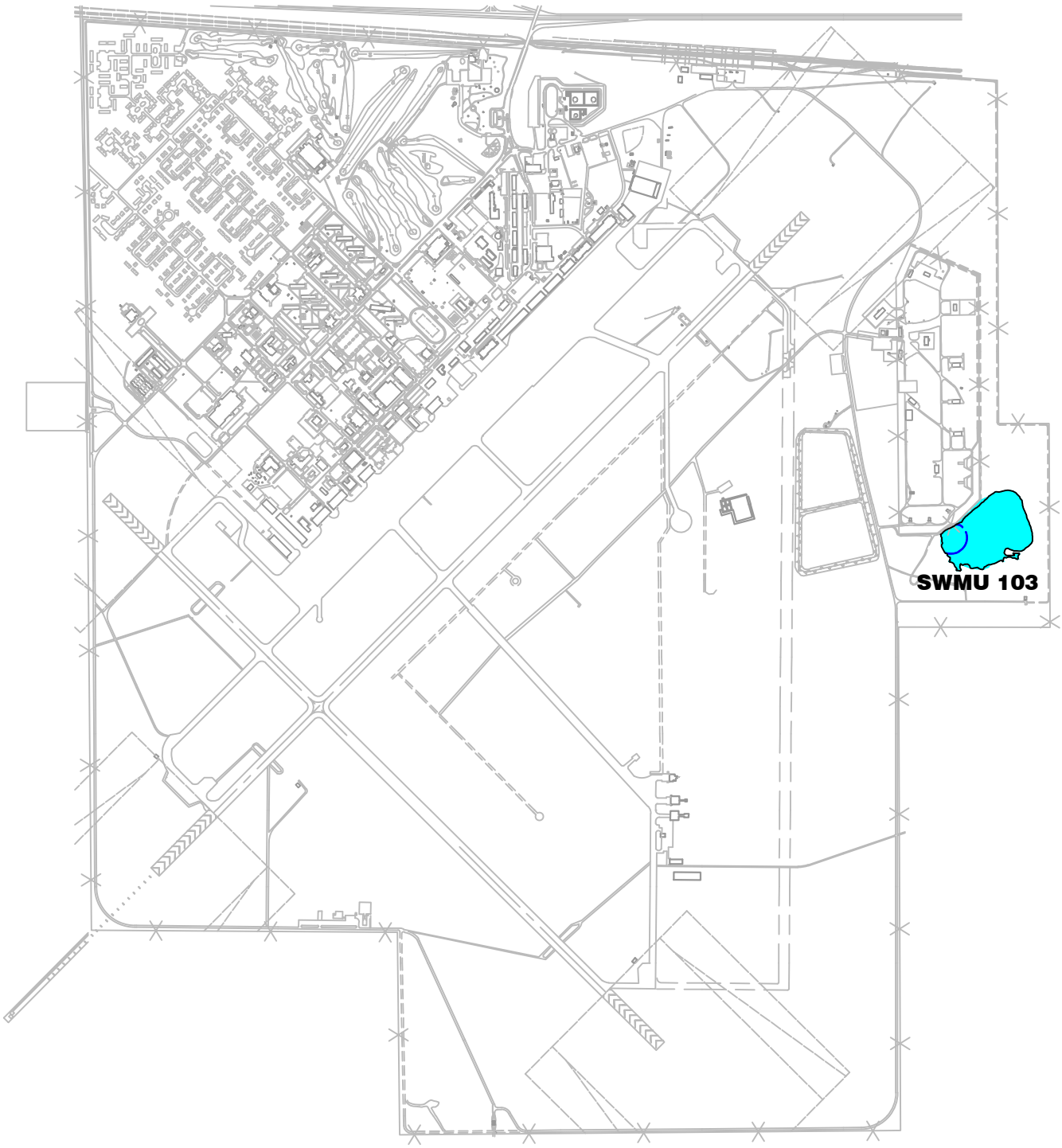
1.3 REPORT ORGANIZATION

The remaining sections of this report are organized as follows:

- **Section 2** provides a description of Cannon AFB.
- **Section 3** describes the site, site history, current use, previous investigations and human and ecological risk re-evaluations.
- **Section 4** discusses the Phase III RFI objectives and approach used to evaluate data and the need for further evaluation, if any.
- **Section 5** describes the field sampling procedures used.
- **Section 6** discusses the chemistry data reviews and verifications completed for the new data collected during the 2010 Phase III RFI fieldwork.
- **Section 7** provides the chemical results, nature and extent of potential contamination, screening-level risk evaluation, and conclusions.
- **Section 8** presents the summary and recommendations.
- **Section 9** provides a list of the references used to produce this report.

The appendices contain the following information:

- **Appendix A** presents the Daily Quality Control Reports (DQCRs), and Sample Collection Field Sheets (SCFSs).
- **Appendix B** provides the data quality review and verification results.
- **Appendix C** contains the analytical data summaries, analytical data results, field duplicate results, qualified data and chain-of-custody (COC) forms for the 2010 Phase III RFI samples.
- **Appendix D** provides the Ecological Risk Assessment.
- **Appendix E** presents the photographic log for the October 2010 Phase III RFI fieldwork.



LEGEND

- BERM BOUNDARY
- PLAYA LAKE BOUNDARY
- PLAYA LAKE

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LOCATION MAP,
PLAYA LAKE (SWMU 103)
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: TMS	DATE: 04/21/11	PROJECT NO. 16170402	FIG. NO. 1-1
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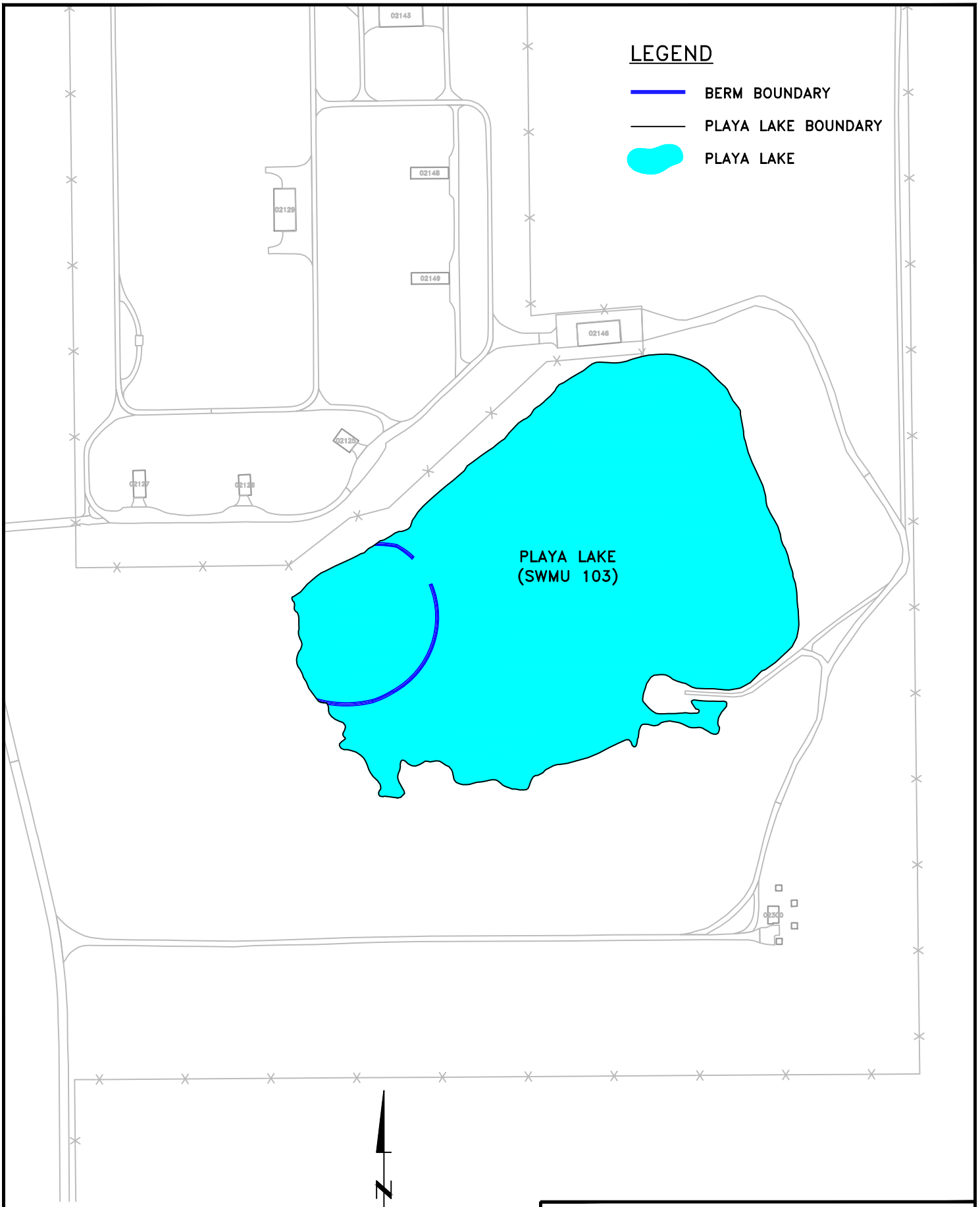

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SITE MAP,
PLAYA LAKE (SWMU 103)
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: TMS	DATE: 04/21/11	PROJECT NO. 16170402	FIG. NO. 1-2
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2.1 SETTING – PHYSICAL GEOGRAPHY

Cannon AFB is situated in the Southern High Plains Physiographic Province in the Llano Estacado subprovince. The Llano Estacado is a nearly flat plain sloping gently (10 to 15 feet per mile [ft/mi]) to the east and southeast. Elevations in the eastern New Mexico portion of the Llano Estacado exceed 4,000 feet above mean sea level (msl). In the vicinity of Cannon AFB, elevations range from 4,250 feet to 4,350 feet above msl.

The most prominent geomorphic features in the vicinity of Cannon AFB are blowouts and broad, widely spaced valleys. Less common landforms are relict sand dunes located along the northern side of the Portales Valley to the south. Relict dunes are not found on or near Cannon AFB.

Blowouts are broad, shallow depressions that form as the result of soil eroded by wind. Blowouts commonly collect surface runoff from small to moderate sized drainage areas. During periods of rainfall, runoff collects in blowouts to form ephemeral playa lakes. Playas have no external surface drainage. Water is lost by infiltration to the soil and evaporation; without recharge, playa lakes persist for only a few days or weeks. Three playas are located within Cannon AFB, and several more are found to the north and east of Cannon AFB.

Stream valleys tend to be fairly broad and widely spaced. Streams are ephemeral and drainages are poorly developed. No streams exist on or near Cannon AFB. Running Water Draw and Frio Draw, located about 10 and 20 miles, respectively, north of Cannon AFB, are the nearest streams. These are second-order streams. Both streams are very straight, flow southeast, and have rectilinear drainage patterns with short laterals (W-C 1991).

2.2 DEMOGRAPHICS AND LAND USE NEAR CANNON AFB

Cannon AFB is located just west of the City of Clovis, New Mexico and just south of United States (U.S.) Highway 60-84 in a farming and ranching area. The majority of the land surrounding Cannon AFB is productive, irrigated farmland or grassland. The major crops are wheat, sorghum, sugar beets, corn, cotton, alfalfa, barley, and peanuts. The land is also used for cattle grazing, both beef and dairy, and Clovis is considered the "Cattle Capital of the Southwest." There were 33,063 people living in Clovis in 2004 according to U.S. Census data, while the Cannon AFB population was estimated to be 2,600 in 2008 with a significant increase planned as part of the Air Force Special Operations Command (AFSOC) beddown.

2.3 CLIMATOLOGY

The climate of east-central New Mexico is classified as tropical semi-arid, with summer temperature and precipitation maxima. Average monthly temperatures range from a January low of 12 degrees Celsius (°C) (39 degrees Fahrenheit [°F]) to a July high of 26°C (78°F). Extreme daily temperatures range from –24°C (-11°F) to 41°C (106°F) (Lee Wan 1990). Average monthly precipitation ranges from 1 centimeter (cm) (0.4 inch) in winter to 6.9 cm (2.7 inches) in July. The maximum-recorded 24-hour rainfall was 12.2 cm (4.8 inches), which occurred in

the month of August. Rainfall occurs on eight or more days per month during the summer precipitation maximum. Mean annual precipitation is approximately 41 cm (16 inches). The mean annual evapotranspiration rate is 181.4 centimeters per year (cm/yr) (71.4 inches per year [in/yr]) (Lee Wan 1990). Prevailing winds are from the west at an average of 5 kilometers per hour (km/hr) (3.1 miles per hour [mph]) during fall, winter, and spring. During the summer, winds are from the south at an average of 3.7 km/hr (2.3 mph).

The atmosphere around the area of Cannon AFB is generally well mixed. The seasonal and annual average mixing heights can vary from 400 meters (m) in the morning to 4,000 m in the afternoon. The afternoon mixing heights are typically greater during the spring and fall. The morning mixing heights are usually low due to nighttime heat loss from the ground, producing surface-based temperature inversions. After sunrise, these inversions break up, and solar heating of the earth's surface causes vertical mixing in the atmosphere.

Dust is frequently entrained into the atmosphere in this region of the country because of gusty winds and the semi-arid climate. The Texas Panhandle-eastern New Mexico area is considered the worst area in the United States for windblown dust. Occasionally, this windblown dust is of sufficient quantity to restrict visibility. Most of the seasonal dust storms occur in March and April, when the wind speeds are typically high (i.e., average 5 km/hr) (W-C 1991).

2.4 GEOLOGY

A generalized geologic section at Cannon AFB is shown in **Figure 2-1**. The near-surface stratigraphic units of interest at Cannon AFB are the Late Miocene Late Pliocene-age Ogallala Formation and the Early Triassic Dockum Group.

The Dockum Group consists of three formations. The stratigraphically lowest unit is the Santa Rosa Sandstone. Overlying the Santa Rosa Sandstone are the Chinle and Redonda Formations. The Chinle and Redonda Formations are composed mainly of red shales with lesser interbedded sands and are known locally as "redbeds." The top of the Dockum Group is marked by an erosional nonconformity having relief of up to several hundred feet (Lee Wan 1990).

Overlying the Dockum Group redbeds is the Ogallala Formation. The Ogallala Formation extends from eastern New Mexico and Colorado into Texas, Oklahoma, Kansas, Nebraska, and South Dakota. According to Lee Wan and Associates (1990), drillers' logs from Cannon AFB indicate that the Ogallala Formation varies from 360 feet to 415 feet in thickness. The incised upper surface of Triassic redbeds strongly influences Ogallala thickness. Paleo valleys in the post-Triassic nonconformity are deep and trend dominantly east to west. Ogallala thickness may thus vary significantly over short north-to-south distances.

The Ogallala Formation is erosionally truncated to the south along the abandoned Portales Valley, to the west along the Pecos River Valley, and to the north in a series of ephemeral stream valleys. The Ogallala Formation extends more than 125 miles to the east before terminating as an escarpment in Briscoe County, Texas. Springs and seeps are common along the erosional margins of the Ogallala.

The Ogallala Formation dips gently and monoclinally to the southeast in the vicinity of Cannon AFB. As reported by Lee Wan and Associates (1990), data suggest that some quaternary warping may have occurred; however, most of these structures are located well to the northwest and southwest of Cannon AFB. No faults or buried structural lineaments are known to exist in the vicinity of Cannon AFB.

The Ogallala Formation is composed of unconsolidated, poorly sorted gravel, sand, silts, and clays. The base of the Ogallala is generally marked by a gravel, cobble, and boulder deposit. This basal member contains sediments derived from igneous and sedimentary rocks transported from the mountains to the west. The Ogallala Formation was laid down as stream and overbank deposits formed within coalescing alluvial fans. These fans form a broad pediment along the eastern flank of the Rocky Mountains. As is typical of alluvial deposits, Ogallala Formation internal stratigraphy varies vertically and horizontally over short distances.

Except where strongly cemented by calcium carbonate (caliche), the sediments of the Ogallala Formation are loose and friable. Authigenic and allogenic clays are found as a trace to abundant matrix mineral (Lee Wan 1990). As reported by Lee Wan and Associates (1990), five zones have been distinguished within the Ogallala Formation of east-central New Mexico on the basis of clay minerals. Smectites (montmorillonites) and attapulgite (with sepeotite) are the dominant clays throughout the Ogallala. Illite is a lesser but persistent clay, as is kaolinite. Smectite is a swelling clay, causing deep cracks to form in dry surface soils. Smectite in particular and, to a lesser extent, attapulgite and illite, are clays with moderate to high cation exchange capacities (CEC). The formation as a whole should, therefore, have a relatively high CEC, which should inhibit the migration of charged contaminants and especially ionic forms of metals.

Caliche is a major feature of the Ogallala Formation, occurring as nearly continuous to discontinuous layers throughout. Caliche is hard, white to pale tan on fresh surfaces, weathering to gray, and has a chalky appearance. Caliche forms as calcium carbonate, leached from overlying sediments, and precipitates in the pore space of the host sediments. Precipitation is caused by the evaporation of downward percolating water. The caliche may thus mark the position of ancient vadose zones. As reported by Lee Wan and Associates (1990) radiocarbon dates for the upper “climax” caliche range from approximately 27,000 years Before Present (B.P.) to approximately 42,000 years B.P.

Caliche is relatively soluble in acidic water (i.e., water with a hydrion ion exponent [pH] less than 7) or in waters containing dissolved carbon dioxide. The top surface of the uppermost or “climax” caliche in a fresh outcrop typically shows solution etching.

The Ogallala Formation has numerous continuous to discontinuous caliche layers throughout its thickness. The climax caliche is pisolitic (i.e., consisting of spherical concentrically laminated aggregates 1 to 10 millimeters [mm] in diameter) (Lee Wan 1990). The pisolites are thought to have formed as the caliche was repeatedly chemically weathered and brecciated during Pleistocene pluvials (wet climate episodes) and later recemented during drier intervals. This upper caliche crops out around playas and the bounding escarpments of the Ogallala Formation, and is locally termed “caprock.” The climax caliche is typically 3 to 5 feet thick. Caliches that

occur lower in the Ogallala Formation are platy and harder. Caliche may be thin or absent below playas (W-C 1991).

2.5 HYDROGEOLOGY

The lower portion of the Ogallala Formation is the primary regional aquifer for both potable and irrigation water. No deeper aquifers are utilized in the vicinity of Cannon AFB. The Ogallala aquifer is part of the High Plains Aquifer that extends continuously from Wyoming and South Dakota into New Mexico and Texas. In east-central New Mexico, the Ogallala aquifer rests on Dockum Group redbeds that serve as the basal confining layer. The Ogallala aquifer is a water table, or unconfined, aquifer (Lee Wan 1990). The Ogallala aquifer has a southeasterly regional gradient of about 17 ft/mi (0.0032 meters per meter [m/m]) (see **Figure 2-2**). Well yields vary from less than 1 gallon per minute (gpm) in thin silts and sands and up to 1,600 gpm in thick sands and gravels (Lee Wan 1990). Water quality is generally good, with hardness and fluorides being somewhat high (Lee Wan 1990).

Beneath the eastern portion of Cannon AFB, the depth to groundwater has been measured between 270 and 300 feet below ground surface (bgs). Saturated thickness of the Ogallala aquifer ranges from 93 to 143 feet and is influenced by the configuration of the erosional nonconformity surface marking the top of the Dockum Group. The local groundwater gradient is southeasterly at 7.5 ft/mi (Lee Wan 1990). Yields in tests of Cannon AFB water wells have ranged from 776 liters per minute (L/min) (205 gpm) to 4,353 L/min (1,150 gpm). Specific capacities range from 0.14 cubic meters per meter (m^3/m) (11.4 gallons per foot [gal/ft]) to 0.35 m^3/m (27.9 gal/ft) (Lee Wan 1990).

Very rough estimates of hydraulic conductivity were made from well pump tests in water wells 5 and 9 (**Figure 2-3**) using the Theis equation. An estimate of hydraulic conductivity for water well 8 was based on water level recovery data using the Bouwer and Rice approach (Lee Wan 1990). The data used in these calculations were obtained to evaluate pump rates, efficiency, and well yield and were not intended for use in calculating aquifer properties. The results of these calculations should therefore be considered as first approximations.

Hydraulic conductivity values for water wells 5 and 9 were found to be approximately 2.0×10^{-3} centimeters per second (cm/sec). Calculations for water well 8 resulted in a hydraulic conductivity of 2.0×10^{-2} cm/sec. In addition, slug testing of two monitoring wells (MW-O and MW-N) was completed by Woodward-Clyde Consultants, Inc. (W-C) in February 1995 (W-C 1995). The estimated hydraulic conductivities from these slug tests were both 3×10^{-3} cm/sec. These estimates appear to be low when compared to published hydraulic conductivity data for sands and gravels. As reported by Lee Wan and Associates (1990), a groundwater flow velocity of about 45 meters per year (m/yr) (150 feet per year [ft/yr]) has been estimated. This calculates out to a hydraulic conductivity of approximately 1.4×10^{-4} cm/sec. Again, this appears to be low when compared with published data (Freeze and Cherry 1979).

The presence of interstitial clays may account for both the variability and the low values of hydraulic conductivities. Boring logs from Cannon AFB Installation Restoration Program (IRP)

projects and published reports (Lee Wan 1990) indicated that interstitial and interstratified clays are abundant in the Ogallala Formation.

Recharge to the Ogallala aquifer is primarily through precipitation. A recharge rate of 0.5 in/yr was calculated using the Theis equation, and the recharge rate may be as much as 1.0 in/yr (Lee Wan 1990). Due to the high evapotranspiration rate and low precipitation, recharge probably occurs only during heavy rainfall events in which the infiltration capacity of the soil is exceeded and runoff occurs, or during cool months when precipitation exceeds evapotranspiration. Excess runoff flows to playas, and the presence of water in playas may allow deep percolation to the aquifer. The occurrence of this process is evidenced by the presence of clay deposits in, and thin or nonexistent caliche layers directly below, playas. Caliche is soluble in acidic rain waters, and is leached over time to form percolation pathways.

Discharge from the Ogallala aquifer occurs through well pumping and springs along the eroded margins of the formation. Spring discharge does not occur on or near Cannon AFB. However, domestic and irrigation water wells are common on and around Cannon AFB. The rate of discharge exceeds the rate of recharge. Water levels in the Ogallala aquifer have declined steadily from the 1930s to the present. A decline of 50 to 100 feet has been observed in the area around Clovis, New Mexico for the period from the 1930s to 1980. Lee Wan and Associates (1990), states "the largest area of water level decline exceeding 100 feet occurs south of the Canadian River extending from Curry County, New Mexico to Crosby County, Texas."

The dominant uses of groundwater in the Cannon AFB area are as potable and irrigation water. Numerous wells are found in the Cannon AFB area, most of which provide only irrigation water.

The Ogallala aquifer will continue to be used as the primary source of potable and irrigation water for eastern New Mexico. The New Mexico State Engineer designated Curry County as a Water Basin in 1989. This designation allows for regulation of water rights, usage, and well drilling (W-C 1991).

2.6 SOILS

2.6.1 Cannon AFB Vicinity

Soils in the vicinity of Cannon AFB are classified as silty sand (SM) to clayey sand (SC) under the Unified Soil Classification System (USCS), and as aridisols (calciorthids) under the Soil Conservation Service Comprehensive Soil Classification System. The following summary is based on the Soil Conservation Service Curry County Soil Survey as reported by Lee Wan and Associates (1990).

The most common soil type on Cannon AFB is Amarillo fine sandy loam, 0- to 2-percent slope phase (map symbol Ab on **Figure 2-4**). This soil consists of a thin sandy A horizon, well-defined clayey B_{1-3} horizons, with a calcic B_3 horizon at depths below 40 inches. The calcic B_3 horizon lies on a calcic C horizon or on caliche. The Amarillo fine sandy loam is present on all

relatively flat surfaces at Cannon AFB but is also found on slopes associated with playas (map symbol Ac).

Clovis fine sandy loams, 0- to 2-percent slope phase (map symbol Cb) and 2- to 5-percent slope phase (map symbol Cc) are very similar to Amarillo fine sandy loams. In the Clovis soils, the depth to the calcic C horizon ranges from 28 to 56 inches. The depth to caliche exceeds 56 inches. Clovis and Amarillo fine sandy loams occur in close association.

In a few limited areas, particularly along the steeper slopes around playas, Mansker fine sandy loam, 0- to 2-percent slope phase (map symbol Ma), and 2- to 5-percent phase (map symbol Mb) are found. Mansker fine sandy loams have no B horizons and are very calcareous. The calcic C horizon is within 2 feet of the surface.

The A and B horizons of Amarillo and Clovis fine sandy loams are rapidly to moderately permeable. Mansker fine sandy loam A and Ac horizons are rapidly permeable. Permeabilities in calcic B and C horizons are moderate (Lee Wan 1990).

2.6.2 Background Metals Concentrations in Soil

Soils in the vicinity of Cannon AFB are generally alkaline and naturally contain higher concentrations of metals. Elevated concentrations of aluminum, calcium, iron, magnesium, manganese, and potassium have been found to naturally occur in this area.

A summary of background elemental concentrations in soil samples at Cannon AFB is presented in **Table 2-1**. Data for this table were initially presented in the final report "Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico" (W-C 1997a). Additional information regarding historical background soil data is available in this report.

2.7 BIOLOGICAL RESOURCES

Land adjacent to Cannon AFB is primarily used for agriculture, and there is little natural vegetation remaining in the area. There are a few playa lakes in the area; these are used by upland game for cover, by waterfowl for resting and feeding, and by wildlife in general for drinking. Nearby riverbeds also provide water sources during rainy seasons. During periods of low rainfall, the riverbeds are dry (W-C 1991).

2.7.1 Plant Resources

The undisturbed natural vegetation is mostly shortgrass prairie, including blue grama grassland and mixed grama grassland vegetation types, which have moderately fast recovery rates. Woodlands composed of large shrubs and small trees are confined to riparian areas and playa lakes in the vicinity (W-C 1991).

The following plants are candidate species for the Federal List of Endangered and Threatened Wildlife and Plants and are found within a 50-mile radius of Cannon AFB: chatterbox orchid (*Epipactus gigantea*), spiny aster (*Aster harridus*), Whittmans milkvetch (*Asragalus witmanii*), dune unicorn plant (*Proboscidea sabulosa*), and the tall plains spruce (*Eupjorbia strictior*). The dune unicorn plant is also on the state endangered plant species list. No federally protected endangered plants are known to be present on the Base (Lee Wan 1990).

2.7.2 Wildlife Resources

The eastern New Mexico area contains many nongame wildlife species that are typical of the High Plains. Most of these species are distributed widely throughout the western United States. Species diversity is low in most habitats because of the low vegetation diversity. Most amphibian species are associated with riparian habitats and playa lakes. Reptiles are found in all terrestrial habitat types, but are most abundant in scrub/grasslands. Nocturnal rodents are the most abundant members of the small mammal community.

Grasslands on the High Plains support a variety of seed-eating sparrows and other ground-dwelling birds, both as residents and migrants. Raptors (hawks and owls) are relatively abundant in all habitats in the region. Insectivorous and tree-nesting species are most abundant in riparian areas. Shorebirds and waterfowl utilize the rivers, playa lakes, and reservoirs of the region.

Two National Wildlife Refuges (NWRs) are located in the region surrounding Cannon AFB area. The Grulla and Muleshoe NWRs are within 30 miles of the Base. These areas provide high-quality habitat for waterfowl.

Big-game species in the area include mule deer, white-tailed deer, pronghorn, and barbary sheep. Pronghorn are the most abundant game animal in the area. Several species of upland game, such as quail, ring-necked pheasant, and turkey are common in the area. Reservoirs (Ute Lake, Conchas Lake, and Clayton Lake) and playa lakes are important waterfowl habitats in the region. Numerous species of native and introduced fish inhabit the rivers and perennial streams, and the reservoirs support recreational fishing of warm-water species such as walleye, crappie, channel catfish, largemouth bass, and bluegill.

As determined by the regional office of the U.S. Fish and Wildlife Service, two federally listed endangered animal species, the bald eagle and peregrine falcon, are known to inhabit the area within a 50-mile radius of Cannon AFB. The New Mexico Department of Game and Fish also indicated that the state endangered Mississippi kite, Baird's sparrow, and the black-footed ferret may also occur in the vicinity of the Base. The federal and state-protected species are listed in **Table 2-2**.

Within Curry County, the only state-protected bird that is expected to occur is the Mississippi Kite. In New Mexico, since the early 1960s, this kite summers regularly and breeds in the Clovis region. The birds frequent the golf course at Cannon AFB. Two other state-protected birds that may occur within Curry County are the McCown's longspur and Baird's sparrow. These two species have not been sighted regularly in recent years. No information is available on the

McCown's longspur in New Mexico; however, Baird's sparrow occurs mainly in autumn during migration in the eastern plains and southern lowlands. Migratory birds appear as early as the first week of August and move further south by November. The species seems to have declined in abundance throughout its range in the Southwest due to the loss of shrubby shortgrass habitats.

State-protected birds known to occur infrequently are the bald eagle and the peregrine falcon. The bald eagle migrates and winters from the northern border of New Mexico to the Gila, lower Rio Grande, middle Pecos, and Canadian valleys. It is seen occasionally in summer and as a breeding bird, with nests reported in the extreme northern and western parts of the state. Winter and migrant populations appear to have increased with reservoir construction. The peregrine falcon is widely distributed but population numbers are low. The American subspecies breeds statewide in New Mexico, but mainly west of the eastern plains (Cannon 1990).

TABLE 2-1
SUMMARY OF BACKGROUND ELEMENTAL CONCENTRATIONS[1] IN SOIL SAMPLES[2] AT CANNON AIR FORCE BASE, NEW MEXICO

	Mean (x)		Standard Deviation (s)		95% Upper Tolerance Limit of Background Concentrations (UTLs)	
Element	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil
Aluminum	5,508	5,932	1,964	2,183	8,950	12,214
Antimony	ND (3)	ND (3)	ND (3)	ND (3)	3.15 (3)	16 (3)
Arsenic	2.1	2.1(4)	0.48	0.96 (4)	3.6	4.3 (4)
Barium	100	210	165	199	670	890
Beryllium	0.35 (4)	0.35 (4)	0.13 (4)	0.17 (4)	0.78 (4)	0.73 (4)
Cadmium	ND (3)	ND (3)	ND (3)	ND (3)	0.435 (3)	1.3 (3)
Calcium	5,645	89,410	11,366	64,611	44,800	237,498
Chromium (total)	7.1	5.6	1.3	2.33	10.5	13.3
Cobalt	2.9	2.6 (4)	1.0	1.4 (4)	6.6	4.7 (4)
Copper	6.8	3.8 (4)	4.6	1.97 (4)	18.3	8.3 (4)
Iron	6,458	5,148	1,349	2,262	10,100	13,148
Lead	6.8	4.7	1.6	1.7	12	8.7
Magnesium	1,066	4,260	390	3,856	1,930	19,300
Manganese	139	83	51	50	307	333
Mercury	0.025 (4)	ND (3)	0.016 (4)	ND (3)	0.056 (4)	0.019 (3)
Nickel	5.5	5.9 (4)	1.6	2.41 (4)	11	14.9 (4)
Potassium	1,345	1,222	413	417	2,691	2,512
Selenium	ND (3)	0.47 (4)	ND (3)	0.31 (4)	0.26 (3)	1.1 (4)
Silver	--- (5)	ND (3)	--- (5)	ND (3)	0.4 (5)	2.65 (3)
Sodium	91	351(4)	10	253 (4)	102	1,227 (4)
Thallium	ND (3)	ND (3)	ND (3)	ND (3)	0.6 (3)	2.65 (3)
Vanadium	14.9	16	2.8	5.2	23.3	32.8
Zinc	15.4	12.1	5.2	4.8	32.2	30.6

(1) All concentrations are in milligrams per kilogram (mg/kg).

(2) From report entitled "Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico" (W-C 1997a).

(3) All analytical samples were nondetect; therefore, a mean and standard deviation was not calculated. One-half the highest reporting limit is used as the 95% UTL. The actual mean, standard deviation, and UTL may be less than these values.

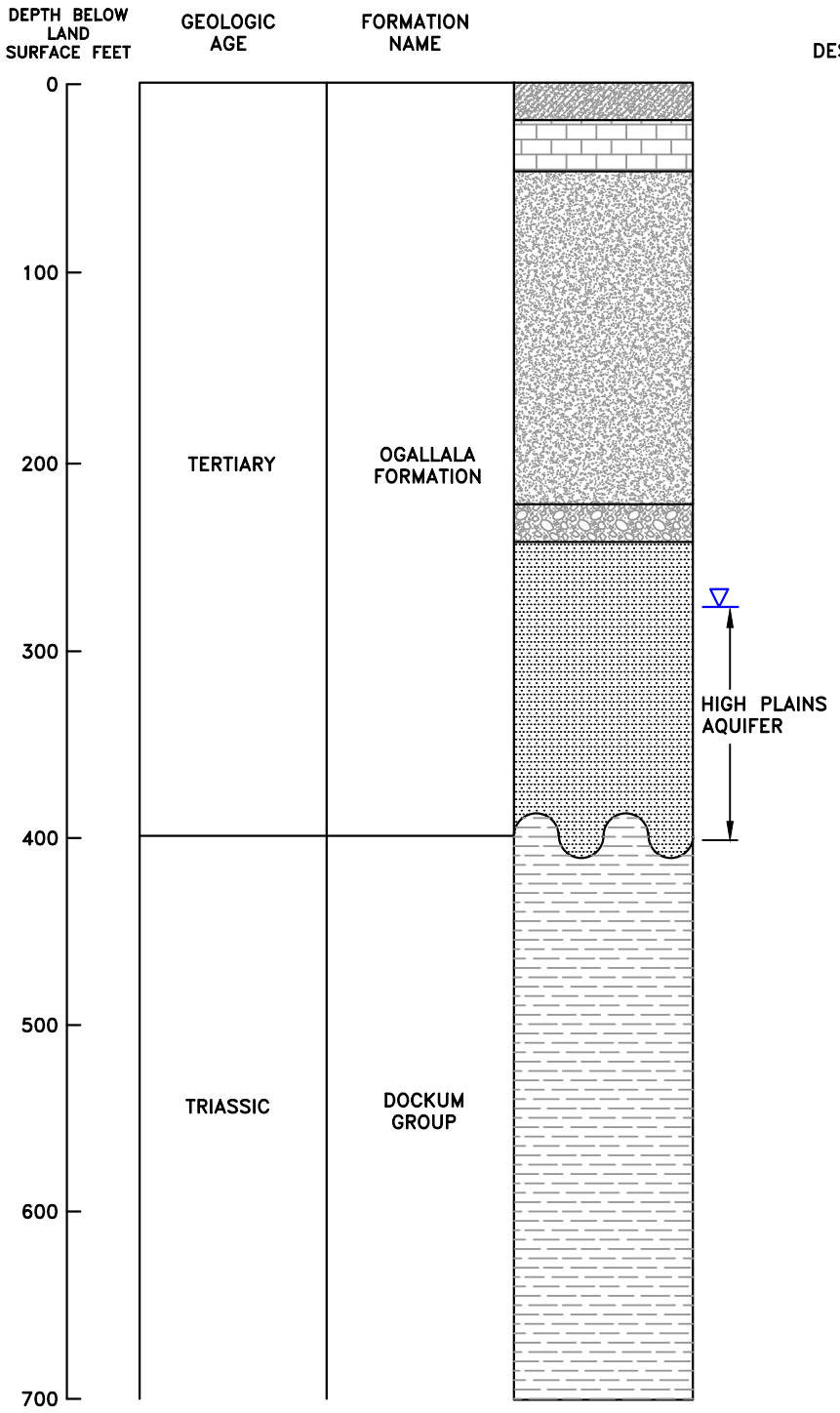
(4) Values determined from a data set including one-half of the reporting limits for nondetects.

(5) Silver was detected in only one sample; therefore, a mean and standard deviation was not calculated. The single detected concentration is used as the 95% UTL.

TABLE 2-2
FEDERAL AND STATE-PROTECTED ANIMALS POTENTIALLY OCCURRING IN THE VICINITY OF CANNON AIR FORCE BASE (CURRY COUNTY)

Common Name		Scientific Name	Federal Status	State Status
Birds				
	Eagle, Bald	Haliaeetus leucocephalus alascanus (NM)		Threatened
	Falcon, Peregrine	Falco peregrinus		Threatened
Arctic	Falcon, Peregrine,	Falco peregrinus tundrius		Threatened
	Tern, Least	Sterna antillarum athalassos	Endangered	Endangered

Source: New Mexico Game and Fish Department, Bison-M 2009



LEGEND

- SILTY SAND WITH CALICHE
- CALICHE
- SAND AND SILTY SAND
- SANDY GRAVEL
- SAND
- SANDSTONE (RED BEDS)
- LITHOLOGIC CONTACT
- EROSIONAL UNCONFORMITY
- WATER LEVEL

SOURCE: MODIFIED FROM GUTENTAG ET. AL., 1984

GENERALIZED GEOLOGIC STRATA AT
CANNON AIR FORCE BASE
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: LLS	DATE: 05/02/11	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	DATE: 05/02/11	16170402	2-1

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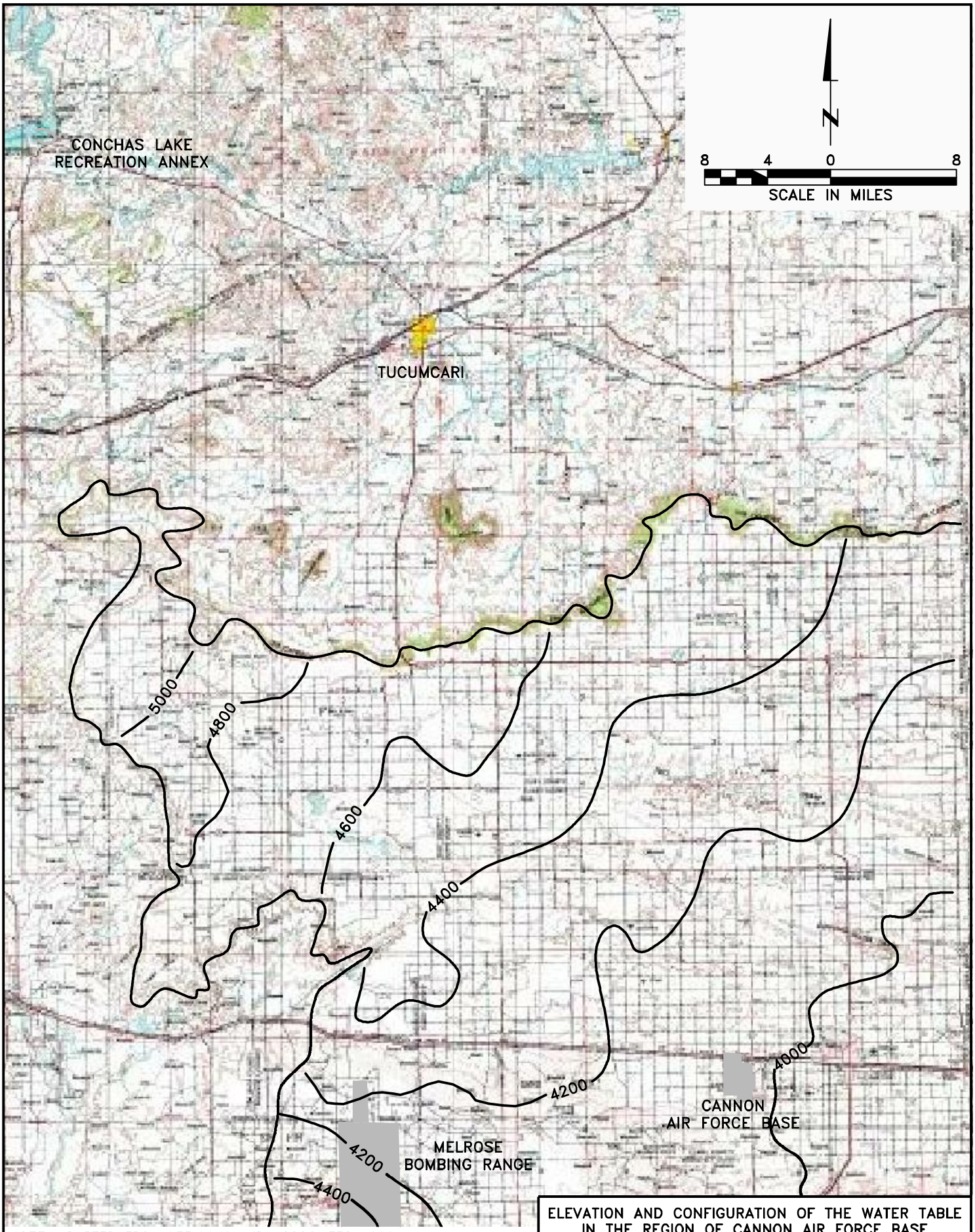
Drawing: T:\CANNON\16170402\200\2-1.dwg

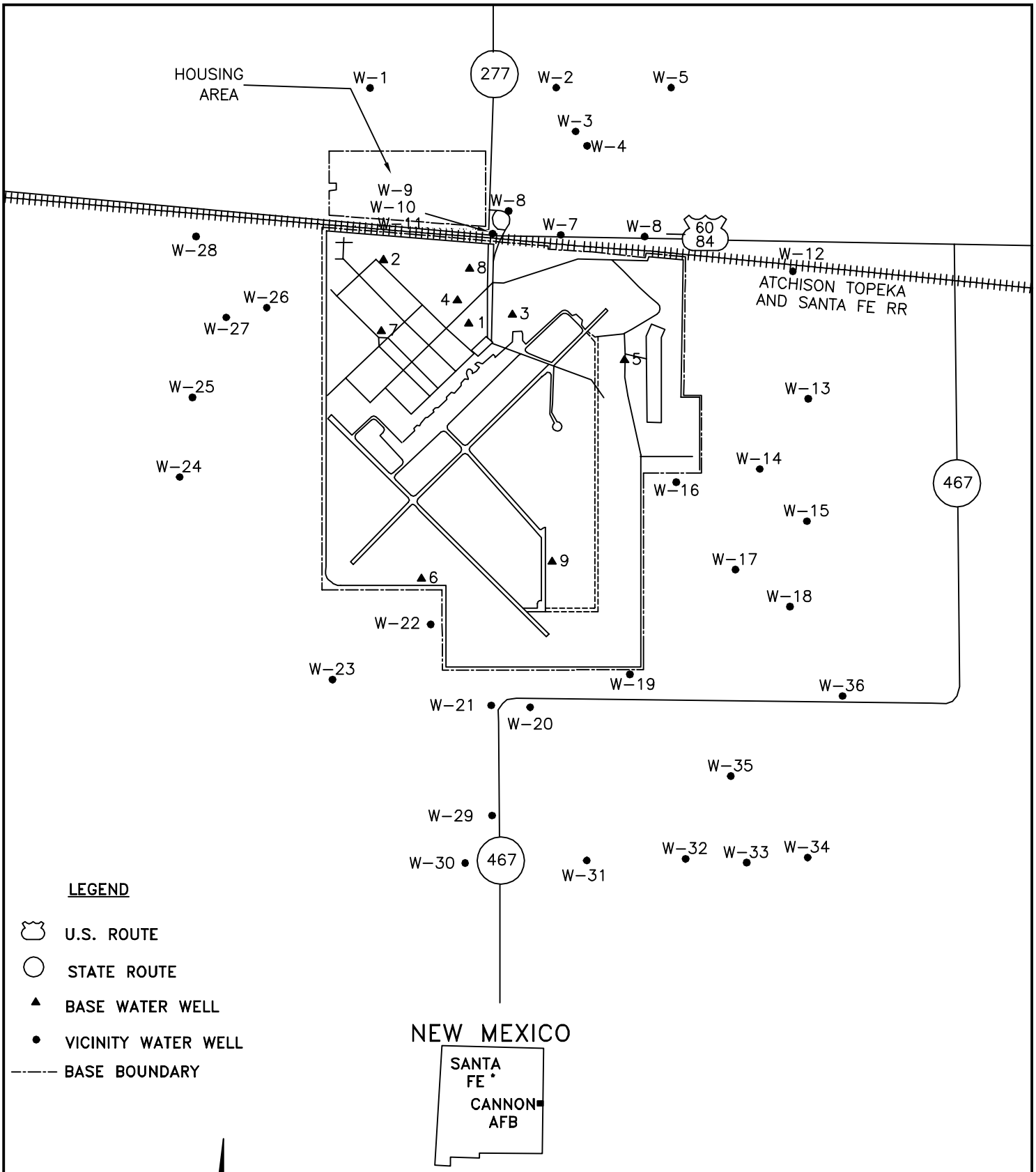


NOTE: ADAPTED FROM LEE WAN AND ASSOCIATES 1990
ORIGINAL SOURCE: USGS

May 27, 2009 1:56:02 p.m.
Drawing: T:\CANNON\16170402\200\2-2.dwg

ELEVATION AND CONFIGURATION OF THE WATER TABLE
IN THE REGION OF CANNON AIR FORCE BASE
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 05/08/09	PROJECT NO. 16170402	FIG. NO. 2-2
CHK'D. BY: JLV	REVISION: 0		

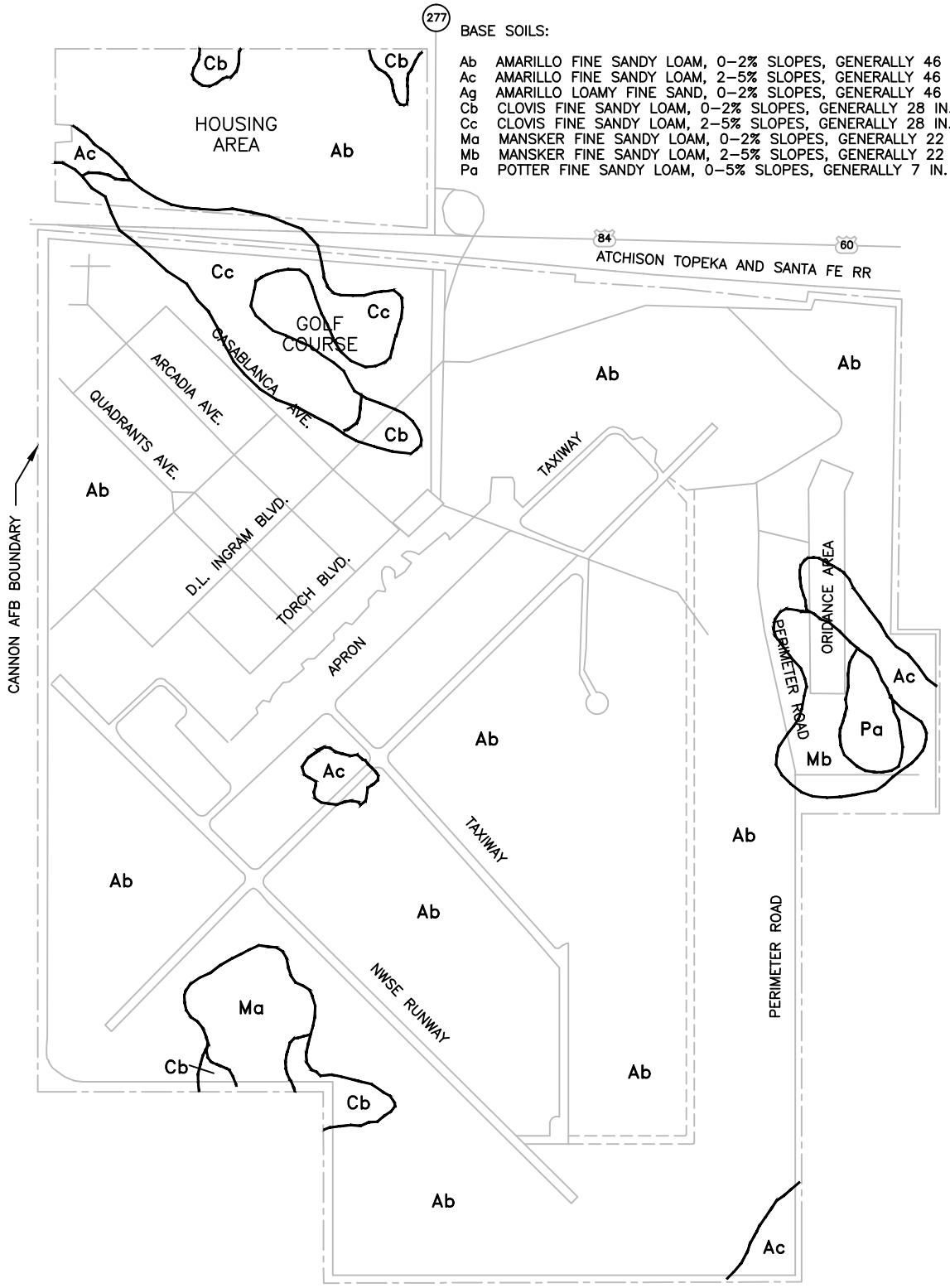


SOURCE: MODIFIED FROM BUTENTAG ET. AL., 1984

WATER WELL LOCATIONS ON AND NEAR
CANNON AIR FORCE BASE
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 05/08/09	PROJECT NO. 16170402	FIG. NO. 2-3
CHK'D. BY: JLV	DATE: 05/08/09		

May 27, 2009 1:55:49 p.m.
Drawing: T:\CANNON\16170402\200\2-3.dwg



BASE SOILS:

Ab AMARILLO FINE SANDY LOAM, 0–2% SLOPES, GENERALLY 46 IN. THICK
Ac AMARILLO FINE SANDY LOAM, 2–5% SLOPES, GENERALLY 46 IN. THICK
Ag AMARILLO LOAMY FINE SAND, 0–2% SLOPES, GENERALLY 46 IN. THICK
Cb CLOVIS FINE SANDY LOAM, 0–2% SLOPES, GENERALLY 28 IN. THICK
Cc CLOVIS FINE SANDY LOAM, 2–5% SLOPES, GENERALLY 28 IN. THICK
Ma MANSKER FINE SANDY LOAM, 0–2% SLOPES, GENERALLY 22 IN. THICK
Mb MANSKER FINE SANDY LOAM, 2–5% SLOPES, GENERALLY 22 IN. THICK
Pa POTTER FINE SANDY LOAM, 0–5% SLOPES, GENERALLY 7 IN. THICK

N

2000 1000 0 2000
SCALE IN FEET

SOURCE: UNITED STATE DEPARTMENT OF AGRICULTURE–SOIL CONSERVATION SERVICE, SOIL SURVEY OF CURRY COUNTY N.M., 1958

DISTRIBUTION OF SOILS BY TYPE AT
CANNON AIR FORCE BASE
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: LLS	DATE: 05/02/11	PROJECT NO. 16170402	FIG. NO. 2–4
CHK'D. BY: JLV	DATE: 05/02/11		

May 03, 2011 2:52:15 p.m.
Drawing: T:\CANNON\16170402\200\2–4.dwg

3.1 SITE DESCRIPTION

Playa Lake (SWMU 103) occupies approximately 13 acres of Cannon AFB near the munitions storage area at the east-central edge of the Base (**Figure 1-1**). This shallow pond is maintained at capacity by inflow from the base wastewater treatment plant (WWTP), located to the west. The lake is approximately 1,000 feet across at the widest part, and is estimated to be a maximum of 5 feet deep, with a gradual sloping bottom.

3.2 SITE HISTORY

Playa Lake (SWMU 103) received all of Cannon AFB sanitary and industrial wastewater from 1943 to 1966; a portion of the wastewater was treated with an Imhoff unit prior to discharge to the Playa Lake. In 1966, a lagoon system was placed in operation that provided aeration treatment of the wastewater prior to discharge of treated effluent to Playa Lake (SWMU 103). The lake received treated sanitary and industrial wastewater effluent from the wastewater treatment lagoons from 1966 to 1998; the lagoons were decommissioned in 2003. A new WWTP was built and put into commission in 1998. A portion of the treated effluent is discharged to a golf course pond where it is used for irrigation. The remainder of the effluent is discharged to Playa Lake. The WWTP is regulated by a National Pollution Discharge Elimination System permit issued by the United States Environmental Protection Agency (USEPA) and a New Mexico Ground Water Discharge Permit. The WWTP consistently meets its discharge requirements. In 2006 and 2007, it was awarded the New Mexico Water and Wastewater Association's Good Housekeeping Award for best overall operations and maintenance practices.

3.3 CURRENT USE

Playa Lake (SWMU 103) continues to receive treated effluent directly from the WWTP. There are no streams or water bodies entering or exiting the lake. Water exits the lake via evaporation and possibly via infiltration. The surface water from the Playa Lake (SWMU 103) is not currently being used for irrigation of nearby agricultural fields. Limited vegetation surrounds the lake; weeds and annuals are found seasonally in the wet zones of the shoreline. A few individual elms and hybrid poplars are also located near the shoreline.

3.4 PREVIOUS INVESTIGATIONS

3.4.1 Phase I RFI

The Phase I RFI for Playa Lake (SWMU 103) included sample collection and screening-level risk evaluation (W-C 1994). All surface water and sediment samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), and herbicides.

As a conservative risk-screening approach, maximum detected chemical concentrations from the Phase I RFI were screened against highly conservative USEPA Region III Risk-Based Concentrations (RBCs) in accordance with RCRA Subpart S guidance. Other screening criteria included the State of New Mexico's TPH clean-up level of 1,000 milligrams per kilogram (mg/kg) (New Mexico Environmental Improvement Board 1993), USEPA's then recommended soil lead level of 500 mg/kg (USEPA 1994), and Federal Maximum Contaminant Levels (MCLs) for some surface water analytes. Prior to risk screening, metals analytes were first screened against upper tolerance limit (UTL) background concentrations.

3.4.2 Phase II RFI

The Phase II RFI investigation for Playa Lake (SWMU 103) (W-C 1997b) included the collection of soil samples and subsurface sediment samples to further assess the vertical and horizontal extent of potential site contamination at Playa Lake (SWMU 103). All samples were analyzed for VOCs, SVOCs, metals, total recoverable petroleum hydrocarbons (TRPH), chlorinated herbicides, pesticides, and PCBs. Phase II maximum chemical concentrations that exceeded Phase I maximums were screened to evaluate the nature and extent of any contamination and to assess any risks associated with potential exposure to chemicals of concern.

The human health routes and receptors addressed by the Phase II risk assessment for soil and sediment were the same as those addressed during Phase I. The higher of the maximum concentrations detected during Phase I and Phase II were screened against USEPA Region III RBCs. Of the Phase II maximum chemical concentrations, only Aroclor-1248, manganese, and beryllium exceeded residential and industrial RBCs. However, the maximum detected beryllium concentration was within typical regional background concentrations. The estimated risk associated with Aroclor-1248 fell within USEPA's target risk range of 1×10^{-6} to 1×10^{-4}. An estimated hazard quotient for manganese (2.3) exceeded the recommended hazard quotient of 1.0. However, the maximum manganese concentration was detected in a sample collected beneath Playa Lake (SWMU 103) where the potential for a residential exposure scenario is unlikely.

Phase II RFI data were screened against Phase I results, background values, and RBCs (residential and industrial). The results of the screening indicated that no unacceptable human health risks due to detected chemicals were expected from Playa Lake (SWMU 103). Therefore, the results of the Phase I baseline risk assessment (BRA) were supported by the Phase II RFI data, and no further action (NFA) was recommended for lake sediments and surrounding soil.

3.5 HUMAN HEALTH RISK RE-EVALUATION

Historical maximum detected soil and sediment data from the Phase I and II RFIs completed at Playa Lake (SWMU 103), were re-evaluated and compared to State of New Mexico SSLs to determine if any unacceptable risks to human health exist. For the data re-evaluation, historical maximum soil and sediment concentrations were compared to New Mexico Environment Department (NMED) Soil Screening Levels (SSLs) (NMED 2006a). The results of the human health risk re-evaluation are presented in Appendix E of the Phase III RFI WP (URS 2010). In

summary, the results indicated that the historical maximum TPH concentration detected in sediment (5,890 mg/kg) exceeded the residential screening guideline for waste oil (2,500 mg/kg) (NMED 2006b). The maximum arsenic (10.8 mg/kg) and vanadium (130 mg/kg) concentrations also exceeded corresponding residential SSLs (3.9 mg/kg and 78.2 mg/kg, respectively). These are the only chemicals historically detected in sediment at Playa Lake (SWMU 103) that exceeded current residential SSLs. All three of these maximum concentrations were associated with a single sediment sample (CAN103-10302) collected within the bermed area of the Playa Lake (SWMU 103) as part of the Phase I RFI (W-C 1994).

The use of maximum chemical concentrations to evaluate risk provided a conservative means to estimate risk. The human health risk assessment was also a highly conservative estimate of risk from sediment concentrations because exposure to the sediments underlying Playa Lake (SWMU 103) is limited by the 5 feet of water typically present in the lake. Therefore, the use of residential screening levels to re-evaluate the RFI data was a highly conservative approach.

3.6 ECOLOGICAL RISK RE-EVALUATION

A Draft Summary of Risk Evaluations at the Playa Lake (W-C 1998) was written to address specific comments and concerns posed by NMED regarding potential deficiencies in the historical data collection, analyses, and associated risk assessments, especially the ecological risk assessment. The ecological risk evaluation identified elevated sulfide and selenium concentrations as potential ecological concerns, but concluded, based on typical concentrations of sulfides and selenium associated with natural sources and the intrinsic conservatism applied during the ecological risk assessment, that Corrective Action Complete was warranted for ecological concerns at the Playa Lake (SWMU 103). It does not appear, however, that this document was ever submitted for regulatory review. Therefore, an updated ecological risk screening evaluation was completed in 2009 for the data collected during the Phase I and II RFI in order to further facilitate the Phase III RFI. This ecological risk assessment was included as Appendix F of the Phase III RFI WP (URS 2010). In summary, the results of this evaluation concluded that risks to terrestrial receptors from exposure to soils around Playa Lake were not indicated. No further sampling or evaluation of soils was recommended.

The updated ecological risk evaluation recommended additional surface sediment and surface water samples be collected in the areas where lead, silver, and selenium were elevated in the 1993 sampling (specifically in the bermed area) to determine current concentrations of these elements in sediment and surface water. Surface water was recommended to be evaluated for both total (unfiltered) and dissolved (filtered) fractions.

Although dioxins/furans and PCB congeners were not identified as potential site-related contaminants and were not addressed in the human health and ecological risk re-evaluations, Cannon AFB agreed to analyze six surface water and sediment samples for dioxins/furans and PCB congeners, based on a request from NMED.

This section presents the objectives and approach of the Phase III RFI for the Playa Lake (SWMU 103).

4.1 PHASE III RFI OBJECTIVES

The overall purpose of the Phase III RFI was to determine the nature and extent of any potential contamination in surface water and sediment.

The preliminary objective for Playa Lake (SWMU 103) was to implement a risk-based process that was protective of human health and the environment. This risk-based process integrated site assessment, and monitoring with NMED-recommended risk evaluation practices.

The specific objectives for Playa Lake (SWMU 103) were:

- Further evaluate the extent and degree of potential contamination levels in surface water and sediment at Playa Lake (SWMU 103)
- Further assess the potential for contaminant migration into the surrounding and subsurface environment
- Further identify public health and environmental risks of contaminants relative to applicable regulatory standards
- Based on the results of the risk-screening process, evaluate and justify the Corrective Action Complete (CAC) alternative or appropriate corrective measures implementation alternative

4.2 PHASE III RFI APPROACH

The following decision process was used to assess the data needs and approach for the Phase III RFI at Playa Lake (SWMU 103). The Data Quality Objective (DQO) evaluation process was designed to provide data of sufficient quality and quantity to evaluate whether a release has occurred that could pose a risk to human health or the environment and to evaluate the need for further action, such as corrective measures implementation.

The decision process was designed to identify appropriate actions based on recommendations: CAC (with or without controls), further evaluation, or corrective measures implementation. The recommendation for the selection of appropriate action would depend upon whether chemicals of potential concern (COPCs) were detected in Playa Lake (SWMU 103), surface water and/or sediment at levels that posed an unacceptable risk to human health or the environment. The initial steps in the decision process involved compiling all historical information and analytical data as well as any new information and/or data for Playa Lake (SWMU 103). Additional fieldwork was completed at Playa Lake (SWMU 103) to further evaluate the extent and degree of surface water and sediment contamination. The data collected during the Phase III RFI was used to determine potential surface water and/or sediment COPCs for Playa Lake (SWMU 103) and, if possible, to identify any potential sites of chemical release.

4.2.1 Sediment

Sediment metals data were compared to the established Cannon AFB background values (W-C 1997a) and to NMED human health SSLs for residential exposure (NMED 2009). In addition, TPH data were compared to NMED TPH screening guidelines for unknown oil. USEPA residential soil Regional Screening Levels (RSLs) (USEPA 2010) were used for human health screening if associated NMED screening levels were not available. If any sediment COPC exceeded background values and its corresponding human health SSL or screening guideline, then a more site-specific risk evaluation was completed which included the generation of site-specific target levels (SSTLs). Chemicals of potential ecological concern (COPECs) for sediment were identified by comparing maximum concentrations to Ecological Screening Values (ESVs). If the maximum concentration exceeded the ESVs, an ecological risk assessment was completed. An updated screening-level ecological risk evaluation was completed using the Phase III RFI data for sediment. This risk evaluation process is discussed in more detail in **Sections 4.5**, **4.6**, and **4.7**. The risk evaluations provided a focused assessment of potential risks to human health and the environment at Playa Lake (SWMU 103).

4.2.2 Surface Water

Surface water COPCs were compared to NMAC surface water screening levels (NMAC 2009) and ESVs (NMED 2008). USEPA tap water RSLs (USEPA 2010) were used for human health screening if associated NMAC screening levels were not available. An NMAC SWSL (NMAC 2009) was available for dissolved selenium only; USEPA RSLs (USEPA 2010) were available for total selenium and silver and were used for human health screening. NMAC SWSLs and USEPA RSLs were unavailable for lead; therefore, lead results were evaluated using the Maximum Contaminant Level (MCL) for human health screening. If any surface water COPC exceeded its corresponding human health screening level, then a more site-specific risk evaluation was completed which included the generation of SSTLs. Ecological COPCs for surface water were identified by comparing maximum concentrations to ESVs. If the maximum concentration exceeded the ESVs, an ecological risk assessment was completed. An updated screening-level ecological risk evaluation was completed using the Phase III RFI data for surface water. This risk evaluation process is discussed in more detail in **Sections 4.5**, **4.6**, and **4.7**. These risk evaluations provided a focused assessment of potential risks to human health and the environment at Playa Lake (SWMU 103).

4.2.3 Phase III RFI Guidelines

The results of the risk evaluation process were used to help evaluate appropriate future actions for Playa Lake (SWMU 103). Recommendations regarding the appropriate actions were made on the following basis:

- If the extent of contamination was defined, no threat to human or ecological health was identified based on the risk evaluation process, and no potential threat to the environment was apparent, then CAC would be recommended.

- If the extent was not defined and there was a potential significant threat to human or ecological health based on the risk evaluation process, then further evaluation would be recommended for the site.
- If the extent of contamination has been defined and an unacceptable threat to human health or the environment was identified, then corrective measure alternatives would be reviewed, and the appropriate measures would be recommended for implementation.

4.3 PRELIMINARY DEVELOPMENT OF SITE CONCEPTUAL EXPOSURE MODELS

The initial step in the evaluation of the site was the development of a Site Conceptual Exposure Model (SCEM), which provided a framework for evaluating potential risks associated with the site, aided in the identification of data needs, and assisted in the identification of appropriate preliminary remediation goals targeted at significant exposure pathways. The human health SCEM is presented as Figure 4-1 of the Phase III RFI WP (URS 2010). The ecological SCEM is included in Appendix F of the Phase III RFI WP (URS 2010). Upon completion of the field sampling program, the SCEMs were reviewed and modified (if necessary) in order to re-evaluate the site, taking into consideration the analytical results of all COPCs for surface water and sediment.

The SCEMs presents chemical release sources and transport media, potential human or ecological receptors, and intake-mechanisms for each potential exposure pathway. An exposure pathway describes the means by which release, transport, and intake by receptor populations of COPCs occurred. An exposure pathway consisted of four necessary elements:

- A source and transport mechanism of chemical release to the environment
- An environmental exposure medium for the released chemical (e.g., surface water or sediment)
- A point of potential human or ecological exposure to transported chemicals (e.g., a domestic drinking water well)
- A human or ecological intake mechanism (e.g., inhalation or ingestion) at the point of exposure

All four elements must be present for an exposure pathway to be complete and for chemical exposure to occur. In the SCEMs, potentially significant pathways are denoted with solid lines.

Potential exposure pathways were evaluated with respect to potential chemical sources at the site. Exposure pathways were considered to be potentially complete if there were chemical release and transport mechanisms; and identified exposure points and receptors for that exposure pathway. Incomplete exposure pathways did not result in actual exposure to human or ecological receptors and, therefore, did not pose a potential risk. Insignificant pathways were those that could conceivably be complete and result in an exposure, but the resulting exposure was at levels that did not pose a significant risk.

The primary source was generally waste (e.g., fuels, oils, and metals) that may have been discharged to Playa Lake (SWMU 103). Chemicals from the primary source may have been transported away from the primary source area, affecting other media that may in turn have acted as secondary sources. Percolation and leaching of the wastes to the subsurface sediment were shown as secondary chemical release mechanisms. Historical analytical data showed that contaminant concentrations in the area of the Playa Lake (SWMU 103) generally reduce significantly with depth; however, despite the depth to groundwater, percolation of water and contaminants to groundwater is possible. Therefore, it is possible that any COPCs in sediments could potentially leach or percolate through the subsurface and be released to groundwater even though the depth to groundwater is nearly 300 feet.–

Other release mechanisms, such as direct contact (soil ingestion and dermal contact), surface runoff, or volatilization to the atmosphere were also depicted in the SCEMs.

4.4 EVALUATION OF BACKGROUND CONCENTRATIONS

A comparison of Playa Lake (SWMU 103) sediment sample concentrations to Cannon AFB background soil concentrations (see **Table 2-1**) were used to determine whether metals detected in sediment samples were site related. The following sections describe the approaches used for each.

Sediments are derived from parent geologic materials as a result of physical, chemical, and biological processes as well as the hydrologic processes that have occurred in the Playa Lake. The sediment system is a highly heterogeneous matrix of inorganic and organic components. The relative proportions of these components are dependent upon factors such as topography, climate, deposition, and time (Sposito and Page 1984). Total concentrations of metals in sediments may vary depending upon location; for example, surface sediments can be influenced by leaching, runoff, atmospheric deposition, and biotic uptake, as well as any anthropogenic activity. The ranges of naturally occurring or "background" concentrations of metals in sediments can be variable due to the composition of parent material. Therefore, care must be taken in the interpretation of metals data generated during an investigation.

Metals concentrations in Playa Lake (SWMU 103) sediments were compared to background soils concentrations presented in "Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico" (W-C 1997a). The approach compared the maximum concentrations detected in Playa Lake (SWMU 103) sediment samples to the 95 percent UTL of the background concentrations for subsurface soils. Using this technique, individual samples at the site with high metals concentrations relative to background values (i.e., which could represent a site-related release) were identified.

4.5 HUMAN HEALTH RISK EVALUATION METHODOLOGY

This section provides a description of the approach that was used in the health risk evaluation for the Playa Lake (SWMU 103). Sediment COPCs were compared to NMED human health SSLs

for residential exposure (NMED 2009). In addition, TPH data were compared to NMED TPH screening guideline for unknown oil. Surface water COPCs were compared to NMAC surface water screening levels (NMAC 2009). If NMAC SWSLs were not available for surface water, COPCs were compared to USEPA RSLs (USEPA 2010) and if USEPA RSLs were not available, COPCs were compared to the Maximum Contaminant Level (MCL) (USEPA 2009). An NMAC SWSL (NMAC 2009) was available for dissolved selenium only; USEPA RSLs (USEPA 2010) were available for total selenium and silver and were used for human health screening. NMAC SWSLs and USEPA RSLs were unavailable for lead; therefore, lead results were evaluated using the Maximum Contaminant Level (MCL) for human health screening. If any surface water or sediment COPCs exceeded background values and its corresponding human health screening level or guideline, then a more site-specific risk evaluation was completed which would have included the generation of SSTLs (as applicable).

4.5.1 Derivation of NMED SSLs

The SSLs were taken from the NMED table which was provided in Appendix D (NMED 2009) of the Phase III RFI WP (URS 2010). The latest available version was used. These SSLs are based on 1×10^{-5} excess cancer risk or a hazard quotient equal to 1, assuming residential ingestion, dermal, and inhalation exposures. A maximum chemical concentration that exceeds a screening-level SSLs does not mean that a health risk exists because the maximum concentration detected is not the concentration to which people would routinely be exposed, and the exposure assumptions used to derive the SSLs are not site-specific.

For a carcinogen, the SSL is the concentration of a chemical in soil/sediment that is estimated to result in an excess cancer risk of 1×10^{-5} (1 in 100,000) for Class A and B carcinogens or 1×10^{-4} for Class C carcinogens, assuming long-term (30-year) daily exposures. A range of 1×10^{-6} to 1×10^{-4} (1 in 1,000,000 to 1 in 10,000) is USEPA's target excess cancer risk range for cleanup under Superfund and RCRA (USEPA 1991). Therefore, SSLs based on target risks of 1×10^{-5} and 1×10^{-4} are conservative (protective) values, and exceedances of these SSLs did not necessarily mean that a health risk was present. Exceedance of the SSLs meant, however, that further evaluation of chemical concentrations, exposure assumptions, and carcinogenicity was warranted.

For noncarcinogens, SSLs are the concentrations in soil/sediment that are estimated to result in a "hazard quotient" (HQ) of 1.0. A hazard quotient is the ratio of the estimated daily dose from the assumed exposure to an established reference dose (RfD) that is considered safe for a lifetime of daily exposure. A hazard quotient of 1 meant that no toxic effects were likely to occur even to sensitive individuals exposed for a lifetime. A hazard quotient above 1 did not mean that toxic effects necessarily occurred, but that further evaluation of exposures and chemical toxicity was required.

NMED SSLs for soil/sediment exposures are based on the ingestion, inhalation, and dermal exposure routes. Soil/sediment SSLs were available for industrial and residential scenarios. Playa Lake (SWMU 103) is located in an industrialized area of the Base. For the initial assessment of Phase III RFI, residential SSLs were used. If a secondary assessment was

required, the site-specific exposure parameters were refined and site-specific exposure scenario SSTLs were calculated. Maximum detected concentrations (or upper confidence limit [UCL], if adequate data are available) were compared to the site-specific industrial SSTLs.

It is important to note that SSLs are not cleanup goals. Cleanup goals are determined on a site-specific basis. Rather, comparing the Phase III RFI sediment concentrations to screening-level SSL was adopted as a means of screening whether the chemicals in sediments could pose a threat to human health. If the screening-level SSLs were not exceeded, Corrective Action Complete without controls was recommended. If the screening-level SSLs were exceeded, further evaluation of potential risks will be completed.

4.6 ECOLOGICAL RISK EVALUATION METHODOLOGY

The ecological risk assessment (ERA) for the Playa Lake (SWMU 103) followed the procedures of the Hazardous Waste Bureau (HWB) of NMED's Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment (NMED 2008), USEPA's Ecological Risk Assessment Guidance for Superfund (USEPA 1997), and USEPA's Guidelines for Ecological Risk Assessment (USEPA 1998). Details of the procedures used in the risk assessment were presented in the 2010 ERA found in Appendix F of the Phase III RFI WP (URS 2010). The 2010 ERA identified specific chemicals as being of potential ecological concern for surface water and sediment with the recommendation that further analysis was warranted. At NMED's request, PCB congeners and dioxins/furans were added as chemicals requiring further ecological evaluation for both surface water and sediment. The ERA conducted for the Phase III RFI is presented in **Appendix D** and addresses the chemicals identified as being of concern in surface water and sediment in the 2010 ERA, plus the analytes requested by the State, as follows:

Surface Water Analytes	Sediment Analytes
PCB Congeners	PCB Congeners
Dioxins/Furans	Dioxins/Furans
Lead (total and dissolved)	Arsenic
Selenium (total and dissolved)	Selenium
Silver (total and dissolved)	Silver
	Vanadium
	Diesel Range Organics
	Oil Range Organics
	Gasoline Range Organics

Data used in this ERA consisted of surface water data collected during the Phase III RFI, which included both total and dissolved concentrations, and sediment data collected during the Phase I RFI and Phase III RFI (combined as a single dataset).

Consistent with state and federal guidance, this ERA was initiated with an ecological problem formulation describing the environmental setting, contaminant fate and transport, and potential

ecological receptor species that may be exposed to contaminants present. The ecological assessment endpoints relevant to Playa Lake (SMWU 103) were identified. Chemicals of potential ecological concern (COPECs) were identified by comparing the maximum detected concentrations with media-specific ESVs. The COPECs were identified based on the Phase I RFI and Phase III RFI data. The identified COPECs were further evaluated by comparing a reasonable estimate of the mean (as the exposure concentration) with media- and receptor-specific toxicity reference values (TRVs) for those receptors in direct contact with the medium, or, for higher trophic-level receptors exposed through their diet, by calculating an estimated dose and comparing it with TRVs expressed as doses. Risk estimates were calculated as ecological screening quotients (ESQs) and further characterized by taking into consideration the uncertainties associated with the assumptions and methodology used in this ERA. Details of the ERA process and results are presented in **Appendix D**.

In accordance with the applicable standard operating procedures (SOPs), collocated surface water and sediment samples were collected. Following the dig permit process, it was determined that utility clearances were not required for this site due to the nature of the sampling activities and the fact that all samples were collected within the Playa Lake (SWMU 103), where utilities are not present. Sampling activities, sampling equipment and procedures, sample identification, sample handling, documentation, and analysis are also presented in this section.

5.1 PHASE III RFI ACTIVITIES

The human health and ecological risk re-evaluations identified the need for additional investigation to determine the nature and extent of potential contamination in surface water and sediment at Playa Lake (SWMU 103). The Phase III RFI fieldwork included collecting collocated surface water and shallow sediment samples (from the top 6 inches of sediment) at six sample locations focused within the perimeter of the bermed area. Sediment sampling was completed using a stainless-steel hand auger utilizing a split-spoon sampler. Surface water sampling was completed by immersion, and dissolved metals samples were prepared using a transfer jar and a hand pump utilizing a 0.45-micron filter. Surface water samples were collected and analyzed for dioxins/furans, PCB congeners, total and dissolved (filtered) lead, selenium, and silver. Sediment samples were collected and analyzed for dioxins/furans, PCB congeners, TPH-diesel range organics (DRO), TPH-gasoline range organics (GRO), TPH-oil range organics (ORO), arsenic, selenium, silver and vanadium.

Six additional sediment samples were collected from areas that were accessible to a wide range of ecological receptors. These additional sediment samples were distributed throughout the shallow areas of the Playa Lake (SWMU 103) and were analyzed for selenium only. In addition, six other sediment samples were distributed elsewhere in the Playa Lake (SWMU 103) and placed on hold at the laboratory. These six samples were later analyzed at the laboratory for TPH-DRO, TPH-GRO, TPH-ORO, selenium, and silver to better delineate the lateral extent of potential contamination.

Surface water sample locations with shallow water depths were sampled using chest waders, and locations with deeper water were collected using a 14-foot V-bottom boat provided by the Cannon AFB Recreation Services. A global positioning system (GPS) was used to locate and record sampling coordinates. Refusal was encountered at 3 inches at sample locations SD08 and SD09 on the east end of the Playa Lake (SWMU 103). Rocks were present at these sample locations causing refusal. Several attempts were made to collect a 6-inch interval sample resulting in a bent auger cutting shoe.

A culvert on the west side of the lake discharged treated water from the WWTP into Playa Lake (SWMU 103) periodically throughout each day of sampling from Cannon AFB WWTP. Numerous waterfowl were also observed, mainly on the eastern end of the Playa Lake (SWMU 103), during sampling activities. Sampling was completed in accordance with the Phase III RFI WP (URS 2010). A summary of samples collected at SWMU 103 are shown on **Table 5-1** and a photographic log of field activities is presented in **Appendix E**.

5.2 SAMPLING EQUIPMENT AND PROCEDURES

The sample locations where both surface water and sediment were collected were collocated. Surface water samples were collected by immersion and dissolved metals samples were collected using a transfer jar and prepared using a hand held pump that utilized a 0.45 micron in-line filter. Before collecting surface water samples, the outside of all sample containers were triple rinsed with the surface water being sampled and water quality parameters including pH, temperature, conductivity and turbidity were measured. Water quality parameters were measured using an Oakton 300 water quality meter without a flow through cell and turbidity was measured using a Hanna turbidity meter.

Sediment samples were collected using a stainless-steel hand auger utilizing a split spoon sampler. Upon arrival to the sample location, the depth of water overlying the sediment sample location was measured using the hand auger extension rods. The extension rods were decontaminated, which included an Alconox wash, tap water rinse, followed by two deionized water rinses. Sediment samples were collected by pushing the sampler into the sediment, and a slide hammer attached to the auger extension rods was used to reach the desired sample depth (i.e., top 6 inches of sediment). Once the sample was collected, the sampler was opened and TPH-GRO samples were collected from the center of the top 2 inches of sediment material. After the TPH-GRO samples were collected, the sample lithography was recorded, the remaining sample was composited, the other required sample analyses were collected, and all samples were placed on ice. After all samples were collected, the sampler and auger extension rods were decontaminated, which included an Alconox wash, tap water rinse, followed by two deionized water rinses.

The Field Manager was responsible for ensuring that samples were collected with properly decontaminated equipment as required by the site-specific sampling procedures. Specific responsibilities included:

- Sampling locations, equipment, and requirements
- Number and type of samples
- Sample identification
- Preservation requirements
- Analytical parameters
- Equipment decontamination procedures
- COC requirements

Decontamination procedures were performed in accordance with SOP No. 5 in a manner consistent with the most recent USEPA guidelines. Procedures included an Alconox or equivalent wash, then a tap water rinse, followed by two deionized water rinses.

5.3 SAMPLE IDENTIFICATION

During the 2010 Phase III RFI fieldwork, seven surface water samples (six samples and one field duplicate) and 21 sediment samples (18 samples and three field duplicates) (see **Table 5-1**) were collected. Each sample was assigned a discrete sample identification that included a unique code that indicated the site, sample location, sample type, and depth.

5.4 SAMPLE HANDLING, DOCUMENTATION, AND ANALYSIS

The labeling, preservation, handling, shipping, documentation, and tracking procedures for all samples collected at Cannon AFB were performed in accordance with SOP No. 6, Sample Handling, Documentation, and Tracking.

All sample labels were completed using waterproof ink and numbered. Surface water and sediment sample labels were supplied by URS. Glass sample containers were placed in protective bubble wrap plastic bags and additional protective packing material was placed between sample containers. Samples were then placed in a cooler with ice (double-bagged using 1-gallon, zipper-lock bags) for overnight express carrier shipment to the laboratory. A completed and signed COC was placed in each cooler to be shipped. Samples were shipped to Agriculture and Priority Pollutants Laboratories, Inc. (APPL) by an overnight courier. Following collection, samples remained on site for no more than 48 hours.

Documentation of observations and data acquired in the field provided information on the acquisition of samples and created a permanent record of field activities. The observations and data were recorded in a permanently bound, weatherproof field book with consecutively numbered pages.

To supplement the information in the field book, SCFSs were completed for every sample location, and daily DQCRs were also completed and maintained in URS records. Sample collection field sheets and DQCRs and are presented in **Appendix A**. All analyses were specified on the COC and are presented in **Appendix C**.

The contact information for the analytical chemistry laboratory used for the Phase III RFI is listed below:

Agriculture & Priority Pollutants Laboratories, Inc.
Point of Contact: Diane Anderson
908 North Temperance Ave.
Clovis, California 93611
Tel: 559-275-2175
Fax: 559-275-4422
Email: danderson@applinc.com

APPL is Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) accredited for all environmental analytes targeted during the Phase III RFI.

TABLE 5-1
SUMMARY OF SAMPLES COLLECTED DURING THE PLAYA LAKE (SWMU 103) PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

Boring Location	Field ID	Depth Interval (feet)	Date Lab Received	Matrix	Investigative	Duplicate	MS/MSD	PCB Congeners (1668B)	Dioxins / Furans (8290)	Total Metals (6010B)	Total/Dissolved Metals (6010B)	TPH-DRO (8015B)	TPH-GRO (8015B)	TPH-ORO (8015B)	Selenium (6010B)	Sample Date
SB01	C103-SW01-00	NA	10/19/2010	Surface Water	x			x	x		x					10/18/2010
SB01	C103-SD01-0.5	0-0.5	10/19/2010	Sediment	x			x	x	x		x	x	x		10/18/2010
SB02	C103-SW02-00	NA	10/19/2010	Surface Water	x		x	x	x		x					10/18/2010
SB02	C103-SD02-0.5	0-0.5	10/19/2010	Sediment	x		x	x	x	x		x	x	x		10/18/2010
SB03	C103-SW03-00	NA	10/21/2010	Surface Water	x			x	x		x					10/19/2010
SB03	C103-SD03-0.5	0-0.5	10/21/2010	Sediment	x			x	x	x		x	x	x		10/19/2010
SB04	C103-SW04-00	NA	10/21/2010	Surface Water	x			x	x		x					10/19/2010
SB04	C103-SD04-0.5	0-0.5	10/21/2010	Sediment	x			x	x	x		x	x	x		10/19/2010
SB04	C103-SW24-00	NA	10/21/2010	Surface Water		x		x	x		x					10/19/2010
SB04	C103-SD24-0.5	0-0.5	10/21/2010	Sediment		x		x	x	x		x	x	x		10/19/2010
SB05	C103-SW05-00	NA	10/21/2010	Surface Water	x			x	x		x					10/19/2010
SB05	C103-SD05-0.5	0-0.5	10/21/2010	Sediment	x			x	x	x		x	x	x		10/19/2010
SB06	C103-SW06-00	NA	10/21/2010	Surface Water	x			x	x		x					10/19/2010
SB06	C103-SD06-0.5	0-0.5	10/21/2010	Sediment	x			x	x	x		x	x	x		10/19/2010
SB07	C103-SD07-0.5	0-0.5	10/21/2010	Sediment	x										x	10/19/2010
SB08	C103-SD08-0.3	0-0.3	10/21/2010	Sediment	x										x	10/19/2010
SB09	C103-SD09-0.3	0-0.3	10/21/2010	Sediment	x										x	10/19/2010
SB10	C103-SD10-0.5	0-0.5	10/21/2010	Sediment	x										x	10/19/2010
SB10	C103-SD20-0.5	0-0.5	10/21/2010	Sediment		x									x	10/19/2010
SB11	C103-SD11-0.5	0-0.5	10/21/2010	Sediment	x										x	10/19/2010
SB12	C103-SD12-0.5	0-0.5	10/21/2010	Sediment	x		x								x	10/19/2010
SB13	C103-SD13-0.5	0-0.5	10/21/2010	Sediment	x					x		x	x	x		10/20/2010
SB14	C103-SD14-0.5	0-0.5	10/21/2010	Sediment	x					x		x	x	x		10/20/2010
SB15	C103-SD15-0.5	0-0.5	10/21/2010	Sediment						x		x	x	x		10/20/2010
SB16	C103-SD16-0.5	0-0.5	10/21/2010	Sediment	x					x		x	x	x		10/20/2010
SB17	C103-SD17-0.5	0-0.5	10/21/2010	Sediment	x					x		x	x	x		10/20/2010
SB18	C103-SD18-0.5	0-0.5	10/21/2010	Sediment	x					x		x	x	x		10/20/2010
SB18	C103-SD28-0.5	0-0.5	10/21/2010	Sediment		x				x		x	x	x		10/20/2010

Notes:
Total metals analyte list included Arsenic, selenium, silver, vanadium
Total/Dissolved metals analyte list included lead, selenium, silver
Agriculture and Priority Pollutants Laboratory, Inc (APPL) provided analytical services
ID = Identification
MS/MSD = Matrix spike/matrix spike duplicate
NA = Not Applicable
RFI = Resource Conservation and Recovery Act Facility Investigation
SWMU = Solid Waste Management Unit
TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics
TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics
TPH-ORO = Total Petroleum Hydrocarbons - Oil Range Organics

Overall, seven surface water samples (six samples and one field duplicate) and 21 sediment samples (18 samples and three field duplicates) were collected and submitted for chemical analysis during the 2010 Phase III RFI fieldwork. All chemical data were reviewed and verified following procedures identified in the Quality Assurance Project Plan (QAPP) (URS 2010). No analytical data were rejected.

Acceptable levels of accuracy and precision were achieved for the Phase III RFI sample data. One-hundred percent of the analytical data from the samples collected at Playa Lake (SWMU 103) were determined to be acceptable for their intended use, including estimated/estimated nondetect (**J/UJ**) data. A tabular list of qualified data, including quality control (QC) parameters for which qualifications were made, and a summary of data reviews and verifications are presented in **Appendix B**.

Field duplicate samples collected from this site are identified below. Analytical results for field duplicate samples are presented in **Appendix B.**

Field Duplicate	Associated Sample
C103-SW24-00	C103-SW04-00
C103-SD24-0.5	C103-SD04-0.5
C107-SD20-0.5	C107-SD10-0.5
C107-SD28-0.5	C107-SD18-0.5

7.1 PREVIOUS INVESTIGATION RESULTS

7.1.1 Phase I RFI

The results of the Phase I risk screening concluded that no surface water screening results exceeded screening criteria, and surface water was not evaluated further. Sediment screening results indicated that three metals (beryllium, silver, vanadium), along with TPH, exceeded applicable screening criteria. A Phase I BRA was completed for these four analytes to evaluate potential sediment exposures.

The Phase I BRA identified occupational workers, hypothetical construction workers, hypothetical trespassers, and farm workers as potential sediment receptors through ingestion or dermal contact. The Phase I BRA results indicated that no adverse human health risks were anticipated from potential exposure to concentrations of beryllium, silver, vanadium, or TPH in sediment, even with prolonged exposure. The Phase I RFI report indicated that no significant human health risks were expected due to chemical exposure from Playa Lake (SWMU 103) water or sediment.

7.1.2 Phase II RFI

Phase II analytical data confirmed low levels of VOCs, SVOCs, and pesticides in subsurface sediments (i.e., 2 to 5 feet), and identified low concentrations of VOCs, SVOCs, pesticides, and the PCB (Aroclor-1248) in shallow subsurface soils. TRPH was only detected in surface soils from the soil borings, and only bis(2-ethylhexyl) phthalate (a common laboratory contaminant) was reported in a single subsurface soil sample collected at 20 feet bgs.

A maximum TRPH concentration of 734 mg/kg was detected and compared to the New Mexico petroleum contaminated soils action level of 100 mg/kg for total petroleum hydrocarbon as indicated in Title 20 Environmental Protection, Chapter 9 Solid Waste, Part 2 Solid Waste Management General Requirements, Section 20.9.2.7, Subsection S.13.i of the New Mexico Administrative Code (NMAC 2007) (USEPA had not established a toxicity factor for the combined chemicals, so an appropriate RBC could not be calculated). However, only a small fraction of TRPH constituents are known to be toxic, (e.g., benzene, naphthalene, pyrene, and toluene); these chemicals were analyzed for individually during both the Phase I and II, and all results indicated low concentrations below applicable screening levels. Therefore, it is not likely that TRPH constituents would contribute significantly to risk at Playa Lake (SWMU 103).

The Phase II RFI included an evaluation of the groundwater pathway. The results from the deepest sediment samples (5 feet bgs) collected during the Phase II RFI were compared to surface sediment samples collected during the Phase I. The deepest sediment results were also compared to applicable residential soil RBCs to evaluate any potential current or historical transport of contaminants to groundwater. VOCs and pesticides were detected in the deepest sediment samples (5 feet bgs), but all were at levels below residential screening RBCs. Results of the subsurface sediment analysis showed that only beryllium and manganese were detected at concentrations greater than residential RBCs. Beryllium and manganese are both naturally

occurring and are not typically mobile in soil or groundwater. Groundwater at Cannon AFB ranges from 240 to 280 feet bgs, and was not likely to be impacted by these relatively immobile COPCs. Therefore, NFA was recommended with regard to groundwater beneath Playa Lake (SWMU 103).

7.2 PHASE III RFI RESULTS

Chemical concentrations and frequencies of detection for Phase III RFI surface water results are shown on **Tables 7-1a** and **7-1b**. Maximum concentrations were compared to NMAC SWSLs, USEPA RSLs and ecological screening values and are shown on **Table 7-2**. Sampling locations are shown on **Figure 7-1** and sampling locations with analytical results are shown on **Figure 7-2**.

Chemical concentrations and frequencies of detection for the Phase III RFI sediment results are shown on **Table 7-3a** and **7-3b**. Maximum concentrations were compared to NMED SSLs, TPH screening guidelines, sediment ESVs and Cannon AFB background values (as applicable) and are shown on **Table 7-4**. Sampling locations are shown on **Figure 7-1** and sampling locations with analytical results are shown on **Figure 7-3**.

Target analytes were detected in two surface water samples. Total silver was detected in one surface water sample, and total and dissolved lead were detected in another surface water sample. PCB congeners were detected in several surface water samples, and one dioxin/furan was detected in one surface water sample. The maximum surface water concentrations were compared to NMAC SWSLs, and ESVs, when available. However, since NMAC SWSLs were not available for all chemicals for surface water, maximum surface water concentrations were also compared to USEPA RSLs for tapwater (USEPA 2010) or the MCL (USEPA 2009). All maximum detections were below the USEPA RSLs (USEPA 2010), but dissolved lead (4.6 micrograms per liter [µg/L]) exceeded the ecological screening value (3.0 µg/L), but was below the MCL (USEPA 2009). The sample with the dissolved lead result of 4.6 µg/L also had a total lead result of 2.1 µg/L. The samples were reanalyzed by the laboratory with similar results. Typically the concentrations for total metal analysis are higher than dissolved metal concentrations since total metals includes the metals content both dissolved in the water and present in the particulates in the water. Data review and verification as well as a review of the field documentation did not indicate any QC issues associated with the collection or analysis of the subject sample. The cumulative Hazard Index for the noncarcinogenic metals was < 0.01. The cumulative risk for the PCBs and dioxins/furans was 1E-06.

Target analytes were detected in several sediment samples. The maximum TPH-DRO (63 mg/kg), TPH-ORO (68 mg/kg) and TPH-GRO (19 mg/kg) concentrations were below the NMED residential screening guideline for unknown oil (800 mg/kg). The maximum selenium (7.0 mg/kg), silver (27 mg/kg), and vanadium (52.2 mg/kg) concentrations in sediment were below the NMED residential SSLs, but exceeded Cannon AFB background values. The cumulative Hazard Index for the noncarcinogenic metals was < 1.0 and was primarily due to vanadium in sediment. The cumulative risk for PCBs and dioxins/furans and metals was 1E-05 primarily due to naturally occurring levels of arsenic in sediment. Selenium and silver exceeded

the sediment ESVs. Maximum PCB congeners and dioxins/furan concentrations and toxic equivalent (TEQ) were below NMED residential SSLs.

7.3 DATA REVIEW AND VALIDATION

All chemical data were reviewed using ADR and items not addressed by ADR were addressed in a data verification report. Data reviews and verifications were completed following the Phase III RFI Quality Assurance Project Plan (QAPP) (URS 2010) and Department of Defense Quality Systems Manual (DoD QSM), Final Version 3. Based on the data review and verification process, data were qualified **J** (estimated) based on high surrogate recovery, **J** based on high laboratory control sample (LCS) recoveries, **J/UJ** based on field duplicate relative percent differences (RPDs) and a greater than two times the reporting limit difference between parent and field duplicate results, **J/UJ** based on high and low matrix spike/matrix spike duplicate (MS/MSD) recoveries, **J** based on high continuing calibration recoveries, **J** based on serial dilution high percent differences, and **U** based on analytes detected in the method blank. Data qualifiers are presented in **Appendix C**.

No data was rejected. The analytical data for samples collected at Playa Lake (SWMU 103) were determined to be acceptable (including estimated data) for their intended use.

7.4 HUMAN HEALTH RISK EVALUATION

The Phase III RFI surface water and sediment data were screened against the NMED residential SSLs, NMAC SWSLs, USEPA RSLs, the MCL site-specific soil-to-groundwater screening levels and TPH screening guidelines. Because arsenic exceeded the generic Soil to Groundwater SSL with a dilution attenuation factor (DAF) of 20, a site-specific Soil to Groundwater SSL was calculated. To calculate a site-specific DAF for SWMU 103, NMED Equation 17 (NMED 2006) was used:

$$DAF = 1 + \left(\frac{K \times i \times D}{I \times L} \right)$$

Where:

$$D = \left(0.0112 \times L^2\right)^{0.5} + D_a \left(1 - \exp\left[\frac{-L \times I}{K \times i \times D_a} \right] \right)$$

Parameter	Definition (units)	Site-Specific Value (basis)
DAF	Dilution/attenuation factor (unitless)	Calculated
K	Aquifer Hydraulic conductivity (m/yr)	34,713 (Radian 1994)
i	Hydraulic gradient (m/m)	0.0032 (Lee Wan 1990)
D	Mixing zone depth (m)	Calculated
I	Infiltration rate (m/yr)	0.033* (Wood and Sanford 1995)
L	Length of source parallel to groundwater flow (m)	30 (Figure 7-1)
D_a	Aquifer thickness (m)	36.6 (Lee Wan 1990)

* Because of the presence of surface water in the Playa Lake, the standard infiltration rate of 0.011 m/yr was multiplied by a factor of 3. According to Wood and Sanford (1995), recharge in ephemeral playas is facilitated by desiccation cracks and macropores that form after each wetting-drying cycle. Because Playa Lake contains water year round, and would not contain cracks and macropores resulting from the typical wetting-drying cycle, a recharge value of 0.033 m/yr is believed to be a conservative site-specific estimate for Playa Lake (SWMU 103).

Inserting the site-specific values used for each parameter, resulted in a calculated, site-specific DAF for SWMU 103 of 358.2. As shown in the table below, multiplying this site-specific DAF by the generic migration to groundwater SSLs for a DAF of 1 produces SWMU 103-specific migration to groundwater SSLs for arsenic, which is greater than the maximum concentration identified at the site. This site-specific SSL is used in **Table 7-4**.

Metal	DAF 1	Site-Specific Migration to Groundwater SSL	Maximum Detected Concentration
Arsenic	0.0131 mg/kg	4.70 mg/kg	3.9 mg/kg

Maximum sediment sample results for selenium, silver and vanadium exceeded Cannon AFB background concentrations for subsurface soil. All surface water and sediment data fell below the applicable human health screening levels. No COPCs were identified in surface water or sediment based on human health screening. In addition, the toxic equivalents (TEQs) for dioxins/furans in sediment were also compared to and fell below the applicable NMED residential SSLs. Since all results and TEQs were below the screening levels, a risk assessment was not warranted. Therefore, no unacceptable risks to human health exist at the Playa Lake (SWMU103).

Based on the Phase III RFI human health risk evaluation, the human health SCEM was updated and is shown on **Figure 7-4**.

7.5 ECOLOGICAL RISK EVALUATION

The Phase III RFI surface water and sediment data were screened against NMED ESVs (NMED 2008). Dissolved lead (4.6 µg/L) in surface water exceeded the ecological screening value (3.0 µg/L). Several selenium and silver sediment results exceeded their associated sediment ESVs.

Lead was identified as a COPEC in surface water (Table 7-2). Selenium and silver were identified as COPECs in sediment (Table 7-4). Based on the Phase III RFI surface water and sediment results that exceeded the ESVs, an ERA was completed. The ecological risk assessment was completed using both Phase II and Phase III RFI data. COPECs were identified by comparing the maximum detected concentrations with media-specific ESVs. Upon comparison of the Phase II and III RFI data, lead in surface water, and arsenic, selenium and silver in sediment were retained as COPECs. The estimation of risk was calculated for each endpoint receptor. The estimation of risk calculations determined a low probability of risk for the benthic sediment community, water column community, omnivorous aquatic birds, and predatory aquatic birds.

Based on the Phase III RFI ERA, the ecological SCEM was updated and is shown on **Figure 7-5**. Additional information on the ERA is presented in **Appendix D**.

7.6 CONCLUSIONS

The human health screen concluded, there is no significant risk to human health at Playa Lake (SWMU 103). The ERA indicated a low risk probability was identified for the viability and function of both the benthic sediment and water column communities, the survival, growth, and reproduction of omnivorous aquatic birds, as well as the survival, growth and reproduction of predatory aquatic birds. Based on the results of the human health screen and the ERA, it is evident that the nature and extent of contamination has been defined, the potential for contaminant migration into the surrounding environments is unlikely based on contaminant levels, and no significant risks to human health or the environment exist.

7.7 PHASE III RFI SUMMARY

The scope of the field investigation included the collection of surface water and sediment samples to determine the nature and extent of contamination in surface water and sediment. Following surface water and sediment sample collection and laboratory analytical testing, the data were reviewed and verified. This Phase III RFI report presented analytical results, compared the results to current NMED SSLs, NMED TPH screening guidelines, NMAC SWSLs, USEPA RSLs, sediment to Cannon AFB background values, included further human health and ecological risk evaluations, and provides recommendations for the Playa Lake (SWMU 103).

TABLE 7-1a
SUMMARY OF PCB CONGENERS AND DIOXINS/FURANS DETECTED IN SURFACE WATER
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMAC Surface Water Screening Criteria [1]	USEPA Water RSL [2]	Maximum	Frequency	C103-SW01-00			C103-SW02-00			C103-SW03-00		
DATE COLLECTED					October 18, 2010			October 18, 2010			October 19, 2010		
					Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual
POLYCHORINATED BIPHENYL CONGENERS (PCB) (µg/L)													
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	-	1.70E-02	3.00E-05 J	1 / 6	<	1.80E-05	U	<	2.10E-05	U	<	2.40E-05	U
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	-	1.70E-02	1.80E-05 J	1 / 6	<	1.40E-05	U	<	2.90E-05	U	<	2.00E-05	U
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	-	1.70E-02	5.10E-04	4 / 6	<	4.20E-04	U	3.70E-04	3.70E-04		5.10E-04	5.10E-04	
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	-	1.70E-02	4.90E-05 J	3 / 6	<	7.80E-06	U	4.90E-05	4.90E-05	J	8.10E-06	8.10E-06	J
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	-	3.5E-04 J	1 / 6	<	3.00E-05	U	3.50E-04	3.50E-04	J	<	1.90E-05	U
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	-	9.00E-04 J	6 / 6	1.20E-04	1.20E-04	J	9.00E-04	9.00E-04	J	5.00E-05	5.00E-05	J
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	-	5.20E-03	7.6E-06 J	1 / 6	<	5.20E-06	U	<	7.80E-06	U	<	6.80E-06	U
DIOXINS AND FURANS (µg/L)													
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	-	-	1.9E-05 J	1 / 6	<	2.40E-06	U	<	1.30E-05	U	<	1.80E-05	U
TEQ	-	-	5.70E-09	1 / 4	<	NA	U	<	NA	U	<	NA	U

Notes:

Undetermined values display a dash in the associated cell

[1] NMAC = New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for interstate and intrastate surface waters. Section 20.6.4.900 Subsection J.

[2] RSL = Regional Screening Level, Tap Water, November 2010 (USEPA 2010)

< = Result less than EDL/EMPC

µg/L = microgram per liter

EDL/EMPC = Estimated Detection Limit/Estimated Maximum Potential Concentration

ID = Identification

J = Estimated

NA = Not Applicable

Qual = Qualifier

TEQ = Toxicity Equivalents

U = Nondetect

USEPA = United States Environmental Protection Agency

TABLE 7-1a
SUMMARY OF PCB CONGENERS AND DIOXINS/FURANS DETECTED IN SURFACE WATER
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMAC Surface Water Screening Criteria [1]	USEPA Water RSL [2]	Maximum	Frequency	C103-SW04-00			C103-SW05-00			C103-SW06-00		
DATE COLLECTED					October 19, 2010			October 19, 2010			October 19, 2010		
					Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual
POLYCHORINATED BIPHENYL CONGENERS (PCB) (µg/L)													
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	-	1.70E-02	3.00E-05 J	1 / 6	3.00E-05	3.00E-05	J	<	2.60E-05	U	<	1.90E-05	U
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	-	1.70E-02	1.80E-05 J	1 / 6	<	7.50E-06	U	1.80E-05	1.80E-05	J	<	2.40E-05	U
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	-	1.70E-02	5.10E-04	4 / 6	<	3.40E-04	U	4.50E-04	4.50E-04		3.90E-04	3.90E-04	
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	-	1.70E-02	4.90E-05 J	3 / 6	<	6.50E-06	U	1.30E-05	1.30E-05	J	<	6.50E-06	U
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	-	3.5E-04 J	1 / 6	<	1.60E-05	U	<	2.50E-05	U	<	3.20E-05	U
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	-	9.00E-04 J	6 / 6	5.00E-05	5.00E-05	J	5.80E-05	5.80E-05	J	8.70E-05	8.70E-05	J
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	-	5.20E-03	7.6E-06 J	1 / 6	<	7.50E-06	U	7.60E-06	7.60E-06	J	<	8.20E-06	U
DIOXINS AND FURANS (µg/L)													
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	-	-	1.9E-05 J	1 / 6	<	2.20E-06	U	1.90E-05	1.90E-05	J	<	1.90E-05	U
TEQ	-	-	5.70E-09	1 / 4	<	NA	U	5.70E-09	NA		<	NA	U

Notes:

Undetermined values display a dash in the associated cell

[1] NMAC = New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for interstate and intrastate surface waters. Section 20.6.4.900 Subsection J.

[2] RSL = Regional Screening Level, Tap Water, November 2010 (USEPA 2010)

< = Result less than EDL/EMPC

µg/L = microgram per liter

EDL/EMPC = Estimated Detection Limit/Estimated Maximum Potential Concentration

ID = Identification

J = Estimated

NA = Not Applicable

Qual = Qualifier

TEQ = Toxicity Equivalents

U = Nondetect

USEPA = United States Environmental Protection Agency

TABLE 7-1b
SUMMARY OF METALS DETECTED IN SURFACE WATER
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMAC Surface Water Screening Criteria [1]	USEPA Water RSL[2]	Maximum	Frequency	C103-SW01-00				C103-SW02-00			
DATE COLLECTED					October 18, 2010				October 18, 2010			
					Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (µg/L)												
Total Lead	-	-	2.1E+00 J	1 / 6	<	1.58E+00	5.00E+00	U	<	1.58E+00	5.00E+00	U
Total Silver	-	1.80E+02	1.20E+00	1 / 6	<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U
Dissolved Lead	-	-	4.6E+00 J	1 / 6	<	1.58E+00	5.00E+00	U	<	1.58E+00	5.00E+00	U

Notes:
Undetermined values display a dash in the associated cell
[1] NMAC = New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for interstate and intrastate surface waters. Section 20.6.4.900 Subsection J.
[2] RSL = Regional Screening Level, Tap Water, November 2010 (USEPA 2010)
< = Result less than MDL
µg/L = microgram per liter
ID = Identification
J = Estimated
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 7-1b
SUMMARY OF METALS DETECTED IN SURFACE WATER
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID					C103-SW03-00				C103-SW04-00			
DATE COLLECTED	NMAC Surface Water Screening Criteria [1]	USEPA Water RSL[2]	Maximum	Frequency	October 19, 2010				October 19, 2010			
					Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (µg/L)												
Total Lead	-	-	2.1E+00 J	1 / 6	<	1.58E+00	5.00E+00	U	<	1.58E+00	5.00E+00	UJ
Total Silver	-	1.80E+02	1.20E+00	1 / 6	<	2.50E-01	1.00E+00	U	1.20E+00	2.50E-01	1.00E+00	
Dissolved Lead	-	-	4.6E+00 J	1 / 6	<	1.58E+00	5.00E+00	U	<	1.58E+00	5.00E+00	UJ

Notes:
Undetermined values display a dash in the associated cell
[1] NMAC = New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for interstate and intrastate surface waters. Section 20.6.4.900 Subsection J.
[2] RSL = Regional Screening Level, Tap Water, November 2010 (USEPA 2010)
< = Result less than MDL
µg/L = microgram per liter
ID = Identification
J = Estimated
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 7-1b
SUMMARY OF METALS DETECTED IN SURFACE WATER
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID					C103-SW05-00				C103-SW06-00			
DATE COLLECTED	NMAC Surface Water Screening Criteria [1]	USEPA Water RSL[2]	Maximum	Frequency	October 19, 2010				October 19, 2010			
					Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (µg/L)												
Total Lead	-	-	2.1E+00 J	1 / 6	<	1.58E+00	5.00E+00	U	2.10E+00	1.58E+00	5.00E+00	J
Total Silver	-	1.80E+02	1.20E+00	1 / 6	<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U
Dissolved Lead	-	-	4.6E+00 J	1 / 6	<	1.58E+00	5.00E+00	U	4.60E+00	1.58E+00	5.00E+00	J

Notes:
Undetermined values display a dash in the associated cell
[1] NMAC = New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for interstate and intrastate surface waters. Section 20.6.4.900 Subsection J.
[2] RSL = Regional Screening Level, Tap Water, November 2010 (USEPA 2010)
< = Result less than MDL
µg/L = microgram per liter
ID = Identification
J = Estimated
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
U = Nondetect
USEPA = United States Environmental Protection Agency

TABLE 7-2
COMPARISON OF MAXIMUM SURFACE WATER CONCENTRATIONS TO NMAC SWSLs
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

Chemical	Maximum Detected Concentration (µg/L)	Qual	Human Health Surface Water Criteria (µg/L) [1]	Human Health Tap Water (µg/L) [2]	Hazard Quotient	Risk	Exceeds Human Health SSL?	Ecological Screening Value (µg/L)	Exceeds Ecological Screening Value?
POLYCHORINATED BIPHENYL CONGENERS (PCB) (µg/L)									
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	3.00E-05	J	-	1.70E-01	NA	1.76E-09	NO	-	NA
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1.80E-05	J	-	1.70E-01	NA	1.06E-09	NO	-	NA
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	5.10E-04		-	1.70E-01	NA	3.00E-08	NO	-	NA
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	ND		-	1.70E-01	NA	NA	NO	-	NA
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	ND		-	5.20E-05	NA	NA	NO	-	NA
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	4.90E-05	J	-	1.70E-01	NA	2.88E-09	NO	-	NA
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	ND		-	1.70E-01	NA	NA	NO	-	NA
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	ND		-	1.70E-01	NA	NA	NO	-	NA
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	ND		-	1.70E-04	NA	NA	NO	-	NA
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	3.50E-04	J	-	5.17E-02	NA	6.77E-08	NO	-	NA
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	9.00E-04	J	-	5.17E-01	NA	1.74E-08	NO	-	NA
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	ND		-	1.70E-01	NA	NA	NO	-	NA
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	7.60E-06	J	-	5.20E-02	NA	1.46E-09	NO	-	NA
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	ND		-	1.70E-02	NA	NA	NO	-	NA
DIOXINS AND FURANS (µg/L)									
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	ND		-	-	NA	NA	NA	-	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	ND		-	-	NA	NA	NA	-	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	ND		-	-	NA	NA	NA	-	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	ND		-	-	NA	NA	NA	-	NA
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	ND		-	-	NA	NA	NA	-	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	ND		-	-	NA	NA	NA	-	NA
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	ND		-	-	NA	NA	NA	-	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	ND		-	-	NA	NA	NA	-	NA
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	ND		-	-	NA	NA	NA	-	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	ND		-	-	NA	NA	NA	-	NA
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	ND		-	-	NA	NA	NA	-	NA
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	ND		-	-	NA	NA	NA	-	NA
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	ND		-	-	NA	NA	NA	-	NA
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	ND		5.10E-08	5.20E-06	NA	NA	NO	3.00E-09 **	NA
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	ND		-	-	NA	NA	NA	-	NA
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	1.90E-05	J	-	-	NA	NA	NA	-	NA
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	ND		-	-	NA	NA	NA	-	NA
TEQ	5.70E-09		5.10E-08	5.20E-06	NA	1.12E-06	NO	3.97E-07 **	NA
METALS (µg/L)									
Total Lead	2.10E+00	J	-	1.50E+01 *	NA	NA	NO	3.00E+00	NO
Total Selenium	ND		4.20E+03	1.80E+02	NA	NA	NO	5.00E+00	NO
Total Silver	1.20E+00		-	1.80E+02	6.67E-03	NA	NO	2.40E+00	NO
Dissolved Lead	4.60E+00	J	-	1.50E+01 *	NA	NA	NO	3.00E+00	YES
Dissolved Selenium	ND		4.20E+03	1.80E+02	NA	NA	NO	5.00E+00	NO
Dissolved Silver	ND		-	1.80E+02	NA	NA	NO	2.40E+00	NO
Notes:				Total	6.67E-03	1.2E-06			

Undetermined values display a dash in the associated cell

USEPA Regional Screening Levels were used if New Mexico Administrative Code screening criteria were not available.

[1] New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for Interstate and Intrastate Surface Waters. Section 20.6.4.900 Subsection J.

[2] USEPA Regional Screening Level, Tap Water, November 2010 (USEPA 2010) adjusted to represent a target risk of 1E-05.
Hazard Quotient = Maximum detected concentration (ug/L)* (THQ) / Surface water screening level (ug/L)
ESV = Ecological Screening Value
µg/L = microgram per liter
NA = Not Applicable
J = Estimated
Qual = Qualifier
Risk = Maximum detected concentration (ug/L) * (TR) / Surface water screening level (ug/L)
SSL = Soil Screening Level
TEQ = Toxcity Equivalents
THQ = Target Hazard Quotient of 1.0
TR = Target Risk of 1E-05
* USEPA maximum contaminant level (MCL) was used since USEPA Regional Screening Level for tap water was not available.
** Avian

TABLE 7-3a
SUMMARY OF PCB CONGENERS AND DIOXINS/FURANS DETECTED IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD01-0.5			C103-SD02-0.5			C103-SD03-0.5			C103-SD04-0.5		
DATE COLLECTED				October 18, 2010			October 18, 2010			October 19, 2010			October 19, 2010		
		Maximum	Frequency	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual
POLYCHORINATED BIPHENYL CONGENERS (PCB) (mg/kg)															
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	1.14E+00	1.30E-06	6 / 6	2.30E-08	2.30E-08		1.50E-07	1.50E-07		2.30E-07	2.30E-07	J	1.30E-06	1.30E-06	
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1.14E+00	1.20E-07	5 / 6	<	3.30E-09	U	1.40E-08	1.40E-08		2.00E-08	2.00E-08	J	1.20E-07	1.20E-07	
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	1.14E+00	3.00E-06	5 / 6	<	7.00E-08	U	3.80E-07	3.80E-07	J	5.40E-07	5.40E-07	J	3.00E-06	3.00E-06	
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	3.41E-04	3.60E-08	3 / 6	<	7.50E-10	U	3.40E-09	3.40E-09	J	7.50E-09	7.50E-09	J	3.60E-08	3.60E-08	
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	1.14E+00	3.40E-07	6 / 6	8.60E-09	8.60E-09	J	5.80E-08	5.80E-08		6.40E-08	6.40E-08	J	3.40E-07	3.40E-07	
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	1.14E+00	7.10E-08	4 / 6	2.00E-09	2.00E-09	J	1.10E-08	1.10E-08		<	3.70E-10	U	7.10E-08	7.10E-08	
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	1.14E+00	9.30E-08	3 / 6	<	3.20E-10	U	1.30E-08	1.30E-08		<	3.20E-10	U	9.30E-08	9.30E-08	
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	3.41E-01	2.70E-07 J	5 / 6	3.10E-08	3.10E-08	J	2.30E-07	2.30E-07	J	2.30E-07	2.30E-07	J	<	1.40E-06	U
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	3.41E+00	5.70E-07 J	6 / 6	5.80E-08	5.80E-08	J	4.40E-07	4.40E-07	J	4.90E-07	4.90E-07	J	<	1.00E-07	UJ
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	1.14E+00	6.50E-09 J	2 / 6	9.70E-10	9.70E-10	J	<	5.50E-09	U	<	5.20E-09	U	<	1.80E-06	UJ
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	3.41E-01	2.90E-07	6 / 6	6.70E-09	6.70E-09	J	2.10E-08	2.10E-08		6.80E-08	6.80E-08	J	2.90E-07	2.90E-07	
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	1.14E-01	3.40E-08	4 / 6	<	4.20E-10	U	7.30E-10	7.30E-10	J	3.00E-09	3.00E-09	J	3.40E-08	3.40E-08	
DIOXINS AND FURANS (mg/kg)															
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	-	3.50E-05	6 / 6	2.80E-06	2.80E-06	J	2.10E-05	2.10E-05	J	8.10E-06	8.10E-06	J	3.50E-05	3.50E-05	
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	-	7.40E-06 J	2 / 6	<	5.20E-07	U	3.10E-06	3.10E-06	J	<	1.90E-06	U	7.40E-06	7.40E-06	J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	-	2.90E-06 J	2 / 6	<	1.70E-07	U	<	1.00E-06	UJ	<	5.40E-07	U	2.80E-06	2.80E-06	J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	2.40E-06 J	1 / 6	<	3.60E-07	U	<	8.40E-07	UJ	<	7.50E-07	U	2.40E-06	2.40E-06	J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	-	2.50E-06 J	2 / 6	<	1.00E-07	U	<	5.00E-07	UJ	<	2.90E-07	U	2.30E-06	2.30E-06	J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	1.00E-06 J	1 / 6	<	2.80E-07	U	1.00E-06	1.00E-06	J	<	6.80E-07	U	<	2.50E-06	U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	2.20E-06 J	1 / 6	<	1.60E-06	U	<	7.80E-06	UJ	<	3.10E-07	U	2.20E-06	2.20E-06	J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	-	1.70E-06 J	1 / 6	<	2.00E-07	U	<	3.60E-07	UJ	<	4.00E-07	U	<	3.00E-07	U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	4.50E-05	7.60E-06 J	5 / 6	7.90E-07	7.90E-07	J	7.60E-06	7.60E-06	J	<	1.90E-07	U	1.80E-06	1.80E-06	J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	3.74E-04	3.60E-06 J	3 / 6	1.30E-06	1.30E-06	J	3.60E-06	3.60E-06	J	2.50E-06	2.50E-06	J	<	1.60E-06	U
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	-	2.60E-04	6 / 6	2.00E-05	2.00E-05	J	2.50E-04	2.50E-04	J	5.90E-05	5.90E-05		2.60E-04	2.60E-04	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	-	1.10E-05 J	3 / 6	<	1.20E-07	U	8.00E-06	8.00E-06	J	<	3.90E-07	U	1.10E-05	1.10E-05	J
TEQ	-	8.40E-06	6 / 6	9.50E-07	NA		8.40E-06	NA		3.50E-07	NA		3.00E-06	NA	

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than EDL/EMPC
EDL/EMPC = Estimated Detection Limit/Estimated Maximum Potential Concentration
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
NA = Not Applicable
Qual = Qualifier
TEQ = Toxcity Equivalents
U = Nondetect

TABLE 7-3a
SUMMARY OF PCB CONGENERS AND DIOXINS/FURANS DETECTED IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD05-0.5			C103-SD06-0.5		
DATE COLLECTED				October 19, 2010			October 19, 2010		
		Maximum	Frequency	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual
POLYCHORINATED BIPHENYL CONGENERS (PCB) (mg/kg)									
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	1.14E+00	2.30E-07	6 / 6	2.30E-07	2.30E-07	J	2.30E-07	2.30E-07	J
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1.14E+00	2.40E-08	5 / 6	2.10E-08	2.10E-08	J	2.40E-08	2.40E-08	J
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	1.14E+00	5.80E-07	5 / 6	5.80E-07	5.80E-07	J	5.60E-07	5.60E-07	J
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	3.41E-04	0.00E+00	3 / 6	<	7.50E-09	U	<	4.00E-09	U
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	1.14E+00	7.30E-08	6 / 6	7.30E-08	7.30E-08	J	6.70E-08	6.70E-08	J
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	1.14E+00	1.50E-08	4 / 6	1.50E-08	1.50E-08	J	<	6.60E-10	U
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	1.14E+00	2.00E-08	3 / 6	2.00E-08	2.00E-08	J	<	5.90E-10	U
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	3.41E-01	2.70E-07 J	5 / 6	2.70E-07	2.70E-07	J	2.20E-07	2.20E-07	J
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	3.41E+00	5.70E-07 J	6 / 6	5.70E-07	5.70E-07	J	4.70E-07	4.70E-07	J
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	1.14E+00	6.50E-09 J	2 / 6	<	6.80E-09	U	6.50E-09	6.50E-09	J
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	3.41E-01	6.60E-08	6 / 6	6.60E-08	6.60E-08	J	5.30E-08	5.30E-08	J
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	1.14E-01	7.60E-09	4 / 6	7.60E-09	7.60E-09	J	<	1.80E-09	U
DIOXINS AND FURANS (mg/kg)									
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	-	2.50E-05	6 / 6	2.50E-05	2.50E-05		7.00E-06	7.00E-06	J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	-	7.40E-06 J	2 / 6	<	4.20E-06	U	<	2.10E-06	U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	-	2.90E-06 J	2 / 6	2.90E-06	2.90E-06	J	<	9.00E-07	U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	2.40E-06 J	1 / 6	<	2.90E-06	U	<	3.60E-07	U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	-	2.50E-06 J	2 / 6	2.50E-06	2.50E-06	J	<	4.20E-07	U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	1.00E-06 J	1 / 6	<	3.00E-06	U	<	2.50E-07	U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	2.20E-06 J	1 / 6	<	8.00E-06	U	<	2.40E-06	U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	-	1.70E-06 J	1 / 6	1.70E-06	1.70E-06	J	<	1.80E-07	U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	4.50E-05	7.60E-06 J	5 / 6	1.40E-06	1.40E-06	J	5.50E-07	5.50E-07	J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	3.74E-04	3.60E-06 J	3 / 6	<	2.70E-06	U	<	5.30E-07	
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	-	1.60E-04	6 / 6	1.60E-04	1.60E-04		6.70E-05	6.70E-05	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	-	1.10E-05 J	3 / 6	<	5.40E-06	U	3.00E-06	3.00E-06	J
TEQ	-	2.50E-06	6 / 6	2.50E-06	NA		6.40E-07	NA	

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than EDL/EMPC
EDL/EMPC = Estimated Detection Limit/Estimated Maximum Potential Concentration
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
NA = Not Applicable
Qual = Qualifier
TEQ = Toxcity Equivalents
U = Nondetect

TABLE 7-3b
SUMMARY OF TPH AND METALS DETECTED IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD01-0.5				C103-SD02-0.5				C103-SD03-0.5			
DATE COLLECTED				October 18, 2010				October 18, 2010				October 19, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12	<	1.30E+00	1.30E+00	U	1.90E+01	1.40E+00	1.40E+00	J	3.60E+01	2.10E+00	2.10E+00	J
Oil Range Organics	8.00E+02	6.80E+01	4 / 12	<	4.60E+00	1.30E+01	U	3.00E+01	5.00E+00	1.40E+01		4.60E+01	7.30E+00	2.10E+01	J
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12	<	4.50E-01	1.30E+00	U	<	4.80E-01	1.40E+00	U	<	7.10E-01	2.10E+00	U
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6	1.60E+00	1.20E-01	6.60E-01		1.60E+00	1.20E-01	7.10E-01		1.60E+00	1.80E-01	1.00E+00	
Selenium	3.91E+02	7.00E+00	14 / 18	3.30E-01	3.20E-01	6.60E-01	J	<	3.50E-01	7.10E-01	U	3.70E+00	5.10E-01	1.00E+00	
Silver	3.91E+02	2.70E+01	12 / 12	7.60E-01	4.80E-02	1.30E-01		1.10E+00	5.10E-02	1.40E-01	J	1.02E+01	7.50E-02	2.10E-01	
Vanadium	7.82E+01	5.22E+01	6 / 6	6.80E+00	7.40E-02	6.60E-01		7.10E+00	7.90E-02	7.10E-01	J	2.97E+01	1.20E-01	1.00E+00	

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1]SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE 7-3b
SUMMARY OF TPH AND METALS DETECTED IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD04-0.5				C103-SD05-0.5				C103-SD06-0.5			
DATE COLLECTED				October 19, 2010				October 19, 2010				October 19, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12	6.30E+01	2.60E+00	2.60E+00		<	2.60E+00	2.60E+00	U	<	1.50E+00	1.50E+00	U
Oil Range Organics	8.00E+02	6.80E+01	4 / 12	6.80E+01	9.10E+00	2.60E+01		<	9.00E+00	2.60E+01	U	4.00E+01	5.30E+00	1.50E+01	
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12	1.90E+01	8.90E-01	2.60E+00	J	<	8.80E-01	2.60E+00	U	<	5.10E-01	1.50E+00	U
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6	3.90E+00	2.30E-01	1.30E+00		3.60E+00	2.30E-01	1.30E+00		2.10E-01	1.30E-01	7.60E-01	J
Selenium	3.91E+02	7.00E+00	14 / 18	7.00E+00	6.40E-01	1.30E+00		4.90E+00	6.30E-01	1.30E+00		7.00E-01	3.70E-01	7.60E-01	J
Silver	3.91E+02	2.70E+01	12 / 12	2.37E+01	9.40E-02	2.60E-01	J	1.65E+01	9.30E-02	1.86E-01		1.80E+00	5.40E-02	1.50E-01	
Vanadium	7.82E+01	5.22E+01	6 / 6	5.21E+01	1.50E-01	1.30E+00		5.22E+01	1.40E-01	2.80E-01		9.50E+00	8.50E-02	7.60E-01	

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1]SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE 7-3b
SUMMARY OF TPH AND METALS DETECTED IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD07-0.5				C103-SD08-0.3				C103-SD09-0.3			
DATE COLLECTED				October 19, 2010				October 19, 2010				October 19, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12												
Oil Range Organics	8.00E+02	6.80E+01	4 / 12												
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12												
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6												
Selenium	3.91E+02	7.00E+00	14 / 18	2.70E+00	6.50E-01	1.30E+00		<	3.00E-01	6.20E-01	U	<	3.70E-01	7.50E-01	U
Silver	3.91E+02	2.70E+01	12 / 12												
Vanadium	7.82E+01	5.22E+01	6 / 6												

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1]SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE 7-3b
SUMMARY OF TPH AND METALS DETECTED IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD10-0.5				C103-SD11-0.5				C103-SD12-0.5			
DATE COLLECTED				October 19, 2010				October 19, 2010				October 19, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12												
Oil Range Organics	8.00E+02	6.80E+01	4 / 12												
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12												
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6												
Selenium	3.91E+02	7.00E+00	14 / 18	<	3.10E-01	6.30E-01	U	4.00E+00	4.80E-01	9.90E-01		5.40E+00	7.70E-01	1.60E+00	J
Silver	3.91E+02	2.70E+01	12 / 12												
Vanadium	7.82E+01	5.22E+01	6 / 6												

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1]SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE 7-3b
SUMMARY OF TPH AND METALS DETECTED IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD13-0.5				C103-SD14-0.5				C103-SD15-0.5			
DATE COLLECTED				October 20, 2010				October 20, 2010				October 20, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12	<	2.20E+00	2.20E+00	U	<	1.90E+00	1.90E+00	U	<	2.60E+00	2.60E+00	U
Oil Range Organics	8.00E+02	6.80E+01	4 / 12	<	7.70E+00	2.20E+01	U	<	6.80E+00	1.90E+01	U	<	9.00E+00	2.60E+01	U
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12	<	7.50E-01	2.20E+00	U	<	6.60E-01	1.90E+00	U	<	8.70E-01	2.60E+00	U
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6												
Selenium	3.91E+02	7.00E+00	14 / 18	1.70E+00	5.40E-01	1.10E+00		1.20E+00	4.80E-01	9.70E-01		5.10E+00	6.20E-01	1.30E+00	
Silver	3.91E+02	2.70E+01	12 / 12	2.90E+00	7.90E-02	2.20E-01		1.40E+00	7.00E-02	1.90E-01		1.66E+01	9.20E-02	2.60E-01	
Vanadium	7.82E+01	5.22E+01	6 / 6												

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1]SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE 7-3b
SUMMARY OF TPH AND METALS DETECTED IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD16-0.5				C103-SD17-0.5				C103-SD18-0.5			
DATE COLLECTED				October 20, 2010				October 20, 2010				October 20, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12	<	2.50E+00	2.50E+00	U	<	1.60E+00	1.60E+00	U	<	2.60E+00	2.60E+00	U
Oil Range Organics	8.00E+02	6.80E+01	4 / 12	<	8.80E+00	2.50E+01	U	<	5.70E+00	1.60E+01	U	<	8.90E+00	2.60E+01	U
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12	<	8.50E-01	2.50E+00	U	<	5.60E-01	1.60E+00	U	<	8.70E-01	2.60E+00	U
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6												
Selenium	3.91E+02	7.00E+00	14 / 18	4.80E+00	6.10E-01	1.30E+00		2.30E+00	4.00E-01	8.20E-01		6.40E+00	6.20E-01	1.30E+00	J
Silver	3.91E+02	2.70E+01	12 / 12	1.25E+01	9.00E-02	2.50E-01		3.30E+00	5.90E-02	1.60E-01		2.70E+01	9.20E-02	2.60E-01	J
Vanadium	7.82E+01	5.22E+01	6 / 6												

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1]SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE 7-4
COMPARISON OF MAXIMUM SEDIMENT CONCENTRATIONS TO NMED SSLs AND BACKGROUND CONCENTRATIONS
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

Chemical	Maximum Detected Concentration (mg/kg)	Qual	NMED Residential Soil Screening Levels (mg/kg) [1, 2]	Site-Specific Migration to Groundwater SSL (DAF value) (mg/kg)	Soil Background Concentration (mg/kg)	Hazard Quotient	Risk	Exceeds SSL?	Exceeds DAF Value?	Exceeds Background?	Ecological Screening Value (mg/kg)	Exceeds Ecological Screening Value?
POLYCHORINATED BIPHENYL CONGENERS (PCB) (mg/kg)												
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	1.30E-06		1.14E+00	7.01E+00	NA	NA	1.14E-11	NO	NO	NA	-	NA
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1.20E-07		1.14E+00	7.01E+00	NA	NA	1.05E-12	NO	NO	NA	-	NA
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	3.00E-06		1.14E+00	6.87E+00	NA	NA	2.63E-11	NO	NO	NA	-	NA
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	ND		1.14E+00	7.01E+00	NA	NA	NA	NO	NO	NA	-	NA
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	3.60E-08		3.41E-04	2.06E-03	NA	NA	1.06E-09	NO	NO	NA	-	NA
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	3.40E-07		1.14E+00	1.16E+01	NA	NA	2.98E-12	NO	NO	NA	-	NA
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	7.10E-08		1.14E+00	1.16E+01	NA	NA	6.23E-13	NO	NO	NA	-	NA
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	9.30E-08		1.14E+00	1.14E+01	NA	NA	8.16E-13	NO	NO	NA	-	NA
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	ND		1.14E-03	1.14E-02	NA	NA	NA	NO	NO	NA	-	NA
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	2.70E-07	J	3.41E-01	5.87E+00	NA	NA	7.92E-12	NO	NO	NA	-	NA
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	5.70E-07	J	3.41E+00	5.75E+01	NA	NA	1.67E-12	NO	NO	NA	-	NA
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	6.50E-09	J	1.14E+00	1.92E+01	NA	NA	5.70E-14	NO	NO	NA	-	NA
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	2.90E-07		3.41E-01	1.25E+00	NA	NA	8.50E-12	NO	NO	NA	-	NA
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	3.40E-08		1.14E-01	4.16E-01	NA	NA	2.98E-12	NO	NO	NA	-	NA
DIOXINS AND FURANS (mg/kg)												
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	3.50E-05		-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	7.40E-06	J	-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	2.90E-06	J	-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	2.40E-06	J	-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	2.50E-06	J	-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1.00E-06	J	-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	ND		-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	ND		-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	ND		-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	ND		-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	ND		-	-	NA	NA	NA	NA	NA	NA	-	NA
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	2.20E-06	J	-	-	NA	NA	NA	NA	NA	NA	-	NA
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	1.70E-06	J	-	-	NA	NA	NA	NA	NA	NA	-	NA
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	7.60E-06	J	4.50E-05	4.07E-04	NA	NA	NA	NO	NO	NA	1.20E-04 *	NA
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	3.60E-06	J	3.74E-04	2.25E-03	NA	NA	NA	NO	NO	NA	-	NA
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	2.60E-04		-	-	NA	NA	NA	NA	NA	NA	-	NA
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	1.10E-05	J	-	-	NA	NA	NA	NA	NA	NA	-	NA
TEQ	8.40E-06		4.50E-05	4.50E-05	NA	NA	1.87E-06	NA	NO	NA	1.37E-02 *	NA

TABLE 7-4
COMPARISON OF MAXIMUM SEDIMENT CONCENTRATIONS TO NMED SSLs AND BACKGROUND CONCENTRATIONS
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

Chemical	Maximum Detected Concentration (mg/kg)	Qual	NMED Residential Soil Screening Levels (mg/kg) [1, 2]	Site-Specific Migration to Groundwater SSL (DAF value) (mg/kg)	Soil Background Concentration (mg/kg)	Hazard Quotient	Risk	Exceeds SSL?	Exceeds DAF Value?	Exceeds Background?	Ecological Screening Value (mg/kg)	Exceeds Ecological Screening Value?
TOTAL PETROLEUM HYDROCARBONS (mg/kg)												
Diesel Range Organics	6.30E+01		2.00E+02	-	NA	NA	NA	NO	NA	NA	5.89E+03	NO
Oil Range Organics	6.80E+01		2.00E+02	-	NA	NA	NA	NO	NA	NA	5.89E+03	NO
Gasoline Range Organics	1.90E+01	J	2.00E+02	-	NA	NA	NA	NO	NA	NA	5.89E+03	NO
METALS (mg/kg)												
Arsenic	3.90E+00		3.90E+00	4.70E+00	4.30E+00	NA	1.00E-05	NO	NO	NO	9.79E+00	NO
Selenium	7.00E+00		3.91E+02	3.46E+02	1.10E+00	1.79E-02	NA	NO	NO	YES	2.50E+00	YES
Silver	2.70E+01		3.91E+02	5.62E+02	2.65E+00	6.91E-02	NA	NO	NO	YES	1.00E+00	YES
Vanadium	5.22E+01		7.82E+01	6.56E+04	3.28E+01	6.68E-01	NA	NO	NO	YES	NA	NA
Notes:					Total	7.54E-01	1.19E-05					

USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels

[1] NMED Soil Screening Levels Revision 5.0 (August 2009)

[2] NMED TPH Screening Guidelines for Waste Oil (October 2006)

DAF = Dilution Attenuation Factor (SWMU 103 site-specific DAF = 358.2)

mg/kg = milligram per kilogram

Hazard Quotient = Maximum detected concentration (mg/kg)* (THQ) / SSL(mg/kg)

NA = Not available

NMED = New Mexico Environment Department

J = Estimated

Qual = Qualifier

Risk = Maximum detected concentration (mg/kg) * (TR) / SSL (mg/kg)

SSL = Soil Screening Level

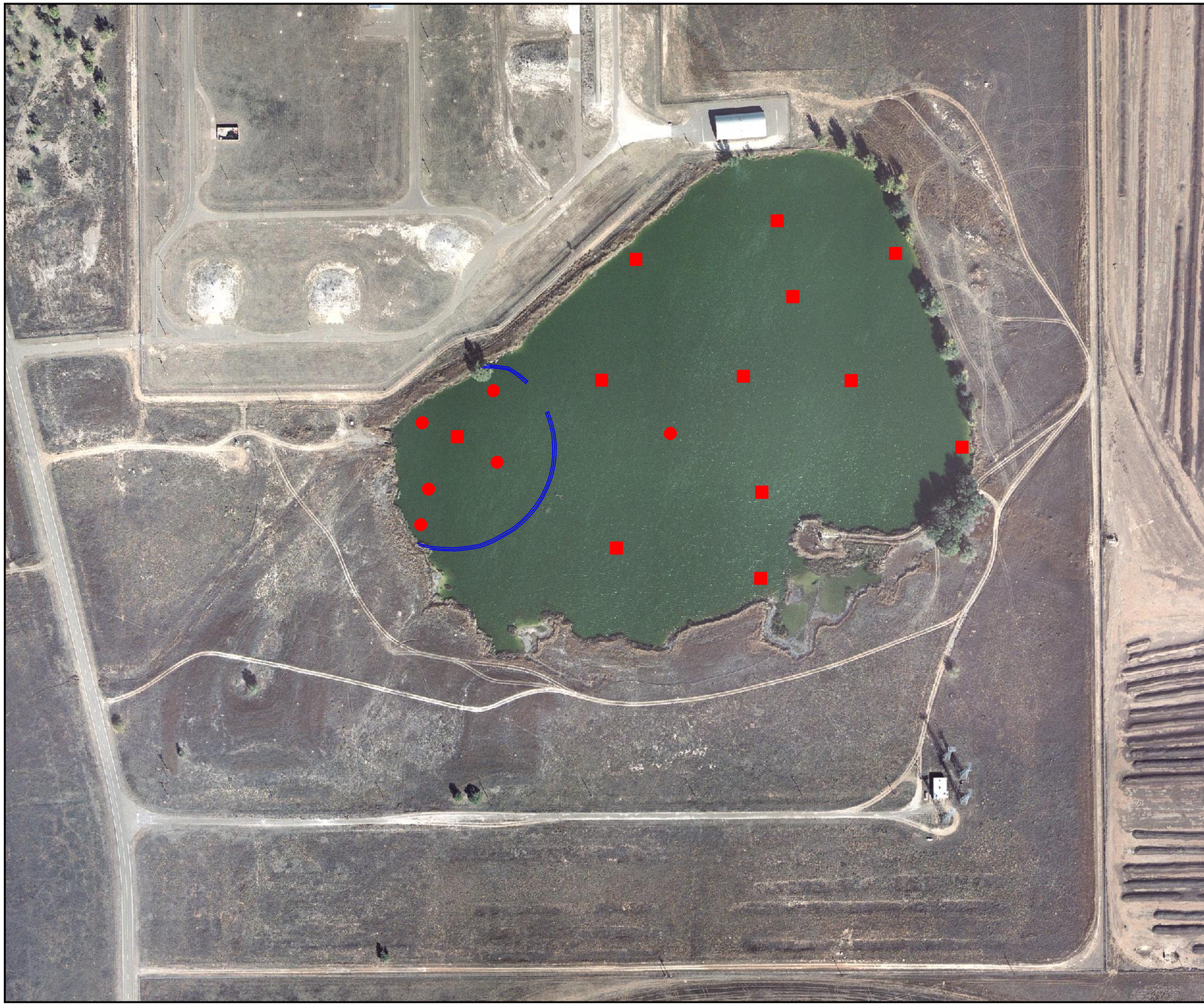
TEQ = Toxcity Equivalents

THQ = Target Hazard Quotient of 1.0

TPH = Total Petroleum Hydrocarbons

TR = Target Risk of 1E-05

* Avian



LEGEND

- PHASE III RFI COLLOCATED SURFACE WATER/SEDIMENT SAMPLE LOCATION (2010)
- PHASE III RFI SEDIMENT SAMPLE LOCATION (2010)
- BERM BOUNDARY

N

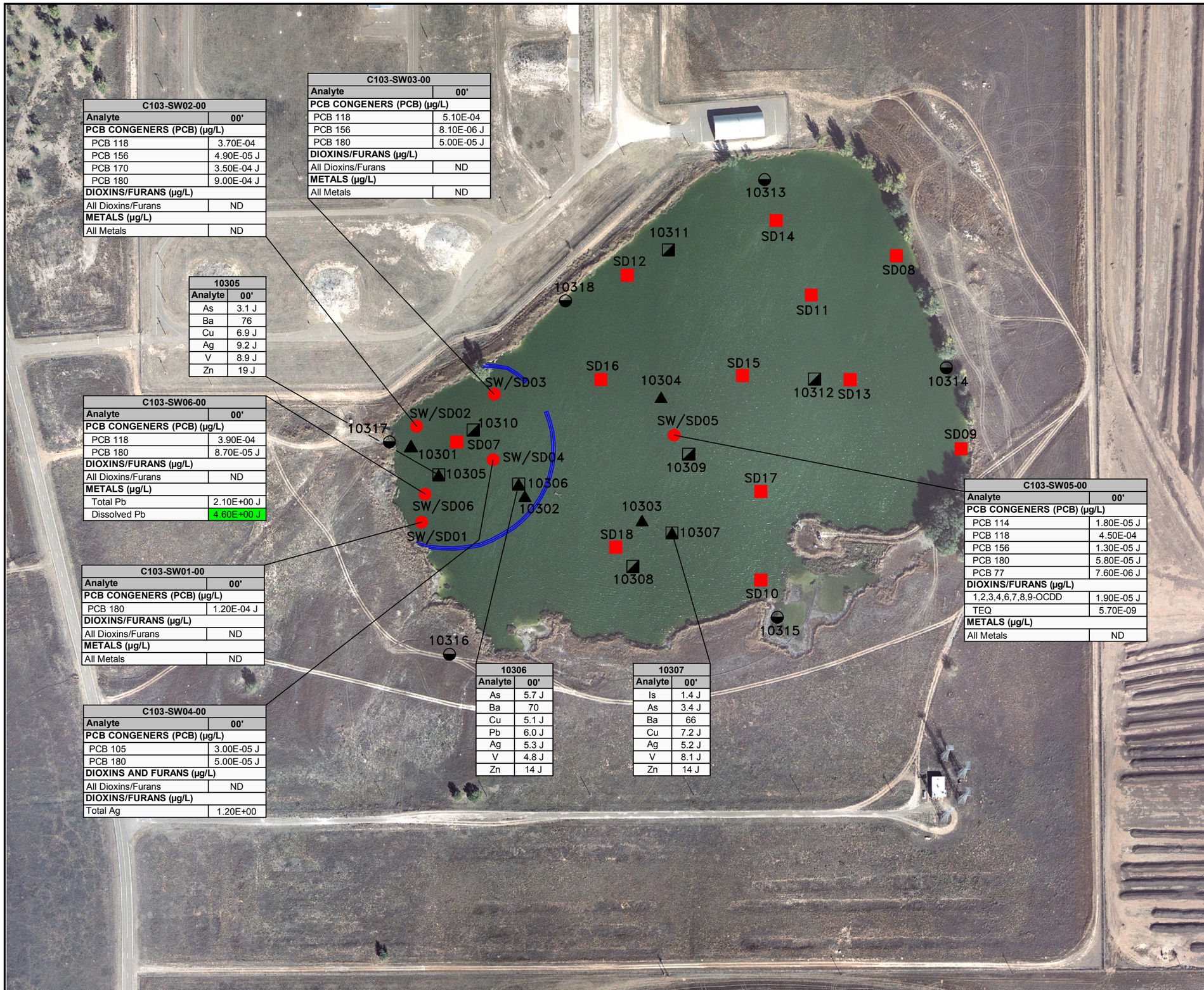
200 100 0 200

SCALE IN FEET

September 19, 2011 11:02:07 a.m.
Drawing: T:\CANNON\16170402\500\7-1.dwg

SAMPLE LOCATIONS
PLAYA LAKE (SWMU 103), PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: TMS	DATE: 01/26/11	PROJECT NO. 16170402	FIG. NO. 7-1
CHK'D. BY: TS	REVISION: 0		



C103-SW02-00	
Analyte	00'
PCB CONGENERS (PCB) (µg/L)	
PCB 118	3.70E-04
PCB 156	4.90E-05 J
PCB 170	3.50E-04 J
PCB 180	9.00E-04 J
DIOXINS/FURANS (µg/L)	
All Dioxins/Furans	ND
METALS (µg/L)	
All Metals	ND

C103-SW03-00	
Analyte	00'
PCB CONGENERS (PCB) (µg/L)	
PCB 118	5.10E-04
PCB 156	8.10E-06 J
PCB 180	5.00E-05 J
DIOXINS/FURANS (µg/L)	
All Dioxins/Furans	ND
METALS (µg/L)	
All Metals	ND

10305	
Analyte	00'
As	3.1 J
Ba	76
Cu	6.9 J
Ag	9.2 J
V	8.9 J
Zn	19 J

C103-SW06-00	
Analyte	00'
PCB CONGENERS (PCB) (µg/L)	
PCB 118	3.90E-04
PCB 180	8.70E-05 J
DIOXINS/FURANS (µg/L)	
All Dioxins/Furans	ND
METALS (µg/L)	
Total Pb	2.10E+00 J
Dissolved Pb	4.60E+00 J

C103-SW05-00	
Analyte	00'
PCB CONGENERS (PCB) (µg/L)	
PCB 114	1.80E-05 J
PCB 118	4.50E-04
PCB 156	1.30E-05 J
PCB 180	5.80E-05 J
PCB 77	7.60E-06 J
DIOXINS/FURANS (µg/L)	
1,2,3,4,6,7,8,9-OCDD	1.90E-05 J
TEQ	5.70E-09
METALS (µg/L)	
All Metals	ND

C103-SW01-00	
Analyte	00'
PCB CONGENERS (PCB) (µg/L)	
PCB 180	1.20E-04 J
DIOXINS/FURANS (µg/L)	
All Dioxins/Furans	ND
METALS (µg/L)	
All Metals	ND

C103-SW04-00	
Analyte	00'
PCB CONGENERS (PCB) (µg/L)	
PCB 105	3.00E-05 J
PCB 180	5.00E-05 J
DIOXINS AND FURANS (µg/L)	
All Dioxins/Furans	ND
DIOXINS/FURANS (µg/L)	
Total Ag	1.20E+00

10306	
Analyte	00'
As	5.7 J
Ba	70
Cu	5.1 J
Pb	6.0 J
Ag	5.3 J
V	4.8 J
Zn	14 J

10307	
Analyte	00'
Is	1.4 J
As	3.4 J
Ba	66
Cu	7.2 J
Ag	5.2 J
V	8.1 J
Zn	14 J

LEGEND

10307 — PHASE I RFI SURFACE WATER SAMPLE LOCATION AND NUMBER (1993)

10304 — PHASE I RFI SEDIMENT SAMPLE LOCATION AND NUMBER (1993)

10316 — PHASE II RFI SOIL BORING LOCATION AND NUMBER (1994)

10312 — PHASE II RFI SEDIMENT BORING LOCATION AND NUMBER (1994)

PHASE III RFI COLLOCATED SURFACE WATER/SEDIMENT SAMPLE LOCATION (2010)

PHASE III RFI SEDIMENT SAMPLE LOCATION (2010)

BERM BOUNDARY

PCB 105 = 2',3,3',4,4'–Pentachlorobiphenyl
PCB 114 = 2,3,4,4',5–Pentachlorobiphenyl
PCB 118 = 2',3',4,4',5–Pentachlorobiphenyl
PCB 156 = 2,3,3',4,4',5–Hexachlorobiphenyl
PCB 170 = 2,2',3,3',4,4',5–Heptachlorobiphenyl
PCB 180 = 2,2',3,4,4',5,5'–Heptachlorobiphenyl
PCB 77 = 3,3',4,4'–Tetrachlorobiphenyl

ACRONYMS

PCB = POLYCHLORINATED BIPHENYL
Is = ISOPHRONE
As = ARSENIC
Ba = BARIUM
Cu = COPPER
Pb = LEAD
Ag = SILVER
V = VANADIUM
Zn = ZINC
ND = NOT DETECTED
µg/L = MICROGRAM PER LITER

NOTE: SHADED RESULTS EXCEED ECOLOGICAL SCREENING VALUES

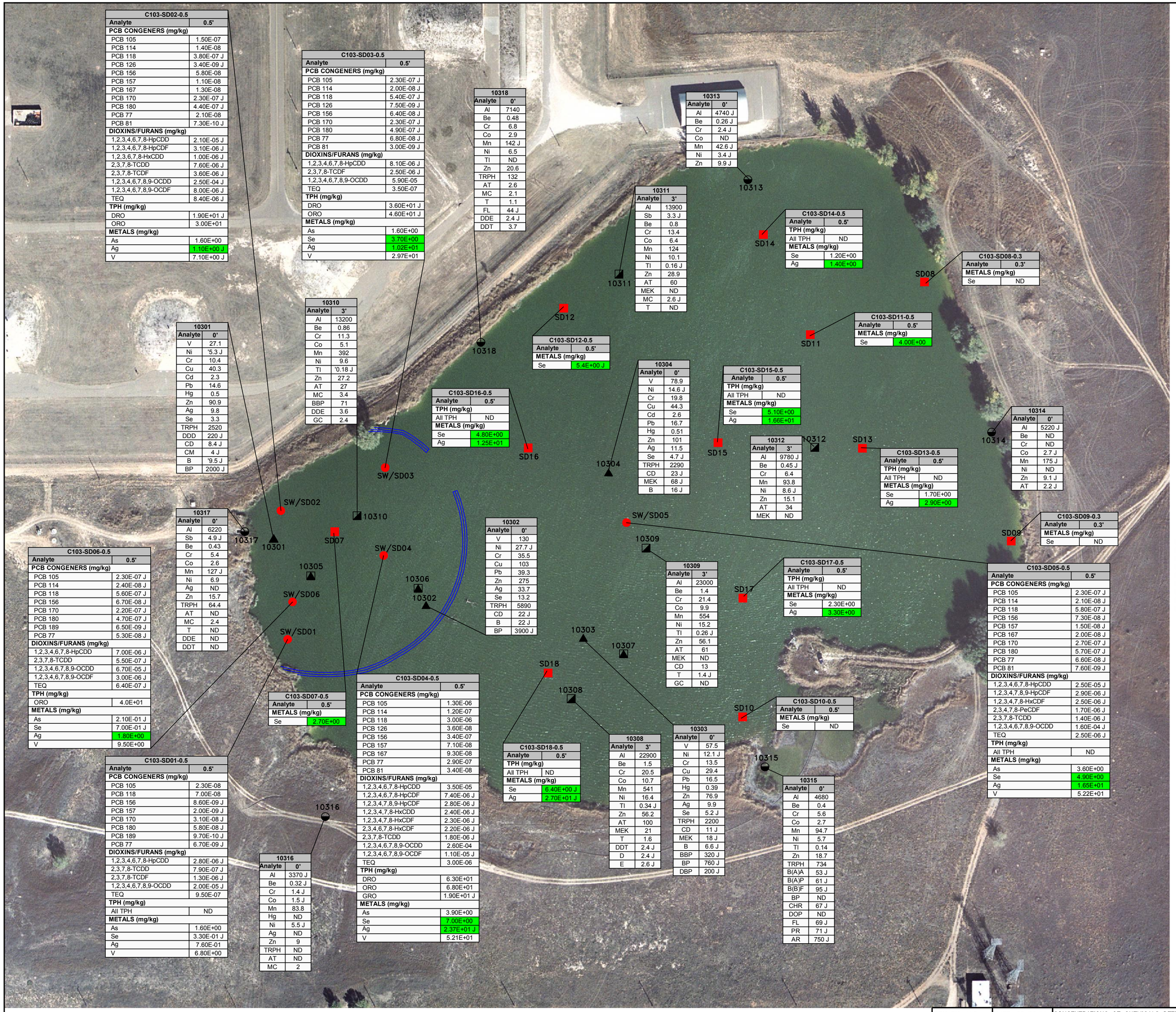
N

200 100 0 200
SCALE IN FEET

September 19, 2011 11:03:27 a.m.
Drawing: T:\CANNON\16170402\500\7–2.dwg

CONCENTRATIONS OF CHEMICALS DETECTED IN SURFACE WATER
PLAYA LAKE (SWMU 103), PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: TMS	DATE: 01/26/11	PROJECT NO.	FIG. NO.
CHK'D. BY: TS	REVISION: 0	16170402	7–2



C103-SD02-0.5	
Analyte	0.5'
PCB CONGENERS (mg/kg)	
PCB 105	1.50E-07
PCB 114	1.40E-08
PCB 118	3.80E-07 J
PCB 126	3.40E-09 J
PCB 156	5.80E-08
PCB 157	1.10E-08
PCB 167	1.30E-08
PCB 170	2.30E-07 J
PCB 180	4.40E-07 J
PCB 77	2.10E-08
PCB 81	7.30E-10 J
DIOXINS/FURANS (mg/kg)	
1,2,3,4,6,7,8-HpCDD	2.10E-05 J
1,2,3,4,6,7,8-HpCDF	3.10E-06 J
1,2,3,6,7,8-HxCDD	1.00E-06 J
2,3,7,8-TCDD	7.60E-06 J
2,3,7,8-TCDF	3.60E-06 J
1,2,3,4,6,7,8,9-OCDD	2.50E-04 J
1,2,3,4,6,7,8,9-OCDF	8.00E-06 J
TEQ	8.40E-06 J
TPH (mg/kg)	
DRO	1.90E+01 J
ORO	3.00E+01
METALS (mg/kg)	
As	1.60E+00
Ag	1.10E+00 J
V	7.10E+00 J

C103-SD03-0.5	
Analyte	0.5'
PCB CONGENERS (mg/kg)	
PCB 105	2.30E-07 J
PCB 114	2.00E-08 J
PCB 118	5.40E-07 J
PCB 126	7.50E-09 J
PCB 156	6.40E-08 J
PCB 170	2.30E-07 J
PCB 180	4.90E-07 J
PCB 77	6.80E-08 J
PCB 81	3.00E-09 J
DIOXINS/FURANS (mg/kg)	
1,2,3,4,6,7,8-HpCDD	8.10E-06 J
2,3,7,8-TCDF	2.50E-06 J
1,2,3,4,6,7,8,9-OCDD	5.90E-05
TEQ	3.50E-07
TPH (mg/kg)	
DRO	3.60E+01 J
ORO	4.60E+01 J
METALS (mg/kg)	
As	1.60E+00
Se	3.70E+00
Ag	1.02E+01
V	2.97E+01

10318	
Analyte	0'
Al	7140
Be	0.48
Cr	6.8
Co	2.9
Mn	142 J
Ni	6.5
Tl	ND
Zn	20.6
TRPH	132
AT	2.6
MC	2.1
T	1.1
FL	44 J
DDE	2.4 J
DDT	3.7

10313	
Analyte	0'
Al	4740 J
Be	0.26 J
Cr	2.4 J
Co	ND
Mn	42.6 J
Ni	3.4 J
Zn	9.9 J

10311	
Analyte	3'
Al	13900
Sb	3.3 J
Be	0.8
Cr	13.4
Co	6.4
Mn	124
Ni	10.1
Tl	0.16 J
Zn	28.9
AT	60
MEK	ND
MC	2.6 J
T	ND

C103-SD14-0.5	
Analyte	0.5'
TPH (mg/kg)	
All TPH	ND
METALS (mg/kg)	
Se	1.20E+00
Ag	1.40E+00

C103-SD08-0.3	
Analyte	0.3'
METALS (mg/kg)	
Se	ND

10310	
Analyte	3'
Al	13200
Be	0.86
Cr	11.3
Co	5.1
Mn	392
Ni	9.6
Tl	'0.18 J
Zn	27.2
AT	27
MC	3.4
BBP	71
DDE	3.6
GC	2.4

C103-SD12-0.5	
Analyte	0.5'
METALS (mg/kg)	
Se	5.4E+00 J

C103-SD11-0.5	
Analyte	0.5'
METALS (mg/kg)	
Se	4.00E+00

10301	
Analyte	0'
V	27.1
Ni	'5.3 J
Cr	10.4
Cu	40.3
Cd	2.3
Pb	14.6
Hg	0.5
Zn	90.9
Ag	9.8
Se	3.3
TRPH	2520
DDD	220 J
CD	8.4 J
CM	4 J
B	'9.5 J
BP	2000 J

C103-SD16-0.5	
Analyte	0.5'
TPH (mg/kg)	
All TPH	ND
METALS (mg/kg)	
Se	4.80E+00
Ag	1.25E+01

10304	
Analyte	0'
V	78.9
Ni	14.6 J
Cr	19.8
Cu	44.3
Cd	2.6
Pb	16.7
Hg	0.51
Zn	101
Ag	11.5
Se	4.7 J
TRPH	2290
CD	23 J
MEK	68 J
B	16 J

C103-SD15-0.5	
Analyte	0.5'
TPH (mg/kg)	
All TPH	ND
METALS (mg/kg)	
Se	5.10E+00
Ag	1.66E+01

10312	
Analyte	3'
Al	9780 J
Be	0.45 J
Cr	6.4
Mn	93.8
Ni	8.6 J
Zn	15.1
AT	34
MEK	ND

C103-SD13-0.5	
Analyte	0.5'
TPH (mg/kg)	
All TPH	ND
METALS (mg/kg)	
Se	1.70E+00
Ag	2.90E+00

10314	
Analyte	0'
Al	5220 J
Be	ND
Cr	ND
Co	2.7 J
Mn	175 J
Ni	ND
Zn	9.1 J
AT	2.2 J

10317	
Analyte	0'
Al	6220
Sb	4.9 J
Be	0.43
Cr	5.4
Co	2.6
Mn	127 J
Ni	6.9
Ag	ND
Zn	15.7
TRPH	64.4
AT	ND
MC	2.4
T	ND
DDE	ND
DDT	ND

10302	
Analyte	0'
V	130
Ni	27.7 J
Cr	35.5
Cu	103
Pb	39.3
Zn	275
Ag	33.7
Se	13.2
TRPH	5890
CD	22 J
B	22 J
BP	3900 J

C103-SD09-0.3	
Analyte	0.3'
METALS (mg/kg)	
Se	ND

C103-SD06-0.5	
Analyte	0.5'
PCB CONGENERS (mg/kg)	
PCB 105	2.30E-07 J
PCB 114	2.40E-08 J
PCB 118	5.60E-07 J
PCB 156	6.70E-08 J
PCB 170	2.20E-07 J
PCB 180	4.70E-07 J
PCB 189	6.50E-09 J
PCB 77	5.30E-08 J
DIOXINS/FURANS (mg/kg)	
1,2,3,4,6,7,8-HpCDD	7.00E-06 J
2,3,7,8-TCDD	5.50E-07 J
1,2,3,4,6,7,8,9-OCDD	6.70E-05 J
1,2,3,4,6,7,8,9-OCDF	3.00E-06 J
TEQ	6.40E-07 J
TPH (mg/kg)	
ORO	4.0E+01
METALS (mg/kg)	
As	2.10E-01 J
Se	7.00E-01 J
Ag	1.80E+00
V	9.50E+00

10309	
Analyte	3'
Al	23000
Be	1.4
Cr	21.4
Co	9.9
Mn	554
Ni	15.2
Tl	0.26 J
Zn	56.1
AT	61
MEK	ND
CD	13
T	1.4 J
GC	ND

C103-SD17-0.5	
Analyte	0.5'
TPH (mg/kg)	
All TPH	ND
METALS (mg/kg)	
Se	2.30E+00
Ag	3.30E+00

C103-SD05-0.5	
Analyte	0.5'
PCB CONGENERS (mg/kg)	
PCB 105	2.30E-07 J
PCB 114	2.10E-08 J
PCB 118	5.80E-07 J
PCB 156	7.30E-08 J
PCB 157	1.50E-08 J
PCB 167	2.00E-08 J
PCB 170	2.70E-07 J
PCB 180	5.70E-07 J
PCB 77	6.60E-08 J
PCB 81	7.60E-09 J
DIOXINS/FURANS (mg/kg)	
1,2,3,4,6,7,8-HpCDD	2.50E-05 J
1,2,3,4,7,8,9-HpCDF	2.90E-06 J
1,2,3,4,7,8-HxCDF	2.50E-06 J
2,3,4,7,8-PeCDF	1.70E-06 J
2,3,7,8-TCDD	1.40E-06 J
1,2,3,4,6,7,8,9-OCDD	1.60E-04 J
TEQ	2.50E-06 J
TPH (mg/kg)	
All TPH	ND
METALS (mg/kg)	
As	3.60E+00
Se	4.90E+00
Ag	1.65E+01
V	5.22E+01

C103-SD07-0.5	
Analyte	0.5'
METALS (mg/kg)	
Se	2.70E+00

C103-SD04-0.5	
Analyte	0.5'
PCB CONGENERS (mg/kg)	
PCB 105	1.30E-06
PCB 114	1.20E-07
PCB 118	3.00E-06
PCB 126	3.60E-08
PCB 156	3.40E-07
PCB 157	7.10E-08
PCB 167	9.30E-08
PCB 77	2.90E-07
PCB 81	3.40E-08
DIOXINS/FURANS (mg/kg)	
1,2,3,4,6,7,8-HpCDD	3.50E-05
1,2,3,4,6,7,8-HpCDF	7.40E-06 J
1,2,3,4,7,8,9-HpCDF	2.80E-06 J
1,2,3,4,7,8-HxCDD	2.40E-06 J
1,2,3,4,7,8-HxCDF	2.30E-06 J
2,3,4,6,7,8-HxCDF	2.20E-06 J
2,3,7,8-TCDD	1.80E-06 J
1,2,3,4,6,7,8,9-OCDD	2.60E-04
1,2,3,4,6,7,8,9-OCDF	1.10E-05 J
TEQ	3.00E-06
TPH (mg/kg)	
DRO	6.30E+01
ORO	6.80E+01
GRO	1.90E+01 J
METALS (mg/kg)	
As	3.90E+00
Se	7.00E+00
Ag	2.37E+01 J
V	5.21E+01

C103-SD18-0.5	
Analyte	0.5'
TPH (mg/kg)	
All TPH	ND
METALS (mg/kg)	
Se	6.40E+00 J
Ag	2.70E+01 J

10308	
Analyte	3'
Al	22900
Be	1.5
Cr	20.5
Co	10.7
Mn	541
Ni	16.4
Tl	0.34 J
Zn	56.2
AT	100
MEK	21
T	1.6
DDT	2.4 J
D	2.4 J
E	2.6 J

10303	
Analyte	0'
V	57.5
Ni	12.1 J
Cr	13.5
Cu	29.4
Pb	16.5
Hg	0.39
Zn	76.9
Ag	9.9
Se	5.2 J
TRPH	2200
CD	11 J
MEK	18 J
B	6.6 J
BBP	320 J
BP	760 J
DBP	200 J

C103-SD10-0.5	
Analyte	0.5'
METALS (mg/kg)	
Se	ND

C103-SD01-0.5	
Analyte	0.5'
PCB CONGENERS (mg/kg)	
PCB 105	2.30E-08
PCB 118	7.00E-08
PCB 156	8.60E-09 J
PCB 157	2.00E-09 J
PCB 170	3.10E-08 J
PCB 180	5.80E-08 J
PCB 189	9.70E-10 J
PCB 77	6.70E-09 J
DIOXINS/FURANS (mg/kg)	
1,2,3,4,6,7,8-HpCDD	2.80E-06 J
2,3,7,8-TCDD	7.90E-07 J
2,3,7,8-TCDF	1.30E-06 J
1,2,3,4,6,7,8,9-OCDD	2.00E-05 J
TEQ	9.50E-07
TPH (mg/kg)	
All TPH	ND
METALS (mg/kg)	
As	1.60E+00
Se	3.30E-01 J
Ag	7.60E-01
V	6.80E+00

10316	
Analyte	0'
Al	3370 J
Be	0.32 J
Cr	1.4 J
Co	1.5 J
Mn	83.8
Hg	ND
Ni	5.5 J
Ag	ND
Zn	9
TRPH	ND
AT	ND
MC	2

10315	
Analyte	0'
Al	4680
Be	0.4
Cr	5.6
Co	2.7
Mn	94.7
Ni	5.7
Tl	0.14
Zn	18.7
TRPH	734
B(A)A	53 J
B(A)P	61 J
B(B)F	95 J
BP	ND
CHR	67 J
DOP	ND
FL	69 J
PR	71 J
AR	750 J

LEGEND

10307 — PHASE I RFI SURFACE WATER SAMPLE LOCATION AND NUMBER (1993)

10304 — PHASE I RFI SEDIMENT SAMPLE LOCATION AND NUMBER (1993)

10316 — PHASE II RFI SOIL BORING LOCATION AND NUMBER (1994)

10312 — PHASE II RFI SEDIMENT BORING LOCATION AND NUMBER (1994)

PHASE III RFI COLLOCATED SURFACE WATER/SEDIMENT SAMPLE LOCATION (2010)

PHASE III RFI SEDIMENT SAMPLE LOCATION (2010)

BERM BOUNDARY

Al = ALUMINUM (mg/kg)
AR = AROCLOR-1248
Be = BERYLLIUM (mg/kg)
Co = COBALT (mg/kg)
Mn = MANGANESE (mg/kg)
Tl = THALLIUM (mg/kg)
AT = ACETONE
GC = gamma-Chlordane
CD = CARBON DISULFIDE
MC = METHYLENE CHLORIDE
Ni = NICKEL (mg/kg)
Cr = CHROMIUM (mg/kg)
Cu = COPPER (mg/kg)
FL = FLUORANTHENE
PR = PYRENE
Cd = CADMIUM (mg/kg)
Pb = LEAD (mg/kg)
Hg = MERCURY (mg/kg)
Zn = ZINC (mg/kg)
Ag = SILVER (mg/kg)
Se = SELENIUM (mg/kg)
DDD = 4,4'-DDD
TRPH = TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (mg/kg)
DDD = 4,4'-DDD
CD = CHLORDANE
CM = CHLOROMETHANE
MEK = 2-BUTANONE
B = BENZENE
BBP = BENZYL BUTYL PHTHALATE
BP = BIS(2-ETHYLHEXYL)PHTHLATE
DBP = DI-N-BUTYLPHTHLATE
DDT = 4,4'-DDT
B(A)A = BENZO(A)ANTHRACENE
B(A)P = BENZO(A)PYRENE
B(B)F = BENZO(B)FLUORANTHENE
CHR = CHRYSENE
DOP = DI-N-OCTYLPHTHALATE
V = VANADIUM (mg/kg)
D = Dieldrin
E = Endrin
T = TOLUENE
PCB 105 = 2',3,3',4,4'-Pentachlorobiphenyl
PCB 114 = 2,3,4,4',5-Pentachlorobiphenyl
PCB 118 = 2',3',4,4',5-Pentachlorobiphenyl
PCB 126 = 3,3',4,4',5-Pentachlorobiphenyl
PCB 156 = 2,3,3',4,4',5-Hexachlorobiphenyl
PCB 157 = 2,3,3',4,4',5'-Hexachlorobiphenyl
PCB 167 = 2,3',4,4',5,5'-Hexachlorobiphenyl
PCB 170 = 2,2',3,3',4,4',5-Heptachlorobiphenyl
PCB 180 = 2,2',3,4,4',5,5'-Heptachlorobiphenyl
PCB 77 = 3,3',4,4'-Tetrachlorobiphenyl
PCB 81 = 3,4,4',5-Tetrachlorobiphenyl
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodibenzofuran
TCDD = Tetrachlorodibenzo-p-dioxin
OCDD = Heptachlorodibenzo-p-dioxin
OCDF = Octachlorodibenzofuran
TCDF = Tetrachlorodibenzofuran
TEQ = Toxic Equivalent
TPH = TOTAL PETROLEUM HYDROCARBONS
DRO = DIESEL RANGE ORGANICS
ORO = OIL RANGE ORGANICS
GRO = GASOLINE RANGE ORGANICS

mg/kg = MILLIGRAM PER KILOGRAM
µg/kg = MICROGRAM PER KILOGRAM
PCB = POLYCHLORINATED BIPHENYLS

ND= CHEMICALS ANALYZED FOR WERE NOT DETECTED

NOTE: RESULTS SHADED GREEN EXCEED GENERIC ECOLOGICAL SCREENING VALUES

CONCENTRATIONS ARE µg/kg EXCEPT WHERE NOTED

NOTE
PHASE I RFI SEDIMENT AND SURFACE WATER SAMPLES LOCATIONS ARE APPROXIMATE

N

100 50 0 100
SCALE IN FEET

September 19, 2011 11:04:16 a.m.
Drawing: T:\CANNON\16170402\500\7-3.dwg

SOURCE: CANNON AFB CAD FILES AND CANNON AFB FIELD SAMPLING PLAN.

DRN BY LLS	DATE 05/02/11	CONCENTRATIONS OF CHEMICALS DETECTED IN SOIL AND SEDIMENT PLAYA LAKE (SWMU 103), PHASE III RFI CANNON AIR FORCE BASE, NEW MEXICO	PROJECT NO. 16170402	FIG. NO. 7-3
CHK'D BY	REVISION 0			

This Phase III RFI report addressed Playa Lake (SWMU 103) at Cannon AFB near Clovis, New Mexico, which required additional investigation to determine the nature and extent of potential contamination in surface water and sediment.

The Phase III RFI sediment analytical results were evaluated using current NMED SSLs (NMED 2009), NMED TPH screening guidelines for unknown oil (NMED 2006b) and ESVs (NMED 2008). Surface water analytical results were evaluated using current NMAC SWSLs (NMAC 2009), USEPA RSLs (USEPA 2010), and ESVs (NMED 2008). Sediment analytical results were also compared to Cannon AFB background values. This Phase III RFI report presented analytical results, compared the results to current NMED SSLs, USEPA RSLs, NMED TPH screening guidelines and NMAC SWSLs, included further human health and ecological risk evaluations; as necessary, and provided recommendations for Playa Lake (SWMU 103).

The data collected during the Phase I and II RFIs was re-evaluated for risk to humans and the Playa Lake (SWMU 103) environment. The human health and ecological risk reassessments identified sediment and surface water as the media of concern for the Phase III RFI.

8.1 SETTING

Cannon AFB is situated in the Southern High Plains Physiographic Province in the Llano Estacado subprovince. The Llano Estacado is a nearly flat plain sloping gently (10 to 15 ft/mi) to the east and southeast. Elevations in the eastern New Mexico portion of the Llano Estacado exceed 4,000 feet above msl. In the vicinity of Cannon AFB, elevations range from 4,250 feet to 4,350 feet above msl.

8.2 LAND USE

Cannon AFB is located just west of the City of Clovis, New Mexico and just south of U.S. Highway 60-84 in a farming and ranching area. The majority of the land surrounding Cannon AFB is productive, irrigated farmland or grassland.

8.3 CLIMATOLOGY

The climate of east-central New Mexico is classified as tropical semi-arid, with summer temperature and precipitation maxima. Average monthly temperatures range from a January low of 12°C (39°F) to a July high of 26°C (78°F).

8.4 GEOLOGY

The near-surface stratigraphic units of interest at Cannon AFB are the Late Miocene-Late Pliocene-age Ogallala Formation and the Early Triassic Dockum Group.

8.5 HYDROGEOLOGY

The lower portion of the Ogallala Formation is the primary regional aquifer for both potable and irrigation water. No deeper aquifers are utilized in the vicinity of Cannon AFB. The Ogallala aquifer is part of the High Plains Aquifer that extends continuously from Wyoming and South Dakota into New Mexico and Texas. In east-central New Mexico, the Ogallala aquifer rests on Dockum Group redbeds, which serve as the basal confining layer. The Ogallala is a water table, or unconfined, aquifer (Lee Wan 1990).

8.6 SOILS

8.6.1 Cannon AFB Vicinity

Soils in the vicinity of Cannon AFB are classified as SM to SC under the USCS, and as aridisols (calciorthids) under the Soil Conservation Service Comprehensive Soil Classification System. The following summary is based on the Soil Conservation Service Curry County Soil Survey as reported in Lee Wan and Associates (1990).

8.6.2 Playa Lake (SWMU 103) Sediment

The Playa Lake (SWMU 103) sediment samples were described as organic silt, black to dark gray with a slight to strong methane odor, and sand.

8.7 BACKGROUND METALS CONCENTRATIONS IN SOIL

The natural soils in the vicinity of Cannon AFB are alkaline and generally rich in metals. Typically high concentrations of aluminum, iron, magnesium, manganese, and potassium combine with elevated levels of many other metals in the natural soils including arsenic (4.3 mg/kg) and lead (8.7 mg/kg).

8.8 WATER QUALITY

The groundwater quality at Cannon AFB is generally good, with dissolved solids ranging from 250 to 500 milligrams per liter (mg/L) (Gutentag et al. 1984) and fluorides ranging from 2.2 to 2.7 mg/L (William Matotan and Associates, Inc. 1985).

8.9 PHASE III RFI ANALYTICAL DATA

Overall, twenty one sediment samples (18 samples and three field duplicates) and seven surface water samples (six samples and one field duplicate) were collected and submitted for chemical analysis during the 2010 Phase III RFI fieldwork. Surface water samples were collected and analyzed for dioxins/furans, PCB congeners, total and dissolved (filtered) lead, selenium and

silver. Sediment samples were collected and analyzed for dioxins/furans, PCB congeners, TPH-DRO, TPH- GRO, TPH-ORO, arsenic, selenium, silver and vanadium.

All chemical data were verified following procedures identified in the QAPP (URS 2010). No analytical data were rejected.

Acceptable levels of accuracy and precision were achieved for the Phase III RFI sample data. One hundred percent of the analytical data from the samples collected at Playa Lake (SWMU 103) were determined to be acceptable for their intended use, including estimated/estimated nondetect (**J/UJ**) data.

8.10 SUMMARY OF PLAYA LAKE (SWMU 103) INVESTIGATIONS

Play Lake (SWMU 103) has been the subject of a Phase I RFI, a Phase II RFI, as well as Human Health and Ecological Risk Evaluations. The Phase I RFI for Playa Lake (SWMU 103) included collection of surface water and sediment samples (W-C 1994). The Phase II RFI investigation for Playa Lake (SWMU 103) (W-C 1997b) included the collection of soil samples and subsurface sediment samples to further assess the vertical and horizontal extent of potential site contamination at Playa Lake (SWMU 103).

The data collected during the Phase I and II RFIs was re-evaluated for risk to humans and the Playa Lake (SWMU 103) environment. The human health and ecological risk reassessments identified sediment and surface water as the media of concern for the Phase III RFI. Phase III RFI fieldwork consisted of the collection of six collocated surface water and sediment samples for a full set of analyses, six sediment samples for selenium only analysis, plus six additional sediment samples for TPH, selenium, and silver analyses. The maximum dissolved lead concentration in surface water exceeded ESVs. The maximum selenium, silver and vanadium concentrations in sediment were below the NMED residential SSLs, but exceeded the Cannon AFB background values. Selenium and silver both exceeded sediment ESVs; however both were identified as low potential for risk to ecological receptors based on the ecological risk assessment. Maximum PCB congeners and dioxins/furans concentrations and TEQs were all below NMED residential SSLs.

8.11 RECOMMENDATIONS

The extent of contamination has been defined, and no unacceptable risks to human health or the environment were identified based on the risk evaluation process which included a human health screen and an ecological risk assessment. Therefore, Corrective Action Complete without Controls is recommended for Playa Lake (SWMU 103).

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A.1 DAILY QUALITY CONTROL REPORTS

DAILY QUALITY CONTROL REPORT

Date	**17-Oct-10**

Day	S	M	T	W	TH	F	S
	X						

On Site Hours	0
Travel Time	7.5
Office Time	0

Site Name and Location	Playa Lake (SWMU 103), Cannon AFB, New Mexico
USACE Project Manager	Hector Santiago
Project	Phase III RFI
Project No.	16170402
Contract No.	W9128F-04-D-0001 DO 0071, Modification 01

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:

None

Visitors on Site:

None.

URS Personnel on Site:

None.

Field Work Performed (including sampling):

Mobilization to Clovis, New Mexico.

Quality Control Activities (including field calibration):

None.

Health and Safety and Activities:

None.

Observations/Problems Encountered/Corrective Action Taken:

By *Tony Sedlacek* **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	18-Oct-10

Day	S	M	T	W	TH	F	S
		X					

On Site Hours	9
Travel Time	0.5
Office Time	0

Site Name and Location	Playa Lake (SWMU 103), Cannon AFB, New Mexico
USACE Project Manager	Hector Santiago
Project	Phase III RFI
Project No.	16170402
Contract No.	W9128F-04-D-0001 DO 0071, Modification 01

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

Subcontractors on Site:

None

Equipment on Site:

Mini-Rae 10.6 eV PID, Hanna Turbidity Meter, Oakton 300 Water Quality Meter, Hand Pump

Visitors on Site:

None

URS Personnel on Site:

Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling):

Purchased sampling supplies; obtained 4-day base passes; met with Cannon AFB Manager Hugh Hanson; stopped at Base security office to inform them of field work at the Playa Lake (SWMU 103); completed sampling at collocated surface water and sediment locations SW/SD01 and SW/SD02; shipped samples via Fed Ex. Collected one MS/MSD sample from SW/SD02 location.

Quality Control Activities (including field calibration):

Calibrated PID using 100 ppm Isobutylene, calibrated Hanna turbidity meter with <0.1, 15, 100 and 750 NTU standards, calibrated Oakton 300 water quality meter with pH standards of 4.0, 7.0 and 10 and conductivity solution.

Health and Safety and Activities:

Completed Health and Safety briefing with URS personnel; signed safety compliance agreement form. Monitored air quality with PID.

Observations/Problems Encountered/Corrective Action Taken:

Hand pump set-up as shown in instruction manual was not correct. The sample was getting pulled through the pump and not the attached tubing. Called Field Environmental for instruction, determined that the set-up in the manual was incorrect and sample had to be pulled from transfer jar with tubing attached to pump to create vacuum to pull sample through 0.45 micron filter and into preserved sample container. Also, culvert on west side of lake discharging treated water into lake periodically from Cannon AFB wastewater treatment plant.

By *Tony Sedlacek* **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	19-Oct-10

Day	S	M	T	W	TH	F	S
			X				

On Site Hours	10.5
Travel Time	0.5
Office Time	0

Site Name and Location	Playa Lake (SWMU 103), Cannon AFB, New Mexico
USACE Project Manager	Hector Santiago
Project	Phase III RFI
Project No.	16170402
Contract No.	W9128F-04-D-0001 DO 0071, Modification 01

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

Subcontractors on Site:

None

Equipment on Site:

Mini-Rae 10.6 eV PID, Hanna Turbidity Meter, Oakton 300 Water Quality Meter, Hand Pump

Visitors on Site:

Hugh Hanson (Cannon AFB) and Karen Walker (AGEISS), Cannon AFB security officers.

URS Personnel on Site:

Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling):

Met with Cannon AFB Manager Hugh Hanson at Cannon AFB Recreation office to obtain 14 foot V-bottom boat for sampling; Completed sampling at collocated surface water and sediment locations SW/SD03, SW/SD04, SW/SD05, SW/SD06 and sediment only locations SD07 through SD12. Collected two duplicate samples, one from SW/SD04 and one from SD10, and one MS/MSD sample from Boring SD12.

Quality Control Activities (including field calibration):

Calibrated PID using 100 ppm Isobutylene, calibrated Hanna turbidity meter with <0.1, 15, 100 and 750 NTU standards, calibrated Oakton 300 water quality meter with pH standards of 4.0, 7.0 and 10 and conductivity solution.

Health and Safety and Activities:

Completed tailgate Health and Safety briefing with URS personnel; monitored air quality with PID.

Observations/Problems Encountered/Corrective Action Taken:

Culvert on west side of lake discharging treated water into lake periodically from Cannon AFB wastewater treatment plant. Refusal was encountered at 3 inches at sample locations SD08 and SD09.

By *Tony Sedlacek* **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	20-Oct-10

Day	S	M	T	W	TH	F	S
				X			

On Site Hours	9.5
Travel Time	0.5
Office Time	0

Site Name and Location	Playa Lake (SWMU 103), Cannon AFB, New Mexico
USACE Project Manager	Hector Santiago
Project	Phase III RFI
Project No.	16170402
Contract No.	W9128F-04-D-0001 DO 0071, Modification 01

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

Subcontractors on Site:

None

Equipment on Site:

Mini-Rae 10.6 eV PID

Visitors on Site:

Unidentified visitor in blue Chevy truck (Unable to meet visitor, due to sampling in boat on Playa Lake, visitor observed field activities from Playa Lake shore for a few minutes and left site, did not return)

URS Personnel on Site:

Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling):

Completed sampling at sediment-only locations SD13 through SD18 for hold at the laboratory; shipped samples via Fed Ex. Met with Cannon AFB Manager Hugh Hanson at Cannon AFB Recreation office to return 14 foot V-bottom boat. Shipped sampling equipment to Field Environmental and URS Omaha office via Fed Ex.

Quality Control Activities (including field calibration):

Calibrated PID using 100 ppm Isobutylene

Health and Safety and Activities:

Completed tailgate Health and Safety briefing with URS personnel; monitored air quality with PID.

Observations/Problems Encountered/Corrective Action Taken:

Culvert on west side of lake discharging treated water into lake periodically from Cannon AFB wastewater treatment plant.

By *Tony Sedlacek* **Title** Field Manager

DAILY QUALITY CONTROL REPORT

Date	21-Oct-10

Day	S	M	T	W	TH	F	S
					X		

On Site Hours	0
Travel Time	7.5
Office Time	0

Site Name and Location	Playa Lake (SWMU 103), Cannon AFB, New Mexico
USACE Project Manager	Hector Santiago
Project	Phase III RFI
Project No.	16170402
Contract No.	W9128F-04-D-0001 DO 0071, Modification 01

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	**Report No.**	
Humidity	Dry X	Moderate	Humid	**5**	

Subcontractors on Site:

None.

Equipment on Site:

None

Visitors on Site:

None.

URS Personnel on Site:

None.

Field Work Performed (including sampling):

Demobilization from Clovis, New Mexico.

Quality Control Activities (including field calibration):

None.

Health and Safety and Activities:

None.

Observations/Problems Encountered/Corrective Action Taken:

By *Tony Sedlacek* **Title** Field Manager

A.2 SAMPLE COLLECTION FIELD SHEETS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SW01-00 WELL NO. N/A

DATE/TIME COLLECTED 10/18/10 / 1130 PERSONNEL T.S., S.W.

SAMPLE METHOD Immersion / Transfer Jar (Dissolved Metals)

SAMPLE MEDIA: Groundwater Surface Water

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
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, filtered	Metals (6010B)
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, unfiltered	Metals (6010B)
(2) 1-L Ambers	4^0 C, in the dark	PCB Congeners (1668B)
(2) 1-L Ambers	4^0 C	Dioxin/Furans (8290)

WELL PURGING DATA

Date	N/A	Well Depth (ft. BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
OVA Measurements		Volume of Water in Well (gal)	
Background		Casing Volumes to Purge	
Breathing Zone		Minimum to Purge (gal)	
Well Head		Actual Purge (gal)	

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU's)
1130	N/A	9.77	27.5	1145	N/A	N/A	16.5

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	N/A	N/A
Water Quality Meter	Oakton 300	pH stds. & Conductivity Solution
Turbidity Meter	Hanna	<0.1, 15, 100, 750 NTU Stds.

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SW02-00 WELL NO. N/A

DATE/TIME COLLECTED 10/18/10 /1345 PERSONNEL T.S., S.W.

SAMPLE METHOD Immersion /Transfer Jar (Dissolved metals)

SAMPLE MEDIA: Groundwater (Surface Water)

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
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, filtered	Metals (6010B)
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, unfiltered	Metals (6010B)
(2) 1-L Ambers	4^0 C, in the dark	PCB Congeners (1668B)
(2) 1-L Ambers	4^0 C	Dioxin/Furans (8290)

WELL PURGING DATA

Date	N/A	Well Depth (ft. BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
OVA Measurements		Volume of Water in Well (gal)	
Background		Casing Volumes to Purge	
Breathing Zone		Minimum to Purge (gal)	
Well Head		Actual Purge (gal)	

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU's)
1345	N/A	9.95	21.3	1150	N/A	N/A	23.0

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	N/A	N/A
Water Quality Meter	Oakton 300	pH Stds. & Conductivity Solution
Turbidity Meter		<0.1, 15, 100, 750 NTU Stds.

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SW03 - 00 WELL NO. N/A

DATE/TIME COLLECTED 10/19/10 / 0837 PERSONNEL T.S., S.W.

SAMPLE METHOD Immersion / Transfer Jar (Dissolved Metals)

SAMPLE MEDIA: Groundwater (Surface Water)

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
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, filtered	Metals (6010B)
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, unfiltered	Metals (6010B)
(2) 1-L Ambers	4^0 C, in the dark	PCB Congeners (1668B)
(2) 1-L Ambers	4^0 C	Dioxin/Furans (8290)

WELL PURGING DATA

Date	N/A	Well Depth (ft. BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
OVA Measurements		Volume of Water in Well (gal)	
Background		Casing Volumes to Purge	
Breathing Zone		Minimum to Purge (gal)	
Well Head		Actual Purge (gal)	

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU's)
0837	N/A	9.55	16.1	1190	N/A	N/A	16.9

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	N/A	N/A
Water Quality Meter	Oakton 300	pH Stds. & Conductivity Solution
Turbidity Meter	Hanna	20.1, 15, 100, 750 NTU Stds.

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SW04-00 WELL NO. N/A

DATE/TIME COLLECTED 10/19/10 / 0959 PERSONNEL T.S., S.W.

SAMPLE METHOD Immersion / Transfer Jar (Dissolved Metals)

SAMPLE MEDIA: Groundwater (Surface Water)

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. N/A

SAMPLE QC DUPLICATE: (YES) NO DUPLICATE SAMPLE NO. C103-SW24-00 @ 1000

MS/MSD REQUESTED YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, filtered	Metals (6010B)
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, unfiltered	Metals (6010B)
(2) 1-L Ambers	4^0 C, in the dark	PCB Congeners (1668B)
(2) 1-L Ambers	4^0 C	Dioxin/Furans (8290)

WELL PURGING DATA

Date	N/A	Well Depth (ft. BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
OVA Measurements		Volume of Water in Well (gal)	
Background		Casing Volumes to Purge	
Breathing Zone		Minimum to Purge (gal)	
Well Head		Actual Purge (gal)	

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU's)
0959	N/A	9.92	18.7	641	N/A	N/A	16.9

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	N/A	N/A
Water Quality Meter	Oakton 300	pH Stds. & Conductivity Solution
Turbidity Meter	Hanna	<0.01, 15, 100, 750 NTU Stds.

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SW05-00 WELL NO. N/A

DATE/TIME COLLECTED 10/19/10 / 1127 PERSONNEL T.S., S.W.

SAMPLE METHOD Immersion / Transfer Jar (Dissolved Metals)

SAMPLE MEDIA: Groundwater (Surface Water)

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
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, filtered	Metals (6010B)
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, unfiltered	Metals (6010B)
(2) 1-L Ambers	4^0 C, in the dark	PCB Congeners (1668B)
(2) 1-L Ambers	4^0 C	Dioxin/Furans (8290)

WELL PURGING DATA

Date	N/A	Well Depth (ft. BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
OVA Measurements		Volume of Water in Well (gal)	
Background		Casing Volumes to Purge	
Breathing Zone		Minimum to Purge (gal)	
Well Head		Actual Purge (gal)	

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU's)
1127	N/A	9.89	19.4	1201	N/A	N/A	16.8

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	N/A	N/A
Water Quality Meter	Oakton 300	pH Stds. & Conductivity Solution
Turbidity Meter	Hanna	<0.1, 15, 100, 750 NTU Stds.

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SW06-00 WELL NO. N/A

DATE/TIME COLLECTED 10/19/10 / 1248 PERSONNEL T.S., S.W.

SAMPLE METHOD Immersion / Transfer Jar (Dissolved Metals)

SAMPLE MEDIA: Groundwater Surface Water

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
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, filtered	Metals (6010B)
(1) 500-mL HDPE	4^0 C, HNO3 to pH < 2, unfiltered	Metals (6010B)
(2) 1-L Ambers	4^0 C, in the dark	PCB Congeners (1668B)
(2) 1-L Ambers	4^0 C	Dioxin/Furans (8290)

WELL PURGING DATA

Date	N/A	Well Depth (ft. BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
OVA Measurements		Volume of Water in Well (gal)	
Background		Casing Volumes to Purge	
Breathing Zone		Minimum to Purge (gal)	
Well Head		Actual Purge (gal)	

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Turbidity (NTU's)
1248	N/A	9.85	20.9	1130	N/A	N/A	16

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	N/A	N/A
Water Quality Meter	Oakton 300	pH Stds. & Conductivity Solution
Turbidity ~~Hanna~~ TS Meter	Hanna	0.1, 15, 100, 750 NTU Stds.

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SD01-0.5 BORING NO. SD01

DATE/TIME COLLECTED: 10/18/10 /1130 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0--0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(2) 4 oz. Glass jars	4^0 C	TPH-GRO (8015B)
(1) 8 oz. Glass jars	4^0 C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(1) 8 oz. Glass jars	4^0 C	PCB Congeners/Dioxin/Furans (1668B/8290)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0--0.5' DESCRIPTION: Silt (OL) - Soft, dark gray to black with sand and sandy organic clay, wet

GENERAL COMMENTS

Collected under approximately 3 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD02 - 0.5 BORING NO. SD02

DATE/TIME COLLECTED: 10/18/10 / 1345 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0 - 0.5'

SAMPLE MEDIA: SOIL SEDIMENT SLUDGE

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
(2) 4 oz. Glass jars	4^0 C	TPH-GRO (8015B)
(1) 8 oz. Glass jars	4^0 C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(1) 8 oz. Glass jars	4^0 C	PCB Congeners/Dioxin/Furans (1668B/8290)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0.5' DESCRIPTION: Silt (OL) - Soft, dark gray to black with sandy organic clay, wet

GENERAL COMMENTS

Collected under approximately 3 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SD03-0.5 BORING NO. SD03

DATE/TIME COLLECTED: 10/19/10 / 0837 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0-0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(2) 4 oz. Glass jars	4^0 C	TPH-GRO (8015B)
(1) 8 oz. Glass jars	4^0 C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(1) 8 oz. Glass jars	4^0 C	PCB Congeners/Dioxin/Furans (1668B/8290)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Organic Silt (OH) - very soft, dark gray, wet, with sand

GENERAL COMMENTS

Collected under approximately 5 feet of water.

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD04 - 0.5 BORING NO. SD04

DATE/TIME COLLECTED: 10/19/10 / 0959 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0-0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. N/A

SAMPLE QC DUPLICATE: (YES) NO DUPLICATE SAMPLE NO. C103 - SD24 - 0.5 @1000

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 4 oz. Glass jars	4^0 C	TPH-GRO (8015B)
(1) 8 oz. Glass jars	4^0 C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(1) 8 oz. Glass jars	4^0 C	PCB Congeners/Dioxin/Furans (1668B/8290)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Organic silt (OH) - very soft, dark gray to blacks saturated, hydrocarbon odor, with sand

GENERAL COMMENTS

Collected under approximately 4 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD05 - 0.5 BORING NO. SD05

DATE/TIME COLLECTED: 10/29/10 / 1127 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with split Spoon / 0 - 0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(2) 4 oz. Glass jars	4^0 C	TPH-GRO (8015B)
(1) 8 oz. Glass jars	4^0 C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(1) 8 oz. Glass jars	4^0 C	PCB Congeners/Dioxin/Furans (1668B/8290)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0 - 0.5' DESCRIPTION: Organic Silt (OH) - very soft, dark gray to black, methane odor, saturated, with sand

GENERAL COMMENTS

Collected under approximately 4 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SD06-0.5 BORING NO. SD06

DATE/TIME COLLECTED: 10/19/10 / 1248 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon/0-0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(2) 4 oz. Glass jars	4^0 C	TPH-GRO (8015B)
(1) 8 oz. Glass jars	4^0 C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(1) 8 oz. Glass jars	4^0 C	PCB Congeners/Dioxin/Furans (1668B/8290)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silt (OH) - Very soft, dark gray to black with sand, saturated, with sand

GENERAL COMMENTS

Collected under approximately 3 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SD07-0.5 BORING NO. SD07

DATE/TIME COLLECTED: 10/19/10 / 1337 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0-0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(1) 8 oz. Glass jars	4°C	Selenium (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silt (OL) - Organic, soft, dark gray to black with sand, wet

GENERAL COMMENTS

Collected under approximately 4 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD08 - 0.3 BORING NO. SD08

DATE/TIME COLLECTED: 10/19/10 / 1430 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0-0.3'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(1) 8 oz. Glass jars	4^0 C	Selenium (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0.3' DESCRIPTION: Clay (CL) - Stiff, dark gray to black with Coarse, angular gravel, wet.

GENERAL COMMENTS

Collected under approximately 2 feet of water, hit refusal at approximately 3 inches bgs

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD09 - 0.3 BORING NO. SD09

DATE/TIME COLLECTED: 10/19/10 / 1516 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0-0.3'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(1) 8 oz. Glass jars	4^0 C	Selenium (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.3' DESCRIPTION: Silt (OH) - Organic, soft, black with sand, saturated with methane odor.

GENERAL COMMENTS

Collected under approximately 2 feet of water, very rocky, made 3 attempts to collect sample to depth of 0.5 feet, bent teeth on split spoon.

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD10 - 0.5 BORING NO. SD10

DATE/TIME COLLECTED: 10/19/10 / 1539 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0-0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. N/A

SAMPLE QC DUPLICATE: (YES) NO DUPLICATE SAMPLE NO. C103 - SD20 - 0.5 @ 1600

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 8 oz. Glass jars	4^0 C	Selenium (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silt (ML) - Sandy, very soft, reddish brown, saturated.

GENERAL COMMENTS

Collected under approximately 3 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SD11-0.5 BORING NO. SD11

DATE/TIME COLLECTED: 10/19/10 /1629 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon /0-0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(1) 8 oz. Glass jars	4°C	Selenium (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silt (OH) - Organic, soft, black, with sand, strong methane odor, wet

GENERAL COMMENTS

Collected under approximately 4 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD12 - 0.5 BORING NO. SD12

DATE/TIME COLLECTED: 10/19/10 / 1701 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0-0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(1) 8 oz. Glass jars	4^0 C	Selenium (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0 - 0.5' DESCRIPTION: Silt (OL) - organic, soft, black to dark gray, fine grained sandy, saturated, methane odor.

GENERAL COMMENTS

Collected under 3 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD13 - 0.5 BORING NO. SD13

DATE/TIME COLLECTED: 10/20/10 / 0810 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auge with Split Spoon / 0 - 0.5'

SAMPLE MEDIA: SOIL SEDIMENT SLUDGE

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
(1) 8 oz. Glass jars	4°C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(2) 4oz. Glass jars	4°C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0 - 0.5' DESCRIPTION: Silt (OL) - organic, sandy, soft, dark gray, saturated, methane odor.

GENERAL COMMENTS

Collected under approximately 3 feet water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SD14-0.5 BORING NO. SD14

DATE/TIME COLLECTED: 10/20/10 / 0831 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless steel Hand Auger with Split Spoon / 0-0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(1) 8 oz. Glass jars	4°C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(2) 4 oz. Glass jars	4°C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silt (OL) - Organic, soft, black to dark gray, sandy, wet, methane odor

GENERAL COMMENTS

Collected under 4 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD15 - 0.5 BORING NO. SD 15

DATE/TIME COLLECTED: 10/20/10 / 0845 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0 - 0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

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
(1) 8 oz. Glass jars	4^0C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(2) 4 oz. Glass jars	4°C	TPH - GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0 - 0.5' DESCRIPTION: Silt (OL) - Organic, soft, black to dark gray, sandy, wet, methane odor.

GENERAL COMMENTS

Collected under 4 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SD16-0.5 BORING NO. SD16

DATE/TIME COLLECTED: 10/20/10 / 0955 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0-0.5'

SAMPLE MEDIA: SOIL SEDIMENT SLUDGE

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
(1) 8 oz. Glass jars	4°C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(2) 4 oz. Glass jars	4°C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silt (OL) - organic, soft, dark gray to black, clayey, wet, methane odor

GENERAL COMMENTS

Collected under 4 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103 - SD17 - 0.5 BORING NO. SD17

DATE/TIME COLLECTED: 10/20/10 /1011 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger with Split Spoon / 0 - 0.5'

SAMPLE MEDIA: SOIL SEDIMENT SLUDGE

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
(1) 8 oz. Glass jars	4°C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(2) 4 oz. Glass jars	4°C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Clay (CL) - organic, soft, dark gray to black, wet, with silt, methane odor

GENERAL COMMENTS

Collected under 4 feet of water

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: PLAYA LAKE (SWMU 103) PROJECT NO. 16170587

SAMPLE NO. C103-SD18-0.5 BORING NO. SD18

DATE/TIME COLLECTED: 10/20/10 / 1034 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auge with Split Spoon / 0-0.5'

SAMPLE MEDIA: SOIL (SEDIMENT) SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. N/A

SAMPLE QC DUPLICATE: (YES) NO DUPLICATE SAMPLE NO. C103-SD28-0.5

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 8 oz. Glass jars	4°C	TPH-DRO/TPH-ORO/Metals (8015B/6010B)
(2) 4 oz Glass jars	4°C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silt (OL) - organic, soft, dark gray to black, with clay, wet, methane odor.

GENERAL COMMENTS

Collected under 4 feet of water

URS

Cannon AFB Phase III RFI Playa Lake (SWMU 103)
Data Verification
Dioxins/Furans

Laboratory SDG: 62880 **URS Chemist:** Tony Sedlacek
Date Verified: 1/15/2011 **URS ITR:** Jeff Aust
Guidance: DoD-QSM, Version 3, Table B-5 (DoD 2006)
Applicable QAPP: Final Cannon AFB Phase III RFI Playa Lake (SWMU 103) QAPP (URS 2010)
Applicable Analytical Methods: SW-846 8290

Sample Identification #	Matrix (i.e., soil, water)
C103-SW01-00	Surface Water
C103-SD01-0.5	Sediment
C103-SW02-00	Surface Water
C103-SD02-0.5	Sediment

Note: This data verification only discusses QC issues not verified by ADR. "Yes/No" answers that indicate a possible data quality issue are in bold.

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	

2.0 Sample Documentation

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

3.0 Instrument Performance Check (Tuning)

Verification Criteria	Yes	No
Was instrument tune completed at the beginning and end of each 12-hour period of analysis?	x	
Was the static resolving power > 10,000 for each analyte and the lock-mass ion < 10% full-scale deflection?	x	

4.0 Initial Calibration

Verification Criteria for ICAL on 11/5/10, (16:11), Instrument: MAGNETO	Yes	No
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all 17 unlabeled standards ≤20% and ≤30% for the 9 labeled internal standards?	x	
Verification Criteria for ICAL on 11/10/10, (14:02), Instrument: MAGNETO	**Yes**	**No**
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all 17 unlabeled standards ≤20% and ≤30% for the 9 labeled standards?	x	

Instrument/Cal date	Parameter	Analyte	%RSD	RF	r	Criteria
N/A						

No qualification of data was required.

5.0 Continuing Calibration Verification (CCV)

Verification Criteria for CCV: 101105_HR37, Instrument: MAGNETO	Yes	No
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	
Verification Criteria for CCV: 101105_HR_47, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	
Verification Criteria for CCV: 101105_HR_57, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	

Verification Criteria for CCV: 101105_HR_67, Instrument: MAGNETO	Yes	No
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	
Verification Criteria for CCV: 101105_HR_77, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	
Verification Criteria for CCV: 101110_HR_19, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	
Verification Criteria for CCV: 101110_HR_29, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	

CCV ID	Parameter	Analyte	CCV %D / %drift or %R	CCV Criteria
N/A				

No qualification of data was required.

6.0 Sensitivity

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

Analytes that have quantitation limits that do not meet QAPP requirements are listed in the table below. The analyte 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) does not meet the sensitivity requirement; however, dioxins are evaluated using the Toxicity Equivalency (TEQ) for all dioxins and the sensitivity for determining the dioxin TEQ was sufficient for this investigation.

Field ID	Parameter	Analyte
C103-SW01-00	Dioxin/Furans	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
C103-SW02-00	Dioxin/Furans	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

7.0 Additional Qualifications

Were additional qualifications applied?

No

Field ID	Analyte	New RL	Qualification
N/A			

8.0 Completeness

Verification 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 Phase III RFI Playa Lake (SWMU 103)
Data Verification
TPH-GRO, TPH-DRO & TPH-ORO

Laboratory SDG: 62880 **URS Chemist:** Tony Sedlacek
Date Verified: 1/15/2011 **URS ITR:** Jeff Aust
Guidance: DoD-QSM, Version 3, Table B-2 (DoD 2006)
Applicable QAPP: Final Cannon AFB Phase III RFI Playa Lake (SWMU 103) QAPP (URS 2010)
Applicable Analytical Methods: SW-846 8015B

Sample Identification #	Matrix (i.e., soil, water)
C103-SW01-00	Surface Water
C103-SD01-0.5	Sediment
C103-SW02-00	Surface Water
C103-SD02-0.5	Sediment

Note: This data verification only discusses QC issues not verified by ADR. "Yes/No" answers that indicate a possible data quality issue are shaded.

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	

2.0 Sample Documentation

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

3.0 Initial Calibration

Verification Criteria for ICAL on 6/18/10, (23:10), Instrument: HARPO (TPH-GRO)	Yes	No
Was at least a 5-point calibration completed for all analytes prior to sample analysis?	x	
Option 1: RSD for each analyte < 20% or Option 2: If linear least squares regression was used was the r > 0.995 or 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
Verification Criteria for ICAL on 11/1/10, (12:37), Instrument: APOLLO (TPH-DRO/ORO)	**Yes**	**No**
Was at least a 5-point calibration completed for all analytes prior to sample analysis?	x	
Option 1: RSD for each analyte < 20% or Option 2: If linear least squares regression was used was the r > 0.995 or 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

No qualification of data was required.

4.0 Initial Calibration Verification [(ICV) Second Source]

Verification Criteria for ICV: 0618H20.D, Instrument: HARPO (TPH-GRO)	Yes	No
Was the ICV analyzed daily, before sample analysis?	x	
Was the ICV %difference (%D) for all analytes within ±20% of the expected value (initial source)?	x	
Verification Criteria for ICV: 1101015.H, Instrument: APOLLO (TPH-DRO/ORO)	**Yes**	**No**
Was the ICV analyzed daily, before sample analysis?	x	
Was the ICV %difference (%D) for all analytes within ±20% of the expected value (initial source)?	x	

No qualification of data was required.

5.0 Continuing Calibration Verification (CCV)

Verification Criteria for CCV: 1025H01.D, Instrument: HARPO (TPH-GRO)	Yes	No
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	
Verification Criteria for CCV: 1025H14.D, Instrument: HARPO (TPH-GRO)	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	
Verification Criteria for CCV: 1025H21.D, Instrument: HARPO (TPH-GRO)	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	
Verification Criteria for CCV: 1110028,29.D, Instrument: APOLLO (TPH-DRO/ORO)	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	
Verification Criteria for CCV: 1110043,44.D, Instrument: APOLLO (TPH-DRO/ORO)	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	

No qualification of data was required.

6.0 Sensitivity

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

7.0 Additional Qualifications

Were additional qualifications applied?

No

8.0 Completeness

Verification 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 Phase III RFI Playa Lake (SWMU 103)
Data Verification
Metals (6010B)

Laboratory SDG: 62880 **URS Chemist:** Tony Sedlacek
Date Verified: 1/15/2011 **URS ITR:** Jeff Aust
Guidance: DoD-QSM, Version 3, Table B-6 (DoD 2006)
Applicable QAPP: Final Cannon AFB Phase III RFI Playa Lake (SWMU 103) QAPP (URS 2010)
Applicable Analytical Methods: SW-846 6010B

Sample Identification #	Matrix (i.e., soil, water)
C103-SW01-00	Surface Water
C103-SD01-0.5	Sediment
C103-SW02-00	Surface Water
C103-SD02-0.5	Sediment

Note: This data verification only discusses QC issues not verified by ADR. "Yes/No" answers that indicate a possible data quality issue are shaded.

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	

2.0 Sample Documentation

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

3.0 Tuning (ICP-MS, Method 6020, only)

Verification Criteria	Yes	No	N/A
Was instrument tuning completed prior to calibration?			x
Was mass calibration $\leq$ 0.1 amu from true value?			x
Was resolution < 0.9 amu full width at 10% peak height?			x
For stability, was < 5% for at least four replicate analytes?			x

4.0 Initial Calibration

Verification Criteria	Yes	No	N/A
ICP-AES – Was a minimum two standards and a calibration blank used for ICAL?	x		
ICP-AES – Was r $\geq$ 0.995?	x		
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?			x
CVAA – Was r $\geq$ 0.995?			x

Instrument/Cal date	Parameter	Analyte	%RSD	RF	r	Criteria
N/A						

No qualification of data was required.

5.0 Initial Calibration Verification [(ICV) Second Source]

Verification Criteria	Yes	No
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	x	
Was the ICV % D for all analytes within $\pm$10% of the expected value (initial source) for ICP-AES and CVAA?	x	

ICV ID	Parameter	Analyte	ICV %D / %drift or %R	ICV Criteria
N/A				

No qualification of data was required.

6.0 Continuing Calibration Verification (CCV)

Verification Criteria	Yes	No
Was the CCV analyzed after every 10 samples and at the end of the analysis sequence?	x	
Was the CCV %D for all analytes within $\pm$10% (ICP-AES) and $\pm$20% (CVAA) of the expected value (initial source)?	x	

CCV ID	Parameter	Analyte	CCV %D	CCV Criteria
N/A				

No qualification of data was required.

7.0 Calibration Blanks

Verification Criteria	Yes	No
Was the calibration blank analyzed before beginning a sample run, after every 10 samples and at the end of the analysis sequence?	x	
Were analytes detected > 2x MDL?		x

No qualification of data was required.

8.0 Interference Check Solutions (ICS) [ICP-AES only]

Verification Criteria	Yes	No
Was the ICS analyzed at the beginning of each analytical run?	x	
ICS-A – Was the absolute value of concentration for all non-spiked analytes < 2x MDL (unless they are a verified trace impurity from one of the spiked analytes)?	x	
Was the ICS-AB within ± 20% of the expected results?	x	

No qualification of data was required.

9.0 Dilution Test

Note: Only applicable for samples with concentrations >50X MDL (ICP) or > 25X MDL (CVAA).

Verification Criteria	Yes	No	N/A
Was the dilution test analyzed if sample concentrations were >50X MDL (ICP) or > 25X MDL (CVAA)?	x		
Did the five-fold dilution agree within ±10% of the original determination?		**x**	
ICP-AES – if the dilution test failed, was a post digestion spike addition performed?	x		
CVVA – If the dilution test failed, was a matrix spike performed?			x

Serial dilutions were performed for samples C103-SW02-00 and C103-SD02-0.5. The %D for vanadium (138%) was above ±10% in sample C103-SD02-0.5. Analytical data qualified based on dilution test are included in Table C-5 in Appendix C.

10.0 Post Digestion Spike (PDS) [ICP-AES only]

Verification Criteria	Yes	No	N/A
Was the PDS addition performed when the dilution test failed or analyte concentration in all samples < 50X MDL?	x		
Was the recovery within 75-125% of the expected result?	x		

Post digestion spike were performed for samples C103-SW02-00 and C103-SD02-0.5. No qualification of data was required.

11.0 Internal Standards (ICP-MS only)

Verification Criteria	Yes	No	N/A
Were internal standard intensities within 30-120% of intensity of the IS in the ICAL?			x

12.0 Sensitivity

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

Analytes that have quantitation limits that do not meet QAPP requirements are listed in the table below.

Field ID	Parameter	Analyte
N/A		

13.0 Additional Qualifications

Were additional qualifications applied?

No

Field ID	Analyte	New RL	Qualification
N/A			

14.0 Completeness

Verification 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 Phase III RFI Playa Lake (SWMU 103)
Data Verification
PCB Congeners

Laboratory SDG: 62880 **URS Chemist:** Tony Sedlacek
Date Verified: 1/15/2011 **URS ITR:** Jeff Aust
Guidance: USEPA Method 1668, Revision B (EPA 2008)
Applicable QAPP: Final Cannon AFB Phase III RFI Playa Lake (SWMU 103) QAPP (URS 2010)
Applicable Analytical Methods: USEPA Method 1668, Revision B

Sample Identification #	Matrix (i.e., soil, water)
C103-SW01-00	Surface Water
C103-SD01-0.5	Sediment
C103-SW02-00	Surface Water
C103-SD02-0.5	Sediment

Note: This data verification only discusses QC issues not verified by ADR. "Yes/No" answers that indicate a possible data quality issue are in bold.

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any problems noted in the laboratory case narrative?	**x**		
Were any issues noted in the cooler receipt form?		x	

The laboratory case narrative indicated that CCVs and ion-ratios were outside evaluation criteria.

2.0 Sample Documentation

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

3.0 Instrument Performance Check (Tuning)

Verification Criteria	Yes	No
Was instrument tune completed at the beginning and end of each 12-hour period of analysis?	x	
Was the static resolving power > 10,000 for each analyte and the lock-mass ion < 10% full-scale deflection?	x	

4.0 Initial Calibration

Verification Criteria for ICAL on 11/13/10, (13:56), Instrument: MAGNETO	Yes	No
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all isotope dilution standards ≤20% and ≤35% for the internal standards?	x	
Verification Criteria for ICAL on 11/17/10, (21:01), Instrument: MAGNETO	**Yes**	**No**
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?		**x**
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all isotope dilution standards ≤20% and ≤35% for the internal standards?	x	

Instrument/Cal date	Parameter	Analyte	Ion Ratio	Criteria
MAGNETO / 11/17/10	PCB Congeners	2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	**1.02**	1.05 - 1.43
MAGNETO / 11/17/10	PCB Congeners	2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	**0.84**	0.89 - 1.21

Sample results were reported from the ICAL ran on 11/13/2010; therefore, no qualification of data was required.

5.0 Continuing Calibration Verification (CCV)

Verification Criteria for CCV: 101113_HR_11, Instrument: MAGNETO	Yes	No
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101113_HR_21, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101113_HR_31, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**
Verification Criteria for CCV: 101113_HR_41, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**

Verification Criteria for CCV: 101113_HR_48, Instrument: MAGNETO	Yes	No
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**
Verification Criteria for CCV: 101113_HR_58, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**
Verification Criteria for CCV: 101113_HR_68, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**
Verification Criteria for CCV: 101113_HR_75, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**
Verification Criteria for CCV: 101117_HR_21, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101117_HR_31, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101117_HR_50, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101117_HR_56, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	

CCV ID	Parameter	Analyte	CCV %R	CCV Criteria
101113_HR_31	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**131.72**	70-130
101113_HR_41	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**188.88**	70-130
101113_HR_41	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	**189.76**	70-130
101113_HR_48	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**164.55**	70-130

CCV ID	Parameter	Analyte	CCV %R	CCV Criteria
101113_HR_48	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	**161.16**	70-130
101113_HR_58	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**147.94**	70-130
101113_HR_58	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	**139.28**	70-130
101113_HR_68	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**146.39**	70-130
101113_HR_68	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	**141.70**	70-130
101113_HR_75	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**169.70**	70-130
101113_HR_75	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	**173.14**	70-130

Analytical data that required qualification based on CCV data are included in Table C-5 in Appendix C.

6.0 Sensitivity

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

Analytes that have quantitation limits that do not meet QAPP requirements are listed in the table below.

Field ID	Parameter	Analyte
N/A		

7.0 Additional Qualifications

Were additional qualifications applied?

No

Field ID	Analyte	New RL	Qualification
N/A			

8.0 Completeness

Verification 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		

Data Qualifier Summary

Lab Reporting Batch ID: 62880 **Laboratory: APPL**

EDD Filename: 62880 **eQAPP Name: Cannon AFB SWMU 103**

Method Category: METALS
Method: 6010B **Matrix:** SED

Sample ID: C103-SD01-0.5 **Collected:** 10/18/2010 11:30:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
SELENIUM	0.33	0.320	0.66	mg/Kg	J	J	Rl

Method Category: SVOA
Method: 1668B **Matrix:** AQ

Sample ID: C103-SW01-00 **Collected:** 10/18/2010 11:30:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	120	0	100.0	pg/L		J	Lcs

Sample ID: C103-SW02-00 **Collected:** 10/18/2010 1:45:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL	350	0	100.0	pg/L		J	Lcs
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	900	0	100.0	pg/L		J	Ms, Lcs
2,3,3',4,4',5-Hexachlorobiphenyl	49	0	100.0	pg/L	J	J	Rl

Method Category: SVOA
Method: 1668B **Matrix:** SED

Sample ID: C103-SD01-0.5 **Collected:** 10/18/2010 11:30:00 **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,3,3',4,4',5,5'-Heptachlorobiphenyl	0.97	0	10.0	pg/Kg	J	J	Rl
2,3,3',4,4',5'-Hexachlorobiphenyl	2.0	0	10.0	pg/Kg	J	J	Rl
2,3,3',4,4',5-Hexachlorobiphenyl	8.6	0	10.0	pg/Kg	J	J	Rl
2,3',4,4',5-PENTACHLOROIPHENYL	70	0	10.0	pg/Kg		U	Mb
3,3',4,4'-Tetrachlorobiphenyl	6.7	0	10.0	pg/Kg	J	J	Rl

Sample ID: C103-SD02-0.5 **Collected:** 10/18/2010 1:45:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	440	0	10.0	pg/Kg		J	Ms
2,3',4,4',5-PENTACHLOROIPHENYL	380	0	10.0	pg/Kg		J	Ms
3,3',4,4',5-Pentachlorobiphenyl	3.4	0	10.0	pg/Kg	J	J	Rl
3,4,4',5-Tetrachlorobiphenyl	0.73	0	10.0	pg/Kg	J	J	Rl

Data Qualifier Summary

Lab Reporting Batch ID: 62880 **Laboratory: APPL**

EDD Filename: 62880 **eQAPP Name: Cannon AFB SWMU 103**

Method Category: SVOA
Method: 1668B **Matrix:** SED

Method Category: SVOA
Method: 8015B DRO **Matrix:** SED

Sample ID: C103-SD02-0.5 **Collected:** 10/18/2010 1:45:00 **Analysis Type:** RES-BASE/NEUTRAL **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
Oil Range Organics	30	5.00	14.0	mg/Kg		J	Ms

Method Category: SVOA
Method: 8290 **Matrix:** AQ

Sample ID: C103-SW02-00 **Collected:** 10/18/2010 1:45:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,3,4,7,8-PENTACHLORODIBENZOFURAN	125.0	0.50	125.0	pg/L	U	UJ	Ms

Method Category: SVOA
Method: 8290 **Matrix:** SED

Sample ID: C103-SD01-0.5 **Collected:** 10/18/2010 11:30:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	20	20	25.0	pg/G	J	J	RI
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	2.8	2.8	12.5	pg/G	J	J	RI
2,3,7,8-TETRACHLORODIBENZOFURAN	1.3	1.3	5.0	pg/G	J	J	RI
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.79	0.79	5.0	pg/G	J	J	RI

Sample ID: C103-SD02-0.5 **Collected:** 10/18/2010 1:45:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,4,6,7,8,9-Octachlorodibenzofurans	8.0	8.0	25.0	pg/G	J	J	RI, Ms, Ms
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	3.1	3.1	12.5	pg/G	J	J	RI, Ms, Ms
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	21	21	12.5	pg/G		J	Ms, Ms
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	12.5	1.0	12.5	pg/G	U	UJ	Ms, Ms
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	12.5	0.50	12.5	pg/G	U	UJ	Ms, Ms
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	12.5	0.84	12.5	pg/G	U	UJ	Ms, Ms
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	12.5	1.5	12.5	pg/G	U	UJ	Ms, Ms
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	1.0	1.0	12.5	pg/G	J	J	RI, Ms, Ms

Data Qualifier Summary

Lab Reporting Batch ID: 62880 **Laboratory: APPL**

EDD Filename: 62880 **eQAPP Name: Cannon AFB SWMU 103**

Method Category: **SVOA**

Method: **8290** ***Matrix:*** **SED**

Sample ID: **C103-SD02-0.5** ***Collected:*** **10/18/2010 1:45:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	12.5	0.57	12.5	pg/G	U	UJ	Ms, Ms
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	12.5	0.60	12.5	pg/G	U	UJ	Ms, Ms
1,2,3,7,8-PENTACHLORODIBENZOFURAN	12.5	0.50	12.5	pg/G	U	UJ	Ms, Ms
1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	12.5	0.51	12.5	pg/G	U	UJ	Ms, Ms
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	12.5	7.8	12.5	pg/G	U	UJ	Ms, Ms
2,3,4,7,8-PENTACHLORODIBENZOFURAN	12.5	0.36	12.5	pg/G	U	UJ	Ms, Ms
2,3,7,8-TETRACHLORODIBENZOFURAN	3.6	3.6	5.0	pg/G	J	J	RI, Ms, Ms
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	7.6	7.6	5.0	pg/G		J	Ms, Ms

Data Qualifier Summary

Lab Reporting Batch ID: 62880 **Laboratory: APPL**

EDD Filename: 62880 **eQAPP Name: Cannon AFB SWMU 103**

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Ccv	Continuing Calibration Verification Percent Difference Lower Estimation
Ccv	Continuing Calibration Verification Percent Difference Lower Rejection
Ccv	Continuing Calibration Verification Percent Difference Upper Estimation
Ccv	Continuing Calibration Verification Percent Difference Upper Rejection
Ccv	Continuing Calibration Verification Percent Recovery Lower Estimation
Ccv	Continuing Calibration Verification Percent Recovery Lower Rejection
Ccv	Continuing Calibration Verification Percent Recovery Upper Estimation
Ccv	Continuing Calibration Verification Percent Recovery Upper Rejection
CcvCC	Continuing Calibration Verification Correlation Coefficient
CcvRrf	Continuing Calibration Verification Relative Response Factor
ContTune	Continuing Tune
Dup=0	Duplicate Sample Count = 0
Dup>1	Duplicate Sample Count > 1
Eb	Equipment Blank Contamination
EtoA	Extraction to Analysis Estimation
EtoA	Extraction to Analysis Rejection
Fb	Field Blank Contamination
Fd	Field Duplicate Precision
IcCC	Initial Calibration Correlation Coefficient
IcRrf	Initial Calibration Relative Response Factor
IcRsd	Initial Calibration Percent Relative Standard Deviation
Icv	Initial Calibration Verification Percent Difference Lower Estimation
Icv	Initial Calibration Verification Percent Difference Lower Rejection
Icv	Initial Calibration Verification Percent Difference Upper Estimation
Icv	Initial Calibration Verification Percent Difference Upper Rejection
Icv	Initial Calibration Verification Percent Recovery Lower Estimation
Icv	Initial Calibration Verification Percent Recovery Lower Rejection
Icv	Initial Calibration Verification Percent Recovery Upper Estimation
Icv	Initial Calibration Verification Percent Recovery Upper Rejection
IcvCC	Initial Calibration Verification Correlation Coefficient

Data Qualifier Summary

Lab Reporting Batch ID: 62880 **Laboratory: APPL**

EDD Filename: 62880 **eQAPP Name: Cannon AFB SWMU 103**

IcvRrf	Initial Calibration Verification Relative Response Factor
IllogicalFraction	Illogical Fraction
InitTune	Initial Tune
Is	Internal Standard Estimation
Is	Internal Standard Rejection
Lcs	Laboratory Control Precision
Lcs	Laboratory Control Spike Lower Estimation
Lcs	Laboratory Control Spike Lower Rejection
Lcs	Laboratory Control Spike Upper Estimation
Lcs	Laboratory Control Spike Upper Rejection
Lcs=0	Laboratory Control Sample Count = 0
Lcs>1	Laboratory Control Sample Count > 1
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
Mb=0	Method Blank Sample Count = 0
Mb>1	Method Blank Sample Count > 1
Moist	Percent Moisture
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Lower Rejection
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
Ms	Matrix Spike Upper Rejection
Ms=0	Matrix Spike Sample Count = 0
Ms>1	Matrix Spike Sample Count > 1
PEM	Performance Evaluation Mixture
Preservation	Preservation
ProfJudg	Professional Judgment
REM	Resolution Check Mixture
Rl	Reporting Limit
Rl	Reporting Limit > Project Maximum Contamination Limit
Rl	Reporting Limit Trace Value
StoA	Sampling to Analysis Estimation
StoA	Sampling to Analysis Rejection

Data Qualifier Summary

Lab Reporting Batch ID: 62880 **Laboratory: APPL**

EDD Filename: 62880 **eQAPP Name: Cannon AFB SWMU 103**

StoE	Sampling to Extraction Estimation
StoE	Sampling to Extraction Rejection
StoL	Sampling to Leaching Estimation
StoL	Sampling to Leaching Rejection
Surr	Surrogate/Tracer Recovery Lower Estimation
Surr	Surrogate/Tracer Recovery Lower Rejection
Surr	Surrogate/Tracer Recovery Upper Estimation
Surr	Surrogate/Tracer Recovery Upper Rejection
Tb	Trip Blank Contamination
TempEst	Temperature Estimation
TempRej	Temperature Rejection

Cannon AFB Phase III RFI Playa Lake (SWMU 103)
Data Verification
Dioxins/Furans

Laboratory SDG: 62914 **URS Chemist:** Tony Sedlacek
Date Verified: 1/15/2011 **URS ITR:** Jeff Aust
Guidance: DoD-QSM, Version 3, Table B-5 (DoD 2006)
Applicable QAPP: Final Cannon AFB Phase III RFI Playa Lake (SWMU 103) QAPP (URS 2010)
Applicable Analytical Methods: SW-846 8290

Sample Identification #	Matrix (i.e., soil, water)
C103-SW03-00	Surface Water
C103-SD03-0.5	Sediment
C103-SW04-00	Surface Water
C103-SD04-0.5	Sediment
C103-SW05-00	Surface Water
C103-SD05-0.5	Sediment
C103-SW24-00	Surface Water
C103-SD24-0.5	Sediment
C103-SW06-00	Surface Water
C103-SD06-0.5	Sediment

Note: This data verification only discusses QC issues not verified by ADR. "Yes/No" answers that indicate a possible data quality issue are in bold.

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	

2.0 Sample Documentation

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

3.0 Instrument Performance Check (Tuning)

Verification Criteria	Yes	No
Was instrument tune completed at the beginning and end of each 12-hour period of analysis?	x	
Was the static resolving power > 10,000 for each analyte and the lock-mass ion < 10% full-scale deflection?	x	

4.0 Initial Calibration

Verification Criteria for ICAL on 11/5/10, (16:11), Instrument: MAGNETO	Yes	No
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all 17 unlabeled standards ≤20% and ≤30% for the 9 labeled internal standards?	x	
Verification Criteria for ICAL on 11/10/10, (14:02), Instrument: MAGNETO	**Yes**	**No**
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all 17 unlabeled standards ≤20% and ≤30% for the 9 labeled standards?	x	

Instrument/Cal date	Parameter	Analyte	%RSD	RF	r	Criteria
N/A						

No qualification of data was required.

5.0 Continuing Calibration Verification (CCV)

Verification Criteria for CCV: 101105_HR37, Instrument: MAGNETO	Yes	No
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	
Verification Criteria for CCV: 101105_HR_47, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	
Verification Criteria for CCV: 101105_HR_57, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	
Verification Criteria for CCV: 101105_HR_67, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	

Verification Criteria for CCV: 101110_HR_19, Instrument: MAGNETO	Yes	No
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	
Verification Criteria for CCV: 101110_HR_29, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period and at the end of each analytical sequence?	x	
Were the ion abundance ratios within criteria in Table 8 of SW-846 8290?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all unlabeled standards within ±20%D and ±30%D for the all labeled standards?	x	

CCV ID	Parameter	Analyte	CCV %D / %drift or %R	CCV Criteria
N/A				

No qualification of data was required.

6.0 Sensitivity

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

Analytes that have quantitation limits that do not meet QAPP requirements are listed in the table below. The analyte 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) does not meet the sensitivity requirement; however, dioxins are evaluated using the Toxicity Equivalency (TEQ) for all dioxins and the sensitivity for determining the dioxin TEQ was sufficient for this investigation.

Field ID	Parameter	Analyte
C103-SW03-00	Dioxin/Furans	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
C103-SW04-00	Dioxin/Furans	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
C103-SW05-00	Dioxin/Furans	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
C103-SW24-00	Dioxin/Furans	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
C103-SW06-00	Dioxin/Furans	2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

7.0 Additional Qualifications

Were additional qualifications applied?

No

Field ID	Analyte	New RL	Qualification
N/A			

8.0 Completeness

Verification 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 Phase III RFI Playa Lake (SWMU 103)
Data Verification
TPH-GRO, TPH-DRO & TPH-ORO

Laboratory SDG: 62914 **URS Chemist:** Tony Sedlacek
Date Verified: 1/15/2011 **URS ITR:** Jeff Aust
Guidance: DoD-QSM, Version 3, Table B-2 (DoD 2006)
Applicable QAPP: Final Cannon AFB Phase III RFI Playa Lake (SWMU 103) QAPP (URS 2010)
Applicable Analytical Methods: SW-846 8015B

Sample Identification #	Matrix (i.e., soil, water)
C103-SW03-00	Surface Water
C103-SD03-0.5	Sediment
C103-SW04-00	Surface Water
C103-SD04-0.5	Sediment
C103-SW05-00	Surface Water
C103-SD05-0.5	Sediment
C103-SW24-00	Surface Water
C103-SD24-0.5	Sediment
C103-SW06-00	Surface Water
C103-SD06-0.5	Sediment
C107-SD13-0.5	Sediment
C107-SD14-0.5	Sediment
C107-SD15-0.5	Sediment
C107-SD16-0.5	Sediment
C107-SD17-0.5	Sediment
C107-SD18-0.5	Sediment
C107-SD28-0.5	Sediment

Note: This data verification only discusses QC issues not verified by ADR. "Yes/No" answers that indicate a possible data quality issue are shaded.

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	

2.0 Sample Documentation

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

3.0 Initial Calibration

Verification Criteria for ICAL on 6/18/10, (23:10), Instrument: HARPO (TPH-GRO)	Yes	No
Was at least a 5-point calibration completed for all analytes prior to sample analysis?	x	
Option 1: RSD for each analyte < 20% or Option 2: If linear least squares regression was used was the r > 0.995 or 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
Verification Criteria for ICAL on 11/1/10, (12:37), Instrument: APOLLO (TPH-DRO/ORO)	**Yes**	**No**
Was at least a 5-point calibration completed for all analytes prior to sample analysis?	x	
Option 1: RSD for each analyte < 20% or Option 2: If linear least squares regression was used was the r > 0.995 or 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

No qualification of data was required.

4.0 Initial Calibration Verification [(ICV) Second Source]

Verification Criteria for ICV: 0618H20.D, Instrument: HARPO (TPH-GRO)	Yes	No
Was the ICV analyzed daily, before sample analysis?	x	
Was the ICV %difference (%D) for all analytes within ±20% of the expected value (initial source)?	x	
Verification Criteria for ICV: 1101015.H, Instrument: APOLLO (TPH-DRO/ORO)	**Yes**	**No**
Was the ICV analyzed daily, before sample analysis?	x	
Was the ICV %difference (%D) for all analytes within ±20% of the expected value (initial source)?	x	

No qualification of data was required.

5.0 Continuing Calibration Verification (CCV)

Verification Criteria for CCV: 1025H01.D, Instrument: HARPO (TPH-GRO)	Yes	No
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	
Verification Criteria for CCV: 1025H14.D, Instrument: HARPO (TPH-GRO)	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	
Verification Criteria for CCV: 1025H21.D, Instrument: HARPO (TPH-GRO)	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	
Verification Criteria for CCV: 1110028,29.D, Instrument: APOLLO (TPH-DRO/ORO)	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	
Verification Criteria for CCV: 1110043,44.D, Instrument: APOLLO (TPH-DRO/ORO)	**Yes**	**No**
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	

Verification Criteria for CCV: 1110055,56.D, Instrument: APOLLO (TPH-DRO/ORO)	Yes	No
Was the CCV analyzed daily before sample analysis?	x	
Was the CCV analyzed every 10 samples and at the end of the analysis sequence?	x	
Were all analytes within 20% of expected value from ICAL?	x	

No qualification of data was required.

6.0 Sensitivity

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

7.0 Additional Qualifications

Were additional qualifications applied?

No

8.0 Completeness

Verification 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 Phase III RFI Playa Lake (SWMU 103)
Data Verification
Metals (6010B)

Laboratory SDG: 62914 **URS Chemist:** Tony Sedlacek
Date Verified: 1/15/2011 **URS ITR:** Jeff Aust
Guidance: DoD-QSM, Version 3, Table B-6 (DoD 2006)
Applicable QAPP: Final Cannon AFB Phase III RFI Playa Lake (SWMU 103) QAPP (URS 2010)
Applicable Analytical Methods: SW-846 6010B

Sample Identification #	Matrix (i.e., soil, water)
C103-SW03-00	Surface Water
C103-SD03-0.5	Sediment
C103-SW04-00	Surface Water
C103-SD04-0.5	Sediment
C103-SW05-00	Surface Water
C103-SD05-0.5	Sediment
C103-SW24-00	Surface Water
C103-SD24-0.5	Sediment
C103-SW06-00	Surface Water
C103-SD06-0.5	Sediment
C107-SD07-0.5	Sediment
C107-SD08-0.3	Sediment
C107-SD09-0.3	Sediment
C107-SD10-0.5	Sediment
C107-SD20-0.5	Sediment
C107-SD11-0.5	Sediment
C107-SD12-0.5	Sediment
C107-SD13-0.5	Sediment
C107-SD14-0.5	Sediment
C107-SD15-0.5	Sediment
C107-SD16-0.5	Sediment
C107-SD17-0.5	Sediment
C107-SD18-0.5	Sediment
C107-SD28-0.5	Sediment

Note: This data verification only discusses QC issues not verified by ADR. "Yes/No" answers that indicate a possible data quality issue are shaded.

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	

2.0 Sample Documentation

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

3.0 Tuning (ICP-MS, Method 6020, only)

Verification Criteria	Yes	No	N/A
Was instrument tuning completed prior to calibration?			x
Was mass calibration $\leq$ 0.1 amu from true value?			x
Was resolution < 0.9 amu full width at 10% peak height?			x
For stability, was < 5% for at least four replicate analytes?			x

4.0 Initial Calibration

Verification Criteria	Yes	No	N/A
ICP-AES – Was a minimum two standards and a calibration blank used for ICAL?	x		
ICP-AES – Was r $\geq$ 0.995?	x		
CVAA – Was a minimum of 5 standards and a calibration blank used for ICAL?			x
CVAA – Was r $\geq$ 0.995?			x

Instrument/Cal date	Parameter	Analyte	%RSD	RF	r	Criteria
N/A						

No qualification of data was required.

5.0 Initial Calibration Verification [(ICV) Second Source]

Verification Criteria	Yes	No
Was the ICV analyzed after each ICAL, prior to the beginning of a sample analysis?	x	
Was the ICV % D for all analytes within $\pm$10% of the expected value (initial source) for ICP-AES and CVAA?	x	

ICV ID	Parameter	Analyte	ICV %D / %drift or %R	ICV Criteria
N/A				

No qualification of data was required.

6.0 Continuing Calibration Verification (CCV)

Verification Criteria	Yes	No
Was the CCV analyzed after every 10 samples and at the end of the analysis sequence?	x	
Was the CCV %D for all analytes within $\pm$10% (ICP-AES) and $\pm$20% (CVAA) of the expected value (initial source)?	x	

CCV ID	Parameter	Analyte	CCV %D	CCV Criteria
N/A				

No qualification of data was required.

7.0 Calibration Blanks

Verification Criteria	Yes	No
Was the calibration blank analyzed before beginning a sample run, after every 10 samples and at the end of the analysis sequence?	x	
Were analytes detected > 2x MDL?		x

No qualification of data was required.

8.0 Interference Check Solutions (ICS) [ICP-AES only]

Verification Criteria	Yes	No
Was the ICS analyzed at the beginning of each analytical run?	x	
ICS-A – Was the absolute value of concentration for all non-spiked analytes < 2x MDL (unless they are a verified trace impurity from one of the spiked analytes)?	x	
Was the ICS-AB within ± 20% of the expected results?	x	

9.0 Dilution Test

Note: Only applicable for samples with concentrations >50X MDL (ICP) or > 25X MDL (CVAA).

Verification Criteria	Yes	No	N/A
Was the dilution test analyzed if sample concentrations were >50X MDL (ICP) or > 25X MDL (CVAA)?	x		
Did the five-fold dilution agree within ±10% of the original determination?	x		
ICP-AES – if the dilution test failed, was a post digestion spike addition performed?	x		
CVVA – If the dilution test failed, was a matrix spike performed?			x

Serial dilutions were performed for samples C103-SW03-00, C103-SD12-0.5 and C103-SD28-0.5. No qualification of data was required.

10.0 Post Digestion Spike (PDS) [ICP-AES only]

Verification Criteria	Yes	No	N/A
Was the PDS addition performed when the dilution test failed or analyte concentration in all samples < 50X MDL?	x		
Was the recovery within 75-125% of the expected result?	x		

Post digestion spike were performed for samples C103-SW03-00, C103-SD12-0.5 and C103-SD28-0.5. No qualification of data was required.

11.0 Internal Standards (ICP-MS only)

Verification Criteria	Yes	No	N/A
Were internal standard intensities within 30-120% of intensity of the IS in the ICAL?			x

12.0 Sensitivity

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

Analytes that have quantitation limits that do not meet QAPP requirements are listed in the table below.

Field ID	Parameter	Analyte
N/A		

13.0 Additional Qualifications

Were additional qualifications applied?

No

Field ID	Analyte	New RL	Qualification
N/A			

14.0 Completeness

Verification 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 Phase III RFI Playa Lake (SWMU 103)
Data Verification
PCB Congeners

Laboratory SDG: 62914 **URS Chemist:** Tony Sedlacek
Date Verified: 1/15/2011 **URS ITR:** Jeff Aust
Guidance: USEPA Method 1668, Revision B (EPA 2008)
Applicable QAPP: Final Cannon AFB Phase III RFI Playa Lake (SWMU 103) QAPP (URS 2010)
Applicable Analytical Methods: USEPA Method 1668, Revision B

Sample Identification #	Matrix (i.e., soil, water)
C103-SW03-00	Surface Water
C103-SD03-0.5	Sediment
C103-SW04-00	Surface Water
C103-SD04-0.5	Sediment
C103-SW05-00	Surface Water
C103-SD05-0.5	Sediment
C103-SW24-00	Surface Water
C103-SD24-0.5	Sediment
C103-SW06-00	Surface Water
C103-SD06-0.5	Sediment

Note: This data verification only discusses QC issues not verified by ADR. "Yes/No" answers that indicate a possible data quality issue are in bold.

1.0 Laboratory Case Narrative \ Cooler Receipt Form

Verification Criteria	Yes	No	N/A
Were any problems noted in the laboratory case narrative?	**x**		
Were any issues noted in the cooler receipt form?		x	

The laboratory case narrative indicated that CCVs and ion-ratios were outside evaluation criteria.

2.0 Sample Documentation

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

3.0 Instrument Performance Check (Tuning)

Verification Criteria	Yes	No
Was instrument tune completed at the beginning and end of each 12-hour period of analysis?	x	
Was the static resolving power > 10,000 for each analyte and the lock-mass ion < 10% full-scale deflection?	x	

4.0 Initial Calibration

Verification Criteria for ICAL on 11/13/10, (13:56), Instrument: MAGNETO	Yes	No
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all isotope dilution standards ≤20% and ≤35% for the internal standards?	x	
Verification Criteria for ICAL on 11/17/10, (21:01), Instrument: MAGNETO	**Yes**	**No**
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?		**x**
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the RSDs for RFs for all isotope dilution standards ≤20% and ≤35% for the internal standards?	x	

Instrument/Cal date	Parameter	Analyte	Ion Ratio	Criteria
MAGNETO / 11/17/10	PCB Congeners	2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	**1.02**	1.05 - 1.43
MAGNETO / 11/17/10	PCB Congeners	2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	**0.84**	0.89 - 1.21

Sample results were reported from the ICAL ran on 11/13/2010; therefore, no qualification of data was required.

5.0 Continuing Calibration Verification (CCV)

Verification Criteria for CCV: 101113_HR_11, Instrument: MAGNETO	Yes	No
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101113_HR_21, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101113_HR_31, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**

Verification Criteria for CCV: 101113_HR_41, Instrument: MAGNETO	Yes	No
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**
Verification Criteria for CCV: 101113_HR_48, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**
Verification Criteria for CCV: 101113_HR_58, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**
Verification Criteria for CCV: 101113_HR_68, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?		**x**
Verification Criteria for CCV: 101113_HR_11, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101117_HR_21, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101117_HR_31, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101117_HR_40, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	
Verification Criteria for CCV: 101117_HR_50, Instrument: MAGNETO	**Yes**	**No**
Was the CCV analyzed at the beginning of each 12-hour period?	x	
Were the ion abundance ratios within criteria in Table 8 of USEPA 1668?	x	
Was the signal to noise ratio ≥ 10 for all target analyte ions?	x	
Are the recoveries within criteria in Table 6 of USEPA Method 1668?	x	

CCV ID	Parameter	Analyte	CCV %R	CCV Criteria
101113_HR_31	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**131.72**	70-130
101113_HR_41	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**188.88**	70-130

CCV ID	Parameter	Analyte	CCV %R	CCV Criteria
101113_HR_41	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	**189.76**	70-130
101113_HR_48	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**164.55**	70-130
101113_HR_48	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	**161.16**	70-130
101113_HR_58	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**147.94**	70-130
101113_HR_58	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	**139.28**	70-130
101113_HR_68	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	**146.39**	70-130
101113_HR_68	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	**141.70**	70-130

Analytical data that required qualification based on CCV data are included in Table C-5 in Appendix C.

6.0 Sensitivity

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

Analytes that have quantitation limits that do not meet QAPP requirements are listed in the table below.

Field ID	Parameter	Analyte
N/A		

7.0 Additional Qualifications

Were additional qualifications applied?

No

Field ID	Analyte	New RL	Qualification
N/A			

8.0 Completeness

Verification 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		

Data Qualifier Summary

Lab Reporting Batch ID: 62914 **Laboratory: APPL**

EDD Filename: 62914 **eQAPP Name: Cannon AFB SWMU 103**

Method Category: METALS
Method: 6010B **Matrix:** AQ

Sample ID: C103-SW06-00 **Collected:** 10/19/2010 12:48:00 **Analysis Type:** RE/DIS **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
LEAD	4.6	1.58	5.0	ug/L	J	J	Rl

Sample ID: C103-SW06-00 **Collected:** 10/19/2010 12:48:00 **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
LEAD	2.1	1.58	5.0	ug/L	J	J	Rl

Method Category: METALS
Method: 6010B **Matrix:** SED

Sample ID: C103-SD06-0.5 **Collected:** 10/19/2010 12:48:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
ARSENIC	0.21	0.130	0.76	mg/Kg	J	J	Rl
SELENIUM	0.70	0.370	0.76	mg/Kg	J	J	Rl

Sample ID: C103-SD12-0.5 **Collected:** 10/19/2010 5:01:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
SELENIUM	5.4	0.770	1.60	mg/Kg		J	Ms

Method Category: SVOA
Method: 1668B **Matrix:** AQ

Sample ID: C103-SW03-00 **Collected:** 10/19/2010 8:37:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	50	0	100.0	pg/L	J	J	Rl, Lcs
2,3,3',4,4',5-Hexachlorobiphenyl	8.1	0	100.0	pg/L	J	J	Rl

Sample ID: C103-SW04-00 **Collected:** 10/19/2010 9:59:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL	16	0	100.0	pg/L	J	U	Mb
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	50	0	100.0	pg/L	J	J	Rl, Lcs
2',3,3',4,4'-Pentachlorobiphenyl	30	0	100.0	pg/L	J	J	Rl

Project Name and Number: 16170587 - Cannon AFB

Data Qualifier Summary

Lab Reporting Batch ID: 62914 **Laboratory: APPL**

EDD Filename: 62914 **eQAPP Name: Cannon AFB SWMU 103**

Method Category: SVOA

Method: 1668B **Matrix:** AQ

Sample ID: C103-SW05-00 **Collected:** 10/19/2010 11:27:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL	25	0	100.0	pg/L	J	U	Mb
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	58	0	100.0	pg/L	J	J	Rl, Lcs
2,3,3',4,4',5-Hexachlorobiphenyl	13	0	100.0	pg/L	J	J	Rl
2,3,4,4',5-Pentachlorobiphenyl	18	0	100.0	pg/L	J	J	Rl
3,3',4,4'-Tetrachlorobiphenyl	7.6	0	100.0	pg/L	J	J	Rl

Sample ID: C103-SW06-00 **Collected:** 10/19/2010 12:48:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL	32	0	100.0	pg/L	J	U	Mb
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	87	0	100.0	pg/L	J	J	Rl, Lcs

Sample ID: C103-SW24-00 **Collected:** 10/19/2010 10:00:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL	56	0	100.0	pg/L	J	U	Mb
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	120	0	100.0	pg/L		J	Lcs

Method Category: SVOA

Method: 1668B **Matrix:** SED

Sample ID: C103-SD03-0.5 **Collected:** 10/19/2010 8:37:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL	230	0	10.0	pg/Kg		J	Surr
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	490	0	10.0	pg/Kg		J	Surr
2,3,3',4,4',5-Hexachlorobiphenyl	64	0	10.0	pg/Kg		J	Surr
2',3,3',4,4'-Pentachlorobiphenyl	230	0	10.0	pg/Kg		J	Surr
2,3,4,4',5-Pentachlorobiphenyl	20	0	10.0	pg/Kg		J	Surr
2,3',4,4',5-PENTACHLOROIPHENYL	540	0	10.0	pg/Kg		J	Surr
3,3',4,4',5-Pentachlorobiphenyl	7.5	0	10.0	pg/Kg	J	J	Rl, Surr
3,3',4,4'-Tetrachlorobiphenyl	68	0	10.0	pg/Kg		J	Surr
3,4,4',5-Tetrachlorobiphenyl	3.0	0	10.0	pg/Kg	J	J	Rl, Surr

Data Qualifier Summary

Lab Reporting Batch ID: 62914 **Laboratory: APPL**

EDD Filename: 62914 **eQAPP Name: Cannon AFB SWMU 103**

Method Category: **SVOA**

Method: **1668B** ***Matrix:*** **SED**

Sample ID: **C103-SD05-0.5** ***Collected:*** **10/19/2010 11:27:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL	270	0	10.0	pg/Kg		J	Surr
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	570	0	10.0	pg/Kg		J	Surr
2,3,3',4,4',5'-Hexachlorobiphenyl	15	0	10.0	pg/Kg		J	Surr
2,3,3',4,4',5-Hexachlorobiphenyl	73	0	10.0	pg/Kg		J	Surr
2',3,3',4,4'-Pentachlorobiphenyl	230	0	10.0	pg/Kg		J	Surr
2,3',4,4',5,5-Hexachlorobiphenyl	20	0	10.0	pg/Kg		J	Surr
2,3,4,4',5-Pentachlorobiphenyl	21	0	10.0	pg/Kg		J	Surr
2,3',4,4',5-PENTACHLOROIPHENYL	580	0	10.0	pg/Kg		J	Surr
3,3',4,4'-Tetrachlorobiphenyl	66	0	10.0	pg/Kg		J	Surr
3,4,4',5-Tetrachlorobiphenyl	7.6	0	10.0	pg/Kg	J	J	RI, Surr

Sample ID: **C103-SD06-0.5** ***Collected:*** **10/19/2010 12:48:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL	220	0	10.0	pg/Kg		J	Surr
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL	470	0	10.0	pg/Kg		J	Surr
2,3,3',4,4',5,5'-Heptachlorobiphenyl	6.5	0	10.0	pg/Kg	J	J	RI, Surr
2,3,3',4,4',5-Hexachlorobiphenyl	67	0	10.0	pg/Kg		J	Surr
2',3,3',4,4'-Pentachlorobiphenyl	230	0	10.0	pg/Kg		J	Surr
2,3,4,4',5-Pentachlorobiphenyl	24	0	10.0	pg/Kg		J	Surr
2,3',4,4',5-PENTACHLOROIPHENYL	560	0	10.0	pg/Kg		J	Surr
3,3',4,4'-Tetrachlorobiphenyl	53	0	10.0	pg/Kg		J	Surr

Method Category: **SVOA**

Method: **8015B DRO** ***Matrix:*** **SED**

Sample ID: **C103-SD03-0.5** ***Collected:*** **10/19/2010 8:37:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	36	2.10	2.1	mg/Kg	T1M	J	Surr
Oil Range Organics	46	7.30	21.0	mg/Kg		J	Surr

Data Qualifier Summary

Lab Reporting Batch ID: 62914 **Laboratory: APPL**

EDD Filename: 62914 **eQAPP Name: Cannon AFB SWMU 103**

Method Category: SVOA

Method: 8290 **Matrix:** AQ

Sample ID: C103-SW05-00 **Collected:** 10/19/2010 11:27:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	19	19	250.0	pg/L	J	J	RI

Sample ID: C103-SW24-00 **Collected:** 10/19/2010 10:00:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	1.7	1.7	125.0	pg/L	J	J	RI

Method Category: SVOA

Method: 8290 **Matrix:** SED

Sample ID: C103-SD03-0.5 **Collected:** 10/19/2010 8:37:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	8.1	8.1	12.5	pg/G	J	J	RI
2,3,7,8-TETRACHLORODIBENZOFURAN	2.5	2.5	5.0	pg/G	J	J	RI

Sample ID: C103-SD04-0.5 **Collected:** 10/19/2010 9:59:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,4,6,7,8,9-Octachlorodibenzofurans	11	11	25.0	pg/G	J	J	RI
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	7.4	7.4	12.5	pg/G	J	J	RI
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	2.8	2.8	12.5	pg/G	J	J	RI
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	2.3	2.3	12.5	pg/G	J	J	RI
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	2.4	2.4	12.5	pg/G	J	J	RI
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	2.2	2.2	12.5	pg/G	J	J	RI
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1.8	1.8	5.0	pg/G	J	J	RI

Sample ID: C103-SD05-0.5 **Collected:** 10/19/2010 11:27:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	2.9	2.9	12.5	pg/G	J	J	RI
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	2.5	2.5	12.5	pg/G	J	J	RI
2,3,4,7,8-PENTACHLORODIBENZOFURAN	1.7	1.7	12.5	pg/G	J	J	RI
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1.4	1.4	5.0	pg/G	J	J	RI

Data Qualifier Summary

Lab Reporting Batch ID: 62914 **Laboratory: APPL**

EDD Filename: 62914 **eQAPP Name: Cannon AFB SWMU 103**

Method Category: **SVOA**

Method: **8290** ***Matrix:*** **SED**

Sample ID: **C103-SD06-0.5** ***Collected:*** **10/19/2010 12:48:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,4,6,7,8,9-Octachlorodibenzofurans	3.0	3.0	25.0	pg/G	J	J	RI
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	7.0	7.0	12.5	pg/G	J	J	RI
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.55	0.55	5.0	pg/G	J	J	RI

Sample ID: **C103-SD24-0.5** ***Collected:*** **10/19/2010 10:00:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	3.6	3.6	12.5	pg/G	J	J	RI
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	11	11	12.5	pg/G	J	J	RI

Method Category: **VOA**

Method: **8015B GRO** ***Matrix:*** **SED**

Sample ID: **C103-SD04-0.5** ***Collected:*** **10/19/2010 9:59:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
GASOLINE RANGE ORGANICS	19	0.89	2.6	mg/Kg	G3	J	Surr

Sample ID: **C103-SD24-0.5** ***Collected:*** **10/19/2010 10:00:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	MDL	RL	Units	Lab Qual	Data Review Qual	Reason Code
GASOLINE RANGE ORGANICS	21	0.99	2.9	mg/Kg	G3	J	Surr

Data Qualifier Summary

Lab Reporting Batch ID: 62914 **Laboratory: APPL**

EDD Filename: 62914 **eQAPP Name: Cannon AFB SWMU 103**

Reason Code Legend

Reason Code	*Description*
Cb	Calibration Blank Contamination
Ccv	Continuing Calibration Verification Percent Difference Lower Estimation
Ccv	Continuing Calibration Verification Percent Difference Lower Rejection
Ccv	Continuing Calibration Verification Percent Difference Upper Estimation
Ccv	Continuing Calibration Verification Percent Difference Upper Rejection
Ccv	Continuing Calibration Verification Percent Recovery Lower Estimation
Ccv	Continuing Calibration Verification Percent Recovery Lower Rejection
Ccv	Continuing Calibration Verification Percent Recovery Upper Estimation
Ccv	Continuing Calibration Verification Percent Recovery Upper Rejection
CcvCC	Continuing Calibration Verification Correlation Coefficient
CcvRrf	Continuing Calibration Verification Relative Response Factor
ContTune	Continuing Tune
Dup=0	Duplicate Sample Count = 0
Dup>1	Duplicate Sample Count > 1
Eb	Equipment Blank Contamination
EtoA	Extraction to Analysis Estimation
EtoA	Extraction to Analysis Rejection
Fb	Field Blank Contamination
Fd	Field Duplicate Precision
IcCC	Initial Calibration Correlation Coefficient
IcRrf	Initial Calibration Relative Response Factor
IcRsd	Initial Calibration Percent Relative Standard Deviation
Icv	Initial Calibration Verification Percent Difference Lower Estimation
Icv	Initial Calibration Verification Percent Difference Lower Rejection
Icv	Initial Calibration Verification Percent Difference Upper Estimation
Icv	Initial Calibration Verification Percent Difference Upper Rejection
Icv	Initial Calibration Verification Percent Recovery Lower Estimation
Icv	Initial Calibration Verification Percent Recovery Lower Rejection
Icv	Initial Calibration Verification Percent Recovery Upper Estimation
Icv	Initial Calibration Verification Percent Recovery Upper Rejection
IcvCC	Initial Calibration Verification Correlation Coefficient

Data Qualifier Summary

Lab Reporting Batch ID: 62914 **Laboratory: APPL**

EDD Filename: 62914 **eQAPP Name: Cannon AFB SWMU 103**

IcvRrf	Initial Calibration Verification Relative Response Factor
IllogicalFraction	Illogical Fraction
InitTune	Initial Tune
Is	Internal Standard Estimation
Is	Internal Standard Rejection
Lcs	Laboratory Control Precision
Lcs	Laboratory Control Spike Lower Estimation
Lcs	Laboratory Control Spike Lower Rejection
Lcs	Laboratory Control Spike Upper Estimation
Lcs	Laboratory Control Spike Upper Rejection
Lcs=0	Laboratory Control Sample Count = 0
Lcs>1	Laboratory Control Sample Count > 1
Ld	Laboratory Duplicate Precision
Mb	Method Blank Contamination
Mb=0	Method Blank Sample Count = 0
Mb>1	Method Blank Sample Count > 1
Moist	Percent Moisture
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Lower Rejection
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
Ms	Matrix Spike Upper Rejection
Ms=0	Matrix Spike Sample Count = 0
Ms>1	Matrix Spike Sample Count > 1
PEM	Performance Evaluation Mixture
Preservation	Preservation
ProfJudg	Professional Judgment
REM	Resolution Check Mixture
Rl	Reporting Limit
Rl	Reporting Limit > Project Maximum Contamination Limit
Rl	Reporting Limit Trace Value
StoA	Sampling to Analysis Estimation
StoA	Sampling to Analysis Rejection

Data Qualifier Summary

Lab Reporting Batch ID: 62914 **Laboratory: APPL**

EDD Filename: 62914 **eQAPP Name: Cannon AFB SWMU 103**

StoE	Sampling to Extraction Estimation
StoE	Sampling to Extraction Rejection
StoL	Sampling to Leaching Estimation
StoL	Sampling to Leaching Rejection
Surr	Surrogate/Tracer Recovery Lower Estimation
Surr	Surrogate/Tracer Recovery Lower Rejection
Surr	Surrogate/Tracer Recovery Upper Estimation
Surr	Surrogate/Tracer Recovery Upper Rejection
Tb	Trip Blank Contamination
TempEst	Temperature Estimation
TempRej	Temperature Rejection

APPENDIX C

Laboratory Data Summaries, Analytical Data Results, Field Duplicate Results, Qualified Data Table, and Chains of Custody

APPENDIX C

C.1 LABORATORY DATA SUMMARIES

(Included on CD)

Data Summary Report

URS Group, Inc.

16170587Cannon AF SWMU 103 (Playa Lake)

ARF 62880

Samples collected: October 18, 2010

APPL, Inc., Clovis, California

December 1, 2010

URS Group. Inc.
12120 Shamrock Plaza Suite 300
Omaha, Nebraska 68154

Attn: Tony Sedlacek

Subject: Report of Data: Case 62880

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Dear Mr. Sedlacek:

Two soil samples and two water samples for project "16170587 Cannon AF SWMU 103 (Playa Lake)" were received October 19, 2010, in good condition. Written results are being provided on this December 1, 2010, for the requested analyses.

If you have any questions or require further information, please contact us at your convenience. Thank you for choosing APPL, Inc.

Sincerely,

Leonard Fong, Ph.D, Laboratory Director
APPL, Inc.

LF/sf
Enclosure
cc: File

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-442

Case Narrative

ARF: 62880

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

State Certification Number: CA1312 (DW & WW)

NELAP Certification number: 05233CA (HW)

DoD-ELAP Certificate number: ADE-1410

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sample Receipt Information:

The sample group was received on October 19, 2010, at 3.0°C and 3.0°C. The samples were assigned Analytical Request Form (ARF) number 62880. The sample numbers and requested analyses were compared to the chain of custody. No exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
C103-SW02-00	AY24725	WATER	10/18/10	10/19/10
C103-SD02-0.5	AY24726	SOIL	10/18/10	10/19/10
C103-SW01-00	AY24727	WATER	10/18/10	10/19/10
C103-SD01-0.5	AY24728	SOIL	10/18/10	10/19/10

The samples and method blanks were screened for J-value responses down to the DL. Percent moisture was determined using CLP4.0.

EPA Method 8015B

Total Petroleum Hydrocarbons

Diesel and Oil Range Organics

Sample Preparation and Analysis Information:

The soil samples were extracted according to EPA method 3540C. The samples were analyzed according to the method using a Hewlett Packard Gas Chromatograph with a flame ionization detector.

Quality Control/Assurance

Calibrations:

Initial and continuing calibrations were performed according to the method. All calibration criteria were met.

Blanks:

No target analyte was detected above the detection limits in the method blank.

Spikes:

A Laboratory control spike (LCS) was used for quality assurance. All acceptance criteria were met.

Sample C103-SD02-0.5 was designated by the client for MS/MSD analysis. Oil Range Organics recovered above the 150% limit in the MS at 200%. All other recoveries were acceptable.

Surrogates

Surrogate recoveries are summarized on the form 2&8. All surrogate recoveries were within the control limits.

Summary:

No other problem was encountered. All data were acceptable.

EPA Method 8015B
Total Petroleum Hydrocarbons
Gasoline

Sample Preparation and Analysis Information:

The soil samples were prepared according to EPA method 5035 and purged according to EPA method 5030B. The samples were analyzed according to the method using a Hewlett Packard Gas Chromatograph with a FID detector. All holding times were met.

Quality Control/Assurance

Calibrations:

Initial and continuing calibrations were performed according to the method. All acceptance criteria were met.

Blanks:

The blank contained no target analyte at or above the method detection limit.

Spikes:

A laboratory control spike (LCS) was used for quality assurance. All acceptance criteria were met.

Sample C103-SD02-0.5 was designated by the client for MS/MSD analysis. All acceptance criteria were met.

Surrogates

Surrogate recoveries are summarized on the form 2&8. For the MS/MSD, 4-Bromofluorobenzene recovered above the 125% upper control limit at 128% and 127%. All other surrogate recoveries were within control limits.

Summary:

No other problem was encountered. All data were acceptable.

EPA Method 8290
Dioxins/Furans by GC-HRMS

Sample Preparation:

The samples were extracted and cleaned up according to the EPA 8290 method. All holding times were met.

Analysis Information:

The samples were analyzed according to the EPA 8290, using a Waters Inc. Autospec Premier High Resolution Mass Spectrometer. The results were reported in accordance with EPA 8290 guidelines, as follows:

1. For analytes that had no chromatographic response in the samples, the EDL (Estimated Detection Limit) was reported in the EDL / EMPC column on the Form 1.
2. For analytes that exhibited chromatographic peaks in the samples (but did not meet the method requirements for positive identification), the EMPC (Estimated Maximum Potential Concentration) was reported in the EDL / EMPC column.
3. For the positively identified analytes the concentration was reported in the "Results" column, and EMPC was reported in the EDL / EMPC column. The EMPC is equal to the detected concentration.

The TEQ was calculated using the TEF values provided by the World Health Organization "Toxicity Equivalency Factor Table 2005". As per the method, the TEQ values were based on concentrations of pg/g for soil samples.

Quality Control/Assurance

Calibrations:

Calibrations and Resolution Checks were performed according to the method. All calibration acceptance criteria were met.

Blanks:

The method blanks contained no analyte above one-half the PQL.

Spikes:

Laboratory Control Spikes (LCS) were used for quality control. The LCS recoveries met acceptance criteria.

Sample C103-SW02-00 and C103-SD02-0.5 were designated by the client for MS/MSD analysis. For C103-SW02-00, 2,3,4,7,8-PeCDF recovered below the lower control limit of 70% at 69.5% in the MS. For C103-SD02-0.5, the MSD overall recovered at approximately half the recovery in the MS, resulting in RPD failures.

Surrogate Recoveries (C13 Internal Standards):

C13 Internal Standards were added to the extracts in accordance with the method and reported on the Form 1s as surrogate recoveries. C13-OCDD recovered below the lower control limit of 40% at 37.5% in the C103-SD02-0.5 MSD. All other recoveries met acceptance criteria.

Summary:

All data were acceptable. No other analytical exception is noted.

EPA Method 1668

PCB Congeners by HR-GCMS

Sample Preparation:

The water and soil samples were extracted and cleaned up according to EPA method 1668B. All hold times were met.

Analysis Information:

The samples were analyzed according to the EPA 1668B, using a Waters Inc. Autospec Premier High Resolution Mass Spectrometer. The results were reported in accordance with EPA 1668B guidelines, as follows:

1. For analytes that had no chromatographic response in the samples, the EDL (Estimated Detection Limit) was reported in the EDL / EMPC column on the Form 1.
2. For analytes that exhibited chromatographic peaks in the samples (but did not meet the method requirements for positive identification), the EMPC (Estimated Maximum Potential Concentration) was reported in the EDL / EMPC column.
3. For the positively identified analytes the concentration was reported in the "Results" column, and EMPC was reported in the EDL / EMPC column.

Quality Control/Assurance

Calibrations:

Calibrations were performed according to the method. The following PCBs were quantitated using a five-point calibration curve: PCB-77, PCB-81, PCB-105, PCB-114, PCB-118, PCB-123, PCB-126, PCB-156, PCB-157, PCB-167, PCB-169, PCB-170, PCB-180 and PCB-189.

The calibration curve analyzed on 11/13/10 was acceptable. The CCVs 101113_HR_11 and 101113_HR_21 were acceptable. For 101113_HR_31, the %D exceeded the control limit for PCB-170 at 132%. For 101113_HR_ 41, the %D exceeded the control limit for PCB-170 at 189%, PCB-180 at 190% and the 13C_189L at 46%. For 101113_HR_ 48, the %D exceeded the control limit for PCB-170 at 165% and PCB-180 at 161%. For 101113_HR_ 58, the %D exceeded the control limit for PCB-170 at 148% and PCB-180 at 139%. For 101113_HR_ 68, the %D exceeded the control limit for PCB-170 at 146% and PCB-180 at 142%. For 101113_HR_ 75, the %D exceeded the control limit for PCB-170 at 170%, PCB-173 at 142% and the surrogate PCB-189L at 48.8%. The samples injected after 10113_HR_31 were reinjected after the 11/17/10 calibration curve. Both sets of data are included in the package.

For the calibration curve analyzed on 11/17/10 the ion ratios failed for PCB-157 and PCB-189. All other calibration acceptance criteria were met.

Blanks:

The 101027SA method blank contained PCB-118 at 29 pg/Kg. The blank was re-injected with similar results.

Spikes:

Laboratory Control Spikes were used for quality control. For the 101025WA LCS, PCB-170 and PCB-180 recovered above the 140% upper control limit, at 178% and 269% respectively. All other LCS recoveries met acceptance criteria.

Sample C103-SW02-00 and C103-SD02-0.5 were designated by the client for MS/MSD analysis. For the C103-SW02-00 MSD, PCB-180 recovered below the 60% lower control limit at 56.0%. For the C103-SD02-0.5 MS/MSD, PCB-118 recovered below the 60% lower control limit at 57.2% in the MSD and PCB-180 recovered above the 140% upper control limit at 180% in the MS. All other MS/MSD recoveries met acceptance criteria.

Surrogate Recoveries (C13 Internal Standards):

C13 Internal Standards were added to the extracts in accordance with the method and reported on the Form 1s as surrogate recoveries. For the 101027SA method blank, the surrogates PCB-126L, PCB-169L and PCB-77L recovered above the 140% upper control limit at 143%, 160% and 142% respectively. The method blank was re-injected with similar recoveries. For the 101027SA LCS the surrogate PCB-77L recovered above the 140% upper control limit at 150%. For sample C103-SD01-0.51, the surrogates PCB-126L, PCB-169L and PCB-77L recovered above the upper control limit at 145%, 160%, and 143% respectively.

Summary:

No other analytical exceptions are noted.

EPA method 6010B
Metals

Digestion Information:

The soil samples were digested according to EPA method 3050B. The water samples were digested according to EPA method 3010A. No exceptions were encountered. All holding times were met.

Analysis Information:

Samples:

The samples were analyzed according to EPA method 6010B using a Perkin Elmer Optima 5300DV.

Calibrations:

Calibrations were performed according to the methods for the initial calibration and the initial calibration verification. The initial calibration verification is prepared from a second source standard.

Blanks:

Silver was detected above one-half the LOQ (1.0 ug/L) at 0.58 ug/L in the C101027 water method blank. Silver was not detected in the associated samples. No other target metal was detected at or above one-half the reporting limit in the method blanks.

Spikes:

Laboratory control spikes (LCS), sample duplicates (DUP), matrix spikes (MS), post digestion spikes (PDS) and serial dilutions were used for quality assurance. All metals had acceptable recoveries in the LCS.

Sample C103-SW02-00 was designated by the client as the water QC sample. All sample duplicate, MS, PDS, and serial dilution test acceptance criteria were met.

Sample C103-SD02-0.5 was designated by the client as the soil QC sample. The sample duplicate and PDS met acceptance criteria. In the MS, silver recovered above the 120% upper control limit at 123%. In the serial dilution test, vanadium exceeded the 10% deviation limit.

Summary:

No other analytical exception is noted.

CERTIFICATION

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requ irements of NELAC. Release of the hard copy has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

12/2/10

Leonard Fong, Ph.D, Laboratory Director / Date

COOLER RECEIPT FORM

1) Project: 16170587.00100 SWMV 103 (Playa Lake Date Received: 10/19/10

2) Coolers: Number of Coolers: 2

3) (YES) NO Were coolers and samples screened for radioactivity?

4) (YES) NO Were custody seals on outside of cooler? How many? 2 Date on seal? 10/18/10

5) Name on seal? See label below

6) (YES) NO NA Were custody seals unbroken and intact at the time of arrival?

7) (YES) NO Did the cooler come with a shipping slip (air bill, etc.)? Carrier name: Fed Ex

8) Shipping slip numbers: 1) 8728 3921 1988 2) 3)

9) (YES) NO NA Was the shipping slip scanned into the database?

10) YES NO (NA) If cooler belongs to APPL, has it been logged into the ice chest database?

11) Describe type of packing in cooler (bubble wrap, popcorn, type of ice, etc.): Bubble wrap, wet Ice

12) YES NO (NA) For hand delivered samples was sufficient ice present to start the cooling process?

13) (YES) NO Was a temperature blank included in the cooler?

14) Serial number of certified NIST thermometer used: A39267 Correction factor: 0

15) Cooler temp(s): 1) 3.0°C 2) 3.0°C 3) 4) 5) 6) 7) 8)

Chain of custody:

16) (YES) NO Was a chain of custody received?

17) (YES) NO Were the custody papers signed in the appropriate places?

18) (YES) NO Was the project identifiable from custody papers?

19) (YES) NO Did the chain of custody include date and time of sampling?

20) (YES) NO Is location where sample was taken listed on the chain of custody?

Sample Labels:

21) (YES) NO Were container labels in good condition?

22) (YES) NO Was the client ID on the label?

23) (YES) NO Was the date of sampling on the label?

24) (YES) NO Was the time of sampling on the label?

25) (YES) NO Did all container labels agree with custody papers?

Sample Containers:

26) (YES) NO Were all containers sealed in separate bags?

27) (YES) NO Did all containers arrive unbroken?

28) YES (NO) Was there any leakage from samples?

29) YES (NO) Were any of the lids cracked or broken?

30) (YES) NO Were correct containers used for the tests indicated?

31) (YES) NO Was a sufficient amount of sample sent for tests indicated?

32) YES NO (NA) Were bubbles present in volatile samples? If yes, the following were received with air bubbles:

Larger than a pea:

Smaller than a pea:

Preservation & Hold time:

33) (YES) NO NA Was a sufficient amount of holding time remaining to analyze the samples?

34) (YES) NO NA Do the sample containers contain the same preservative as what is stated on the COC?

35) (YES) NO NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

36) (YES) NO NA Was the pH of acid preserved non-VOA samples < 2 & sodium hydroxide preserved samples > 10?

Lab notified if pH was not adequate:

Deficiencies:

Signature of personnel receiving samples: Second reviewer:

Signature of project manager notified: Date and Time of notification:

Name of client notified: Date and Time of notification:

Information given to client:

by whom (Initials):

CUSTODY SEAL
APPL, Inc.
(559) 275-2175
Initials AJ
Date 10/18/10

62882

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Page 1 of 1

Project Name: SWMU 103 (Playa Lake) Phase III RFI	Project No.: 16170587.00100
Project Location: Cannon AFB	Project Manager: Jeff Voelker
Sampler(s): Tony Sedlacek, Skip Wrightson	

*Analytical Parameters

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total Metals (6010B)	Dissolved Metals (6010B)	TPH-G120 (8015B)	TPH-DRO/ORO/Metals (8015B)	PCB Congeners/Dioxin/Furans (1668B) (8290)				Remarks
10/18/10	1345		X	C103-SW02-00	Surface Water	2	1-L Amber	X										4°C
	1345		X	"	"	2	1-L Amber		X									4°C
	1345		X	"	"	1	500mL HDPE			X								4°C + HNO_3
	1345		X	"	"	1	500mL HDPE				X							4°C + HNO_3 + Filtered
	1345		X	C103-SD02-0.5	Sediment	2	4 oz Jar					X						4°C
	1345	X		"	"	1	8 oz Jar						X	~~X~~ IS				4°C
	1345	X		"	"	1	8 oz Jar							X				4°C
	1345		X	C103-SW02-00 ms/msD	Surface Water	2	1-L Amber	X										4°C + Use as ms/msD
	1345		X	"	"	2	1-L Amber		X									4°C + Use as ms/msD
	1345		X	"	"	1	500 mL HDPE			X								4°C + HNO_3 + Use as ms/msD
	1345		X	"	"	1	500mL HDPE				X							4°C + HNO_3 + Filtered + ms/msD
	1345		X	C103-SD02-00 ms/msD	Sediment	2	4 oz Jar					X						4°C + Use as ms/msD
	1345	X		"	"	1	8 oz Jar						X					4°C + Use as ms/msD
	1345	X		"	"	1	8 oz Jar							X				4°C + Use as ms/msD

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10/18/10	1700	Method of Shipment: FEDEX	* Project Metals List for Surface Water C103-SW02-00 & C103-SW02-00 ms/msD (Lead, Selenium & Silver) Dissolved Metals were filtered in the field.
Received by:			Airbill No.: 87283921 1988	
Relinquished by:			Lab Address: APPL, Inc. 908 N. Temperance Ave Clovis, CA 93611	** Project Metals List for Sediment C103-SD02-0.5 & C103-SD02-0.5 ms/msD (Arsenic, Selenium, Silver, Vanadium)
Received for Laboratory by: [signature]	10/19/10	930		

12

Custody.frm/jdg 3-09-92

White copy - Laboratory Yellow copy - Laboratory Pink copy - WCC

172027

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Page 1 of 1

Project Name: SWMU 103 (Playa Lake) Phase III RFI	Project No.: 16170587.00100
Project Location: Cannon AFB	Project Manager: Jeff Voelker
Sampler(s): Tony Sedlacek, Skip Wrightson	

Analytical Parameters: PCB Congeners (1668B); Dioxin/Furans (8290); Total metals (6010B)*; Dissolved metals (6010B)*; TPH-GRO (8015B); TPH-DRO/ORO/Metals (6010B)**; PCB Congeners/Dioxin/Furans (1668B/8290)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total metals (6010B)	Dissolved metals (6010B)	TPH-GRO (8015B)	TPH-DRO/ORO/Metals (6010B)	PCB Congeners/Dioxin/Furans (1668B/8290)				Remarks
10/18/10	1130		X	C103-SW01-00	Surface Water	2	1-L Ambers	X										4°C
	1130		X	"	"	2	1-L Ambers		X									4°C
	1130		X	"	"	1	500mL HDPE			X								4°C + HNO_3
	1130		X	"	"	1	500mL HDPE				X							4°C + HNO_3 + Filtered
	1130		X	C103-SD01-0.5	Sediment	2	4oz Jar					X						4°C
	1130	X		"	"	1	8oz Jar						X					4°C
	1130	X		"	"	1	8oz Jar							X				4°C

Tony Sedlacek

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10/18/10	1700	Method of Shipment: FedEx	* Project Metals List for Surface Water C103-SW01-00 (Lead, Selenium, silver), Dissolved Metals were filtered in the field.
Received by:			Airbill No.: 8728 3921 1988	** Project metals List for Sediment C103-SD01-0.5 (Arsenic, Selenium, Silver, Vanadium)
Relinquished by:			Lab Address: APPL, INC. 908 N. Temperance Ave Clovis, CA 93611	
Received for Laboratory by: [signature]	10/19/10	930		

Custody.frm/jdg 3-09-92

White copy - Laboratory Yellow copy - Laboratory Pink copy - WCC

13

122021

APPL - Analysis Request Form

62880

Client: URS Group, Inc.
Address: 12120 Shamrock Plaza Suite 300
Omaha, NE 68154
Attn: Tony Sedlacek
Phone: 402-334-8181 Fax: 402-334-1984
Job: 16170587 Cannon AF SWMU 103 (Playa La
PO #: Subcontract #239132
Chain of Custody (Y/N): Y # 123937,123936
RAD Screen (Y/N): Y pH (Y/N): Y
Turn Around Type: STD

Received by: TBV
Date Received: 10/19/10 Time: 09:30
Delivered by: FED EX
Shuttle Custody Seals (Y/N): Y
Chest Temp(s): 3.0,3.0°C
Color: VOA,A-GRN,R-ORGYELL
Samples Chilled until Placed in Refrig/Freezer: Y
Project Manager: Diane Anderson DA
QC Report Type: DVP4/ADR/ERPIMS5/NM
Due Date: 10/31/10

W

Comments:
Batch QC is different for this client! Start the batch name with the Letter
i.e A040318BLK instead of 040318ABLK. Special summary package required
Requires LCS association form. Requires only LCS.
Moisture correct soils after analysis. DoD QSM v4.1
Report w/ Special Forms w/ LOQ, LOD, DL. Report 'J' values to the DL
Matrix spike and matrix duplicate must be run for metals not an MSD
EDDs: ADR (A1 & A3 files) and ERPIMS 5.0 lab submission files compatible with ERPToolsX.

10-21 Pot'd ARP

Sample Distribution:
GC: 2-$TPHCANS 11/15
Extractions: 2-_SEP1668, 2-_SEP8290, 2-_SOX002, 2-_SOX1668, 2-_SOX8290
VOA: 2-$GASCANS
Metals: 2-$61DODW(Pb,Se,Ag), 2-$61DODWD(Pb,Se,Ag), 2-$61SDOD(As,Se,Ag,V) 11-5
Wetlab: 2-MOIST
Other: 2-$1668CANW, 2-$8290W, 2-_M3010, 2-$1668CANS, 2-$8290S, 2-_M3050
11/17

Charges:

Invoice To:
submit invoice monthly

	Client ID		APPL ID	Sampled		Analyses Requested
1.	C103-SW02-00	MS/MSD	AY24725W	10/18/10	13:45	$1668CANW, $61DODW(Pb,Se,Ag), $61DODWD(Pb,Se,Ag), $8290W
2.	C103-SD02-0.5	MS/MSD	AY24726S	10/18/10	13:45	$1668CANS, $61SDOD(As,Se,Ag,V), $8290S, $GASCANS, $TPHCANS, MOIST
3.	C103-SW01-00		AY24727W	10/18/10	11:30	$1668CANW, $61DODW(Pb,Se,Ag), $61DODWD(Pb,Se,Ag), $8290W
4.	C103-SD01-0.5		AY24728S	10/18/10	11:30	$1668CANS, $61SDOD(As,Se,Ag,V), $8290S, $GASCANS, $TPHCANS, MOIST

TPH Extractables Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62880

Sample ID: C103-SD02-0.5

APPL ID: AY24726

Sample Collection Date: 10/18/2010

QCG: #TPHCA-A101101-148950

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 29.4 Percent Moisture.)							
EPA 8015B-	Diesel Range Organics	19 ++	1.4	1.40	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	30	14.0	5.00	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	93.6	70-120		%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	90.2	75-120		%	11/1/2010	11/11/2010

++(T1M) The analyst has noted that the chromatogram of this sample is mainly a wide range of hydrocarbons which are not necessarily indicative of diesel.

Quant Method: TPHD1101.M
Run #: 1110039
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 3:22:17 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

TPH Extractables Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD01-0.5
Sample Collection Date: 10/18/2010

ARF: 62880
APPL ID: AY24728
QCG: #TPHCA-A101101-148950

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 24.7 Percent Moisture.)							
EPA 8015B-	Diesel Range Organics	Not detected	1.3	1.30	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	Not detected	13.0	4.60	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	109	70-120		%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	104	75-120		%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110040
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 3:22:17 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62880

Sample ID: C103-SD02-0.5

APPL ID: AY24726

Sample Collection Date: 10/18/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 29.4 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	0.96 U	1.4	0.96	0.48	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	110	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H04
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 5:58:28 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62880

Sample ID: C103-SD01-0.5

APPL ID: AY24728

Sample Collection Date: 10/18/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 24.7 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	0.90 U	1.3	0.90	0.45	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	61.8	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H05
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 5:58:28 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62880

Sample ID: C103-SW02-00

APPL ID: AY24725

Sample Collection Date: 10/18/10

QCG: $8290W-101028A-148857

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	2.1 U	125.0	2.1	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	1.0 U	125.0	1.0	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	1.4 U	125.0	1.4	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8-HxCDD	3.3 U	125.0	3.3	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8-HxCDF	0.85 U	125.0	0.85	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,6,7,8-HxCDD	1.8 U	125.0	1.8	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,6,7,8-HxCDF	0.84 U	125.0	0.84	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8,9-HxCDD	1.9 U	125.0	1.9	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8,9-HxCDF	1.1 U	125.0	1.1	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8-PeCDD	1.4 U	125.0	1.4	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8-PeCDF	1.1 U	125.0	1.1	pg/L	10/28/10	11/07/10
EPA 8290	2,3,4,6,7,8-HxCDF	1.0 U	125.0	1.0	pg/L	10/28/10	11/07/10
EPA 8290	2,3,4,7,8-PeCDF	0.50 U	125.0	0.50	pg/L	10/28/10	11/07/10
EPA 8290	2,3,7,8-TCDD	1.9 U	50.0	1.9	pg/L	10/28/10	11/07/10
EPA 8290	2,3,7,8-TCDF	1.6 U	50.0	1.6	pg/L	10/28/10	11/07/10
EPA 8290	OCDD	13 U	250.0	13	pg/L	10/28/10	11/07/10
EPA 8290	OCDF	2.0 U	250.0	2.0	pg/L	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	60.8	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	63.7	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	62.7	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	53.7	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	47.8	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	61.8	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	59.2	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	61.2	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-OCDD (S)	61.9	40-135		%	10/28/10	11/07/10

Quant Method: 8290_101105
Run #: 101105_HR_50
Instrument: Magneto
Sequence: 101105
Dilution Factor: 1
Initials: RP

Printed: 12/02/10 9:58:51 AM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD02-0.5
Sample Collection Date: 10/18/10

ARF: 62880
APPL ID: AY24726
QCG: $8290S-101028B-148880

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	21	12.5	21	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	3.1 J	12.5	3.1	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	1.0 U	12.5	1.0	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDD	0.84 U	12.5	0.84	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDF	0.50 U	12.5	0.50	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDD	1.0 J	12.5	1.0	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDF	1.5 U	12.5	1.5	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDD	0.60 U	12.5	0.60	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDF	0.57 U	12.5	0.57	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDD	0.51 U	12.5	0.51	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDF	0.50 U	12.5	0.50	pg/g	10/28/10	11/08/10
EPA 8290	2,3,4,6,7,8-HxCDF	7.8 U	12.5	7.8	pg/g	10/28/10	11/08/10
EPA 8290	2,3,4,7,8-PeCDF	0.36 U	12.5	0.36	pg/g	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDD	7.6	5.0	7.6	pg/g	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDF	3.6 J	5.0	3.6	pg/g	10/28/10	11/08/10
EPA 8290	OCDD	250	25.0	250	pg/g	10/28/10	11/08/10
EPA 8290	OCDF	8.0 J	25.0	8.0	pg/g	10/28/10	11/08/10
EPA 8290	TEQ	8.4	NA		pg/g	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	53.2	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	68.7	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	74.6	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	54.3	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	58.4	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	57.7	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	64.2	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	62.6	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-OCDD (S)	45.5	40-135		%	10/28/10	11/08/10

J = Estimated value.

Quant Method: 8290_101105
Run #: 101105_HR_70
Instrument: Magneto
Sequence: 101105
Dilution Factor: 1
Initials: RP

Printed: 12/01/10 4:00:51 PM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62880

Sample ID: C103-SW01-00

APPL ID: AY24727

Sample Collection Date: 10/18/10

QCG: $8290W-101028A-148857

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	1.0 U	125.0	1.0	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	0.88 U	125.0	0.88	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	1.2 U	125.0	1.2	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8-HxCDD	2.2 U	125.0	2.2	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8-HxCDF	1.4 U	125.0	1.4	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,6,7,8-HxCDD	1.5 U	125.0	1.5	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,6,7,8-HxCDF	0.87 U	125.0	0.87	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8,9-HxCDD	2.1 U	125.0	2.1	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8,9-HxCDF	1.2 U	125.0	1.2	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8-PeCDD	1.5 U	125.0	1.5	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8-PeCDF	1.1 U	125.0	1.1	pg/L	10/28/10	11/07/10
EPA 8290	2,3,4,6,7,8-HxCDF	1.0 U	125.0	1.0	pg/L	10/28/10	11/07/10
EPA 8290	2,3,4,7,8-PeCDF	1.1 U	125.0	1.1	pg/L	10/28/10	11/07/10
EPA 8290	2,3,7,8-TCDD	0.91 U	50.0	0.91	pg/L	10/28/10	11/07/10
EPA 8290	2,3,7,8-TCDF	1.8 U	50.0	1.8	pg/L	10/28/10	11/07/10
EPA 8290	OCDD	2.4 U	250.0	2.4	pg/L	10/28/10	11/07/10
EPA 8290	OCDF	2.1 U	250.0	2.1	pg/L	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	63.4	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	65.1	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	65.6	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	55.9	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	48.9	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	58.4	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	61.8	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	60.1	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-OCDD (S)	68.1	40-135		%	10/28/10	11/07/10

Quant Method: 8290_101105
Run #: 101105_HR_51
Instrument: Magneto
Sequence: 101105
Dilution Factor: 1
Initials: RP

Printed: 12/02/10 10:05:07 AM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD01-0.5
Sample Collection Date: 10/18/10

ARF: 62880
APPL ID: AY24728
QCG: $8290S-101028B-148880

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	2.8 J	12.5	2.8	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	0.52 U	12.5	0.52	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	0.17 U	12.5	0.17	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDD	0.36 U	12.5	0.36	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDF	0.10 U	12.5	0.10	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDD	0.28 U	12.5	0.28	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDF	0.29 U	12.5	0.29	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDD	0.36 U	12.5	0.36	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDF	0.11 U	12.5	0.11	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDD	0.16 U	12.5	0.16	pg/g	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDF	0.39 U	12.5	0.39	pg/g	10/28/10	11/08/10
EPA 8290	2,3,4,6,7,8-HxCDF	1.6 U	12.5	1.6	pg/g	10/28/10	11/08/10
EPA 8290	2,3,4,7,8-PeCDF	0.20 U	12.5	0.20	pg/g	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDD	0.79 J	5.0	0.79	pg/g	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDF	1.3 J	5.0	1.3	pg/g	10/28/10	11/08/10
EPA 8290	OCDD	20 J	25.0	20	pg/g	10/28/10	11/08/10
EPA 8290	OCDF	0.12 U	25.0	0.12	pg/g	10/28/10	11/08/10
EPA 8290	TEQ	0.95	NA		pg/g	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	73.6	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	85.5	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	87.5	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	70.1	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	73.8	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	82.5	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	81.4	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	82.4	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-OCDD (S)	65.1	40-135		%	10/28/10	11/08/10

J = Estimated value.

Quant Method: 8290_101105
Run #: 101105_HR_71
Instrument: Magneto
Sequence: 101105
Dilution Factor: 1
Initials: RP

Printed: 12/01/10 4:00:51 PM
Form 1 - APPL Standard GC - No MC

EPA 1668B Waters

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW02-00
Sample Collection Date: 10/18/10

ARF: 62880
APPL ID: AY24725
QCG: $1668CANW-101025-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	21 U	100.0	21	pg/L	10/25/10	11/18/10
EPA 1668	PCB-114	29 U	100.0	29	pg/L	10/25/10	11/18/10
EPA 1668	PCB-118	370	100.0	370	pg/L	10/25/10	11/18/10
EPA 1668	PCB-123	26 U	100.0	26	pg/L	10/25/10	11/18/10
EPA 1668	PCB-126	8.4 U	100.0	8.4	pg/L	10/25/10	11/18/10
EPA 1668	PCB-156	49 J	100.0	49	pg/L	10/25/10	11/18/10
EPA 1668	PCB-157	4.1 U	100.0	4.1	pg/L	10/25/10	11/18/10
EPA 1668	PCB-167	17 U	100.0	17	pg/L	10/25/10	11/18/10
EPA 1668	PCB-169	6.0 U	100.0	6.0	pg/L	10/25/10	11/18/10
EPA 1668	PCB-170	350	100.0	350	pg/L	10/25/10	11/18/10
EPA 1668	PCB-180	900	100.0	900	pg/L	10/25/10	11/18/10
EPA 1668	PCB-189	6.9 U	100.0	6.9	pg/L	10/25/10	11/18/10
EPA 1668	PCB-77	7.8 U	100.0	7.8	pg/L	10/25/10	11/18/10
EPA 1668	PCB-81	0.76 U	100.0	0.76	pg/L	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-105L (S)	81.1	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-118L (S)	76.4	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-126L (S)	85.7	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-169L (S)	90.6	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-77L (S)	86.0	30-140		%	10/25/10	11/18/10

J = Estimated value.

Quant Method: 1668_101117
Run #: 101117_HR_23
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

Printed: 12/01/10 3:58:36 PM
Form 1 - APPL Standard GC - No MC

EPA 1668B Solids

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD02-0.5
Sample Collection Date: 10/18/10

ARF: 62880
APPL ID: AY24726
QCG: $1668CANS-101027-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	150	10.0	150	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-114	14	10.0	14	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-118	380	10.0	380	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-123	0.59 U	10.0	0.59	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-126	3.4 J	10.0	3.4	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-156	58	10.0	58	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-157	11	10.0	11	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-167	13	10.0	13	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-169	1.0 U	10.0	1.0	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-170	230	10.0	230	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-180	440	10.0	440	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-189	5.5 U	10.0	5.5	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-77	21	10.0	21	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-81	0.73 J	10.0	0.73	pg/Kg	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-105L (S)	110	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-118L (S)	104	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-126L (S)	128	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-169L (S)	134	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-77L (S)	120	30-140		%	10/27/10	11/19/10

J = Estimated value.

Quant Method: 1668_101117
Run #: 101117_HR_33
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

Printed: 12/01/10 3:58:36 PM
Form 1 - APPL Standard GC - No MC

EPA 1668B Waters

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW01-00
Sample Collection Date: 10/18/10

ARF: 62880
APPL ID: AY24727
QCG: $1668CANW-101025-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	18 U	100.0	18	pg/L	10/25/10	11/14/10
EPA 1668	PCB-114	14 U	100.0	14	pg/L	10/25/10	11/14/10
EPA 1668	PCB-118	420 U	100.0	420	pg/L	10/25/10	11/14/10
EPA 1668	PCB-123	4.3 U	100.0	4.3	pg/L	10/25/10	11/14/10
EPA 1668	PCB-126	5.4 U	100.0	5.4	pg/L	10/25/10	11/14/10
EPA 1668	PCB-156	7.8 U	100.0	7.8	pg/L	10/25/10	11/14/10
EPA 1668	PCB-157	8.1 U	100.0	8.1	pg/L	10/25/10	11/14/10
EPA 1668	PCB-167	7.0 U	100.0	7.0	pg/L	10/25/10	11/14/10
EPA 1668	PCB-169	11 U	100.0	11	pg/L	10/25/10	11/14/10
EPA 1668	PCB-170	30 U	100.0	30	pg/L	10/25/10	11/14/10
EPA 1668	PCB-180	120	100.0	120	pg/L	10/25/10	11/14/10
EPA 1668	PCB-189	3.4 U	100.0	3.4	pg/L	10/25/10	11/14/10
EPA 1668	PCB-77	5.2 U	100.0	5.2	pg/L	10/25/10	11/14/10
EPA 1668	PCB-81	3.8 U	100.0	3.8	pg/L	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-105L (S)	82.1	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-118L (S)	77.0	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-126L (S)	82.0	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-169L (S)	93.2	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-77L (S)	93.0	30-140		%	10/25/10	11/14/10

Quant Method: 1668_101113
Run #: 101113_HR_16
Instrument: Magneto
Sequence: 101113
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Solids

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD01-0.5
Sample Collection Date: 10/18/10

ARF: 62880
APPL ID: AY24728
QCG: $1668CANS-101027-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	23	10.0	23	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-114	3.3 U	10.0	3.3	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-118	70	10.0	70	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-123	0.62 U	10.0	0.62	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-126	0.75 U	10.0	0.75	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-156	8.6 J	10.0	8.6	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-157	2.0 J	10.0	2.0	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-167	0.32 U	10.0	0.32	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-169	0.50 U	10.0	0.50	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-170	31	10.0	31	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-180	58	10.0	58	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-189	0.97 J	10.0	1.0	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-77	6.7 J	10.0	6.7	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-81	0.42 U	10.0	0.42	pg/Kg	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-105L (S)	128	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-118L (S)	125	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-126L (S)	145 #	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-169L (S)	160 #	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-77L (S)	143 #	30-140		%	10/27/10	11/19/10

J = Estimated value.
# = Recovery (or RPD) is outside QC limits.

Quant Method: 1668_101117
Run #: 101117_HR_34
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW02-00
Sample Collection Date: 10/18/10

ARF: 62880
APPL ID: AY24725

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Lead (Pb)	3.16 U	5.0	3.16	1.58	ug/L	1	10/20/10	10/24/10
6010B/3010A	Selenium (Se)	6.34 U	10.0	6.34	3.17	ug/L	1	10/20/10	10/24/10
6010B/3010A	Silver (Ag)	0.50 U	1.0	0.50	0.25	ug/L	1	10/20/10	10/24/10
6010B/3010A	Lead (Pb) (Dissolved)	3.16 U	5.0	3.16	1.58	ug/L	1	10/27/10	10/29/10
6010B/3010A	Selenium (Se) (Dissolved)	3.17 U	5.0	3.17	3.17	ug/L	1	10/27/10	10/29/10
6010B/3010A	Silver (Ag) (Dissolved)	0.50 U	1.0	0.50	0.25	ug/L	1	10/27/10	10/29/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62880

Sample ID: C103-SD02-0.5

APPL ID: AY24726

Sample Collection Date: 10/18/10

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 29.4 Percent Moisture.)									
6010B/3050B	Arsenic (As)	1.6	0.71	0.240	0.120	mg/kg	1	10/25/10	10/27/10
6010B/3050B	Selenium (Se)	0.700 U	0.71	0.700	0.350	mg/kg	1	10/25/10	10/27/10
6010B/3050B	Silver (Ag)	1.1	0.14	0.102	0.051	mg/kg	1	10/25/10	10/27/10
6010B/3050B	Vanadium (V)	7.1	0.71	0.158	0.079	mg/kg	1	10/25/10	10/27/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW01-00
Sample Collection Date: 10/18/10

ARF: 62880
APPL ID: AY24727

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Lead (Pb)	3.16 U	5.0	3.16	1.58	ug/L	1	10/27/10	10/29/10
6010B/3010A	Selenium (Se)	6.34 U	10.0	6.34	3.17	ug/L	1	10/27/10	10/29/10
6010B/3010A	Silver (Ag)	0.50 U	1.0	0.50	0.25	ug/L	1	10/27/10	10/29/10
6010B/3010A	Lead (Pb) (Dissolved)	3.16 U	5.0	3.16	1.58	ug/L	1	10/20/10	10/24/10
6010B/3010A	Selenium (Se) (Dissolved)	3.17 U	5.0	3.17	3.17	ug/L	1	10/20/10	10/24/10
6010B/3010A	Silver (Ag) (Dissolved)	0.50 U	1.0	0.50	0.25	ug/L	1	10/20/10	10/24/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD01-0.5
Sample Collection Date: 10/18/10

ARF: 62880
APPL ID: AY24728

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 24.7 Percent Moisture.)									
6010B/3050B	Arsenic (As)	1.6	0.66	0.240	0.120	mg/kg	1	10/25/10	10/27/10
6010B/3050B	Selenium (Se)	0.33 J	0.66	0.640	0.320	mg/kg	1	10/25/10	10/27/10
6010B/3050B	Silver (Ag)	0.76	0.13	0.096	0.048	mg/kg	1	10/25/10	10/27/10
6010B/3050B	Vanadium (V)	6.8	0.66	0.148	0.074	mg/kg	1	10/25/10	10/27/10

J = Estimated value.

Printed: 11/03/10 2:10:45 PM

-SC-MCRes/MCPQL-URS-REG MDLs

EPA 8015B-e

Form 4

Blank Summary

Lab Name: APPL, Inc.
SDG No: 62880
Case No: 62880
Date Analyzed: 11/10/2010
Matrix: SOIL
Instrument: Apollo
Blank ID: A101101-BLK
Time Analyzed: 2150

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101101-BLK	Blank	1110032	11/10/2010 2150
A101101-LCS	Lab Control Spike	1110033	11/10/2010 2213
A101101-MS	Matrix Spike	1110035	11/10/2010 2300
A101101-MSD	Matrix SpikeD	1110036	11/10/2010 2324
AY24726	C103-SD02-0.5	1110039	11/11/2010 0034
AY24728	C103-SD01-0.5	1110040	11/11/2010 0058

Comments: Batch: #TPHCA-A101101

Printed: 11/11/2010 3:22:10 PM
Form 4, Blank Summary

Method Blank
TPH Extractables Soil

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **A10110S-24726 - 148950**
Batch ID: #TPHCA-A101101

Sample Type	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
BLANK	Diesel Range Organics	Not detected	1.0	1.00	mg/kg	11/1/2010	11/10/2010
BLANK	Oil Range Organics	Not detected	10.0	3.50	mg/kg	11/1/2010	11/10/2010
BLANK	Surrogate: Octacosane (S)	91.2	70-120		%	11/1/2010	11/10/2010
BLANK	Surrogate: Ortho_Terphenyl (S)	92.2	75-120		%	11/1/2010	11/10/2010

Quant Method: TPHD1101.M
Run #: 1110032
Instrument: Apollo
Sequence: 101101
Initials: LA

GC SC-Blank-REG MDLs
Printed: 11/11/2010 3:22:19 PM

EPA 8015

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 62880

Case No: 62880 Date Analyzed: 10/25/10

Matrix: SOIL Instrument: Harpo

Blank ID: A101025-BLK Time Analyzed: 1129

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101025-LCS	Lab Control Spike	1025H02	10/25/10 1055
A101025-BLK	Blank	1025H03	10/25/10 1129
AY24726	C103-SD02-0.5	1025H04	10/25/10 1203
AY24728	C103-SD01-0.5	1025H05	10/25/10 1238
A101025-MS	Matrix Spike	1025H19	10/25/10 2036
A101025-MSD	Matrix SpikeD	1025H20	10/25/10 2110

Comments: Batch: #GASCA-A101025

Method Blank
Gasoline Range Organics Soil

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **A10102S-24726 - 149128**
Batch ID: #GASCA-A101025

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	Gasoline Range Organics	0.68 U	1.0	0.68	0.34	mg/Kg	10/25/10	10/25/10
BLANK	Surrogate: BFB-FID (S)	97.5	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H03
Instrument: Harpo
Sequence: 100618
Initials: LF

GC SC-Blank-REG MDLs
Printed: 11/16/10 5:58:33 PM

EPA 8290

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 62880

Case No: 62880 Date Analyzed: 11/07/10

Matrix: WATER Instrument: Magneto

Blank ID: 101028A-BLK Time Analyzed: 1530

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101028A-LCS	Lab Control Spike	101105_HR_44	11/07/10 1315
101028A-BLK	Blank	101105_HR_46	11/07/10 1530
AY24725	C103-SW02-00	101105_HR_50	11/07/10 2007
AY24727	C103-SW01-00	101105_HR_51	11/07/10 2115
101028A-MS	Matrix Spike	101105_HR_61	11/08/10 0845
101028A-MSD	Matrix SpikeD	101105_HR_62	11/08/10 0953

Comments: Batch: #8290W-101028A

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Form 4, Blank Summary

Method Blank

EPA 8290 - Dioxins and Furans

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **101028W-24725 - 148857**
Batch ID: $8290W-101028A

Sample Type	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
BLANK	1,2,3,4,6,7,8-HpCDD	2.1 U	125.0	2.1	pg/L	10/28/10	11/07/10
BLANK	1,2,3,4,6,7,8-HpCDF	2.3 U	125.0	2.3	pg/L	10/28/10	11/07/10
BLANK	1,2,3,4,7,8,9-HpCDF	3.2 U	125.0	3.2	pg/L	10/28/10	11/07/10
BLANK	1,2,3,4,7,8-HxCDD	2.7 U	125.0	2.7	pg/L	10/28/10	11/07/10
BLANK	1,2,3,4,7,8-HxCDF	1.4 U	125.0	1.4	pg/L	10/28/10	11/07/10
BLANK	1,2,3,6,7,8-HxCDD	2.5 U	125.0	2.5	pg/L	10/28/10	11/07/10
BLANK	1,2,3,6,7,8-HxCDF	1.2 U	125.0	1.2	pg/L	10/28/10	11/07/10
BLANK	1,2,3,7,8,9-HxCDD	2.6 U	125.0	2.6	pg/L	10/28/10	11/07/10
BLANK	1,2,3,7,8,9-HxCDF	1.6 U	125.0	1.6	pg/L	10/28/10	11/07/10
BLANK	1,2,3,7,8-PeCDD	1.9 U	125.0	1.9	pg/L	10/28/10	11/07/10
BLANK	1,2,3,7,8-PeCDF	1.6 U	125.0	1.6	pg/L	10/28/10	11/07/10
BLANK	2,3,4,6,7,8-HxCDF	1.4 U	125.0	1.4	pg/L	10/28/10	11/07/10
BLANK	2,3,4,7,8-PeCDF	2.5 U	125.0	2.5	pg/L	10/28/10	11/07/10
BLANK	2,3,7,8-TCDD	1.4 U	50.0	1.4	pg/L	10/28/10	11/07/10
BLANK	2,3,7,8-TCDF	1.7 U	50.0	1.7	pg/L	10/28/10	11/07/10
BLANK	OCDD	4.5 U	250.0	4.5	pg/L	10/28/10	11/07/10
BLANK	OCDF	4.9 U	250.0	4.9	pg/L	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	80.0	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	78.5	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	73.8	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	66.3	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	68.0	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	74.9	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-2,3,7,8-TCDD (S)	77.4	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-2,3,7,8-TCDF (S)	74.5	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-OCDD (S)	70.9	40-135		%	10/28/10	11/07/10

Quant Method: 8290_101105
Run #: 101105_HR_46
Instrument: Magneto
Sequence: 101105
Initials: RP

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EPA 8290

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: SOIL
Blank ID: 101028B-BLK

SDG No: 62880
Date Analyzed: 11/08/10
Instrument: Magneto
Time Analyzed: 1430

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101028B-LCS	Lab Control Spike	101105_HR_63	11/08/10 1108
101028B-BLK	Blank	101105_HR_66	11/08/10 1430
AY24726	C103-SD02-0.5	101105_HR_70	11/08/10 1907
AY24728	C103-SD01-0.5	101105_HR_71	11/08/10 2015
101028B-MS	Matrix Spike	101110_HR_26	11/11/10 1548
101028B-MSD	Matrix SpikeD	101110_HR_27	11/11/10 1656

Comments: Batch: #8290S-101028B

Printed: 12/01/10 2:22:37 PM
Form 4, Blank Summary

Method Blank

EPA 8290 - Dioxins and Furans

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **101028S-24726 - 148880**
Batch ID: $8290S-101028B

Sample Type	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
BLANK	1,2,3,4,6,7,8-HpCDD	0.54 U	12.5	0.54	pg/g	10/28/10	11/08/10
BLANK	1,2,3,4,6,7,8-HpCDF	0.20 U	12.5	0.20	pg/g	10/28/10	11/08/10
BLANK	1,2,3,4,7,8,9-HpCDF	0.27 U	12.5	0.27	pg/g	10/28/10	11/08/10
BLANK	1,2,3,4,7,8-HxCDD	0.44 U	12.5	0.44	pg/g	10/28/10	11/08/10
BLANK	1,2,3,4,7,8-HxCDF	0.16 U	12.5	0.16	pg/g	10/28/10	11/08/10
BLANK	1,2,3,6,7,8-HxCDD	0.34 U	12.5	0.34	pg/g	10/28/10	11/08/10
BLANK	1,2,3,6,7,8-HxCDF	0.14 U	12.5	0.14	pg/g	10/28/10	11/08/10
BLANK	1,2,3,7,8,9-HxCDD	0.36 U	12.5	0.36	pg/g	10/28/10	11/08/10
BLANK	1,2,3,7,8,9-HxCDF	0.18 U	12.5	0.18	pg/g	10/28/10	11/08/10
BLANK	1,2,3,7,8-PeCDD	0.23 U	12.5	0.23	pg/g	10/28/10	11/08/10
BLANK	1,2,3,7,8-PeCDF	0.15 U	12.5	0.15	pg/g	10/28/10	11/08/10
BLANK	2,3,4,6,7,8-HxCDF	0.16 U	12.5	0.16	pg/g	10/28/10	11/08/10
BLANK	2,3,4,7,8-PeCDF	0.15 U	12.5	0.15	pg/g	10/28/10	11/08/10
BLANK	2,3,7,8-TCDD	0.17 U	5.0	0.17	pg/g	10/28/10	11/08/10
BLANK	2,3,7,8-TCDF	0.24 U	5.0	0.24	pg/g	10/28/10	11/08/10
BLANK	OCDD	0.76 U	25.0	0.76	pg/g	10/28/10	11/08/10
BLANK	OCDF	0.53 U	25.0	0.53	pg/g	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	84.8	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	81.6	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	79.8	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	72.4	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	65.8	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	77.6	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-2,3,7,8-TCDD (S)	82.0	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-2,3,7,8-TCDF (S)	78.6	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-OCDD (S)	74.3	40-135		%	10/28/10	11/08/10

Quant Method: 8290_101105
Run #: 101105_HR_66
Instrument: Magneto
Sequence: 101105
Initials: RP

Printed: 12/01/10 3:59:51 PM

EPA 1668

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: SOIL
Blank ID: 101027-BLK

SDG No: 62880
Date Analyzed: 11/19/10
Instrument: Magneto
Time Analyzed: 0352

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101027-LCS	Lab Control Spike	101117_HR_26	11/19/10 0130
101027-BLK	Blank	101117_HR_28	11/19/10 0352
AY24726	C103-SD02-0.5	101117_HR_33	11/19/10 1001
AY24728	C103-SD01-0.5	101117_HR_34	11/19/10 1113
101027-MS	Matrix Spike	101117_HR_52	11/20/10 1037
101027-MSD	Matrix SpikeD	101117_HR_53	11/20/10 1149

Comments: Batch: #1668CANS-10102

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Form 4, Blank Summary

Method Blank
EPA 1668B Solids

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **101027S-24726 - 149247**
Batch ID: $1668CANS-101027

Sample Type	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
BLANK	PCB-105	2.1 U	10.0	2.1	pg/Kg	10/27/10	11/19/10
BLANK	PCB-114	1.9 U	10.0	1.9	pg/Kg	10/27/10	11/19/10
BLANK	PCB-118	29	10.0	29	pg/Kg	10/27/10	11/19/10
BLANK	PCB-123	0.56 U	10.0	0.56	pg/Kg	10/27/10	11/19/10
BLANK	PCB-126	0.72 U	10.0	0.72	pg/Kg	10/27/10	11/19/10
BLANK	PCB-156	0.31 U	10.0	0.31	pg/Kg	10/27/10	11/19/10
BLANK	PCB-157	0.31 U	10.0	0.31	pg/Kg	10/27/10	11/19/10
BLANK	PCB-167	0.27 U	10.0	0.27	pg/Kg	10/27/10	11/19/10
BLANK	PCB-169	0.43 U	10.0	0.43	pg/Kg	10/27/10	11/19/10
BLANK	PCB-170	1.5 J	10.0	1.5	pg/Kg	10/27/10	11/19/10
BLANK	PCB-180	2.4 J	10.0	2.4	pg/Kg	10/27/10	11/19/10
BLANK	PCB-189	0.042 U	10.0	0.042	pg/Kg	10/27/10	11/19/10
BLANK	PCB-77	0.57 J	10.0	0.57	pg/Kg	10/27/10	11/19/10
BLANK	PCB-81	0.19 U	10.0	0.19	pg/Kg	10/27/10	11/19/10
BLANK	Surrogate: PCB-105L (S)	131	30-140		%	10/27/10	11/19/10
BLANK	Surrogate: PCB-118L (S)	126	30-140		%	10/27/10	11/19/10
BLANK	Surrogate: PCB-126L (S)	143 #	30-140		%	10/27/10	11/19/10
BLANK	Surrogate: PCB-169L (S)	160 #	30-140		%	10/27/10	11/19/10
BLANK	Surrogate: PCB-77L (S)	142 #	30-140		%	10/27/10	11/19/10

J = Estimated value.
# = Recovery (or RPD) is outside QC limits.

Quant Method: 1668_101117
Run #: 101117_HR_28
Instrument: Magneto
Sequence: 101117
Initials: RP

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EPA 1668

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: WATER
Blank ID: 101025-BLK

SDG No: 62880
Date Analyzed: 11/14/10
Instrument: Magneto
Time Analyzed: 0445

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101025-LCS	Lab Control Spike	101113_HR_13	11/14/10 0221
101025-BLK	Blank	101113_HR_15	11/14/10 0445
AY24727	C103-SW01-00	101113_HR_16	11/14/10 0557
AY24725	C103-SW02-00	101117_HR_23	11/18/10 2143
101025-MS	Matrix Spike	101117_HR_24	11/18/10 2255
101025-MSD	Matrix SpikeD	101117_HR_25	11/19/10 0007

Comments: Batch: #1668CANW-10102

Printed: 12/01/10 2:27:55 PM
Form 4, Blank Summary

Method Blank
EPA 1668B Waters

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **101025W-24725 - 149248**
Batch ID: $1668CANW-101025

Sample Type	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
BLANK	PCB-105	7.5 U	100.0	7.5	pg/L	10/25/10	11/14/10
BLANK	PCB-114	21 U	100.0	21	pg/L	10/25/10	11/14/10
BLANK	PCB-118	370 U	100.0	370	pg/L	10/25/10	11/14/10
BLANK	PCB-123	3.3 U	100.0	3.3	pg/L	10/25/10	11/14/10
BLANK	PCB-126	4.0 U	100.0	4.0	pg/L	10/25/10	11/14/10
BLANK	PCB-156	3.7 U	100.0	3.7	pg/L	10/25/10	11/14/10
BLANK	PCB-157	3.8 U	100.0	3.8	pg/L	10/25/10	11/14/10
BLANK	PCB-167	3.3 U	100.0	3.3	pg/L	10/25/10	11/14/10
BLANK	PCB-169	4.8 U	100.0	4.8	pg/L	10/25/10	11/14/10
BLANK	PCB-170	19 J	100.0	19	pg/L	10/25/10	11/14/10
BLANK	PCB-180	30 U	100.0	30	pg/L	10/25/10	11/14/10
BLANK	PCB-189	0.50 U	100.0	0.50	pg/L	10/25/10	11/14/10
BLANK	PCB-77	2.6 U	100.0	2.6	pg/L	10/25/10	11/14/10
BLANK	PCB-81	0.70 U	100.0	0.70	pg/L	10/25/10	11/14/10
BLANK	Surrogate: PCB-105L (S)	86.5	30-140		%	10/25/10	11/14/10
BLANK	Surrogate: PCB-118L (S)	81.3	30-140		%	10/25/10	11/14/10
BLANK	Surrogate: PCB-126L (S)	91.7	30-140		%	10/25/10	11/14/10
BLANK	Surrogate: PCB-169L (S)	98.3	30-140		%	10/25/10	11/14/10
BLANK	Surrogate: PCB-77L (S)	95.9	30-140		%	10/25/10	11/14/10

J = Estimated value.

Quant Method: 1668_101113
Run #: 101113_HR_15
Instrument: Magneto
Sequence: 101113
Initials: RP

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6010B/3010A

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: WATER
Blank ID: A101020-BLK

SDG No: 62880
Date Analyzed: 10/24/10
Instrument: Phoebe
Time Analyzed: 1005

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101020-BLK	Blank	101025A	10/24/10 1005
A101020-DUP	Duplicate	101025A	10/24/10 1014
A101020-LCS	Lab Control Spike	101025A	10/24/10 1008
A101020-MS	Matrix Spike	101025A	10/24/10 1028
AY24725	C103-SW02-00	101025A	10/24/10 1011

Comments: Batch: #61DOD-A101020

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Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Lead (Pb)	3.16 U	5.0	3.16	1.58	ug/L	10/20/10	10/24/10	#61DOD-A101020-AY24725
6010B	Selenium (Se)	6.34 U	10.0	6.34	3.17	ug/L	10/20/10	10/24/10	#61DOD-A101020-AY24725
6010B	Silver (Ag)	0.39 J	1.0	0.50	0.25	ug/L	10/20/10	10/24/10	#61DOD-A101020-AY24725

J = Estimated value.

Metals SC-Blank-URS-REG MDLs
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6010B/3010A

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: WATER
Blank ID: AA101020-BLK

SDG No: 62880
Date Analyzed: 10/24/10
Instrument: Phoebe
Time Analyzed: 1005

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24727	C103-SW01-00	101025A	10/24/10 1034
AA101020-BLK	Blank	101025A	10/24/10 1005
AA101020-LCS	Lab Control Spike	101025A	10/24/10 1008

Comments: Batch: #61DOD-AA101020

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Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Lead (Pb) (Dissolved	3.16 U	5.0	3.16	1.58	ug/L	10/20/10	10/24/10	I61DOD-AA101020-AY24727
6010B	Selenium (Se) (Disso	3.17 U	5.0	3.17	3.17	ug/L	10/20/10	10/24/10	I61DOD-AA101020-AY24727
6010B	Silver (Ag) (Dissolve	0.39 J	1.0	0.50	0.25	ug/L	10/20/10	10/24/10	I61DOD-AA101020-AY24727

J = Estimated value.

Metals SC-Blank-URS-REG MDLs
Printed: 11/03/10 2:09:43 PM

6010B/3010A

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: WATER
Blank ID: C101027-BLK

SDG No: 62880
Date Analyzed: 10/29/10
Instrument: Phoebe
Time Analyzed: 1323

APPL ID.	Client Sample No.	File ID.	Date Analyzed
C101027-LCS	Lab Control Spike	101029B	10/29/10 1326
AY24725	C103-SW02-00	101029B	10/29/10 1329
C101027-BLK	Blank	101029B	10/29/10 1323

Comments: Batch: #61DOD-C101027

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Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Lead (Pb) (Dissolved	3.16 U	5.0	3.16	1.58	ug/L	10/27/10	10/29/10	#61DOD-C101027-AY24725
6010B	Selenium (Se) (Disso	3.17 U	5.0	3.17	3.17	ug/L	10/27/10	10/29/10	#61DOD-C101027-AY24725
6010B	Silver (Ag) (Dissolve	0.58 J	1.0	0.50	0.25	ug/L	10/27/10	10/29/10	#61DOD-C101027-AY24725

J = Estimated value.

Metals SC-Blank-URS-REG MDLs
Printed: 11/03/10 2:09:43 PM

6010B/3010A

Form 4

Blank Summary

Lab Name: APPL, Inc.
SDG No: 62880
Case No: 62880
Date Analyzed: 10/29/10
Matrix: WATER
Instrument: Phoebe
Blank ID: CC101027-BLK
Time Analyzed: 1323

APPL ID.	Client Sample No.	File ID.	Date Analyzed
CC101027-BLK	Blank	101029B	10/29/10 1323
CC101027-LCS	Lab Control Spike	101029B	10/29/10 1326
AY24727	C103-SW01-00	101029B	10/29/10 1350

Comments: Batch: #61DOD-CC101027

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Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Lead (Pb)	3.16 U	5.0	3.16	1.58	ug/L	10/27/10	10/29/10	61DOD-CC101027-AY24727
6010B	Selenium (Se)	6.34 U	10.0	6.34	3.17	ug/L	10/27/10	10/29/10	61DOD-CC101027-AY24727
6010B	Silver (Ag)	0.58 J	1.0	0.50	0.25	ug/L	10/27/10	10/29/10	61DOD-CC101027-AY24727

J = Estimated value.

Metals SC-Blank-URS-REG MDLs
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6010B/3050B

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: SOIL
Blank ID: B101025-BLK

SDG No: 62880
Date Analyzed: 10/27/10
Instrument: Phoebe
Time Analyzed: 1402

APPL ID.	Client Sample No.	File ID.	Date Analyzed
B101025-MS	Matrix Spike	101027C	10/27/10 1420
AY24726	C103-SD02-0.5	101027C	10/27/10 1412
AY24728	C103-SD01-0.5	101027C	10/27/10 1430
B101025-BLK	Blank	101027C	10/27/10 1402
B101025-DUP	Duplicate	101027C	10/27/10 1416
B101025-LCS	Lab Control Spike	101027C	10/27/10 1408

Comments: Batch: #61SDO-B101025

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Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Arsenic (As)	0.176 U	0.50	0.176	0.088	mg/kg	10/25/10	10/27/10	#61SDO-B101025-AY24726
6010B	Selenium (Se)	0.488 U	0.50	0.488	0.244	mg/kg	10/25/10	10/27/10	#61SDO-B101025-AY24726
6010B	Silver (Ag)	0.072 U	0.10	0.072	0.036	mg/kg	10/25/10	10/27/10	#61SDO-B101025-AY24726
6010B	Vanadium (V)	0.112 U	0.50	0.112	0.056	mg/kg	10/25/10	10/27/10	#61SDO-B101025-AY24726

Metals SC-Blank-URS-REG MDLs
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EPA 8015B-e

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: SOIL
LCS ID: A101101-LCS

SDG No: 62880
Date Analyzed: 11/10/2010
Instrument: Apollo
Time Analyzed: 2213

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101101-BLK	Blank	1110032	11/10/2010 2150
A101101-LCS	Lab Control Spike	1110033	11/10/2010 2213
A101101-MS	Matrix Spike	1110035	11/10/2010 2300
A101101-MSD	Matrix SpikeD	1110036	11/10/2010 2324
AY24726	C103-SD02-0.5	1110039	11/11/2010 0034
AY24728	C103-SD01-0.5	1110040	11/11/2010 0058

Comments: Batch: #TPHCA-A101101

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Form 4, LCS Summary

Laboratory Control Spike Recovery
TPH Extractables Soil

APPL ID: **101101S-24726 LCS - 148950**
Batch ID: #TPHCA-A101101

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level mg/kg	SPK Result mg/kg	SPK % Recovery	Recovery Limits
Diesel Range Organics	40.0	40.6	102	64-122
Oil Range Organics	40.0	49.8	125	50-150
Surrogate: Octacosane (S)	3.00	2.81	93.7	70-120
Surrogate: Ortho_Terphenyl (S)	3.00	2.86	95.3	75-120

Comments:

Primary	SPK
Quant Method :	TPHD1101.M
Extraction Date :	11/1/2010
Analysis Date :	11/10/2010
Instrument :	Apollo
Run :	1110033
Initials :	LA

Printed: 11/11/2010 3:15:12 PM

APPL Standard LCS

EPA 8015

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: SOIL
LCS ID: A101025-LCS

SDG No: 62880
Date Analyzed: 10/25/10
Instrument: Harpo
Time Analyzed: 1055

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101025-LCS	Lab Control Spike	1025H02	10/25/10 1055
A101025-BLK	Blank	1025H03	10/25/10 1129
AY24726	C103-SD02-0.5	1025H04	10/25/10 1203
AY24728	C103-SD01-0.5	1025H05	10/25/10 1238
A101025-MS	Matrix Spike	1025H19	10/25/10 2036
A101025-MSD	Matrix SpikeD	1025H20	10/25/10 2110

Comments: Batch: #GASCA-A101025

Laboratory Control Spike Recovery
Gasoline Range Organics Soil

APPL ID: **101025S-24726 LCS - 149128**
Batch ID: #GASCA-A101025

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level mg/Kg	SPK Result mg/Kg	SPK % Recovery	Recovery Limits
Gasoline Range Organics	15.0	12.7	84.7	37-150
Surrogate: BFB-FID (S)	0.035	0.0377	108	40-125

Comments:

Primary	SPK
Quant Method :	HBTXGM.M
Extraction Date :	10/25/10
Analysis Date :	10/25/10
Instrument :	Harpo
Run :	1025H02
Initials :	LF

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APPL Standard LCS

EPA 8290

Form 4

LCS Summary

Lab Name: APPL, Inc. SDG No: 62880

Case No: 62880 Date Analyzed: 11/07/10

Matrix: WATER Instrument: Magneto

LCS ID: 101028A-LCS Time Analyzed: 1315

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101028A-LCS	Lab Control Spike	101105_HR_44	11/07/10 1315
101028A-BLK	Blank	101105_HR_46	11/07/10 1530
AY24725	C103-SW02-00	101105_HR_50	11/07/10 2007
AY24727	C103-SW01-00	101105_HR_51	11/07/10 2115
101028A-MS	Matrix Spike	101105_HR_61	11/08/10 0845
101028A-MSD	Matrix SpikeD	101105_HR_62	11/08/10 0953

Comments: Batch: #8290W-101028A

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Form 4, LCS Summary

Laboratory Control Spike Recovery
EPA 8290 - Dioxins and Furans

APPL ID: **101028W-24725 LCS - 148857**
Batch ID: #8290W-101028A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level pg/L	SPK Result pg/L	SPK % Recovery	Recovery Limits
1,2,3,4,6,7,8-HpCDD	1620	1620	99.9	70-130
1,2,3,4,6,7,8-HpCDF	1730	1450	83.9	70-130
1,2,3,4,7,8,9-HpCDF	1730	1550	89.6	70-130
1,2,3,4,7,8-HxCDD	1870	1780	95.1	70-130
1,2,3,4,7,8-HxCDF	1650	1510	91.5	70-130
1,2,3,6,7,8-HxCDD	1900	1670	88.1	70-130
1,2,3,6,7,8-HxCDF	1620	1400	86.6	70-130
1,2,3,7,8,9-HxCDD	1890	1900	101	70-130
1,2,3,7,8,9-HxCDF	1530	1570	103	70-130
1,2,3,7,8-PeCDD	1640	1340	81.6	70-130
1,2,3,7,8-PeCDF	1750	1470	84.0	70-130
2,3,4,6,7,8-HxCDF	1650	1660	101	70-130
2,3,4,7,8-PeCDF	1600	1190	74.5	70-130
2,3,7,8-TCDD	629	540	85.9	70-130
2,3,7,8-TCDF	668	579	86.7	70-130
OCDD	3780	3260	86.4	70-130
OCDF	3560	3140	88.1	70-130
Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	5000	4290	85.8	40-135
Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	5000	4110	82.2	40-135
Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	5000	3700	74.0	40-135
Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	5000	3290	65.8	40-135
Surrogate: 13C-1,2,3,7,8-PeCDD (S)	2000	1440	72.0	40-135
Surrogate: 13C-1,2,3,7,8-PeCDF (S)	2000	1620	81.0	40-135
Surrogate: 13C-2,3,7,8-TCDD (S)	2000	1550	77.5	40-135
Surrogate: 13C-2,3,7,8-TCDF (S)	2000	1500	75.0	40-135
Surrogate: 13C-OCDD (S)	10000	8000	80.0	40-135

Comments:

Primary	SPK
Quant Method :	8290_101105
Extraction Date :	10/28/10
Analysis Date :	11/07/10
Instrument :	Magneto
Run :	101105_HR_44
Initials :	RP

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APPL Standard LCS

EPA 8290

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: SOIL
LCS ID: 101028B-LCS

SDG No: 62880
Date Analyzed: 11/08/10
Instrument: Magneto
Time Analyzed: 1108

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101028B-LCS	Lab Control Spike	101105_HR_63	11/08/10 1108
101028B-BLK	Blank	101105_HR_66	11/08/10 1430
AY24726	C103-SD02-0.5	101105_HR_70	11/08/10 1907
AY24728	C103-SD01-0.5	101105_HR_71	11/08/10 2015
101028B-MS	Matrix Spike	101110_HR_26	11/11/10 1548
101028B-MSD	Matrix SpikeD	101110_HR_27	11/11/10 1656

Comments: Batch: #8290S-101028B

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Form 4, LCS Summary

Laboratory Control Spike Recovery
EPA 8290 - Dioxins and Furans

APPL ID: **101028S-24726 LCS - 148880**
Batch ID: #8290S-101028B

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level pg/g	SPK Result pg/g	SPK % Recovery	Recovery Limits
1,2,3,4,6,7,8-HpCDD	162	176	109	70-130
1,2,3,4,6,7,8-HpCDF	173	161	93.1	70-130
1,2,3,4,7,8,9-HpCDF	173	146	84.4	70-130
1,2,3,4,7,8-HxCDD	187	202	108	70-130
1,2,3,4,7,8-HxCDF	165	171	104	70-130
1,2,3,6,7,8-HxCDD	189	186	98.4	70-130
1,2,3,6,7,8-HxCDF	162	168	104	70-130
1,2,3,7,8,9-HxCDD	189	199	105	70-130
1,2,3,7,8,9-HxCDF	153	166	108	70-130
1,2,3,7,8-PeCDD	164	155	94.5	70-130
1,2,3,7,8-PeCDF	175	180	103	70-130
2,3,4,6,7,8-HxCDF	165	189	115	70-130
2,3,4,7,8-PeCDF	160	135	84.4	70-130
2,3,7,8-TCDD	62.9	61.5	97.8	70-130
2,3,7,8-TCDF	66.8	68.7	103	70-130
OCDD	377	363	96.3	70-130
OCDF	356	338	94.9	70-130
Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	500	266	53.2	40-135
Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	500	277	55.4	40-135
Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	500	254	50.8	40-135
Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	500	227	45.4	40-135
Surrogate: 13C-1,2,3,7,8-PeCDD (S)	200	85.0	42.5	40-135
Surrogate: 13C-1,2,3,7,8-PeCDF (S)	200	97.0	48.5	40-135
Surrogate: 13C-2,3,7,8-TCDD (S)	200	109	54.5	40-135
Surrogate: 13C-2,3,7,8-TCDF (S)	200	103	51.5	40-135
Surrogate: 13C-OCDD (S)	1000	462	46.2	40-135

Comments:

Primary	SPK
Quant Method :	8290_101105
Extraction Date :	10/28/10
Analysis Date :	11/08/10
Instrument :	Magneto
Run :	101105_HR_63
Initials :	RP

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APPL Standard LCS

EPA 1668

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: SOIL
LCS ID: 101027-LCS

SDG No: 62880
Date Analyzed: 11/19/10
Instrument: Magneto
Time Analyzed: 0130

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101027-LCS	Lab Control Spike	101117_HR_26	11/19/10 0130
101027-BLK	Blank	101117_HR_28	11/19/10 0352
AY24726	C103-SD02-0.5	101117_HR_33	11/19/10 1001
AY24728	C103-SD01-0.5	101117_HR_34	11/19/10 1113
101027-MS	Matrix Spike	101117_HR_52	11/20/10 1037
101027-MSD	Matrix SpikeD	101117_HR_53	11/20/10 1149

Comments: Batch: #1668CANS-10102

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Form 4, LCS Summary

Laboratory Control Spike Recovery
EPA 1668B Solids

APPL ID: **101027S-24726 LCS - 149247**
Batch ID: #1668CANS-101027

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level pg/Kg	SPK Result pg/Kg	SPK % Recovery	Recovery Limits
PCB-105	250	194	77.6	60-140
PCB-114	250	192	76.8	60-140
PCB-118	250	222	88.8	60-140
PCB-123	250	206	82.4	60-140
PCB-126	250	192	76.8	60-140
PCB-156	250	185	74.0	60-140
PCB-157	250	198	79.2	60-140
PCB-167	250	202	80.8	60-140
PCB-169	250	222	88.8	60-140
PCB-170	250	222	88.8	60-140
PCB-180	250	219	87.6	60-140
PCB-189	250	185	74.0	60-140
PCB-77	250	205	82.0	60-140
PCB-81	250	206	82.4	60-140
Surrogate: PCB-105L (S)	500	686	137	30-140
Surrogate: PCB-118L (S)	500	663	133	30-140
Surrogate: PCB-126L (S)	500	653	131	30-140
Surrogate: PCB-169L (S)	500	673	135	30-140
Surrogate: PCB-77L (S)	500	749	150 #	30-140

= Recovery is outside QC limits.

Comments:

Primary	SPK
Quant Method :	1668_101117
Extraction Date :	10/27/10
Analysis Date :	11/19/10
Instrument :	Magneto
Run :	101117_HR_26
Initials :	RP

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APPL Standard LCS

EPA 1668

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: WATER
LCS ID: 101025-LCS

SDG No: 62880
Date Analyzed: 11/14/10
Instrument: Magneto
Time Analyzed: 0221

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101025-LCS	Lab Control Spike	101113_HR_13	11/14/10 0221
101025-BLK	Blank	101113_HR_15	11/14/10 0445
AY24727	C103-SW01-00	101113_HR_16	11/14/10 0557
AY24725	C103-SW02-00	101117_HR_23	11/18/10 2143
101025-MS	Matrix Spike	101117_HR_24	11/18/10 2255
101025-MSD	Matrix SpikeD	101117_HR_25	11/19/10 0007

Comments: Batch: #1668CANW-10102

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Form 4, LCS Summary

Laboratory Control Spike Recovery
EPA 1668B Waters

APPL ID: **101025W-24725 LCS - 149248**
Batch ID: #1668CANW-101025

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level pg/L	SPK Result pg/L	SPK % Recovery	Recovery Limits
PCB-105	2500	2050	82.0	60-140
PCB-114	2500	2000	80.0	60-140
PCB-118	2500	2550	102	60-140
PCB-123	2500	2200	88.0	60-140
PCB-126	2500	2070	82.8	60-140
PCB-156	2500	2220	88.8	60-140
PCB-157	2500	2110	84.4	60-140
PCB-167	2500	2260	90.4	60-140
PCB-169	2500	2180	87.2	60-140
PCB-170	2500	4440	178 #	60-140
PCB-180	2500	6730	269 #	60-140
PCB-189	2500	2010	80.4	60-140
PCB-77	2500	2260	90.4	60-140
PCB-81	2500	2260	90.4	60-140
Surrogate: PCB-105L (S)	5000	4140	82.8	30-140
Surrogate: PCB-118L (S)	5000	3880	77.6	30-140
Surrogate: PCB-126L (S)	5000	3920	78.4	30-140
Surrogate: PCB-169L (S)	5000	3830	76.6	30-140
Surrogate: PCB-77L (S)	5000	4640	92.8	30-140

= Recovery is outside QC limits.

Comments:

Primary	SPK
Quant Method :	1668_101113
Extraction Date :	10/25/10
Analysis Date :	11/14/10
Instrument :	Magneto
Run :	101113_HR_13
Initials :	RP

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APPL Standard LCS

6010B/3010A

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: WATER
LCS ID: A101020-LCS

SDG No: 62880
Date Analyzed: 10/24/10
Instrument: Phoebe
Time Analyzed: 1008

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101020-BLK	Blank	101025A	10/24/10 1005
A101020-DUP	Duplicate	101025A	10/24/10 1014
A101020-LCS	Lab Control Spike	101025A	10/24/10 1008
A101020-MS	Matrix Spike	101025A	10/24/10 1028
AY24725	C103-SW02-00	101025A	10/24/10 1011

Comments: Batch: #61DOD-A101020

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Form 4, LCS Summary

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Lead (Pb)	250	264	106	80-120	10/20/10	10/24/10	#61DOD-A101020-AY24725
EPA 6010B	Selenium (Se)	250	241	96.4	80-120	10/20/10	10/24/10	#61DOD-A101020-AY24725
EPA 6010B	Silver (Ag)	100.0	102	102	80-120	10/20/10	10/24/10	#61DOD-A101020-AY24725

Comments:

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APPL Standard LCS

6010B/3010A

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: WATER
LCS ID: AA101020-LCS

SDG No: 62880
Date Analyzed: 10/24/2010
Instrument: Phoebe
Time Analyzed: 1008

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24727	C103-SW01-00	101025A	10/24/2010 1034
AA101020-BLK	Blank	101025A	10/24/2010 1005
AA101020-LCS	Lab Control Spike	101025A	10/24/2010 1008

Comments: Batch: #61DOD-AA101020

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Form 4, LCS Summary

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Lead (Pb) (Dissolved)	250	264	106	80-120	10/20/10	10/24/10	#61DOD-AA101020-AY24727
EPA 6010B	Selenium (Se) (Dissolved)	250	241	96.4	80-120	10/20/10	10/24/10	#61DOD-AA101020-AY24727
EPA 6010B	Silver (Ag) (Dissolved)	100	102	102	80-120	10/20/10	10/24/10	#61DOD-AA101020-AY24727

Comments:

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APPL Standard LCS

6010B/3010A

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: WATER
LCS ID: C101027-LCS

SDG No: 62880
Date Analyzed: 10/29/10
Instrument: Phoebe
Time Analyzed: 1326

APPL ID.	Client Sample No.	File ID.	Date Analyzed
C101027-LCS	Lab Control Spike	101029B	10/29/10 1326
AY24725	C103-SW02-00	101029B	10/29/10 1329
C101027-BLK	Blank	101029B	10/29/10 1323

Comments: Batch: #61DOD-C101027

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Form 4, LCS Summary

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Lead (Pb) (Dissolved)	250	290	116	80-120	10/27/10	10/29/10	#61DOD-C101027-AY24725
EPA 6010B	Selenium (Se) (Dissolved)	250	279	112	80-120	10/27/10	10/29/10	#61DOD-C101027-AY24725
EPA 6010B	Silver (Ag) (Dissolved)	100	106	106	80-120	10/27/10	10/29/10	#61DOD-C101027-AY24725

Comments:

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APPL Standard LCS

6010B/3010A

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: WATER
LCS ID: CC101027-LCS

SDG No: 62880
Date Analyzed: 10/29/10
Instrument: Phoebe
Time Analyzed: 1326

APPL ID.	Client Sample No.	File ID.	Date Analyzed
CC101027-BLK	Blank	101029B	10/29/10 1323
CC101027-LCS	Lab Control Spike	101029B	10/29/10 1326
AY24727	C103-SW01-00	101029B	10/29/10 1350

Comments: Batch: #61DOD-CC101027

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Form 4, LCS Summary

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Lead (Pb)	250	290	116	80-120	10/27/10	10/29/10	#61DOD-CC101027-AY24727
EPA 6010B	Selenium (Se)	250	279	112	80-120	10/27/10	10/29/10	#61DOD-CC101027-AY24727
EPA 6010B	Silver (Ag)	100.0	106	106	80-120	10/27/10	10/29/10	#61DOD-CC101027-AY24727

Comments:

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APPL Standard LCS

6010B/3050B

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62880
Matrix: SOIL
LCS ID: B101025-LCS

SDG No: 62880
Date Analyzed: 10/27/10
Instrument: Phoebe
Time Analyzed: 1408

APPL ID.	Client Sample No.	File ID.	Date Analyzed
B101025-MS	Matrix Spike	101027C	10/27/10 1420
AY24726	C103-SD02-0.5	101027C	10/27/10 1412
AY24728	C103-SD01-0.5	101027C	10/27/10 1430
B101025-BLK	Blank	101027C	10/27/10 1402
B101025-DUP	Duplicate	101027C	10/27/10 1416
B101025-LCS	Lab Control Spike	101027C	10/27/10 1408

Comments: Batch: #61SDO-B101025

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Form 4, LCS Summary

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level mg/kg	SPK Result mg/kg	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Arsenic (As)	25.0	23.8	95.2	80-120	10/25/10	10/27/10	#61SDO-B101025-AY24726
EPA 6010B	Selenium (Se)	25.0	22.6	90.4	80-120	10/25/10	10/27/10	#61SDO-B101025-AY24726
EPA 6010B	Silver (Ag)	10.00	9.5	95.0	75-120	10/25/10	10/27/10	#61SDO-B101025-AY24726
EPA 6010B	Vanadium (V)	25.0	25.6	102	80-120	10/25/10	10/27/10	#61SDO-B101025-AY24726

Comments:

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APPL Standard LCS

Matrix Spike Recoveries
TPH Extractables Soil

APPL ID: **101101S-24726 MS - 148950**
Batch ID: #TPHCA-A101101
Sample ID: AY24726
Client ID: C103-SD02-0.5

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl mg/kg	Matrix Result mg/kg	SPK Result mg/kg	DUP Result mg/kg	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
Diesel Range Organics	40.0	13	44.9	54.6	79.8	104	64-122	19.5	30
Oil Range Organics	40.0	21	101	75.7	200 #	137	50-150	28.6	30
Surrogate: Octacosane (S)	3.00	NA	2.87	2.78	95.7	92.7	70-120		
Surrogate: Ortho_Terphenyl (S)	3.00	NA	2.75	2.83	91.7	94.3	75-120		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	TPHD1101.M	TPHD1101.M
Extraction Date :	11/1/2010	11/1/2010
Analysis Date :	11/10/2010	11/10/2010
Instrument :	Apollo	Apollo
Run :	1110035	1110036
Initials :	LA	

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APPL MSD SCII

Matrix Spike Recoveries
Gasoline Range Organics Soil

APPL ID: **101025S-24726 MS - 149128**
Batch ID: #GASCA-A101025
Sample ID: AY24726
Client ID: C103-SD02-0.5

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl mg/Kg	Matrix Result mg/Kg	SPK Result mg/Kg	DUP Result mg/Kg	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
Gasoline Range Organics	30.0	ND	29.9	28.2	99.7	94.0	37-150	5.9	30
Surrogate: BFB-FID (S)	0.035	NA	0.0449	0.0445	128 #	127 #	40-125		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	HBTXGM.M	HBTXGM.M
Extraction Date :	10/25/10	10/25/10
Analysis Date :	10/25/10	10/25/10
Instrument :	Harpo	Harpo
Run :	1025H19	1025H20
Initials :	LF	

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APPL MSD SCII

Matrix Spike Recoveries

EPA 8290 - Dioxins and Furans

APPL ID: **101028W-24725 MS - 148857**
Batch ID: #8290W-101028A
Sample ID: AY24725
Client ID: C103-SW02-00

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl pg/L	Matrix Result pg/L	SPK Result pg/L	DUP Result pg/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
1,2,3,4,6,7,8-HpCDD	1620	ND	1560	1590	96.2	98.1	70-130	1.9	30
1,2,3,4,6,7,8-HpCDF	1730	ND	1360	1360	78.7	78.7	70-130	0.0	30
1,2,3,4,7,8,9-HpCDF	1730	ND	1430	1420	82.7	82.1	70-130	0.70	30
1,2,3,4,7,8-HxCDD	1870	ND	1740	1780	93.0	95.1	70-130	2.3	30
1,2,3,4,7,8-HxCDF	1650	ND	1500	1500	90.9	90.9	70-130	0.0	30
1,2,3,6,7,8-HxCDD	1900	ND	1670	1640	88.1	86.5	70-130	1.8	30
1,2,3,6,7,8-HxCDF	1620	ND	1380	1380	85.4	85.4	70-130	0.0	30
1,2,3,7,8,9-HxCDD	1890	ND	1840	1850	97.5	98.0	70-130	0.54	30
1,2,3,7,8,9-HxCDF	1530	ND	1450	1500	94.9	98.2	70-130	3.4	30
1,2,3,7,8-PeCDD	1640	ND	1410	1420	85.8	86.4	70-130	0.71	30
1,2,3,7,8-PeCDF	1750	ND	1530	1510	87.5	86.3	70-130	1.3	30
2,3,4,6,7,8-HxCDF	1650	ND	1580	1610	95.9	97.7	70-130	1.9	30
2,3,4,7,8-PeCDF	1600	ND	1110	1160	69.5 #	72.6	70-130	4.4	30
2,3,7,8-TCDD	629	ND	580	565	92.2	89.8	70-130	2.6	30
2,3,7,8-TCDF	668	ND	594	595	88.9	89.1	70-130	0.17	30
OCDD	3780	ND	3270	3180	86.6	84.2	70-130	2.8	30
OCDF	3560	ND	2970	2980	83.4	83.6	70-130	0.34	30
Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	5000	NA	3710	3850	74.2	77.0	40-135		
Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	5000	NA	3880	4060	77.6	81.2	40-135		
Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	5000	NA	3780	3910	75.6	78.2	40-135		
Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	5000	NA	3160	3330	63.2	66.6	40-135		
Surrogate: 13C-1,2,3,7,8-PeCDD (S)	2000	NA	1180	1230	59.0	61.5	40-135		
Surrogate: 13C-1,2,3,7,8-PeCDF (S)	2000	NA	1530	1550	76.5	77.5	40-135		
Surrogate: 13C-2,3,7,8-TCDD (S)	2000	NA	1410	1480	70.5	74.0	40-135		
Surrogate: 13C-2,3,7,8-TCDF (S)	2000	NA	1460	1490	73.0	74.5	40-135		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	8290_101105	8290_101105
Extraction Date :	10/28/10	10/28/10
Analysis Date :	11/08/10	11/08/10
Instrument :	Magneto	Magneto
Run :	101105_HR_61	101105_HR_62
Initials :	RP	

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APPL Standard MSD

Matrix Spike Recoveries
EPA 8290 - Dioxins and Furans

APPL ID: **101028W-24725 MS - 148857**
Batch ID: #8290W-101028A
Sample ID: AY24725
Client ID: C103-SW02-00

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl pg/L	Matrix Result pg/L	SPK Result pg/L	DUP Result pg/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
Surrogate: 13C-OCDD (S)	10000	NA	7250	7560	72.5	75.6	40-135		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	8290_101105	8290_101105
Extraction Date :	10/28/10	10/28/10
Analysis Date :	11/08/10	11/08/10
Instrument :	Magneto	Magneto
Run :	101105_HR_61	101105_HR_62
Initials :	RP	

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APPL Standard MSD

Matrix Spike Recoveries

EPA 8290 - Dioxins and Furans

APPL ID: **101028S-24726 MS - 148880**
Batch ID: #8290S-101028B
Sample ID: AY24726
Client ID: C103-SD02-0.5

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl pg/g	Matrix Result pg/g	SPK Result pg/g	DUP Result pg/g	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
1,2,3,4,6,7,8-HpCDD	162	21	192	112	106	56.2 #	70-130	52.6 #	30
1,2,3,4,6,7,8-HpCDF	173	3.1	184	98.4	105	55.1 #	70-130	60.6 #	30
1,2,3,4,7,8,9-HpCDF	173	ND	163	81.9	94.2	47.3 #	70-130	66.2 #	30
1,2,3,4,7,8-HxCDD	187	ND	200	88.3	107	47.2 #	70-130	77.5 #	30
1,2,3,4,7,8-HxCDF	165	ND	173	78.7	105	47.7 #	70-130	74.9 #	30
1,2,3,6,7,8-HxCDD	189	1.0	188	86.0	98.9	45.0 #	70-130	74.5 #	30
1,2,3,6,7,8-HxCDF	162	ND	168	78.1	104	48.2 #	70-130	73.1 #	30
1,2,3,7,8,9-HxCDD	189	ND	198	92.5	105	48.9 #	70-130	72.6 #	30
1,2,3,7,8,9-HxCDF	153	ND	175	81.7	114	53.4 #	70-130	72.7 #	30
1,2,3,7,8-PeCDD	164	ND	159	75.2	97.0	45.9 #	70-130	71.6 #	30
1,2,3,7,8-PeCDF	175	ND	180	88.0	103	50.3 #	70-130	68.7 #	30
2,3,4,6,7,8-HxCDF	165	ND	183	85.0	111	51.5 #	70-130	73.1 #	30
2,3,4,7,8-PeCDF	160	ND	166	82.2	104	51.4 #	70-130	67.5 #	30
2,3,7,8-TCDD	62.9	7.6	69.3	42.2	98.1	55.0 #	70-130	48.6 #	30
2,3,7,8-TCDF	66.8	3.6	75.0	41.0	107	56.0 #	70-130	58.6 #	30
OCDD	377	250	608	579	95.0	87.3	70-130	4.9	30
OCDF	356	8.0	325	167	89.0	44.7 #	70-130	64.2 #	30
Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	500	NA	297	227	59.4	45.4	40-135		
Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	500	NA	300	232	60.0	46.4	40-135		
Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	500	NA	315	260	63.0	52.0	40-135		
Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	500	NA	263	203	52.6	40.6	40-135		
Surrogate: 13C-1,2,3,7,8-PeCDD (S)	200	NA	131	102	65.5	51.0	40-135		
Surrogate: 13C-1,2,3,7,8-PeCDF (S)	200	NA	124	99.0	62.0	49.5	40-135		
Surrogate: 13C-2,3,7,8-TCDD (S)	200	NA	122	96.0	61.0	48.0	40-135		
Surrogate: 13C-2,3,7,8-TCDF (S)	200	NA	118	93.0	59.0	46.5	40-135		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	8290_101110	8290_101110
Extraction Date :	10/28/10	10/28/10
Analysis Date :	11/11/10	11/11/10
Instrument :	Magneto	Magneto
Run :	101110_HR_26	101110_HR_27
Initials :	RP	

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APPL Standard MSD

Matrix Spike Recoveries

EPA 8290 - Dioxins and Furans

APPL ID: **101028S-24726 MS - 148880**
Batch ID: #8290S-101028B
Sample ID: AY24726
Client ID: C103-SD02-0.5

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl pg/g	Matrix Result pg/g	SPK Result pg/g	DUP Result pg/g	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
Surrogate: 13C-OCDD (S)	1000	NA	494	375	49.4	37.5 #	40-135		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	8290_101110	8290_101110
Extraction Date :	10/28/10	10/28/10
Analysis Date :	11/11/10	11/11/10
Instrument :	Magneto	Magneto
Run :	101110_HR_26	101110_HR_27
Initials :	RP	

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APPL Standard MSD

Matrix Spike Recoveries

EPA 1668B Waters

APPL ID: **101025W-24725 MS - 149248**
Batch ID: #1668CANW-101025
Sample ID: AY24725
Client ID: C103-SW02-00

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl pg/L	Matrix Result pg/L	SPK Result pg/L	DUP Result pg/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
PCB-105	2500	ND	2060	2070	82.4	82.8	60-140	0.48	30
PCB-114	2500	ND	2060	2110	82.4	84.4	60-140	2.4	30
PCB-118	2500	370	2400	2350	81.2	79.2	60-140	2.1	30
PCB-123	2500	ND	2180	2170	87.2	86.8	60-140	0.46	30
PCB-126	2500	ND	2030	2010	81.2	80.4	60-140	0.99	30
PCB-156	2500	49	1970	1960	76.8	76.4	60-140	0.51	30
PCB-157	2500	ND	2120	2120	84.8	84.8	60-140	0.0	30
PCB-167	2500	ND	2200	2220	88.0	88.8	60-140	0.90	30
PCB-169	2500	ND	2350	2320	94.0	92.8	60-140	1.3	30
PCB-170	2500	350	2470	2290	84.8	77.6	60-140	7.6	30
PCB-180	2500	900	2750	2300	74.0	56.0 #	60-140	17.8	30
PCB-189	2500	ND	2080	2050	83.2	82.0	60-140	1.5	30
PCB-77	2500	ND	2200	2210	88.0	88.4	60-140	0.45	30
PCB-81	2500	ND	2110	2160	84.4	86.4	60-140	2.3	30
Surrogate: PCB-105L (S)	5000	NA	3830	4000	76.6	80.0	30-140		
Surrogate: PCB-118L (S)	5000	NA	3720	3930	74.4	78.6	30-140		
Surrogate: PCB-126L (S)	5000	NA	3630	3810	72.6	76.2	30-140		
Surrogate: PCB-169L (S)	5000	NA	3760	3860	75.2	77.2	30-140		
Surrogate: PCB-77L (S)	5000	NA	4200	4370	84.0	87.4	30-140		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	1668_101117	1668_101117
Extraction Date :	10/25/10	10/25/10
Analysis Date :	11/18/10	11/19/10
Instrument :	Magneto	Magneto
Run :	101117_HR_24	101117_HR_25
Initials :	RP	

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APPL Standard MSD

Matrix Spike Recoveries
EPA 1668B Solids

APPL ID: **101027S-24726 MS - 149247**
Batch ID: #1668CANS-101027
Sample ID: AY24726
Client ID: C103-SD02-0.5

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl pg/Kg	Matrix Result pg/Kg	SPK Result pg/Kg	DUP Result pg/Kg	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
PCB-105	250	150	355	330	82.0	72.0	60-140	7.3	30
PCB-114	250	14	227	229	85.2	86.0	60-140	0.88	30
PCB-118	250	380	583	523	81.2	57.2 #	60-140	10.8	30
PCB-123	250	ND	268	264	107	106	60-140	1.5	30
PCB-126	250	3.4	219	219	86.2	86.2	60-140	0.0	30
PCB-156	250	58	268	262	84.0	81.6	60-140	2.3	30
PCB-157	250	11	238	239	90.8	91.2	60-140	0.42	30
PCB-167	250	13	234	242	88.4	91.6	60-140	3.4	30
PCB-169	250	ND	252	246	101	98.4	60-140	2.4	30
PCB-170	250	230	565	509	134	112	60-140	10.4	30
PCB-180	250	440	890	697	180 #	103	60-140	24.3	30
PCB-189	250	ND	231	231	92.4	92.4	60-140	0.0	30
PCB-77	250	21	254	251	93.2	92.0	60-140	1.2	30
PCB-81	250	0.73	242	230	96.5	91.7	60-140	5.1	30
Surrogate: PCB-105L (S)	500	NA	546	511	109	102	30-140		
Surrogate: PCB-118L (S)	500	NA	519	499	104	99.8	30-140		
Surrogate: PCB-126L (S)	500	NA	527	490	105	98.0	30-140		
Surrogate: PCB-169L (S)	500	NA	523	488	105	97.6	30-140		
Surrogate: PCB-77L (S)	500	NA	603	595	121	119	30-140		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	1668_101117	1668_101117
Extraction Date :	10/27/10	10/27/10
Analysis Date :	11/20/10	11/20/10
Instrument :	Magneto	Magneto
Run :	101117_HR_52	101117_HR_53
Initials :	RP	

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APPL Standard MSD

Matrix Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Sample ID: AY24726
Client ID: C103-SD02-0.5

Method	Compound Name	Spike Level mg/kg	Matrix Result mg/kg	SPK Result mg/kg	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group	QC Sample
EPA 6010B	Arsenic (As)	23.4	1.1	24.8	101	80-120	10/25/10	10/27/10	#61SDO-B101025	AY24726
EPA 6010B	Selenium (Se)	23.4	ND	21.8	93.2	80-120	10/25/10	10/27/10	#61SDO-B101025	AY24726
EPA 6010B	Silver (Ag)	9.35	0.78	12.3	123 #	75-120	10/25/10	10/27/10	#61SDO-B101025	AY24726
EPA 6010B	Vanadium (V)	23.4	5.0	28.9	102	80-120	10/25/10	10/27/10	#61SDO-B101025	AY24726

= Recovery is outside QC limits.

Comments:

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APPL MS SCII

Matrix Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Sample ID: AY24725
Client ID: C103-SW02-00

Method	Compound Name	Spike Level ug/L	Matrix Result ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group	QC Sample
EPA 6010B	Lead (Pb)	250	ND	270	108	80-120	10/20/10	10/24/10	#61DOD-A101020	AY24725
EPA 6010B	Selenium (Se)	250	0.23	263	105	80-120	10/20/10	10/24/10	#61DOD-A101020	AY24725
EPA 6010B	Silver (Ag)	100.0	ND	107	107	80-120	10/20/10	10/24/10	#61DOD-A101020	AY24725

Comments:

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APPL MS SCII - URS

Matrix Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Sample ID: AY24725
Client ID: C103-SW02-00

Method	Compound Name	Spike Level ug/L	Matrix Result ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group	QC Sample
EPA 6010B	Lead (Pb) (Dissolved)	250	ND	277	111	80-120	10/27/10	10/29/10	#61DOD-C101027	AY24725
EPA 6010B	Selenium (Se) (Dissolved)	250	0.16	277	111	80-120	10/27/10	10/29/10	#61DOD-C101027	AY24725
EPA 6010B	Silver (Ag) (Dissolved)	100.0	ND	103	103	80-120	10/27/10	10/29/10	#61DOD-C101027	AY24725

Comments: _____

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APPL MS SCII

METALS

Sample/Sample Duplicate Results

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample ID: AY24725
Client ID: C103-SW02-00

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62880

Method	Analyte	Sample ID	Sample Result	Sample Dup Result	RPD	RPD Max	MDL	PQL	Units	Sample Extract Date	Sample Analysis Date	Sample Dup Extract Date	Sample Dup Analysis Date
6010B/3010A	Lead (Pb)	AY24725	Not detected	Not detected	NA	20	1.58	5.0	ug/L	10/20/10	10/24/10	10/20/10	10/24/10
6010B/3010A	Selenium (Se)	AY24725	Not detected	Not detected	NA	20	3.17	10.0	ug/L	10/20/10	10/24/10	10/20/10	10/24/10
6010B/3010A	Silver (Ag)	AY24725	Not detected	Not detected	NA	20	0.25	1.0	ug/L	10/20/10	10/24/10	10/20/10	10/24/10

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Dup-SCII (MCRes-MCLim)

METALS

Sample/Sample Duplicate Results

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

Attn: Tony Sedlacek

Sample ID: AY24726
Client ID: C103-SD02-0.5

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62880

Method	Analyte	Sample ID	Sample Result	Sample Dup Result	RPD	RPD Max	MDL	PQL	Units	Sample Extract Date	Sample Analysis Date	Sample Dup Extract Date	Sample Dup Analysis Date
6010B/3050B	Arsenic (As)	AY24726	1.6	1.8	NA	20	0.120	0.71	mg/kg	10/25/10	10/27/10	10/25/10	10/27/10
6010B/3050B	Selenium (Se)	AY24726	Not detected	Not detected	NA	20	0.350	0.71	mg/kg	10/25/10	10/27/10	10/25/10	10/27/10
6010B/3050B	Silver (Ag)	AY24726	1.1	1.2	8.7	20	0.051	0.14	mg/kg	10/25/10	10/27/10	10/25/10	10/27/10
6010B/3050B	Vanadium (V)	AY24726	7.1	8.1	13	20	0.079	0.71	mg/kg	10/25/10	10/27/10	10/25/10	10/27/10

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Dup-SCII (MCRes-MCLim)

METALS

Sample/Sample Duplicate Results

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample ID: AY24725
Client ID: C103-SW02-00

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62880

Method	Analyte	Sample ID	Sample Result	Sample Dup Result	RPD	RPD Max	MDL	PQL	Units	Sample Extract Date	Sample Analysis Date	Sample Dup Extract Date	Sample Dup Analysis Date
6010B/3010A	Lead (Pb) (Dissolv	AY24725	Not detected	Not detected	NA	20	1.58	5.0	ug/L	10/27/10	10/29/10	11/04/10	11/05/10
6010B/3010A	Selenium (Se) (Dis	AY24725	Not detected	Not detected	NA	20	3.17	5.0	ug/L	10/27/10	10/29/10	11/04/10	11/05/10
6010B/3010A	Silver (Ag) (Dissolv	AY24725	Not detected	Not detected	NA	20	0.25	1.0	ug/L	10/27/10	10/29/10	11/04/10	11/05/10

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Dup-SCII (NoMC)

Data Summary Report

URS Group, Inc.

16170587Cannon AF SWMU 103 (Playa Lake)

ARF 62914

Samples collected: October 19 and 20, 2010

APPL, Inc., Clovis, California

December 9, 2010

URS Group. Inc.
12120 Shamrock Plaza Suite 300
Omaha, Nebraska 68154

Attn: Tony Sedlacek

Subject: Report of Data: Case 62914

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Dear Mr. Sedlacek:

Nineteen soil and five water samples for project "16170587 Cannon AF SWMU 103 (Playa Lake)" were received October 21, 2010, in good condition. Written results are being provided on this December 9, 2010, for the requested analyses.

If you have any questions or require further information, please contact us at your convenience. Thank you for choosing APPL, Inc.

Sincerely,

Leonard Fong, Ph.D, Laboratory Director
APPL, Inc.

LF/cm
Enclosure
cc: File

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-442

Case Narrative

ARF: 62914

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

State Certification Number: CA1312 (DW & WW)

NELAP Certification number: 05233CA (HW)

DoD-ELAP Certificate number: ADE-1410

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sample Receipt Information:

The sample group was received on October 21, 2010, at 3.0°C, 3.0°C, 3.0°C, and 3.0°C. The samples were assigned Analytical Request Form (ARF) number 62914. The sample numbers and requested analyses were compared to the chains of custody. Seven samples were placed on hold by the client. They were eventually taken off hold and analyzed for TPH-DRO, ORO, and GRO, and metals. No other exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
C103-SW03-00	AY24987	WATER	10/19/10	10/21/10
C103-SD03-0.5	AY24988	SOIL	10/19/10	10/21/10
C103-SW05-00	AY24989	WATER	10/19/10	10/21/10
C103-SD05-0.5	AY24990	SOIL	10/19/10	10/21/10
C103-SW04-00	AY24991	WATER	10/19/10	10/21/10
C103-SD04-0.5	AY24992	SOIL	10/19/10	10/21/10
C103-SW24-00	AY24993	WATER	10/19/10	10/21/10
C103-SD24-0.5	AY24994	SOIL	10/19/10	10/21/10
C103-SW06-00	AY24995	WATER	10/19/10	10/21/10
C103-SD06-0.5	AY24996	SOIL	10/19/10	10/21/10
C103-SD07-0.5	AY24997	SOIL	10/19/10	10/21/10
C103-SD08-0.3	AY24998	SOIL	10/19/10	10/21/10
C103-SD09-0.3	AY24999	SOIL	10/19/10	10/21/10
C103-SD10.05	AY25000	SOIL	10/19/10	10/21/10
C103-SD20-0.5	AY25001	SOIL	10/19/10	10/21/10
C103-SD11-0.5	AY25002	SOIL	10/19/10	10/21/10
C103-SD12-0.5	AY25003	SOIL	10/19/10	10/21/10
C103-SD13-0.5	AY25004	SOIL	10/20/10	10/21/10
C103-SD14-0.5	AY25005	SOIL	10/20/10	10/21/10
C103-SD15-0.5	AY25006	SOIL	10/20/10	10/21/10

C103-SD16-0.5	AY25007	SOIL	10/20/10	10/21/10
C103-SD17-0.5	AY25008	SOIL	10/20/10	10/21/10
C103-SD18-0.5	AY25009	SOIL	10/20/10	10/21/10
C103-SD28-0.5	AY25010	SOIL	10/20/10	10/21/10

The samples and method blanks were screened for J-value responses down to the DL. Percent moisture was determined using CLP4.0

EPA Method 8015B

Total Petroleum Hydrocarbons

Diesel and Oil Range Organics

Sample Preparation and Analysis Information:

The soil samples were extracted according to EPA method 3550B. The samples were analyzed according to the method using a Hewlett Packard Gas Chromatograph with a flame ionization detector.

Quality Control/Assurance

Calibrations:

Initial and continuing calibrations were performed according to the method. All calibration criteria were met.

Blanks:

No target analyte was detected above the detection limits in the method blank.

Spikes:

A Laboratory control spike (LCS) was used for quality assurance. All acceptance criteria were met.

No sample was designated by the client for an MS/MSD analysis.

Surrogates

Surrogate recoveries are summarized on the form 2&8. Sample C103-SD03-0.5 recovered both surrogates above the 120% upper control limit: Ortho-Terphenyl at 123% and Octacosane at 123%. All other surrogate recoveries were within the control limits.

Summary:

No other problem was encountered. All data were acceptable.

EPA Method 8015B

Total Petroleum Hydrocarbons - Gasoline

Sample Preparation and Analysis Information:

The soil samples were prepared according to EPA method 5035 and purged according to EPA method 5030B. The samples were analyzed according to the method using a Hewlett Packard Gas Chromatograph with a FID detector. All holding times were met.

Quality Control/Assurance

Calibrations:

Initial and continuing calibrations were performed according to the method. All acceptance criteria were met.

Blanks:

The blank contained no target analyte at or above the detection limit.

Spikes:

A laboratory control spike (LCS) was used for quality assurance. All acceptance criteria were met.

No sample was designated by the client for MS/MSD analysis.

Surrogates

Surrogate recoveries are summarized on the form 2&8. Bromofluorobenzene recovered above the 125% upper control limit in two samples: C103-SD04-0.5 at 165% and C103-SD24-0.5 at 158%. All surrogate recoveries were within control limits.

Summary:

No problem was encountered. All data were acceptable.

EPA Method 8290
Dioxins/Furans by GC-HRMS

Sample Preparation:

The samples were extracted and cleaned up according to the EPA 8290 method. All holding times were met.

Analysis Information:

The samples were analyzed according to the EPA 8290, using a Waters Inc. Autospec Premier High Resolution Mass Spectrometer. The results were reported in accordance with EPA 8290 guidelines, as follows:

1. For analytes that had no chromatographic response in the samples, the EDL (Estimated Detection Limit) was reported in the EDL / EMPC column on the Form 1.
2. For analytes that exhibited chromatographic peaks in the samples (but did not meet the method requirements for positive identification), the EMPC (Estimated Maximum Potential Concentration) was reported in the EDL / EMPC column.
3. For the positively identified analytes the concentration was reported in the "Results" column, and EMPC was reported in the EDL / EMPC column. The EMPC is equal to the detected concentration.

The TEQ was calculated using the TEF values provided by the World Health Organization "Toxicity Equivalency Factor Table 2005". As per the method, the TEQ values were based on concentrations of pg/g for soil samples.

Quality Control/Assurance

Calibrations:

Calibrations and Resolution Checks were performed according to the method. All calibration acceptance criteria were met.

Blanks:

The method blanks contained no analyte at or above one-half the PQL.

Spikes:

Laboratory Control Spikes (LCS) were used for quality control. The LCS recoveries met acceptance criteria.

No sample was designated by the client for MS/MSD analysis.

Surrogate Recoveries (C13 Internal Standards):

C13 Internal Standards were added to the extracts in accordance with the method and reported on the Form 1's as surrogate recoveries. All recoveries met acceptance criteria.

Summary:

All data were acceptable.

EPA Method 1668
PCB Congeners by HR-GCMS

Sample Preparation:

The water and soil samples were extracted and cleaned up according to EPA method 1668B. All hold times were met.

Analysis Information:

The samples were analyzed according to the EPA 1668B, using a Waters Inc. Autospec Premier High Resolution Mass Spectrometer. The results were reported in accordance with EPA 1668B guidelines, as follows:

1. For analytes that had no chromatographic response in the samples, the EDL (Estimated Detection Limit) was reported in the EDL / EMPC column on the Form 1.
2. For analytes that exhibited chromatographic peaks in the samples (but did not meet the method requirements for positive identification), the EMPC (Estimated Maximum Potential Concentration) was reported in the EDL / EMPC column.
3. For the positively identified analytes the concentration was reported in the "Results" column, and EMPC was reported in the EDL / EMPC column.

Quality Control/Assurance

Calibrations:

Calibrations were performed according to the method. The following PCBs were quantitated using a five-point calibration curve: PCB-77, PCB-81, PCB-105, PCB-114, PCB-118, PCB-123, PCB-126, PCB-156, PCB-157, PCB-167, PCB-169, PCB-170, PCB-180 and PCB-189.

The calibration curve analyzed on 11/13/10 was acceptable. The CCVs 101113_HR_11 and 101113_HR_21 were acceptable. For 101113_HR_31, the %D exceeded the control limit for PCB-170 at 132%. For 101113_HR_ 41, the %D exceeded the control limit for PCB-170 at 189%, PCB-180 at 190% and the 13C_189L at 46%. For 101113_HR_ 48, the %D exceeded the control limit for PCB-170 at 165% and PCB-180 at 161%. For 101113_HR_ 58, the %D exceeded the control limit for PCB-170 at 148% and PCB-180 at 139%. For 101113_HR_ 68, the %D exceeded the control limit for PCB-170 at 146% and PCB-180 at 142%. The samples injected after 10113_HR_31 were reinjected after the 11/17/10 calibration curve. Both sets of data are included in the package.

For the calibration curve analyzed on 11/17/10 the ion ratios failed for PCB-157 and PCB-189. All other calibration acceptance criteria were met.

Blanks:

The soil method blank contained PCB-118 at 29 pg/Kg. The blank was re-injected with similar results.

Spikes:

A Laboratory Control Spike was used for quality control. For the 101025 water LCS, PCB-170 and PCB-180 recovered above the 140% upper control limit, at 178% and 269% respectively. All other LCS recoveries met acceptance criteria.

Surrogate Recoveries (C13 Internal Standards):

C13 Internal Standards were added to the extracts in accordance with the method and reported on the Form 1s as surrogate recoveries. For the 101027 soil method blank, the surrogates PCB-126L, PCB-169L and PCB-77L recovered above the 140% upper control limit at 143%, 160% and 142% respectively. The method blank was re-injected with similar recoveries. For the 101027 soil LCS the surrogate PCB-77L recovered high at 150%. For sample C103-SD03-0.5, the surrogates PCB-126L and PCB-169L recovered high at 146% and 161%. For sample C103-SD05-0.5, the surrogates PCB-126L, PCB-169L and PCB-77L recovered high at 151%, 166% and 146%. For C103-SD06-0.5, the surrogate PCB-169L recovered high at 156%.

Summary:

No other analytical exceptions are noted.

EPA method 6010B

Metals

Digestion Information:

The soil samples were digested according to EPA method 3050B. The water samples were digested according to EPA method 3010A. No exceptions were encountered. All holding times were met.

Analysis Information:

Samples:

The samples were analyzed according to EPA method 6010B using a Perkin Elmer Optima 5300DV.

Calibrations:

Calibrations were performed according to the methods for the initial calibration and the initial calibration verification. The initial calibration verification is prepared from a second source standard.

Blanks:

No target metal was detected at or above the DL in the method blanks.

Spikes:

Laboratory control spikes (LCS), sample duplicates (DUP), matrix spikes (MS), post digestion spikes (PDS) and serial dilutions were used for quality assurance. All metals had acceptable recoveries in the LCS.

Sample C103-SW03-00 was selected by the laboratory for QC analysis for the water samples. All sample duplicate, MS, PDS, and serial dilution test acceptance criteria were met.

Sample C103-SD12-0.5 was designated by the client for QC analysis for the soil samples. The sample duplicate, PDS, and serial dilution test met acceptance criteria. In the MS, selenium recovered below the 80% limit at 65.1%.

Sample C103-SD28-0.5 was designated by the laboratory for soil QC analysis. All PDS and serial dilution acceptance criteria were met.

Summary:

No other analytical exception is noted.

CERTIFICATION

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC. Release of the hard copy has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

12/9/10

Leonard Fong, Ph.D, Laboratory Director / Date

COOLER RECEIPT FORM

1) Project: 16170587 Cannon AFB Date Received: 10/21/10

2) Coolers: Number of Coolers: 4

3) (YES) NO Were coolers and samples screened for radioactivity?

4) (YES) NO Were custody seals on outside of cooler? How many? 2 Date on seal? 10/20/10

5) Name on seal? see label below

6) (YES) NO NA Were custody seals unbroken and intact at the time of arrival?

7) (YES) NO Did the cooler come with a shipping slip (air bill, etc.)? Carrier name: Fed Ex

8) Shipping slip numbers: 1) 8728 3921 1999 Master 2) 3)

9) (YES) NO NA Was the shipping slip scanned into the database?

10) YES NO (NA) If cooler belongs to APPL, has it been logged into the ice chest database?

11) Describe type of packing in cooler (bubble wrap, popcorn, type of ice, etc.): Bubble wrap, wet Ice

12) YES NO (NA) For hand delivered samples was sufficient ice present to start the cooling process?

13) (YES) NO Was a temperature blank included in the cooler?

14) Serial number of certified NIST thermometer used: A39267 Correction factor: 0

15) Cooler temp(s): 1) 3.0°C 2) 3.0°C 3) 3.0°C 4) 3.0°C 5) 6) 7) 8)

Chain of custody:

16) (YES) NO Was a chain of custody received?

17) (YES) NO Were the custody papers signed in the appropriate places?

18) (YES) NO Was the project identifiable from custody papers?

19) (YES) NO Did the chain of custody include date and time of sampling?

20) (YES) NO Is location where sample was taken listed on the chain of custody?

Sample Labels:

21) (YES) NO Were container labels in good condition?

22) (YES) NO Was the client ID on the label?

23) (YES) NO Was the date of sampling on the label?

24) (YES) NO Was the time of sampling on the label?

25) (YES) NO Did all container labels agree with custody papers?

Sample Containers:

26) (YES) NO Were all containers sealed in separate bags?

27) (YES) NO Did all containers arrive unbroken?

28) YES (NO) Was there any leakage from samples?

29) YES (NO) Were any of the lids cracked or broken?

30) (YES) NO Were correct containers used for the tests indicated?

31) (YES) NO Was a sufficient amount of sample sent for tests indicated?

32) YES NO (NA) Were bubbles present in volatile samples? If yes, the following were received with air bubbles:

Larger than a pea:

Smaller than a pea:

Preservation & Hold time:

33) (YES) NO NA Was a sufficient amount of holding time remaining to analyze the samples?

34) (YES) NO NA Do the sample containers contain the same preservative as what is stated on the COC?

35) (YES) NO NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

36) (YES) NO NA Was the pH of acid preserved non-VOA samples < 2 & sodium hydroxide preserved samples > 10?

Lab notified if pH was not adequate:

Deficiencies:

Signature of personnel receiving samples: Second reviewer:

Signature of project manager notified: Date and Time of notification:

Name of client notified: Date and Time of notification:

Information given to client:

by whom (initials):

CUSTODY SEAL
APPL, Inc.
(559) 275-2175
Initials AJS
Date 10/21/10

62914

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Project Name: SWMU 103 (Playa Lake) Phase III RFI

Project No.: 16170587.00100

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters: PCB Congeners (1668B); Dioxin/Furans (8290); Total Metals (6010B); Dissolved Metals (6010B)*; TPH-GRO (8015B); TPH-DRO/ORO; Metals (6010B)**; PCB Congeners/Dioxin/Furans (1668B); 8290

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total Metals (6010B)	Dissolved Metals (6010B)*	TPH-GRO (8015B)	TPH-DRO/ORO	Metals (6010B)**	PCB Congeners/Dioxin/Furans (1668B)	8290		Remarks
10/19/10	0837		X	C103-SW03-00	Surface Water	2	1-L Ambers	X										4°C
	0837		X	"	"	2	1-L Ambers		X									4°C
	0837		X	"	"	1	500mL HDPE			X								4°C+HNO3
	0837		X	"	"	1	500mL HDPE				X							4°C +HNO3, Field Filtered
	0837		X	C103-SD03-0.5	Sediment	2	4oz Jar					X						4°C
	0837	X		"	"	1	8oz Jar						X					4°C
	0837	X		"	"	1	8 oz Jar							X				4°C
	1127		X	C103-SW05-00	Surface Water	2	1-L Amber	X										4°C
	1127		X	"	"	2	1-L Amber		X									4°C
	1127		X	"	"	1	500mL HDPE			X								4°C+HNO3
	1127		X	"	"	1	500mL HDPE				X							4°C+HNO3, Field Filtered
	1127		X	C103-SD05-0.5	Sediment	2	4oz Jar					X						4°C
	1127	X		"	"	1	8oz Jar						X					4°C
	1127	X		"	"	1	8oz Jar							X				4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10/20/10	1700
Received by:		
Relinquished by:		
Received for Laboratory by:	10/21/10	1115

Shipping Details

Method of Shipment: FEDEX

Airbill No.: 8728 3921 1999

Lab Address: APPL, Inc. 908 N. Temperance Ave Clovis, CA 93611

Special Instructions

* Project Metals List for Surface Water C103-SW03-00 & C103-SW05-00 (Lead, Selenium & Silver)

Dissolved Metals were filtered in the field.

** Project Metals List for Sediment C103-SD03-0.5 & C103-SD05-0.5 (Arsenic, Selenium, Silver, Vanadium

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123920

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Project Name: SWMU 103 (Playa Lake) Phase III RFI

Project No.: 16170587.00100

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters: PCB Congeners (1668B); Dioxin/Furans (8290); Total Metals (6010B)*; Dissolved Metals (6010B); TPH-GRO (8015B); TPH-DRO/oil/metals (8015B); PCB Congeners (1668B); Dioxin/Furans (1613B) (8290); (6010B)**

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total Metals (6010B)*	Dissolved Metals (6010B)	TPH-GRO (8015B)	TPH-DRO/oil/metals (8015B)	PCB Congeners (1668B)	Dioxin/Furans (1613B) (8290) (6010B)**			Remarks
10/19/10	0959		X	C103-SW04-00	Surface Water	2	1-L Ambers	X										4°C
	0959		X	"	"	2	1-L Ambers		X									4°C
	0959		X	"	"	1	500 mL HDPE			X								4°C + HNO_3
	0959		X	"	"	1	500 mL HDPE				X							4°C + HNO_3, Field Filtered
	0959		X	C103-SD04-0.5	Sediment	2	4 oz Jar					X						4°C
	0959	X		"	"	1	8 oz Jar						X					4°C
	0959	X		"	"	1	8 oz Jar							X				4°C
	1000		X	C103-SW24-00	Surface Water	2	1-L Amber	X										4°C
	1000		X	"	"	2	1-L Amber		X									4°C
	1000		X	"	"	1	500 mL HDPE			X								4°C + HNO_3
	1000		X	"	"	1	500 mL HDPE				X							4°C + HNO_3, Field Filtered
	1000		X	C103-SD24-0.5	Sediment	2	4 oz Jar					X						4°C
	1000	X		"	"	1	8 oz Jar						X					4°C
	1000	X		"	"	1	8 oz Jar							X				4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10/21/10	1700
Received by:		
Relinquished by:		
Received for Laboratory by:	10/21/10	1115

Shipping Details:

Method of Shipment: FEDEX

Airbill No.: 8728 3921 1999

Lab Address: ADPL, Inc. 908 N. Temperance Ave Clovis, CA 93611

Special Instructions:

* Project Metals List for Surface Water C103-SW04-00 & C103-SW24-00 (Lead, Selenium & Silver)

Dissolved Metals were filtered in the field.

** Project Metals List for Sediment C103-SD04-0.5 & C103-SD24-0.5 (Arsenic, Selenium, Silver, Vanadium

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12020

14

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Project Name: SWMU 103 (Playa Lake) Phase III RFI

Project No.: 16170587.00100

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total Metals (6010B)*	Dissolved Metals (6010B)*	TPH-GRO (8015B)	TPH-DRO/ORO/Metals (8015B/6010B)**	PCB Congeners/Dioxin/Furans (1668B/8290)	Selenium (6010B)			Remarks
10/19/10	1248		X	C103-SW06-00	Surface Water	2	1-L Amber	X										4°C
	1248		X	"	"	2	1-L Amber		X									4°C
	1248		X	"	"	1	500 mL HDPE			X								4°C + HNO_3
	1248		X	"	"	1	500 mL HDPE				X							4°C + HNO_3, Field Filtered
	1248		X	C103-SD06-0.5	Sediment	2	4 oz Jar					X						4°C
	1248	X		"	"	1	8 oz Jar						X					4°C
	1248	X		"	"	1	8 oz Jar							X				4°C
	1337	X		C103-SD07-0.5	Sediment	1	8 oz Jar								X			4°C
	1430	X		C103-SD08-0.3	"	1	8 oz Jar								X			4°C
	1516	X		C103-SD09-0.3	"	1	8 oz Jar								X			4°C
	1539	X		C103-SD10-0.5	"	1	8 oz Jar								X			4°C
	1600	X		C103-SD20-0.5	"	1	8 oz Jar								X			4°C
	1629	X		C103-SD11-0.5	"	1	8 oz Jar								X			4°C
	1701	X		C103-SD12-0.5	"	1	8 oz Jar								X			4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10/20/10	1700
Received by:		
Relinquished by:		
Received for Laboratory by: [signature]	10/21/10	1115

Shipping Details

Method of Shipment: FEDEX

Airbill No.: 8728 3921 1999

Lab Address: APPL, Inc
908 N. Temperance Ave
Clovis, CA 93611

Special Instructions

* Project Metals List for Surface Water
C103-SW06-00
(Lead, Selenium, Silver)
Dissolved Metals were filtered in the field.

~~** C103-SD06-0.5~~ TS
Project metals List for Sediment
C103-SD06-0.5
(Arsenic, Selenium, Silver, Vanadium

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102910

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Project Name: SWMU 103 (Playa Lake) Phase III RFI

Project No.: 16170587.00100

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrighton

Analytical Parameters: Selenium (6010B)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	Selenium (6010B)	Remarks
10/19/10	1701	X		C103-SD12-0.5 MS/MSD	Sediment	1	8oz Jar	X	4°C, use as MS/MSD

Tony Sedlacek 10/20/10

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10/20/10	1700	Method of Shipment: FEDEX	
Received by:			Airbill No.: ~~187~~ 8728 3921 1999	
Relinquished by:			Lab Address: APPLI Inc, 908 N. Temperance Ave, Clovis, CA 93611	
Received for Laboratory by:	10/21/10	1115		

Custody.frm/jdg 3-09-92

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1020111

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Project Name: SWMU 103 (Playa Lake) Phase III RFI

Project No.: 16170587.00100

Project Location: Cannon AFB, Clovis N.M

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters: TPH-GRO (8015B), TPH-DRO/ORO/Metals (8015B/6010B)*

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO/ORO/Metals (8015B/6010B)*	Remarks
10/20/10	0810		X	C103-SD13-0.5	Sediment	2	4oz Jar	X		4°C Hold for Analysis
	0810	X		"		1	8 oz Jar		X	4°C
	0831		X	C103-SD14-0.5		2	4oz Jar	X		4°C
	0831	X		"		1	8 oz Jar		X	4°C
	0845		X	C103-SD15-0.5		2	4oz Jar	X		4°C
	0845	X		"		1	8 oz Jar		X	4°C
	0955		X	C103-SD16-0.5		2	4oz Jar	X		4°C
	0955	X		"		1	8 oz Jar		X	4°C
	1011		X	C103-SD17-0.5		2	4oz Jar	X		4°C
	1011	X		"		1	8 oz Jar		X	4°C
	1034		X	C103-SD18-0.5		2	4oz Jar	X		4°C
	1034	X		"		1	8 oz Jar		X	4°C
	1100		X	C103-SD28-0.5		2	4oz Jar	X		4°C
	1100	X		"		1	8 oz Jar		X	4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10/21/10	1900
Received by:		
Relinquished by:		
Received for Laboratory by:	10/21/10	1115

Shipping Details

Method of Shipment: Fedex

Airbill No.: 8728 3921 1999

Lab Address: APPL, Inc. 908 N. Temperance Ave Clovis, CA 93611

Special Instructions

* Project Metals List for Sediment Samples (Arsenic, Selenium, Silver, Vanadi

This is the last cooler for the project.

Custody.frm/jdg 3-09-92

White copy - Laboratory Yellow copy - Laboratory Pink copy - WCC

102911.2

COOLER RECEIPT FORM

1) Project: 16170587 Cannon AFB Date Received: 10/21/10

2) Coolers: Number of Coolers: 4

3) YES NO Were coolers and samples screened for radioactivity?

4) YES NO Were custody seals on outside of cooler? How many? 2 Date on seal? 10/20/10

5) Name on seal? see label below

6) YES NO NA Were custody seals unbroken and intact at the time of arrival?

7) YES NO Did the cooler come with a shipping slip (air bill, etc.)? Carrier name: Fed Ex

8) Shipping slip numbers: 1) 8728 3921 1999 master 2) 3)

9) YES NO NA Was the shipping slip scanned into the database?

10) YES NO NA If cooler belongs to APPL, has it been logged into the ice chest database?

11) Describe type of packing in cooler (bubble wrap, popcorn, type of ice, etc.): Bubble wrap, wet Ice

12) YES NO NA For hand delivered samples was sufficient ice present to start the cooling process?

13) YES NO Was a temperature blank included in the cooler?

14) Serial number of certified NIST thermometer used: A39267 Correction factor: 0

15) Cooler temp(s): 1) 3.0°C 2) 3.0°C 3) 3.0°C 4) 3.0°C 5) 6) 7) 8)

Chain of custody:

16) YES NO Was a chain of custody received?

17) YES NO Were the custody papers signed in the appropriate places?

18) YES NO Was the project identifiable from custody papers?

19) YES NO Did the chain of custody include date and time of sampling?

20) YES NO Is location where sample was taken listed on the chain of custody?

Sample Labels:

21) YES NO Were container labels in good condition?

22) YES NO Was the client ID on the label?

23) YES NO Was the date of sampling on the label?

24) YES NO Was the time of sampling on the label?

25) YES NO Did all container labels agree with custody papers?

Sample Containers:

26) YES NO Were all containers sealed in separate bags?

27) YES NO Did all containers arrive unbroken?

28) YES NO Was there any leakage from samples?

29) YES NO Were any of the lids cracked or broken?

30) YES NO Were correct containers used for the tests indicated?

31) YES NO Was a sufficient amount of sample sent for tests indicated?

32) YES NO NA Were bubbles present in volatile samples? If yes, the following were received with air bubbles:

Larger than a pea:

Smaller than a pea:

Preservation & Hold time:

33) YES NO NA Was a sufficient amount of holding time remaining to analyze the samples?

34) YES NO NA Do the sample containers contain the same preservative as what is stated on the COC?

35) YES NO NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

36) YES NO NA Was the pH of acid preserved non-VOA samples < 2 & sodium hydroxide preserved samples > 10?

Lab notified if pH was not adequate:

Deficiencies:

Signature of personnel receiving samples: Second reviewer:

Signature of project manager notified: Date and Time of notification:

Name of client notified: Date and Time of notification:

Information given to client:

by whom (initials):

CUSTODY SEAL
APPL, Inc.
(559) 275-2175
Initials MJ
Date 10/20/10

Renee Patterson

From: Diane Anderson [danderson@applinc.com]
Sent: Friday, December 03, 2010 2:20 PM
To: Tony_Sedlacek@URSCorp.com
Cc: Renée Patterson
Subject: Re: Cannon AFB samples on hold

Thanks Tony,

This is a HUGE report due to the 1668 results. How fast do you need it? This is for Renee. Would it matter if we sent you all of it and only charged you for what you need? It would be in the EDD this way too.

Thanks
Diane

Diane Anderson
President
APPL, Inc.
908 N. Temperance Ave.
Clovis, CA 93611
p: 559.275-2175
f: 559.275-4422
danderson@applinc.com

This is a PRIVATE and CONFIDENTIAL message. If you are not the intended recipient, please delete without copying and kindly advise us by e-mail of the mistake in delivery. NOTE: Regardless of content, this e-mail shall not operate to bind APPL, Inc. to any order or other contract unless pursuant to explicit written agreement or government initiative expressly permitting the use of e-mail for such purpose.

APPL, Inc.
http://www.applinc.com

----- Original Message -----
From: Tony_Sedlacek@URSCorp.com
To: danderson@applinc.com
Sent: Friday, December 03, 2010 2:11 PM
Subject: Cannon AFB samples on hold

Diane,
We want the TPH results reported for the samples that were placed on hold. Also we also want the metals to be analyzed for silver and selenium only, not all the metals listed on the COC for the hold samples. Please let me know if you have any questions. Thanks

Anthony J. Sedlacek
Senior Chemist
URS Corporation
12120 Shamrock Plz. Suite 300
Omaha, NE 68154
Direct Line (402)952-2532
Email: tony_sedlacek@urscorp.com

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APPL - Analysis Request Form

62914

Client: URS Group, Inc.
Address: 12120 Shamrock Plaza Suite 300
Omaha, NE 68154
Attn: Tony Sedlacek
Phone: 402-334-8181 Fax: 402-334-1984
Job: 16170587 Cannon AF SWMU 103 (Playa La
PO #: Subcontract #239132
Chain of Custody (Y/N): Y # 123938-123942
RAD Screen (Y/N): Y pH (Y/N): Y
Turn Around Type: STD

Received by: TBV
Date Received: 10/21/10 Time: 11:15
Delivered by: FED EX
Shuttle Custody Seals (Y/N): Y
Chest Temp(s): 3,3,3,3°C
Color: VOA,G-BLUE,P-ORGRN
Samples Chilled until Placed in Refrig/Freezer: Y
Project Manager: Diane Anderson
QC Report Type: DVP4/ADR/ERPIMS5/NM
Due Date: 11/02/10

Comments:
Batch QC is different for this client! Start the batch name with the Letter
i.e A040318BLK instead of 040318ABLK. Special summary package required
Requires LCS association form. Requires only LCS.
Moisture correct solls after analysis. DoD QSM v4.1
Report w/ Special Forms w/ LOQ, LOD, DL. Report 'J' values to the DL
Matrix spike and matrix duplicate must be run for metals not an MSD
EDDs: ADR (A1 & A3 files) and ERPIMS 5.0 lab submission files compatible with ERPToolsX.
Samples AY25004-AY25010 metals analysis was placed on hold.10/28/10 cm
Samples AY25004-AY25010 run metals analysis for Ag and Se only.12/03/10 cm

Sample Distribution:	Charges:	Invoice To:
GC: 12-$TPHCANS		
Extractions: 5-_SEP1668, 5-_SEP8290, 12-_SOX002, 5-_SOX1668, 5-_SOX8290		submit invoice monthly
VOA: 12-$GASCANS		No charge for
Metals: 5-$61DODW(Pb,Se,Ag), 5-$61DODWD(Pb,Se,Ag), 2-$61DODWD2(Pb,Se,Ag), 5-$61SDOD(As,Se,Ag,V), 7-$61SDOD(Se), 7-$61SDOD(Se,Ag)		extract and hold
Wetlab: 19-MOIST		
Other: 5-$1668CANW, 5-$8290W, 5-_M3010, 5-$1668CANS, 5-$8290S, 19-_M3050		

	Client ID	APPL ID	Sampled	Analyses Requested
1.	C103-SW03-00	AY24987W	10/19/10 08:37	$1668CANW, $61DODW(Pb,Se,Ag), $61DODWD(Pb,Se,Ag), $61DODWD2(Pb,Se,Ag), $8290W
2.	C103-SD03-0.5	AY24988S	10/19/10 08:37	$1668CANS, $61SDOD(As,Se,Ag,V), $8290S, $GASCANS, $TPHCANS, MOIST
3.	C103-SW05-00	AY24989W	10/19/10 11:27	$1668CANW, $61DODW(Pb,Se,Ag), $61DODWD(Pb,Se,Ag), $61DODWD2(Pb,Se,Ag), $8290W
4.	C103-SD05-0.5	AY24990S	10/19/10 11:27	$1668CANS, $61SDOD(As,Se,Ag,V), $8290S, $GASCANS, $TPHCANS, MOIST

5.	C103-SW04-00		AY24991W	10/19/10 09:59	$1668CANW, $61DODW(Pb,Se,Ag), $61DODWD(Pb,Se,Ag), $8290W
6.	C103-SD04-0.5		AY24992S	10/19/10 09:59	$1668CANS, $61SDOD(As,Se,Ag,V), $8290S, $GASCANS, $TPHCANS, MOIST
7.	C103-SW24-00		AY24993W	10/19/10 10:00	$1668CANW, $61DODW(Pb,Se,Ag), $61DODWD(Pb,Se,Ag), $8290W
8.	C103-SD24-0.5		AY24994S	10/19/10 10:00	$1668CANS, $61SDOD(As,Se,Ag,V), $8290S, $GASCANS, $TPHCANS, MOIST
9.	C103-SW06-00		AY24995W	10/19/10 12:48	$1668CANW, $61DODW(Pb,Se,Ag), $61DODWD(Pb,Se,Ag), $8290W
10.	C103-SD06-0.5		AY24996S	10/19/10 12:48	$1668CANS, $61SDOD(As,Se,Ag,V), $8290S, $GASCANS, $TPHCANS, MOIST
11.	C103-SD07-0.5		AY24997S	10/19/10 13:37	$61SDOD(Se), MOIST
12.	C103-SD08-0.3		AY24998S	10/19/10 14:30	$61SDOD(Se), MOIST
13.	C103-SD09-0.3		AY24999S	10/19/10 15:16	$61SDOD(Se), MOIST
14.	C103-SD10.05		AY25000S	10/19/10 15:39	$61SDOD(Se), MOIST
15.	C103-SD20-0.5		AY25001S	10/19/10 16:00	$61SDOD(Se), MOIST
16.	C103-SD11-0.5		AY25002S	10/19/10 16:29	$61SDOD(Se), MOIST
17.	C103-SD12-0.5	MS/MSD	AY25003S	10/19/10 17:01	$61SDOD(Se), MOIST
18.	C103-SD13-0.5		AY25004S	10/20/10 08:10	$61SDOD(Se,Ag), $GASCANS, $TPHCANS, MOIST
19.	C103-SD14-0.5		AY25005S	10/20/10 08:31	$61SDOD(Se,Ag), $GASCANS, $TPHCANS, MOIST
20.	C103-SD15-0.5		AY25006S	10/20/10 08:45	$61SDOD(Se,Ag), $GASCANS, $TPHCANS, MOIST
21.	C103-SD16-0.5		AY25007S	10/20/10 09:55	$61SDOD(Se,Ag), $GASCANS, $TPHCANS, MOIST
22.	C103-SD17-0.5		AY25008S	10/20/10 10:11	$61SDOD(Se,Ag), $GASCANS, $TPHCANS, MOIST
23.	C103-SD18-0.5		AY25009S	10/20/10 10:34	$61SDOD(Se,Ag), $GASCANS, $TPHCANS, MOIST
24.	C103-SD28-0.5		AY25010S	10/20/10 11:00	$61SDOD(Se,Ag), $GASCANS, $TPHCANS, MOIST

TPH Extractables Soil

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APPL Inc.
908 North Temperance Avenue
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Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD03-0.5

APPL ID: AY24988

Sample Collection Date: 10/19/2010

QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 51.8 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	36 ++	2.1	2.10	2.10	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	46	21.0	14.60	7.30	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	123 #	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	123 #	75-120			%	11/1/2010	11/11/2010

= Recovery (or RPD) is outside QC limits.
++(T1M) The analyst has noted that the chromatogram of this sample is mainly a wide range of hydrocarbons which are not necessarily indicative of diesel.

Quant Method: TPHD1101.M
Run #: 1110041
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

TPH Extractables Soil

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Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD05-0.5
Sample Collection Date: 10/19/2010

ARF: 62914
APPL ID: AY24990
QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 61.3 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	2.60 U	2.6	2.60	2.60	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	18.00 U	26.0	18.00	9.00	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	99.1	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	96.7	75-120			%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110042
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

TPH Extractables Soil

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Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD04-0.5

APPL ID: AY24992

Sample Collection Date: 10/19/2010

QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 61.6 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	63 ++	2.6	2.60	2.60	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	68	26.0	18.20	9.10	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	96.5	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	94.3	75-120			%	11/1/2010	11/11/2010

++(T1M) The analyst has noted that the chromatogram of this sample is mainly a wide range of hydrocarbons which are not necessarily indicative of diesel.

Quant Method: TPHD1101.M
Run #: 1110045
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

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Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD24-0.5

APPL ID: AY24994

Sample Collection Date: 10/19/2010

QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 65.7 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	56 ++	2.9	2.90	2.90	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	60	29.0	20.00	10.00	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	84.5	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	87.9	75-120			%	11/1/2010	11/11/2010

++(T1M) The analyst has noted that the chromatogram of this sample is mainly a wide range of hydrocarbons which are not necessarily indicative of diesel.

Quant Method: TPHD1101.M
Run #: 1110046
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

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Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD06-0.5
Sample Collection Date: 10/19/2010

ARF: 62914
APPL ID: AY24996
QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 33.9 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	1.50 U	1.5	1.50	1.50	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	40	15.0	10.60	5.30	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	95.2	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	94.1	75-120			%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110047
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

TPH Extractables Soil

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Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD13-0.5

APPL ID: AY25004

Sample Collection Date: 10/20/2010

QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 54.6 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	2.20 U	2.2	2.20	2.20	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	15.40 U	22.0	15.40	7.70	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	103	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	99.2	75-120			%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110048
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

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Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD14-0.5

APPL ID: AY25005

Sample Collection Date: 10/20/2010

QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 48.7 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	1.90 U	1.9	1.90	1.90	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	13.60 U	19.0	13.60	6.80	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	97.6	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	97.8	75-120			%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110049
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

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Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD15-0.5
Sample Collection Date: 10/20/2010

ARF: 62914
APPL ID: AY25006
QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 60.9 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	2.60 U	2.6	2.60	2.60	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	18.00 U	26.0	18.00	9.00	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	91.1	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	85.4	75-120			%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110050
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

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Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD16-0.5

APPL ID: AY25007

Sample Collection Date: 10/20/2010

QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 60.1 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	2.50 U	2.5	2.50	2.50	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	17.60 U	25.0	17.60	8.80	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	91.1	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	89.4	75-120			%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110051
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

TPH Extractables Soil

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Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD17-0.5
Sample Collection Date: 10/20/2010

ARF: 62914
APPL ID: AY25008
QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 39.1 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	1.60 U	1.6	1.60	1.60	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	11.40 U	16.0	11.40	5.70	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	92.1	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	89.3	75-120			%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110052
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

TPH Extractables Soil

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Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD18-0.5

APPL ID: AY25009

Sample Collection Date: 10/20/2010

QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 60.8 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	2.60 U	2.6	2.60	2.60	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	17.80 U	26.0	17.80	8.90	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	81.7	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	81.0	75-120			%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110053
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

TPH Extractables Soil

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Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD28-0.5

APPL ID: AY25010

Sample Collection Date: 10/20/2010

QCG: #TPHCA-A101101-148950

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 47.5 Percent Moisture.)								
EPA 8015B-	Diesel Range Organics	1.90 U	1.9	1.90	1.90	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Oil Range Organics	13.40 U	19.0	13.40	6.70	mg/kg	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Octacosane (S)	93.8	70-120			%	11/1/2010	11/11/2010
EPA 8015B-	Surrogate: Ortho_Terphenyl (S)	89.7	75-120			%	11/1/2010	11/11/2010

Quant Method: TPHD1101.M
Run #: 1110054
Instrument: Apollo
Sequence: 101101
Dilution Factor: 1
Initials: LA

Printed: 11/11/2010 4:00:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

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908 North Temperance Avenue
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Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD03-0.5

APPL ID: AY24988

Sample Collection Date: 10/19/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 51.8 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.42 U	2.1	1.42	0.71	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	104	40-125			%	10/25/10	10/25/10

Quant Method:	HBTXGM.M
Run #:	1025H06
Instrument:	Harpo
Sequence:	100618
Dilution Factor:	1
Initials:	LF

Printed: 11/16/10 6:00:16 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

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Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD05-0.5

APPL ID: AY24990

Sample Collection Date: 10/19/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 61.3 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.76 U	2.6	1.76	0.88	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	110	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H07
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

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APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD04-0.5

APPL ID: AY24992

Sample Collection Date: 10/19/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 61.6 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	19 ++	2.6	1.78	0.89	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	165 #	40-125			%	10/25/10	10/25/10

= Recovery (or RPD) is outside QC limits.
++(G3) The analyst has noted that the chromatogram of this sample includes higher boiling hydrocarbons.

Quant Method:	HBTXGM.M
Run #:	1025H08
Instrument:	Harpo
Sequence:	100618
Dilution Factor:	1
Initials:	LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

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Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD24-0.5

APPL ID: AY24994

Sample Collection Date: 10/19/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 65.7 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	21 ++	2.9	1.98	0.99	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	158 #	40-125			%	10/25/10	10/25/10

= Recovery (or RPD) is outside QC limits.
++(G3) The analyst has noted that the chromatogram of this sample includes higher boiling hydrocarbons.

Quant Method:	HBTXGM.M
Run #:	1025H09
Instrument:	Harpo
Sequence:	100618
Dilution Factor:	1
Initials:	LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD06-0.5

APPL ID: AY24996

Sample Collection Date: 10/19/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 33.9 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.02 U	1.5	1.02	0.51	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	118	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H10
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD13-0.5
Sample Collection Date: 10/20/10

ARF: 62914
APPL ID: AY25004
QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 54.6 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.50 U	2.2	1.50	0.75	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	119	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H11
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD14-0.5

APPL ID: AY25005

Sample Collection Date: 10/20/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 48.7 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.32 U	1.9	1.32	0.66	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	122	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H12
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
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APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD15-0.5

APPL ID: AY25006

Sample Collection Date: 10/20/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 60.9 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.74 U	2.6	1.74	0.87	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	123	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H13
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD16-0.5

APPL ID: AY25007

Sample Collection Date: 10/20/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 60.1 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.70 U	2.5	1.70	0.85	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	112	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H15
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD17-0.5

APPL ID: AY25008

Sample Collection Date: 10/20/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 39.1 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.12 U	1.6	1.12	0.56	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	124	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H16
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD18-0.5

APPL ID: AY25009

Sample Collection Date: 10/20/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 60.8 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.74 U	2.6	1.74	0.87	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	123	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H17
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gasoline Range Organics Soil

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD28-0.5

APPL ID: AY25010

Sample Collection Date: 10/20/10

QCG: #GASCA-A101025-149128

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 47.5 Percent Moisture.)								
EPA 8015	Gasoline Range Organics	1.30 U	1.9	1.30	0.65	mg/Kg	10/25/10	10/25/10
EPA 8015	Surrogate: BFB-FID (S)	125	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H18
Instrument: Harpo
Sequence: 100618
Dilution Factor: 1
Initials: LF

Printed: 11/16/10 6:00:16 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW03-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24987
QCG: $8290W-101028A-148857

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	0.84 U	125.0	0.84	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	1.1 U	125.0	1.1	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	1.5 U	125.0	1.5	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8-HxCDD	1.6 U	125.0	1.6	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8-HxCDF	0.83 U	125.0	0.83	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,6,7,8-HxCDD	1.1 U	125.0	1.1	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,6,7,8-HxCDF	0.70 U	125.0	0.70	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8,9-HxCDD	2.8 U	125.0	2.8	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8,9-HxCDF	1.0 U	125.0	1.0	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8-PeCDD	0.88 U	125.0	0.88	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8-PeCDF	1.0 U	125.0	1.0	pg/L	10/28/10	11/07/10
EPA 8290	2,3,4,6,7,8-HxCDF	0.84 U	125.0	0.84	pg/L	10/28/10	11/07/10
EPA 8290	2,3,4,7,8-PeCDF	0.69 U	125.0	0.69	pg/L	10/28/10	11/07/10
EPA 8290	2,3,7,8-TCDD	0.65 U	50.0	0.65	pg/L	10/28/10	11/07/10
EPA 8290	2,3,7,8-TCDF	1.1 U	50.0	1.1	pg/L	10/28/10	11/07/10
EPA 8290	OCDD	18 U	250.0	18	pg/L	10/28/10	11/07/10
EPA 8290	OCDF	1.1 U	250.0	1.1	pg/L	10/28/10	11/07/10
EPA 8290	TEQ	U	NA		pg/L	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	71.8	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	74.8	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	71.6	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	61.7	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	57.4	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	70.8	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	70.7	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	71.7	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-OCDD (S)	68.6	40-135		%	10/28/10	11/07/10

Quant Method: 8290_101105
Run #: 101105_HR_52
Instrument: Magneto
Sequence: 101105
Dilution Factor: 1
Initials: RP

Printed: 12/09/10 3:09:37 PM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD03-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24988
QCG: $8290S-101028B-148880

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	8.1 J	12.5	8.1	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	1.9 U	12.5	1.9	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	0.54 U	12.5	0.54	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDD	0.75 U	12.5	0.75	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDF	0.29 U	12.5	0.29	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDD	0.68 U	12.5	0.68	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDF	0.26 U	12.5	0.26	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDD	0.73 U	12.5	0.73	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDF	0.44 U	12.5	0.44	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDD	0.33 U	12.5	0.33	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDF	0.44 U	12.5	0.44	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,6,7,8-HxCDF	0.31 U	12.5	0.31	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,7,8-PeCDF	0.40 U	12.5	0.40	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDD	0.19 U	5.0	0.19	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDF	2.5 J	5.0	2.5	pg/g	10/28/10	11/11/10
EPA 8290	OCDD	59	25.0	59	pg/g	10/28/10	11/11/10
EPA 8290	OCDF	3.9 U	25.0	3.9	pg/g	10/28/10	11/11/10
EPA 8290	TEQ	0.35	NA		pg/g	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	52.2	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	51.0	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	54.6	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	48.4	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	48.7	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	50.2	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	52.1	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	51.4	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-OCDD (S)	46.8	40-135		%	10/28/10	11/11/10

J = Estimated value.

Quant Method: 8290_101110
Run #: 101110_HR_25
Instrument: Magneto
Sequence: 101110
Dilution Factor: 1
Initials: RP

Printed: 12/09/10 3:09:37 PM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW05-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24989
QCG: $8290W-101028A-148857

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	1.3 U	125.0	1.3	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	1.6 U	125.0	1.6	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	1.1 U	125.0	1.1	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8-HxCDD	1.3 U	125.0	1.3	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,4,7,8-HxCDF	0.52 U	125.0	0.52	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,6,7,8-HxCDD	1.2 U	125.0	1.2	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,6,7,8-HxCDF	0.44 U	125.0	0.44	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8,9-HxCDD	0.31 U	125.0	0.31	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8,9-HxCDF	0.60 U	125.0	0.60	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8-PeCDD	0.85 U	125.0	0.85	pg/L	10/28/10	11/07/10
EPA 8290	1,2,3,7,8-PeCDF	0.71 U	125.0	0.71	pg/L	10/28/10	11/07/10
EPA 8290	2,3,4,6,7,8-HxCDF	1.5 U	125.0	1.5	pg/L	10/28/10	11/07/10
EPA 8290	2,3,4,7,8-PeCDF	0.70 U	125.0	0.70	pg/L	10/28/10	11/07/10
EPA 8290	2,3,7,8-TCDD	0.48 U	50.0	0.48	pg/L	10/28/10	11/07/10
EPA 8290	2,3,7,8-TCDF	1.0 U	50.0	1.0	pg/L	10/28/10	11/07/10
EPA 8290	OCDD	19 J	250.0	19	pg/L	10/28/10	11/07/10
EPA 8290	OCDF	1.2 U	250.0	1.2	pg/L	10/28/10	11/07/10
EPA 8290	TEQ	0.0057	NA		pg/L	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	80.3	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	85.8	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	83.2	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	72.4	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	57.3	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	74.0	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	73.1	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	71.3	40-135		%	10/28/10	11/07/10
EPA 8290	Surrogate: 13C-OCDD (S)	83.7	40-135		%	10/28/10	11/07/10

J = Estimated value.

Quant Method: 8290_101105
Run #: 101105_HR_53
Instrument: Magneto
Sequence: 101105
Dilution Factor: 1
Initials: RP

Printed: 12/09/10 3:09:37 PM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD05-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24990
QCG: $8290S-101028B-148880

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	25	12.5	25	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	4.2 U	12.5	4.2	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	2.9 J	12.5	2.9	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDD	2.9 U	12.5	2.9	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDF	2.5 J	12.5	2.5	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDD	3.0 U	12.5	3.0	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDF	2.5 U	12.5	2.5	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDD	1.9 U	12.5	1.9	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDF	2.4 U	12.5	2.4	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDD	0.41 U	12.5	0.41	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDF	0.36 U	12.5	0.36	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,6,7,8-HxCDF	8.0 U	12.5	8.0	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,7,8-PeCDF	1.7 J	12.5	1.7	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDD	1.4 J	5.0	1.4	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDF	2.7 U	5.0	2.7	pg/g	10/28/10	11/11/10
EPA 8290	OCDD	160	25.0	160	pg/g	10/28/10	11/11/10
EPA 8290	OCDF	5.4 U	25.0	5.4	pg/g	10/28/10	11/11/10
EPA 8290	TEQ	2.5	NA		pg/g	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	64.0	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	65.1	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	64.8	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	53.0	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	67.8	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	66.4	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	61.6	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	60.8	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-OCDD (S)	55.7	40-135		%	10/28/10	11/11/10

J = Estimated value.

Quant Method: 8290_101110
Run #: 101110_HR_15
Instrument: Magneto
Sequence: 101110
Dilution Factor: 1
Initials: RP

Printed: 12/09/10 3:09:37 PM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW04-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24991
QCG: $8290W-101028A-148857

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	2.3 U	125.0	2.3	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	1.7 U	125.0	1.7	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	2.3 U	125.0	2.3	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDD	1.0 U	125.0	1.0	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDF	0.53 U	125.0	0.53	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDD	0.71 U	125.0	0.71	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDF	0.45 U	125.0	0.45	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDD	1.0 U	125.0	1.0	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDF	0.62 U	125.0	0.62	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDD	1.4 U	125.0	1.4	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDF	0.82 U	125.0	0.82	pg/L	10/28/10	11/08/10
EPA 8290	2,3,4,6,7,8-HxCDF	0.54 U	125.0	0.54	pg/L	10/28/10	11/08/10
EPA 8290	2,3,4,7,8-PeCDF	0.54 U	125.0	0.54	pg/L	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDD	0.65 U	50.0	0.65	pg/L	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDF	1.3 U	50.0	1.3	pg/L	10/28/10	11/08/10
EPA 8290	OCDD	2.2 U	250.0	2.2	pg/L	10/28/10	11/08/10
EPA 8290	OCDF	2.2 U	250.0	2.2	pg/L	10/28/10	11/08/10
EPA 8290	TEQ	U	NA		pg/L	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	79.5	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	83.1	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	78.3	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	67.5	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	60.1	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	72.2	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	73.1	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	74.3	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-OCDD (S)	78.9	40-135		%	10/28/10	11/08/10

Quant Method: 8290_101105
Run #: 101105_HR_54
Instrument: Magneto
Sequence: 101105
Dilution Factor: 1
Initials: RP

Printed: 12/09/10 3:09:37 PM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD04-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24992
QCG: $8290S-101028B-148880

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	35	12.5	35	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	7.4 J	12.5	7.4	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	2.8 J	12.5	2.8	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDD	2.4 J	12.5	2.4	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDF	2.3 J	12.5	2.3	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDD	2.5 U	12.5	2.5	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDF	2.3 U	12.5	2.3	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDD	2.4 U	12.5	2.4	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDF	1.6 U	12.5	1.6	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDD	0.65 U	12.5	0.65	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDF	0.44 U	12.5	0.44	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,6,7,8-HxCDF	2.2 J	12.5	2.2	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,7,8-PeCDF	0.30 U	12.5	0.30	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDD	1.8 J	5.0	1.8	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDF	1.6 U	5.0	1.6	pg/g	10/28/10	11/11/10
EPA 8290	OCDD	260	25.0	260	pg/g	10/28/10	11/11/10
EPA 8290	OCDF	11 J	25.0	11	pg/g	10/28/10	11/11/10
EPA 8290	TEQ	3.0	NA		pg/g	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	57.3	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	60.6	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	61.2	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	47.1	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	62.3	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	60.7	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	56.1	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	55.1	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-OCDD (S)	50.1	40-135		%	10/28/10	11/11/10

J = Estimated value.

Quant Method: 8290_101110
Run #: 101110_HR_16
Instrument: Magneto
Sequence: 101110
Dilution Factor: 1
Initials: RP

Printed: 12/09/10 3:09:37 PM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW24-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24993
QCG: $8290W-101028A-148857

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	1.2 U	125.0	1.2	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	0.43 U	125.0	0.43	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	0.60 U	125.0	0.60	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDD	1.4 U	125.0	1.4	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDF	0.60 U	125.0	0.60	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDD	0.99 U	125.0	0.99	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDF	1.7 J	125.0	1.7	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDD	1.0 U	125.0	1.0	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDF	0.70 U	125.0	0.70	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDD	0.74 U	125.0	0.74	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDF	0.66 U	125.0	0.66	pg/L	10/28/10	11/08/10
EPA 8290	2,3,4,6,7,8-HxCDF	0.31 U	125.0	0.31	pg/L	10/28/10	11/08/10
EPA 8290	2,3,4,7,8-PeCDF	0.46 U	125.0	0.46	pg/L	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDD	0.45 U	50.0	0.45	pg/L	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDF	0.47 U	50.0	0.47	pg/L	10/28/10	11/08/10
EPA 8290	OCDD	16 U	250.0	16	pg/L	10/28/10	11/08/10
EPA 8290	OCDF	1.2 U	250.0	1.2	pg/L	10/28/10	11/08/10
EPA 8290	TEQ	0.17	NA		pg/L	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	79.4	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	82.9	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	78.8	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	66.8	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	60.5	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	75.0	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	77.6	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	77.3	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-OCDD (S)	80.3	40-135		%	10/28/10	11/08/10

J = Estimated value.

Quant Method: 8290_101105
Run #: 101105_HR_55
Instrument: Magneto
Sequence: 101105
Dilution Factor: 1
Initials: RP

Printed: 12/09/10 3:09:37 PM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD24-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24994
QCG: $8290S-101028B-148880

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	11 J	12.5	11	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	3.6 J	12.5	3.6	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	0.89 U	12.5	0.89	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDD	1.1 U	12.5	1.1	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDF	1.3 U	12.5	1.3	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDD	0.90 U	12.5	0.90	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDF	0.69 U	12.5	0.69	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDD	1.1 U	12.5	1.1	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDF	1.2 U	12.5	1.2	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDD	0.36 U	12.5	0.36	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDF	0.47 U	12.5	0.47	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,6,7,8-HxCDF	6.5 U	12.5	6.5	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,7,8-PeCDF	0.30 U	12.5	0.30	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDD	1.2 U	5.0	1.2	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDF	1.4 U	5.0	1.4	pg/g	10/28/10	11/11/10
EPA 8290	OCDD	74	25.0	74	pg/g	10/28/10	11/11/10
EPA 8290	OCDF	2.9 U	25.0	2.9	pg/g	10/28/10	11/11/10
EPA 8290	TEQ	0.17	NA		pg/g	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	48.0	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	43.6	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	44.7	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	40.9	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	43.9	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	41.0	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	40.4	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	40.5	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-OCDD (S)	43.9	40-135		%	10/28/10	11/11/10

J = Estimated value.

Quant Method: 8290_101110
Run #: 101110_HR_17
Instrument: Magneto
Sequence: 101110
Dilution Factor: 1
Initials: RP

Printed: 12/09/10 3:09:37 PM
Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW06-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24995
QCG: $8290W-101028A-148857

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	3.8 U	125.0	3.8	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	1.4 U	125.0	1.4	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	13 U	125.0	13	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDD	0.87 U	125.0	0.87	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,4,7,8-HxCDF	1.3 U	125.0	1.3	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDD	1.8 U	125.0	1.8	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,6,7,8-HxCDF	1.1 U	125.0	1.1	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDD	1.3 U	125.0	1.3	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8,9-HxCDF	1.5 U	125.0	1.5	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDD	1.9 U	125.0	1.9	pg/L	10/28/10	11/08/10
EPA 8290	1,2,3,7,8-PeCDF	1.5 U	125.0	1.5	pg/L	10/28/10	11/08/10
EPA 8290	2,3,4,6,7,8-HxCDF	5.0 U	125.0	5.0	pg/L	10/28/10	11/08/10
EPA 8290	2,3,4,7,8-PeCDF	1.5 U	125.0	1.5	pg/L	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDD	1.0 U	50.0	1.0	pg/L	10/28/10	11/08/10
EPA 8290	2,3,7,8-TCDF	2.2 U	50.0	2.2	pg/L	10/28/10	11/08/10
EPA 8290	OCDD	19 U	250.0	19	pg/L	10/28/10	11/08/10
EPA 8290	OCDF	3.2 U	250.0	3.2	pg/L	10/28/10	11/08/10
EPA 8290	TEQ	U	NA		pg/L	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	76.6	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	81.4	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	79.0	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	68.4	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	62.0	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	74.2	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	76.9	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	74.5	40-135		%	10/28/10	11/08/10
EPA 8290	Surrogate: 13C-OCDD (S)	71.4	40-135		%	10/28/10	11/08/10

Quant Method: 8290_101105
Run #: 101105_HR_60
Instrument: Magneto
Sequence: 101105
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 8290 - Dioxins and Furans

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD06-0.5

APPL ID: AY24996

Sample Collection Date: 10/19/10

QCG: $8290S-101028B-148880

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 8290	1,2,3,4,6,7,8-HpCDD	7.0 J	12.5	7.0	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,6,7,8-HpCDF	2.1 U	12.5	2.1	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8,9-HpCDF	0.90 U	12.5	0.90	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDD	0.36 U	12.5	0.36	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,4,7,8-HxCDF	0.42 U	12.5	0.42	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDD	0.25 U	12.5	0.25	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,6,7,8-HxCDF	0.50 U	12.5	0.50	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDD	0.49 U	12.5	0.49	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8,9-HxCDF	0.59 U	12.5	0.59	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDD	0.19 U	12.5	0.19	pg/g	10/28/10	11/11/10
EPA 8290	1,2,3,7,8-PeCDF	0.22 U	12.5	0.22	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,6,7,8-HxCDF	2.4 U	12.5	2.4	pg/g	10/28/10	11/11/10
EPA 8290	2,3,4,7,8-PeCDF	0.18 U	12.5	0.18	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDD	0.55 J	5.0	0.55	pg/g	10/28/10	11/11/10
EPA 8290	2,3,7,8-TCDF	0.53 U	5.0	0.53	pg/g	10/28/10	11/11/10
EPA 8290	OCDD	67	25.0	67	pg/g	10/28/10	11/11/10
EPA 8290	OCDF	3.0 J	25.0	3.0	pg/g	10/28/10	11/11/10
EPA 8290	TEQ	0.64	NA		pg/g	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	83.2	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	82.2	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	89.6	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	73.3	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	85.0	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	85.1	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDD (S)	86.1	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-2,3,7,8-TCDF (S)	84.2	40-135		%	10/28/10	11/11/10
EPA 8290	Surrogate: 13C-OCDD (S)	74.9	40-135		%	10/28/10	11/11/10

J = Estimated value.

Quant Method: 8290_101110
Run #: 101110_HR_23
Instrument: Magneto
Sequence: 101110
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Waters

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW03-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24987
QCG: $1668CANW-101025-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	24 U	100.0	24	pg/L	10/25/10	11/14/10
EPA 1668	PCB-114	20 U	100.0	20	pg/L	10/25/10	11/14/10
EPA 1668	PCB-118	510	100.0	510	pg/L	10/25/10	11/14/10
EPA 1668	PCB-123	4.3 U	100.0	4.3	pg/L	10/25/10	11/14/10
EPA 1668	PCB-126	5.2 U	100.0	5.2	pg/L	10/25/10	11/14/10
EPA 1668	PCB-156	8.1 J	100.0	8.1	pg/L	10/25/10	11/14/10
EPA 1668	PCB-157	4.0 U	100.0	4.0	pg/L	10/25/10	11/14/10
EPA 1668	PCB-167	3.5 U	100.0	3.5	pg/L	10/25/10	11/14/10
EPA 1668	PCB-169	5.2 U	100.0	5.2	pg/L	10/25/10	11/14/10
EPA 1668	PCB-170	19 U	100.0	19	pg/L	10/25/10	11/14/10
EPA 1668	PCB-180	50 J	100.0	50	pg/L	10/25/10	11/14/10
EPA 1668	PCB-189	2.1 U	100.0	2.1	pg/L	10/25/10	11/14/10
EPA 1668	PCB-77	6.8 U	100.0	6.8	pg/L	10/25/10	11/14/10
EPA 1668	PCB-81	3.0 U	100.0	3.0	pg/L	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-105L (S)	75.3	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-118L (S)	68.9	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-126L (S)	77.8	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-169L (S)	82.6	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-77L (S)	83.1	30-140		%	10/25/10	11/14/10

J = Estimated value.

Quant Method: 1668_101113
Run #: 101113_HR_17
Instrument: Magneto
Sequence: 101113
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Solids

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD03-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24988
QCG: $1668CANS-101027-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	230	10.0	230	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-114	20	10.0	20	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-118	540	10.0	540	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-123	0.45 U	10.0	0.45	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-126	7.5 J	10.0	7.5	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-156	64	10.0	64	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-157	0.37 U	10.0	0.37	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-167	0.32 U	10.0	0.32	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-169	0.49 U	10.0	0.49	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-170	230	10.0	230	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-180	490	10.0	490	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-189	5.2 U	10.0	5.2	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-77	68	10.0	68	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-81	3.0 J	10.0	3.0	pg/Kg	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-105L (S)	121	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-118L (S)	118	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-126L (S)	146 #	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-169L (S)	161 #	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-77L (S)	136	30-140		%	10/27/10	11/19/10

J = Estimated value.
# = Recovery (or RPD) is outside QC limits.

Quant Method: 1668_101117
Run #: 101117_HR_35
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Waters

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW05-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24989
QCG: $1668CANW-101025-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	26 U	100.0	26	pg/L	10/25/10	11/14/10
EPA 1668	PCB-114	18 J	100.0	18	pg/L	10/25/10	11/14/10
EPA 1668	PCB-118	450	100.0	450	pg/L	10/25/10	11/14/10
EPA 1668	PCB-123	2.6 U	100.0	2.6	pg/L	10/25/10	11/14/10
EPA 1668	PCB-126	3.2 U	100.0	3.2	pg/L	10/25/10	11/14/10
EPA 1668	PCB-156	13 J	100.0	13	pg/L	10/25/10	11/14/10
EPA 1668	PCB-157	2.9 U	100.0	2.9	pg/L	10/25/10	11/14/10
EPA 1668	PCB-167	4.4 U	100.0	4.4	pg/L	10/25/10	11/14/10
EPA 1668	PCB-169	3.8 U	100.0	3.8	pg/L	10/25/10	11/14/10
EPA 1668	PCB-170	25 J	100.0	25	pg/L	10/25/10	11/14/10
EPA 1668	PCB-180	58 J	100.0	58	pg/L	10/25/10	11/14/10
EPA 1668	PCB-189	1.3 U	100.0	1.3	pg/L	10/25/10	11/14/10
EPA 1668	PCB-77	7.6 J	100.0	7.6	pg/L	10/25/10	11/14/10
EPA 1668	PCB-81	2.0 U	100.0	2.0	pg/L	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-105L (S)	78.8	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-118L (S)	75.1	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-126L (S)	83.1	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-169L (S)	86.1	30-140		%	10/25/10	11/14/10
EPA 1668	Surrogate: PCB-77L (S)	93.5	30-140		%	10/25/10	11/14/10

J = Estimated value.

Quant Method: 1668_101113
Run #: 101113_HR_18
Instrument: Magneto
Sequence: 101113
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Solids

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD05-0.5

APPL ID: AY24990

Sample Collection Date: 10/19/10

QCG: $1668CANS-101027-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	230	10.0	230	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-114	21	10.0	21	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-118	580	10.0	580	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-123	0.59 U	10.0	0.59	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-126	7.5 U	10.0	7.5	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-156	73	10.0	73	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-157	15	10.0	15	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-167	20	10.0	20	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-169	0.37 U	10.0	0.37	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-170	270	10.0	270	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-180	570	10.0	570	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-189	6.8 U	10.0	6.8	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-77	66	10.0	66	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-81	7.6 J	10.0	7.6	pg/Kg	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-105L (S)	128	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-118L (S)	118	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-126L (S)	151 #	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-169L (S)	166 #	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-77L (S)	146 #	30-140		%	10/27/10	11/19/10

J = Estimated value.
# = Recovery (or RPD) is outside QC limits.

Quant Method: 1668_101117
Run #: 101117_HR_36
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Waters

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW04-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24991
QCG: $1668CANW-101025-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	30 J	100.0	30	pg/L	10/25/10	11/18/10
EPA 1668	PCB-114	7.5 U	100.0	7.5	pg/L	10/25/10	11/18/10
EPA 1668	PCB-118	340 U	100.0	340	pg/L	10/25/10	11/18/10
EPA 1668	PCB-123	16 U	100.0	16	pg/L	10/25/10	11/18/10
EPA 1668	PCB-126	11 U	100.0	11	pg/L	10/25/10	11/18/10
EPA 1668	PCB-156	6.5 U	100.0	6.5	pg/L	10/25/10	11/18/10
EPA 1668	PCB-157	6.5 U	100.0	6.5	pg/L	10/25/10	11/18/10
EPA 1668	PCB-167	5.5 U	100.0	5.5	pg/L	10/25/10	11/18/10
EPA 1668	PCB-169	10 U	100.0	10	pg/L	10/25/10	11/18/10
EPA 1668	PCB-170	16 J	100.0	16	pg/L	10/25/10	11/18/10
EPA 1668	PCB-180	50 J	100.0	50	pg/L	10/25/10	11/18/10
EPA 1668	PCB-189	2.0 U	100.0	2.0	pg/L	10/25/10	11/18/10
EPA 1668	PCB-77	7.5 U	100.0	7.5	pg/L	10/25/10	11/18/10
EPA 1668	PCB-81	6.4 U	100.0	6.4	pg/L	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-105L (S)	79.2	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-118L (S)	73.6	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-126L (S)	80.3	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-169L (S)	86.9	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-77L (S)	81.7	30-140		%	10/25/10	11/18/10

J = Estimated value.

Quant Method: 1668_101117
Run #: 101117_HR_13
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Solids

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD04-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24992
QCG: $1668CANS-101027-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	1300	10.0	1300	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-114	120	10.0	120	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-118	3000	10.0	3000	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-123	2.6 U	10.0	2.6	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-126	36	10.0	36	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-156	340	10.0	340	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-157	71	10.0	71	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-167	93	10.0	93	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-169	1.4 U	10.0	1.4	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-170	1400 U	10.0	1400	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-180	1100 U	10.0	1100	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-189	1800 U	10.0	1800	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-77	290	10.0	290	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-81	34	10.0	34	pg/Kg	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-105L (S)	75.5	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-118L (S)	72.1	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-126L (S)	87.1	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-169L (S)	108	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-77L (S)	81.5	30-140		%	10/27/10	11/19/10

Quant Method: 1668_101117
Run #: 101117_HR_37
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Waters

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW24-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24993
QCG: $1668CANW-101025-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	14 U	100.0	14	pg/L	10/25/10	11/18/10
EPA 1668	PCB-114	15 U	100.0	15	pg/L	10/25/10	11/18/10
EPA 1668	PCB-118	370	100.0	370	pg/L	10/25/10	11/18/10
EPA 1668	PCB-123	5.1 U	100.0	5.1	pg/L	10/25/10	11/18/10
EPA 1668	PCB-126	6.5 U	100.0	6.5	pg/L	10/25/10	11/18/10
EPA 1668	PCB-156	4.7 U	100.0	4.7	pg/L	10/25/10	11/18/10
EPA 1668	PCB-157	4.8 U	100.0	4.8	pg/L	10/25/10	11/18/10
EPA 1668	PCB-167	4.1 U	100.0	4.1	pg/L	10/25/10	11/18/10
EPA 1668	PCB-169	6.8 U	100.0	6.8	pg/L	10/25/10	11/18/10
EPA 1668	PCB-170	56 J	100.0	56	pg/L	10/25/10	11/18/10
EPA 1668	PCB-180	120	100.0	120	pg/L	10/25/10	11/18/10
EPA 1668	PCB-189	1.2 U	100.0	1.2	pg/L	10/25/10	11/18/10
EPA 1668	PCB-77	8.2 U	100.0	8.2	pg/L	10/25/10	11/18/10
EPA 1668	PCB-81	1.9 U	100.0	1.9	pg/L	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-105L (S)	76.9	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-118L (S)	70.0	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-126L (S)	82.9	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-169L (S)	91.8	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-77L (S)	83.5	30-140		%	10/25/10	11/18/10

J = Estimated value.

Quant Method: 1668_101117
Run #: 101117_HR_14
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Solids

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD24-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24994
QCG: $1668CANS-101027-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	1300	10.0	1300	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-114	120	10.0	120	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-118	2900	10.0	2900	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-123	2.0 U	10.0	2.0	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-126	32 U	10.0	32	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-156	340	10.0	340	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-157	65	10.0	65	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-167	84	10.0	84	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-169	5.2 U	10.0	5.2	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-170	1200	10.0	1200	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-180	2600	10.0	2600	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-189	32	10.0	32	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-77	280	10.0	280	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-81	12 U	10.0	12	pg/Kg	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-105L (S)	94.2	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-118L (S)	93.4	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-126L (S)	107	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-169L (S)	134	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-77L (S)	98.9	30-140		%	10/27/10	11/19/10

Quant Method: 1668_101117
Run #: 101117_HR_42
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Waters

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW06-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24995
QCG: $1668CANW-101025-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	19 U	100.0	19	pg/L	10/25/10	11/18/10
EPA 1668	PCB-114	24 U	100.0	24	pg/L	10/25/10	11/18/10
EPA 1668	PCB-118	390	100.0	390	pg/L	10/25/10	11/18/10
EPA 1668	PCB-123	5.2 U	100.0	5.2	pg/L	10/25/10	11/18/10
EPA 1668	PCB-126	6.7 U	100.0	6.7	pg/L	10/25/10	11/18/10
EPA 1668	PCB-156	6.5 U	100.0	6.5	pg/L	10/25/10	11/18/10
EPA 1668	PCB-157	6.7 U	100.0	6.7	pg/L	10/25/10	11/18/10
EPA 1668	PCB-167	5.7 U	100.0	5.7	pg/L	10/25/10	11/18/10
EPA 1668	PCB-169	9.5 U	100.0	9.5	pg/L	10/25/10	11/18/10
EPA 1668	PCB-170	32 J	100.0	32	pg/L	10/25/10	11/18/10
EPA 1668	PCB-180	87 J	100.0	87	pg/L	10/25/10	11/18/10
EPA 1668	PCB-189	1.3 U	100.0	1.3	pg/L	10/25/10	11/18/10
EPA 1668	PCB-77	8.2 U	100.0	8.2	pg/L	10/25/10	11/18/10
EPA 1668	PCB-81	2.8 U	100.0	2.8	pg/L	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-105L (S)	71.1	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-118L (S)	68.2	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-126L (S)	77.0	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-169L (S)	91.2	30-140		%	10/25/10	11/18/10
EPA 1668	Surrogate: PCB-77L (S)	79.7	30-140		%	10/25/10	11/18/10

J = Estimated value.

Quant Method: 1668_101117
Run #: 101117_HR_15
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

EPA 1668B Solids

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD06-0.5

APPL ID: AY24996

Sample Collection Date: 10/19/10

QCG: $1668CANS-101027-1492

Method	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
EPA 1668	PCB-105	230	10.0	230	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-114	24	10.0	24	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-118	560	10.0	560	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-123	1.1 U	10.0	1.1	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-126	4.0 U	10.0	4.0	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-156	67	10.0	67	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-157	0.66 U	10.0	0.66	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-167	0.59 U	10.0	0.59	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-169	0.90 U	10.0	0.90	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-170	220	10.0	220	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-180	470	10.0	470	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-189	6.5 J	10.0	6.5	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-77	53	10.0	53	pg/Kg	10/27/10	11/19/10
EPA 1668	PCB-81	1.8 U	10.0	1.8	pg/Kg	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-105L (S)	119	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-118L (S)	112	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-126L (S)	140	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-169L (S)	156 #	30-140		%	10/27/10	11/19/10
EPA 1668	Surrogate: PCB-77L (S)	136	30-140		%	10/27/10	11/19/10

J = Estimated value.
# = Recovery (or RPD) is outside QC limits.

Quant Method: 1668_101117
Run #: 101117_HR_43
Instrument: Magneto
Sequence: 101117
Dilution Factor: 1
Initials: RP

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Form 1 - APPL Standard GC - No MC

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW03-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24987

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Lead (Pb)	3.16U	5.0	3.16	1.58	ug/L	1	10/25/10	10/27/10
6010B/3010A	Selenium (Se)	6.34U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag)	0.50U	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10
6010B/3010A	Lead (Pb) (Dissolved)	3.16U	5.0	3.16	1.58	ug/L	1	11/09/10	11/11/10
6010B/3010A	Selenium (Se) (Dissolved)	6.34U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag) (Dissolved)	0.50U	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10

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APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD03-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24988

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 51.8 Percent Moisture.)									
6010B/3050B	Arsenic (As)	1.6	1.00	0.360	0.180	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Selenium (Se)	3.7	1.00	0.510	0.510	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Silver (Ag)	10.2	0.21	0.150	0.075	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Vanadium (V)	29.7	1.00	0.240	0.120	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW05-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24989

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Lead (Pb)	3.16U	5.0	3.16	1.58	ug/L	1	10/25/10	10/27/10
6010B/3010A	Selenium (Se)	6.34U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag)	0.50U	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10
6010B/3010A	Lead (Pb) (Dissolved)	3.16U	5.0	3.16	1.58	ug/L	1	11/09/10	11/11/10
6010B/3010A	Selenium (Se) (Dissolved)	6.34U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag) (Dissolved)	0.50U	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10

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APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD05-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24990

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 61.3 Percent Moisture.)									
6010B/3050B	Arsenic (As)	3.6	1.30	0.460	0.230	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Selenium (Se)	4.9	1.30	1.260	0.630	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Silver (Ag)	16.5	0.26	0.186	0.093	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Vanadium (V)	52.2	1.30	0.280	0.140	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW04-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24991

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Lead (Pb)	3.16U	5.0	3.16	1.58	ug/L	1	10/25/10	10/27/10
6010B/3010A	Selenium (Se)	6.34U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag)	1.2	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10
6010B/3010A	Lead (Pb) (Dissolved)	3.16U	5.0	3.16	1.58	ug/L	1	10/25/10	10/27/10
6010B/3010A	Selenium (Se) (Dissolved)	6.34U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag) (Dissolved)	0.50U	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10

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Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD04-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24992

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 61.6 Percent Moisture.)									
6010B/3050B	Arsenic (As)	3.9	1.30	0.460	0.230	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Selenium (Se)	7.0	1.30	1.280	0.640	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Silver (Ag)	23.7	0.26	0.188	0.094	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Vanadium (V)	52.1	1.30	0.300	0.150	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SW24-00
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24993

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Lead (Pb)	23.8	5.0	3.16	1.58	ug/L	1	10/25/10	10/27/10
6010B/3010A	Selenium (Se)	6.34U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag)	0.50U	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10
6010B/3010A	Lead (Pb) (Dissolved)	16.9	5.0	3.16	1.58	ug/L	1	10/25/10	10/27/10
6010B/3010A	Selenium (Se) (Dissolved)	6.34U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag) (Dissolved)	0.50U	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10

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APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD24-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24994

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 65.7 Percent Moisture.)									
6010B/3050B	Arsenic (As)	3.8	1.50	0.520	0.260	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Selenium (Se)	4.1	1.50	1.420	0.710	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Silver (Ag)	14.3	0.29	0.200	0.100	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Vanadium (V)	39.9	1.50	0.320	0.160	mg/kg	1	10/29/10	11/02/10

Printed: 11/08/10 3:48:15 PM

-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SW06-00

APPL ID: AY24995

Sample Collection Date: 10/19/10

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Lead (Pb)	2.1 J	5.0	3.16	1.58	ug/L	1	10/25/10	10/27/10
6010B/3010A	Selenium (Se)	6.34 U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag)	0.50 U	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10
6010B/3010A	Lead (Pb) (Dissolved)	4.6 J	5.0	3.16	1.58	ug/L	1	10/25/10	10/27/10
6010B/3010A	Selenium (Se) (Dissolved)	6.34 U	10.0	6.34	3.17	ug/L	1	10/25/10	10/27/10
6010B/3010A	Silver (Ag) (Dissolved)	0.50 U	1.0	0.50	0.25	ug/L	1	10/25/10	10/27/10

J = Estimated value.

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APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD06-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24996

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 33.9 Percent Moisture.)									
6010B/3050B	Arsenic (As)	0.21 J	0.76	0.260	0.130	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Selenium (Se)	0.70 J	0.76	0.740	0.370	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Silver (Ag)	1.8	0.15	0.108	0.054	mg/kg	1	10/29/10	11/02/10
6010B/3050B	Vanadium (V)	9.5	0.76	0.170	0.085	mg/kg	1	10/29/10	11/02/10

J = Estimated value.

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD07-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24997

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 62.3 Percent Moisture.)									
6010B/3050B	Selenium (Se)	2.7	1.30	0.650	0.650	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD08-0.3
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24998

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 19.4 Percent Moisture.)									
6010B/3050B	Selenium (Se)	0.600 U	0.62	0.600	0.300	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD09-0.3
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY24999

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 33.4 Percent Moisture.)									
6010B/3050B	Selenium (Se)	0.740 U	0.75	0.740	0.370	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD10.05

APPL ID: AY25000

Sample Collection Date: 10/19/10

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 20.7 Percent Moisture.)									
6010B/3050B	Selenium (Se)	0.620 U	0.63	0.620	0.310	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD20-0.5

APPL ID: AY25001

Sample Collection Date: 10/19/10

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 19.7 Percent Moisture.)									
6010B/3050B	Selenium (Se)	0.600 U	0.62	0.600	0.300	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
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Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD11-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY25002

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 49.6 Percent Moisture.)									
6010B/3050B	Selenium (Se)	4.0	0.99	0.960	0.480	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD12-0.5
Sample Collection Date: 10/19/10

ARF: 62914
APPL ID: AY25003

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 68.4 Percent Moisture.)									
6010B/3050B	Selenium (Se)	5.4	1.60	1.540	0.770	mg/kg	1	10/29/10	11/02/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD13-0.5
Sample Collection Date: 10/20/10

ARF: 62914
APPL ID: AY25004

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 54.6 Percent Moisture.)									
6010B/3050B	Selenium (Se)	1.7	1.10	1.080	0.540	mg/kg	1	10/29/10	12/08/10
6010B/3050B	Silver (Ag)	2.9	0.22	0.158	0.079	mg/kg	1	10/29/10	12/08/10

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Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD14-0.5
Sample Collection Date: 10/20/10

ARF: 62914
APPL ID: AY25005

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 48.7 Percent Moisture.)									
6010B/3050B	Selenium (Se)	1.2	0.97	0.960	0.480	mg/kg	1	10/29/10	12/08/10
6010B/3050B	Silver (Ag)	1.4	0.19	0.140	0.070	mg/kg	1	10/29/10	12/08/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD15-0.5
Sample Collection Date: 10/20/10

ARF: 62914
APPL ID: AY25006

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 60.9 Percent Moisture.)									
6010B/3050B	Selenium (Se)	5.1	1.30	1.240	0.620	mg/kg	1	10/29/10	12/08/10
6010B/3050B	Silver (Ag)	16.6	0.26	0.184	0.092	mg/kg	1	10/29/10	12/08/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD16-0.5
Sample Collection Date: 10/20/10

ARF: 62914
APPL ID: AY25007

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 60.1 Percent Moisture.)									
6010B/3050B	Selenium (Se)	4.8	1.30	1.220	0.610	mg/kg	1	10/29/10	12/08/10
6010B/3050B	Silver (Ag)	12.5	0.25	0.180	0.090	mg/kg	1	10/29/10	12/08/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD17-0.5

APPL ID: AY25008

Sample Collection Date: 10/20/10

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 39.1 Percent Moisture.)									
6010B/3050B	Selenium (Se)	2.3	0.82	0.800	0.400	mg/kg	1	10/29/10	12/08/10
6010B/3050B	Silver (Ag)	3.3	0.16	0.118	0.059	mg/kg	1	10/29/10	12/08/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Sample ID: C103-SD18-0.5

APPL ID: AY25009

Sample Collection Date: 10/20/10

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 60.8 Percent Moisture.)									
6010B/3050B	Selenium (Se)	6.4	1.30	1.240	0.620	mg/kg	1	10/29/10	12/08/10
6010B/3050B	Silver (Ag)	27.0	0.26	0.184	0.092	mg/kg	1	10/29/10	12/08/10

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-SC-MCRes/MCPQL-URS-REG MDLs

Metals Analysis

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Tony Sedlacek
Project: 16170587 Cannon AF SWMU 103 (Playa Lake)
Sample ID: C103-SD28-0.5
Sample Collection Date: 10/20/10

ARF: 62914
APPL ID: AY25010

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 47.5 Percent Moisture.)									
6010B/3050B	Selenium (Se)	2.5	0.95	0.920	0.460	mg/kg	1	10/29/10	12/08/10
6010B/3050B	Silver (Ag)	10.3	0.19	0.138	0.069	mg/kg	1	10/29/10	12/08/10

Printed: 12/09/10 10:11:58 AM
-SC-MCRes/MCPQL-URS-REG MDLs

EPA 8015B-e

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 62914

Case No: 62914 Date Analyzed: 11/10/2010

Matrix: SOIL Instrument: Apollo

Blank ID: A101101-BLK Time Analyzed: 2150

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101101-BLK	Blank	1110032	11/10/2010 2150
A101101-LCS	Lab Control Spike	1110033	11/10/2010 2213
AY24988	C103-SD03-0.5	1110041	11/11/2010 0121
AY24990	C103-SD05-0.5	1110042	11/11/2010 0145
AY24992	C103-SD04-0.5	1110045	11/11/2010 0255
AY24994	C103-SD24-0.5	1110046	11/11/2010 0318
AY24996	C103-SD06-0.5	1110047	11/11/2010 0341
AY25004	C103-SD13-0.5	1110048	11/11/2010 0405
AY25005	C103-SD14-0.5	1110049	11/11/2010 0428
AY25006	C103-SD15-0.5	1110050	11/11/2010 0451
AY25007	C103-SD16-0.5	1110051	11/11/2010 0515
AY25008	C103-SD17-0.5	1110052	11/11/2010 0538
AY25009	C103-SD18-0.5	1110053	11/11/2010 0602
AY25010	C103-SD28-0.5	1110054	11/11/2010 0625

Comments: Batch: #TPHCA-A101101

Printed: 11/11/2010 4:00:15 PM
Form 4, Blank Summary

Method Blank
TPH Extractables Soil

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **A10110S-24726 - 148950**
Batch ID: #TPHCA-A101101

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	Diesel Range Organics	1.00 U	1.0	1.00	1.00	mg/kg	11/1/2010	11/10/2010
BLANK	Oil Range Organics	7.00 U	10.0	7.00	3.50	mg/kg	11/1/2010	11/10/2010
BLANK	Surrogate: Octacosane (S)	91.2	70-120			%	11/1/2010	11/10/2010
BLANK	Surrogate: Ortho_Terphenyl (S)	92.2	75-120			%	11/1/2010	11/10/2010

Quant Method: TPHD1101.M
Run #: 1110032
Instrument: Apollo
Sequence: 101101
Initials: LA

GC SC-Blank-REG MDLs
Printed: 11/11/2010 4:00:52 PM

EPA 8015

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: SOIL
Blank ID: A101025-BLK

SDG No: 62914
Date Analyzed: 10/25/10
Instrument: Harpo
Time Analyzed: 1129

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101025-LCS	Lab Control Spike	1025H02	10/25/10 1055
A101025-BLK	Blank	1025H03	10/25/10 1129
AY24988	C103-SD03-0.5	1025H06	10/25/10 1312
AY24990	C103-SD05-0.5	1025H07	10/25/10 1346
AY24992	C103-SD04-0.5	1025H08	10/25/10 1420
AY24994	C103-SD24-0.5	1025H09	10/25/10 1454
AY24996	C103-SD06-0.5	1025H10	10/25/10 1528
AY25004	C103-SD13-0.5	1025H11	10/25/10 1602
AY25005	C103-SD14-0.5	1025H12	10/25/10 1636
AY25006	C103-SD15-0.5	1025H13	10/25/10 1711
AY25007	C103-SD16-0.5	1025H15	10/25/10 1819
AY25008	C103-SD17-0.5	1025H16	10/25/10 1853
AY25009	C103-SD18-0.5	1025H17	10/25/10 1928
AY25010	C103-SD28-0.5	1025H18	10/25/10 2002

Comments: Batch: #GASCA-A101025

Method Blank
Gasoline Range Organics Soil

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **A10102S-24726 - 149128**
Batch ID: #GASCA-A101025

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	Gasoline Range Organics	0.68 U	1.0	0.68	0.34	mg/Kg	10/25/10	10/25/10
BLANK	Surrogate: BFB-FID (S)	97.5	40-125			%	10/25/10	10/25/10

Quant Method: HBTXGM.M
Run #: 1025H03
Instrument: Harpo
Sequence: 100618
Initials: LF

GC SC-Blank-REG MDLs
Printed: 11/16/10 6:00:21 PM

EPA 8290

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 62914

Case No: 62914 Date Analyzed: 11/08/10

Matrix: SOIL Instrument: Magneto

Blank ID: 101028B-BLK Time Analyzed: 1430

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101028B-LCS	Lab Control Spike	101105_HR_63	11/08/10 1108
101028B-BLK	Blank	101105_HR_66	11/08/10 1430
AY24990	C103-SD05-0.5	101110_HR_15	11/11/10 0258
AY24992	C103-SD04-0.5	101110_HR_16	11/11/10 0405
AY24994	C103-SD24-0.5	101110_HR_17	11/11/10 0521
AY24996	C103-SD06-0.5	101110_HR_23	11/11/10 1221
AY24988	C103-SD03-0.5	101110_HR_25	11/11/10 1442

Comments: Batch: #8290S-101028B

Printed: 12/01/10 2:44:39 PM
Form 4, Blank Summary

Method Blank

EPA 8290 - Dioxins and Furans

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **101028S-24726 - 148880**
Batch ID: $8290S-101028B

Sample Type	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
BLANK	1,2,3,4,6,7,8-HpCDD	0.54 U	12.5	0.54	pg/g	10/28/10	11/08/10
BLANK	1,2,3,4,6,7,8-HpCDF	0.20 U	12.5	0.20	pg/g	10/28/10	11/08/10
BLANK	1,2,3,4,7,8,9-HpCDF	0.27 U	12.5	0.27	pg/g	10/28/10	11/08/10
BLANK	1,2,3,4,7,8-HxCDD	0.44 U	12.5	0.44	pg/g	10/28/10	11/08/10
BLANK	1,2,3,4,7,8-HxCDF	0.16 U	12.5	0.16	pg/g	10/28/10	11/08/10
BLANK	1,2,3,6,7,8-HxCDD	0.34 U	12.5	0.34	pg/g	10/28/10	11/08/10
BLANK	1,2,3,6,7,8-HxCDF	0.14 U	12.5	0.14	pg/g	10/28/10	11/08/10
BLANK	1,2,3,7,8,9-HxCDD	0.36 U	12.5	0.36	pg/g	10/28/10	11/08/10
BLANK	1,2,3,7,8,9-HxCDF	0.18 U	12.5	0.18	pg/g	10/28/10	11/08/10
BLANK	1,2,3,7,8-PeCDD	0.23 U	12.5	0.23	pg/g	10/28/10	11/08/10
BLANK	1,2,3,7,8-PeCDF	0.15 U	12.5	0.15	pg/g	10/28/10	11/08/10
BLANK	2,3,4,6,7,8-HxCDF	0.16 U	12.5	0.16	pg/g	10/28/10	11/08/10
BLANK	2,3,4,7,8-PeCDF	0.15 U	12.5	0.15	pg/g	10/28/10	11/08/10
BLANK	2,3,7,8-TCDD	0.17 U	5.0	0.17	pg/g	10/28/10	11/08/10
BLANK	2,3,7,8-TCDF	0.24 U	5.0	0.24	pg/g	10/28/10	11/08/10
BLANK	OCDD	0.76 U	25.0	0.76	pg/g	10/28/10	11/08/10
BLANK	OCDF	0.53 U	25.0	0.53	pg/g	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	84.8	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	81.6	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	79.8	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	72.4	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	65.8	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	77.6	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-2,3,7,8-TCDD (S)	82.0	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-2,3,7,8-TCDF (S)	78.6	40-135		%	10/28/10	11/08/10
BLANK	Surrogate: 13C-OCDD (S)	74.3	40-135		%	10/28/10	11/08/10

Quant Method: 8290_101105
Run #: 101105_HR_66
Instrument: Magneto
Sequence: 101105
Initials: RP

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EPA 8290

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 62914

Case No: 62914 Date Analyzed: 11/07/10

Matrix: WATER Instrument: Magneto

Blank ID: 101028A-BLK Time Analyzed: 1530

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101028A-LCS	Lab Control Spike	101105_HR_44	11/07/10 1315
101028A-BLK	Blank	101105_HR_46	11/07/10 1530
AY24987	C103-SW03-00	101105_HR_52	11/07/10 2223
AY24989	C103-SW05-00	101105_HR_53	11/07/10 2339
AY24991	C103-SW04-00	101105_HR_54	11/08/10 0044
AY24993	C103-SW24-00	101105_HR_55	11/08/10 0152
AY24995	C103-SW06-00	101105_HR_60	11/08/10 0737

Comments: Batch: #8290W-101028A

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Form 4, Blank Summary

Method Blank

EPA 8290 - Dioxins and Furans

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **101028W-24725 - 148857**
Batch ID: $8290W-101028A

Sample Type	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
BLANK	1,2,3,4,6,7,8-HpCDD	2.1 U	125.0	2.1	pg/L	10/28/10	11/07/10
BLANK	1,2,3,4,6,7,8-HpCDF	2.3 U	125.0	2.3	pg/L	10/28/10	11/07/10
BLANK	1,2,3,4,7,8,9-HpCDF	3.2 U	125.0	3.2	pg/L	10/28/10	11/07/10
BLANK	1,2,3,4,7,8-HxCDD	2.7 U	125.0	2.7	pg/L	10/28/10	11/07/10
BLANK	1,2,3,4,7,8-HxCDF	1.4 U	125.0	1.4	pg/L	10/28/10	11/07/10
BLANK	1,2,3,6,7,8-HxCDD	2.5 U	125.0	2.5	pg/L	10/28/10	11/07/10
BLANK	1,2,3,6,7,8-HxCDF	1.2 U	125.0	1.2	pg/L	10/28/10	11/07/10
BLANK	1,2,3,7,8,9-HxCDD	2.6 U	125.0	2.6	pg/L	10/28/10	11/07/10
BLANK	1,2,3,7,8,9-HxCDF	1.6 U	125.0	1.6	pg/L	10/28/10	11/07/10
BLANK	1,2,3,7,8-PeCDD	1.9 U	125.0	1.9	pg/L	10/28/10	11/07/10
BLANK	1,2,3,7,8-PeCDF	1.6 U	125.0	1.6	pg/L	10/28/10	11/07/10
BLANK	2,3,4,6,7,8-HxCDF	1.4 U	125.0	1.4	pg/L	10/28/10	11/07/10
BLANK	2,3,4,7,8-PeCDF	2.5 U	125.0	2.5	pg/L	10/28/10	11/07/10
BLANK	2,3,7,8-TCDD	1.4 U	50.0	1.4	pg/L	10/28/10	11/07/10
BLANK	2,3,7,8-TCDF	1.7 U	50.0	1.7	pg/L	10/28/10	11/07/10
BLANK	OCDD	4.5 U	250.0	4.5	pg/L	10/28/10	11/07/10
BLANK	OCDF	4.9 U	250.0	4.9	pg/L	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	80.0	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	78.5	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	73.8	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	66.3	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,7,8-PeCDD (S)	68.0	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-1,2,3,7,8-PeCDF (S)	74.9	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-2,3,7,8-TCDD (S)	77.4	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-2,3,7,8-TCDF (S)	74.5	40-135		%	10/28/10	11/07/10
BLANK	Surrogate: 13C-OCDD (S)	70.9	40-135		%	10/28/10	11/07/10

Quant Method: 8290_101105
Run #: 101105_HR_46
Instrument: Magneto
Sequence: 101105
Initials: RP

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EPA 1668

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 62914

Case No: 62914 Date Analyzed: 11/14/10

Matrix: WATER Instrument: Magneto

Blank ID: 101025-BLK Time Analyzed: 0445

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101025-LCS	Lab Control Spike	101113_HR_13	11/14/10 0221
101025-BLK	Blank	101113_HR_15	11/14/10 0445
AY24987	C103-SW03-00	101113_HR_17	11/14/10 0717
AY24989	C103-SW05-00	101113_HR_18	11/14/10 0837
AY24991	C103-SW04-00	101117_HR_13	11/18/10 0918
AY24993	C103-SW24-00	101117_HR_14	11/18/10 1031
AY24995	C103-SW06-00	101117_HR_15	11/18/10 1143

Comments: Batch: #1668CANW-10102

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Form 4, Blank Summary

Method Blank
EPA 1668B Waters

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **101025W-24725 - 149248**
Batch ID: $1668CANW-101025

Sample Type	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
BLANK	PCB-105	7.5 U	100.0	7.5	pg/L	10/25/10	11/14/10
BLANK	PCB-114	21 U	100.0	21	pg/L	10/25/10	11/14/10
BLANK	PCB-118	370 U	100.0	370	pg/L	10/25/10	11/14/10
BLANK	PCB-123	3.3 U	100.0	3.3	pg/L	10/25/10	11/14/10
BLANK	PCB-126	4.0 U	100.0	4.0	pg/L	10/25/10	11/14/10
BLANK	PCB-156	3.7 U	100.0	3.7	pg/L	10/25/10	11/14/10
BLANK	PCB-157	3.8 U	100.0	3.8	pg/L	10/25/10	11/14/10
BLANK	PCB-167	3.3 U	100.0	3.3	pg/L	10/25/10	11/14/10
BLANK	PCB-169	4.8 U	100.0	4.8	pg/L	10/25/10	11/14/10
BLANK	PCB-170	19 J	100.0	19	pg/L	10/25/10	11/14/10
BLANK	PCB-180	30 U	100.0	30	pg/L	10/25/10	11/14/10
BLANK	PCB-189	0.50 U	100.0	0.50	pg/L	10/25/10	11/14/10
BLANK	PCB-77	2.6 U	100.0	2.6	pg/L	10/25/10	11/14/10
BLANK	PCB-81	0.70 U	100.0	0.70	pg/L	10/25/10	11/14/10
BLANK	Surrogate: PCB-105L (S)	86.5	30-140		%	10/25/10	11/14/10
BLANK	Surrogate: PCB-118L (S)	81.3	30-140		%	10/25/10	11/14/10
BLANK	Surrogate: PCB-126L (S)	91.7	30-140		%	10/25/10	11/14/10
BLANK	Surrogate: PCB-169L (S)	98.3	30-140		%	10/25/10	11/14/10
BLANK	Surrogate: PCB-77L (S)	95.9	30-140		%	10/25/10	11/14/10

J = Estimated value.

Quant Method: 1668_101113
Run #: 101113_HR_15
Instrument: Magneto
Sequence: 101113
Initials: RP

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EPA 1668

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: SOIL
Blank ID: 101027-BLK

SDG No: 62914
Date Analyzed: 11/19/10
Instrument: Magneto
Time Analyzed: 0352

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101027-LCS	Lab Control Spike	101117_HR_26	11/19/10 0130
101027-BLK	Blank	101117_HR_28	11/19/10 0352
AY24988	C103-SD03-0.5	101117_HR_35	11/19/10 1257
AY24990	C103-SD05-0.5	101117_HR_36	11/19/10 1459
AY24992	C103-SD04-0.5	101117_HR_37	11/19/10 1609
AY24994	C103-SD24-0.5	101117_HR_42	11/19/10 2219
AY24996	C103-SD06-0.5	101117_HR_43	11/19/10 2331

Comments: Batch: #1668CANS-10102

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Form 4, Blank Summary

Method Blank
EPA 1668B Solids

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **101027S-24726 - 149247**
Batch ID: $1668CANS-101027

Sample Type	Analyte	Result	PQL	EDL/EMPC	Units	Ext Date	Analysis Date
BLANK	PCB-105	2.1 U	10.0	2.1	pg/Kg	10/27/10	11/19/10
BLANK	PCB-114	1.9 U	10.0	1.9	pg/Kg	10/27/10	11/19/10
BLANK	PCB-118	29	10.0	29	pg/Kg	10/27/10	11/19/10
BLANK	PCB-123	0.56 U	10.0	0.56	pg/Kg	10/27/10	11/19/10
BLANK	PCB-126	0.72 U	10.0	0.72	pg/Kg	10/27/10	11/19/10
BLANK	PCB-156	0.31 U	10.0	0.31	pg/Kg	10/27/10	11/19/10
BLANK	PCB-157	0.31 U	10.0	0.31	pg/Kg	10/27/10	11/19/10
BLANK	PCB-167	0.27 U	10.0	0.27	pg/Kg	10/27/10	11/19/10
BLANK	PCB-169	0.43 U	10.0	0.43	pg/Kg	10/27/10	11/19/10
BLANK	PCB-170	1.5 J	10.0	1.5	pg/Kg	10/27/10	11/19/10
BLANK	PCB-180	2.4 J	10.0	2.4	pg/Kg	10/27/10	11/19/10
BLANK	PCB-189	0.042 U	10.0	0.042	pg/Kg	10/27/10	11/19/10
BLANK	PCB-77	0.57 J	10.0	0.57	pg/Kg	10/27/10	11/19/10
BLANK	PCB-81	0.19 U	10.0	0.19	pg/Kg	10/27/10	11/19/10
BLANK	Surrogate: PCB-105L (S)	131	30-140		%	10/27/10	11/19/10
BLANK	Surrogate: PCB-118L (S)	126	30-140		%	10/27/10	11/19/10
BLANK	Surrogate: PCB-126L (S)	143 #	30-140		%	10/27/10	11/19/10
BLANK	Surrogate: PCB-169L (S)	160 #	30-140		%	10/27/10	11/19/10
BLANK	Surrogate: PCB-77L (S)	142 #	30-140		%	10/27/10	11/19/10

J = Estimated value.
# = Recovery (or RPD) is outside QC limits.

Quant Method: 1668_101117
Run #: 101117_HR_28
Instrument: Magneto
Sequence: 101117
Initials: RP

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6010B/3010A

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: WATER
Blank ID: A101025-BLK

SDG No: 62914
Date Analyzed: 10/27/10
Instrument: Phoebe
Time Analyzed: 1501

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24989	C103-SW05-00	101027C	10/27/10 1537
AY24991	C103-SW04-00	101027C	10/27/10 1544
AY24993	C103-SW24-00	101027C	10/27/10 1556
AY24995	C103-SW06-00	101027C	10/27/10 1602
A101025-BLK	Blank	101027C	10/27/10 1501
A101025-DUP	Duplicate	101027C	10/27/10 1512
A101025-LCS	Lab Control Spike	101027C	10/27/10 1505
A101025-MS	Matrix Spike	101027C	10/27/10 1516
AY24987	C103-SW03-00	101027C	10/27/10 1509

Comments: Batch: #61DOD-A101025

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Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Lead (Pb) (Dissolved	3.16 U	5.0	3.16	1.58	ug/L	10/25/10	10/27/10	#61DOD-A101025-AY24987
6010B	Selenium (Se) (Disso	6.34 U	10.0	6.34	3.17	ug/L	10/25/10	10/27/10	#61DOD-A101025-AY24987
6010B	Silver (Ag) (Dissolve	0.50 U	1.0	0.50	0.25	ug/L	10/25/10	10/27/10	#61DOD-A101025-AY24987

Metals SC-Blank-URS-REG MDLs
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6010B/3010A

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: WATER
Blank ID: AA101025-BLK

SDG No: 62914
Date Analyzed: 10/27/10
Instrument: Phoebe
Time Analyzed: 1501

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24987	C103-SW03-00	101027C	10/27/10 1534
AY24989	C103-SW05-00	101027C	10/27/10 1541
AY24991	C103-SW04-00	101027C	10/27/10 1552
AY24993	C103-SW24-00	101027C	10/27/10 1559
AY24995	C103-SW06-00	101027C	10/27/10 1613
AA101025-BLK	Blank	101027C	10/27/10 1501
AA101025-LCS	Lab Control Spike	101027C	10/27/10 1505

Comments: Batch: #61DOD-AA101025

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Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Lead (Pb)	3.16 U	5.0	3.16	1.58	ug/L	10/25/10	10/27/10	I61DOD-AA101025-AY24987
6010B	Selenium (Se)	6.34 U	10.0	6.34	3.17	ug/L	10/25/10	10/27/10	I61DOD-AA101025-AY24987
6010B	Silver (Ag)	0.50 U	1.0	0.50	0.25	ug/L	10/25/10	10/27/10	I61DOD-AA101025-AY24987

Metals SC-Blank-URS-REG MDLs
Printed: 12/06/10 3:38:35 PM

6010B/3010A

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: WATER
Blank ID: A101109-BLK

SDG No: 62914
Date Analyzed: 11/11/10
Instrument: Phoebe
Time Analyzed: 0922

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24989	C103-SW05-00	101111A	11/11/10 0946
A101109-MS	Matrix Spike	101111A	11/11/10 0934
A101109-LCS	Lab Control Spike	101111A	11/11/10 0925
A101109-BLK	Blank	101111A	11/11/10 0922
AY24987	C103-SW03-00	101111A	11/11/10 0928
A101109-DUP	Duplicate	101111A	11/11/10 0931

Comments: Batch: #61DOD-A101109

Printed: 12/06/10 3:36:27 PM
Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Lead (Pb) (Dissolved	3.16 U	5.0	3.16	1.58	ug/L	11/09/10	11/11/10	#61DOD-A101109-AY24987

Metals SC-Blank-URS-REG MDLs
Printed: 12/06/10 3:38:35 PM

6010B/3050B

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: SOIL
Blank ID: B101029-BLK

SDG No: 62914
Date Analyzed: 11/02/10
Instrument: Phoebe
Time Analyzed: 1546

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24992	C103-SD04-0.5	101102A	11/02/10 1612
B101029-BLK	Blank	101102A	11/02/10 1546
B101029-MS	Matrix Spike	101102A	11/02/10 1655
B101029-LCS	Lab Control Spike	101102A	11/02/10 1550
AY24988	C103-SD03-0.5	101102A	11/02/10 1606
B101029-DUP	Duplicate	101102A	11/02/10 1653
AY24990	C103-SD05-0.5	101102A	11/02/10 1609
AY25003	C103-SD12-0.5	101102A	11/02/10 1649
AY25002	C103-SD11-0.5	101102A	11/02/10 1646
AY25000	C103-SD10.05	101102A	11/02/10 1632
AY24999	C103-SD09-0.3	101102A	11/02/10 1629
AY24998	C103-SD08-0.3	101102A	11/02/10 1626
AY24997	C103-SD07-0.5	101102A	11/02/10 1623
AY24996	C103-SD06-0.5	101102A	11/02/10 1619
AY24994	C103-SD24-0.5	101102A	11/02/10 1616
AY25001	C103-SD20-0.5	101102A	11/02/10 1636
AY25004	C103-SD13-0.5	101208A	12/08/10 1227

Comments: Batch: #61SDO-B101029

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Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Arsenic (As)	0.176 U	0.50	0.176	0.088	mg/kg	10/29/10	11/02/10	#61SDO-B101029-AY25003
6010B	Selenium (Se)	0.488 U	0.50	0.488	0.244	mg/kg	10/29/10	11/02/10	#61SDO-B101029-AY25003
6010B	Silver (Ag)	0.072 U	0.10	0.072	0.036	mg/kg	10/29/10	11/02/10	#61SDO-B101029-AY25003
6010B	Vanadium (V)	0.112 U	0.50	0.112	0.056	mg/kg	10/29/10	11/02/10	#61SDO-B101029-AY25003

Metals SC-Blank-URS-REG MDLs
Printed: 12/06/10 3:38:35 PM

6010B/3050B

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 62914

Case No: 62914 Date Analyzed: 12/08/10

Matrix: SOIL Instrument: Phoebe

Blank ID: CC101029-BLK Time Analyzed: 1141

APPL ID.	Client Sample No.	File ID.	Date Analyzed
CC101029-LCS	Lab Control Spike	101208A	12/08/10 1145
CC101029-BLK	Blank	101208A	12/08/10 1141
AY25010	C103-SD28-0.5	101208A	12/08/10 1215
AY25009	C103-SD18-0.5	101208A	12/08/10 1211
AY25008	C103-SD17-0.5	101208A	12/08/10 1207
AY25007	C103-SD16-0.5	101208A	12/08/10 1203
AY25005	C103-SD14-0.5	101208A	12/08/10 1155
AY25006	C103-SD15-0.5	101208A	12/08/10 1159

Comments: Batch: #61SDO-CC101029

Printed: 12/09/10 10:11:00 AM
Form 4, Blank Summary

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6010B	Selenium (Se)	0.488 U	0.50	0.488	0.244	mg/kg	10/29/10	12/08/10	I61SDO-CC101029-AY25010
6010B	Silver (Ag)	0.072 U	0.10	0.072	0.036	mg/kg	10/29/10	12/08/10	I61SDO-CC101029-AY25010

Metals SC-Blank-URS-REG MDLs
Printed: 12/09/10 10:12:16 AM

EPA 8015B-e

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: SOIL
LCS ID: A101101-LCS

SDG No: 62914
Date Analyzed: 11/10/2010
Instrument: Apollo
Time Analyzed: 2213

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101101-BLK	Blank	1110032	11/10/2010 2150
A101101-LCS	Lab Control Spike	1110033	11/10/2010 2213
AY24988	C103-SD03-0.5	1110041	11/11/2010 0121
AY24990	C103-SD05-0.5	1110042	11/11/2010 0145
AY24992	C103-SD04-0.5	1110045	11/11/2010 0255
AY24994	C103-SD24-0.5	1110046	11/11/2010 0318
AY24996	C103-SD06-0.5	1110047	11/11/2010 0341
AY25004	C103-SD13-0.5	1110048	11/11/2010 0405
AY25005	C103-SD14-0.5	1110049	11/11/2010 0428
AY25006	C103-SD15-0.5	1110050	11/11/2010 0451
AY25007	C103-SD16-0.5	1110051	11/11/2010 0515
AY25008	C103-SD17-0.5	1110052	11/11/2010 0538
AY25009	C103-SD18-0.5	1110053	11/11/2010 0602
AY25010	C103-SD28-0.5	1110054	11/11/2010 0625

Comments: Batch: #TPHCA-A101101

Printed: 11/11/2010 4:00:11 PM
Form 4, LCS Summary

Laboratory Control Spike Recovery
TPH Extractables Soil

APPL ID: **101101S-24726 LCS - 148950**
Batch ID: #TPHCA-A101101

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level mg/kg	SPK Result mg/kg	SPK % Recovery	Recovery Limits
Diesel Range Organics	40.0	40.6	102	64-122
Oil Range Organics	40.0	49.8	125	50-150
Surrogate: Octacosane (S)	3.00	2.81	93.7	70-120
Surrogate: Ortho_Terphenyl (S)	3.00	2.86	95.3	75-120

Comments:

Primary	SPK
Quant Method :	TPHD1101.M
Extraction Date :	11/1/2010
Analysis Date :	11/10/2010
Instrument :	Apollo
Run :	1110033
Initials :	LA

Printed: 11/11/2010 4:00:30 PM

APPL Standard LCS

EPA 8015

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: SOIL
LCS ID: A101025-LCS

SDG No: 62914
Date Analyzed: 10/25/10
Instrument: Harpo
Time Analyzed: 1055

APPL ID.	Client Sample No.	File ID.	Date Analyzed
A101025-LCS	Lab Control Spike	1025H02	10/25/10 1055
A101025-BLK	Blank	1025H03	10/25/10 1129
AY24988	C103-SD03-0.5	1025H06	10/25/10 1312
AY24990	C103-SD05-0.5	1025H07	10/25/10 1346
AY24992	C103-SD04-0.5	1025H08	10/25/10 1420
AY24994	C103-SD24-0.5	1025H09	10/25/10 1454
AY24996	C103-SD06-0.5	1025H10	10/25/10 1528
AY25004	C103-SD13-0.5	1025H11	10/25/10 1602
AY25005	C103-SD14-0.5	1025H12	10/25/10 1636
AY25006	C103-SD15-0.5	1025H13	10/25/10 1711
AY25007	C103-SD16-0.5	1025H15	10/25/10 1819
AY25008	C103-SD17-0.5	1025H16	10/25/10 1853
AY25009	C103-SD18-0.5	1025H17	10/25/10 1928
AY25010	C103-SD28-0.5	1025H18	10/25/10 2002

Comments: Batch: #GASCA-A101025

Laboratory Control Spike Recovery
Gasoline Range Organics Soil

APPL ID: **101025S-24726 LCS - 149128**
Batch ID: #GASCA-A101025

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level mg/Kg	SPK Result mg/Kg	SPK % Recovery	Recovery Limits
Gasoline Range Organics	15.0	12.7	84.7	37-150
Surrogate: BFB-FID (S)	0.035	0.0377	108	40-125

Comments:

Primary	SPK
Quant Method :	HBTXGM.M
Extraction Date :	10/25/10
Analysis Date :	10/25/10
Instrument :	Harpo
Run :	1025H02
Initials :	LF

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APPL Standard LCS

EPA 8290

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: SOIL
LCS ID: 101028B-LCS

SDG No: 62914
Date Analyzed: 11/08/10
Instrument: Magneto
Time Analyzed: 1108

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101028B-LCS	Lab Control Spike	101105_HR_63	11/08/10 1108
101028B-BLK	Blank	101105_HR_66	11/08/10 1430
AY24990	C103-SD05-0.5	101110_HR_15	11/11/10 0258
AY24992	C103-SD04-0.5	101110_HR_16	11/11/10 0405
AY24994	C103-SD24-0.5	101110_HR_17	11/11/10 0521
AY24996	C103-SD06-0.5	101110_HR_23	11/11/10 1221
AY24988	C103-SD03-0.5	101110_HR_25	11/11/10 1442

Comments: Batch: #8290S-101028B

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Form 4, LCS Summary

Laboratory Control Spike Recovery
EPA 8290 - Dioxins and Furans

APPL ID: **101028S-24726 LCS - 148880**
Batch ID: #8290S-101028B

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level pg/g	SPK Result pg/g	SPK % Recovery	Recovery Limits
1,2,3,4,6,7,8-HpCDD	162	176	109	70-130
1,2,3,4,6,7,8-HpCDF	173	161	93.1	70-130
1,2,3,4,7,8,9-HpCDF	173	146	84.4	70-130
1,2,3,4,7,8-HxCDD	187	202	108	70-130
1,2,3,4,7,8-HxCDF	165	171	104	70-130
1,2,3,6,7,8-HxCDD	189	186	98.4	70-130
1,2,3,6,7,8-HxCDF	162	168	104	70-130
1,2,3,7,8,9-HxCDD	189	199	105	70-130
1,2,3,7,8,9-HxCDF	153	166	108	70-130
1,2,3,7,8-PeCDD	164	155	94.5	70-130
1,2,3,7,8-PeCDF	175	180	103	70-130
2,3,4,6,7,8-HxCDF	165	189	115	70-130
2,3,4,7,8-PeCDF	160	135	84.4	70-130
2,3,7,8-TCDD	62.9	61.5	97.8	70-130
2,3,7,8-TCDF	66.8	68.7	103	70-130
OCDD	377	363	96.3	70-130
OCDF	356	338	94.9	70-130
Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	500	266	53.2	40-135
Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	500	277	55.4	40-135
Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	500	254	50.8	40-135
Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	500	227	45.4	40-135
Surrogate: 13C-1,2,3,7,8-PeCDD (S)	200	85.0	42.5	40-135
Surrogate: 13C-1,2,3,7,8-PeCDF (S)	200	97.0	48.5	40-135
Surrogate: 13C-2,3,7,8-TCDD (S)	200	109	54.5	40-135
Surrogate: 13C-2,3,7,8-TCDF (S)	200	103	51.5	40-135
Surrogate: 13C-OCDD (S)	1000	462	46.2	40-135

Comments: _____

Primary	SPK
Quant Method :	8290_101105
Extraction Date :	10/28/10
Analysis Date :	11/08/10
Instrument :	Magneto
Run :	101105_HR_63
Initials :	RP

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APPL Standard LCS

EPA 8290

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: WATER
LCS ID: 101028A-LCS

SDG No: 62914
Date Analyzed: 11/07/10
Instrument: Magneto
Time Analyzed: 1315

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101028A-LCS	Lab Control Spike	101105_HR_44	11/07/10 1315
101028A-BLK	Blank	101105_HR_46	11/07/10 1530
AY24987	C103-SW03-00	101105_HR_52	11/07/10 2223
AY24989	C103-SW05-00	101105_HR_53	11/07/10 2339
AY24991	C103-SW04-00	101105_HR_54	11/08/10 0044
AY24993	C103-SW24-00	101105_HR_55	11/08/10 0152
AY24995	C103-SW06-00	101105_HR_60	11/08/10 0737

Comments: Batch: #8290W-101028A

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Form 4, LCS Summary

Laboratory Control Spike Recovery
EPA 8290 - Dioxins and Furans

APPL ID: **101028W-24725 LCS - 148857**
Batch ID: #8290W-101028A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level pg/L	SPK Result pg/L	SPK % Recovery	Recovery Limits
1,2,3,4,6,7,8-HpCDD	1620	1620	99.9	70-130
1,2,3,4,6,7,8-HpCDF	1730	1450	83.9	70-130
1,2,3,4,7,8,9-HpCDF	1730	1550	89.6	70-130
1,2,3,4,7,8-HxCDD	1870	1780	95.1	70-130
1,2,3,4,7,8-HxCDF	1650	1510	91.5	70-130
1,2,3,6,7,8-HxCDD	1900	1670	88.1	70-130
1,2,3,6,7,8-HxCDF	1620	1400	86.6	70-130
1,2,3,7,8,9-HxCDD	1890	1900	101	70-130
1,2,3,7,8,9-HxCDF	1530	1570	103	70-130
1,2,3,7,8-PeCDD	1640	1340	81.6	70-130
1,2,3,7,8-PeCDF	1750	1470	84.0	70-130
2,3,4,6,7,8-HxCDF	1650	1660	101	70-130
2,3,4,7,8-PeCDF	1600	1190	74.5	70-130
2,3,7,8-TCDD	629	540	85.9	70-130
2,3,7,8-TCDF	668	579	86.7	70-130
OCDD	3780	3260	86.4	70-130
OCDF	3560	3140	88.1	70-130
Surrogate: 13C-1,2,3,4,6,7,8-HpCDD (S)	5000	4290	85.8	40-135
Surrogate: 13C-1,2,3,4,6,7,8-HpCDF (S)	5000	4110	82.2	40-135
Surrogate: 13C-1,2,3,4,7,8-HxCDF (S)	5000	3700	74.0	40-135
Surrogate: 13C-1,2,3,6,7,8-HxCDD (S)	5000	3290	65.8	40-135
Surrogate: 13C-1,2,3,7,8-PeCDD (S)	2000	1440	72.0	40-135
Surrogate: 13C-1,2,3,7,8-PeCDF (S)	2000	1620	81.0	40-135
Surrogate: 13C-2,3,7,8-TCDD (S)	2000	1550	77.5	40-135
Surrogate: 13C-2,3,7,8-TCDF (S)	2000	1500	75.0	40-135
Surrogate: 13C-OCDD (S)	10000	8000	80.0	40-135

Comments:

Primary	SPK
Quant Method :	8290_101105
Extraction Date :	10/28/10
Analysis Date :	11/07/10
Instrument :	Magneto
Run :	101105_HR_44
Initials :	RP

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APPL Standard LCS

EPA 1668

Form 4

LCS Summary

Lab Name: APPL, Inc. SDG No: 62914

Case No: 62914 Date Analyzed: 11/14/10

Matrix: WATER Instrument: Magneto

LCS ID: 101025-LCS Time Analyzed: 0221

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101025-LCS	Lab Control Spike	101113_HR_13	11/14/10 0221
101025-BLK	Blank	101113_HR_15	11/14/10 0445
AY24987	C103-SW03-00	101113_HR_17	11/14/10 0717
AY24989	C103-SW05-00	101113_HR_18	11/14/10 0837
AY24991	C103-SW04-00	101117_HR_13	11/18/10 0918
AY24993	C103-SW24-00	101117_HR_14	11/18/10 1031
AY24995	C103-SW06-00	101117_HR_15	11/18/10 1143

Comments: Batch: #1668CANW-10102

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Form 4, LCS Summary

Laboratory Control Spike Recovery
EPA 1668B Waters

APPL ID: **101025W-24725 LCS - 149248**
Batch ID: #1668CANW-101025

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level pg/L	SPK Result pg/L	SPK % Recovery	Recovery Limits
PCB-105	2500	2050	82.0	60-140
PCB-114	2500	2000	80.0	60-140
PCB-118	2500	2550	102	60-140
PCB-123	2500	2200	88.0	60-140
PCB-126	2500	2070	82.8	60-140
PCB-156	2500	2220	88.8	60-140
PCB-157	2500	2110	84.4	60-140
PCB-167	2500	2260	90.4	60-140
PCB-169	2500	2180	87.2	60-140
PCB-170	2500	4440	178 #	60-140
PCB-180	2500	6730	269 #	60-140
PCB-189	2500	2010	80.4	60-140
PCB-77	2500	2260	90.4	60-140
PCB-81	2500	2260	90.4	60-140
Surrogate: PCB-105L (S)	5000	4140	82.8	30-140
Surrogate: PCB-118L (S)	5000	3880	77.6	30-140
Surrogate: PCB-126L (S)	5000	3920	78.4	30-140
Surrogate: PCB-169L (S)	5000	3830	76.6	30-140
Surrogate: PCB-77L (S)	5000	4640	92.8	30-140

= Recovery is outside QC limits.

Comments:

Primary	SPK
Quant Method :	1668_101113
Extraction Date :	10/25/10
Analysis Date :	11/14/10
Instrument :	Magneto
Run :	101113_HR_13
Initials :	RP

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APPL Standard LCS

EPA 1668

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: SOIL
LCS ID: 101027-LCS

SDG No: 62914
Date Analyzed: 11/19/10
Instrument: Magneto
Time Analyzed: 0130

APPL ID.	Client Sample No.	File ID.	Date Analyzed
101027-LCS	Lab Control Spike	101117_HR_26	11/19/10 0130
101027-BLK	Blank	101117_HR_28	11/19/10 0352
AY24988	C103-SD03-0.5	101117_HR_35	11/19/10 1257
AY24990	C103-SD05-0.5	101117_HR_36	11/19/10 1459
AY24992	C103-SD04-0.5	101117_HR_37	11/19/10 1609
AY24994	C103-SD24-0.5	101117_HR_42	11/19/10 2219
AY24996	C103-SD06-0.5	101117_HR_43	11/19/10 2331

Comments: Batch: #1668CANS-10102

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Form 4, LCS Summary

Laboratory Control Spike Recovery
EPA 1668B Solids

APPL ID: **101027S-24726 LCS - 149247**
Batch ID: #1668CANS-101027

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level pg/Kg	SPK Result pg/Kg	SPK % Recovery	Recovery Limits
PCB-105	250	194	77.6	60-140
PCB-114	250	192	76.8	60-140
PCB-118	250	222	88.8	60-140
PCB-123	250	206	82.4	60-140
PCB-126	250	192	76.8	60-140
PCB-156	250	185	74.0	60-140
PCB-157	250	198	79.2	60-140
PCB-167	250	202	80.8	60-140
PCB-169	250	222	88.8	60-140
PCB-170	250	222	88.8	60-140
PCB-180	250	219	87.6	60-140
PCB-189	250	185	74.0	60-140
PCB-77	250	205	82.0	60-140
PCB-81	250	206	82.4	60-140
Surrogate: PCB-105L (S)	500	686	137	30-140
Surrogate: PCB-118L (S)	500	663	133	30-140
Surrogate: PCB-126L (S)	500	653	131	30-140
Surrogate: PCB-169L (S)	500	673	135	30-140
Surrogate: PCB-77L (S)	500	749	150 #	30-140

= Recovery is outside QC limits.

Comments:

Primary	SPK
Quant Method :	1668_101117
Extraction Date :	10/27/10
Analysis Date :	11/19/10
Instrument :	Magneto
Run :	101117_HR_26
Initials :	RP

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APPL Standard LCS

6010B/3010A

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: WATER
LCS ID: A101025-LCS

SDG No: 62914
Date Analyzed: 10/27/10
Instrument: Phoebe
Time Analyzed: 1505

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24989	C103-SW05-00	101027C	10/27/10 1537
AY24991	C103-SW04-00	101027C	10/27/10 1544
AY24993	C103-SW24-00	101027C	10/27/10 1556
AY24995	C103-SW06-00	101027C	10/27/10 1602
A101025-BLK	Blank	101027C	10/27/10 1501
A101025-DUP	Duplicate	101027C	10/27/10 1512
A101025-LCS	Lab Control Spike	101027C	10/27/10 1505
A101025-MS	Matrix Spike	101027C	10/27/10 1516
AY24987	C103-SW03-00	101027C	10/27/10 1509

Comments: Batch: #61DOD-A101025

Printed: 12/06/10 3:36:22 PM
Form 4, LCS Summary

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Lead (Pb) (Dissolved)	250	270	108	80-120	10/25/10	10/27/10	#61DOD-A101025-AY24987
EPA 6010B	Selenium (Se) (Dissolved)	250	251	100	80-120	10/25/10	10/27/10	#61DOD-A101025-AY24987
EPA 6010B	Silver (Ag) (Dissolved)	100	105	105	80-120	10/25/10	10/27/10	#61DOD-A101025-AY24987

Comments: _____

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APPL Standard LCS

6010B/3010A

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: WATER
LCS ID: AA101025-LCS

SDG No: 62914
Date Analyzed: 10/27/10
Instrument: Phoebe
Time Analyzed: 1505

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24987	C103-SW03-00	101027C	10/27/10 1534
AY24989	C103-SW05-00	101027C	10/27/10 1541
AY24991	C103-SW04-00	101027C	10/27/10 1552
AY24993	C103-SW24-00	101027C	10/27/10 1559
AY24995	C103-SW06-00	101027C	10/27/10 1613
AA101025-BLK	Blank	101027C	10/27/10 1501
AA101025-LCS	Lab Control Spike	101027C	10/27/10 1505

Comments: Batch: #61DOD-AA101025

Printed: 12/06/10 3:36:23 PM
Form 4, LCS Summary

Laboratory Control Spike Recovery
METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Lead (Pb)	250	270	108	80-120	10/25/10	10/27/10	#61DOD-AA101025-AY24987
EPA 6010B	Selenium (Se)	250	251	100	80-120	10/25/10	10/27/10	#61DOD-AA101025-AY24987
EPA 6010B	Silver (Ag)	100.0	105	105	80-120	10/25/10	10/27/10	#61DOD-AA101025-AY24987

Comments: _____

6010B/3010A

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: WATER
LCS ID: A101109-LCS

SDG No: 62914
Date Analyzed: 11/11/10
Instrument: Phoebe
Time Analyzed: 0925

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24989	C103-SW05-00	101111A	11/11/10 0946
A101109-MS	Matrix Spike	101111A	11/11/10 0934
A101109-LCS	Lab Control Spike	101111A	11/11/10 0925
A101109-BLK	Blank	101111A	11/11/10 0922
AY24987	C103-SW03-00	101111A	11/11/10 0928
A101109-DUP	Duplicate	101111A	11/11/10 0931

Comments: Batch: #61DOD-A101109

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Form 4, LCS Summary

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Lead (Pb) (Dissolved)	250	262	105	80-120	11/09/10	11/11/10	#61DOD-A101109-AY24987

Comments:

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APPL Standard LCS

6010B/3050B

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: SOIL
LCS ID: B101029-LCS

SDG No: 62914
Date Analyzed: 11/02/10
Instrument: Phoebe
Time Analyzed: 1550

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY24992	C103-SD04-0.5	101102A	11/02/10 1612
B101029-BLK	Blank	101102A	11/02/10 1546
B101029-MS	Matrix Spike	101102A	11/02/10 1655
B101029-LCS	Lab Control Spike	101102A	11/02/10 1550
AY24988	C103-SD03-0.5	101102A	11/02/10 1606
B101029-DUP	Duplicate	101102A	11/02/10 1653
AY24990	C103-SD05-0.5	101102A	11/02/10 1609
AY25003	C103-SD12-0.5	101102A	11/02/10 1649
AY25002	C103-SD11-0.5	101102A	11/02/10 1646
AY25000	C103-SD10.05	101102A	11/02/10 1632
AY24999	C103-SD09-0.3	101102A	11/02/10 1629
AY24998	C103-SD08-0.3	101102A	11/02/10 1626
AY24997	C103-SD07-0.5	101102A	11/02/10 1623
AY24996	C103-SD06-0.5	101102A	11/02/10 1619
AY24994	C103-SD24-0.5	101102A	11/02/10 1616
AY25001	C103-SD20-0.5	101102A	11/02/10 1636
AY25004	C103-SD13-0.5	101208A	12/08/10 1227

Comments: Batch: #61SDO-B101029

Printed: 12/09/10 10:10:54 AM
Form 4, LCS Summary

Laboratory Control Spike Recovery
METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level mg/kg	SPK Result mg/kg	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Arsenic (As)	25.0	25.3	101	80-120	10/29/10	11/02/10	#61SDO-B101029-AY25003
EPA 6010B	Selenium (Se)	25.0	24.1	96.4	80-120	10/29/10	11/02/10	#61SDO-B101029-AY25003
EPA 6010B	Silver (Ag)	10.00	9.8	98.0	75-120	10/29/10	11/02/10	#61SDO-B101029-AY25003
EPA 6010B	Vanadium (V)	25.0	26.6	106	80-120	10/29/10	11/02/10	#61SDO-B101029-AY25003

Comments: _____

Printed: 12/07/10 9:36:14 AM
APPL Standard LCS

6010B/3050B

Form 4

LCS Summary

Lab Name: APPL, Inc.
Case No: 62914
Matrix: SOIL
LCS ID: CC101029-LCS

SDG No: 62914
Date Analyzed: 12/08/10
Instrument: Phoebe
Time Analyzed: 1145

APPL ID.	Client Sample No.	File ID.	Date Analyzed
CC101029-LCS	Lab Control Spike	101208A	12/08/10 1145
CC101029-BLK	Blank	101208A	12/08/10 1141
AY25010	C103-SD28-0.5	101208A	12/08/10 1215
AY25009	C103-SD18-0.5	101208A	12/08/10 1211
AY25008	C103-SD17-0.5	101208A	12/08/10 1207
AY25007	C103-SD16-0.5	101208A	12/08/10 1203
AY25005	C103-SD14-0.5	101208A	12/08/10 1155
AY25006	C103-SD15-0.5	101208A	12/08/10 1159

Comments: Batch: #61SDO-CC101029

Printed: 12/09/10 10:10:54 AM
Form 4, LCS Summary

Laboratory Control Spike Recovery
METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level mg/kg	SPK Result mg/kg	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
EPA 6010B	Selenium (Se)	25.0	21.4	85.6	80-120	10/29/10	12/08/10	#61SDO-CC101029-AY25010
EPA 6010B	Silver (Ag)	10.0	10.2	102	75-120	10/29/10	12/08/10	#61SDO-CC101029-AY25010

Comments: _____

Printed: 12/09/10 10:11:15 AM
APPL Standard LCS

Matrix Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Sample ID: AY24987
Client ID: C103-SW03-00

Method	Compound Name	Spike Level ug/L	Matrix Result ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group	QC Sample
EPA 6010B	Lead (Pb) (Dissolved)	250	ND	246	98.4	80-120	11/09/10	11/11/10	#61DOD-A101109	AY24987
EPA 6010B	Selenium (Se) (Dissolved)	250	ND	278	111	80-120	10/25/10	10/27/10	#61DOD-A101025	AY24987
EPA 6010B	Silver (Ag) (Dissolved)	100.0	ND	116	116	80-120	10/25/10	10/27/10	#61DOD-A101025	AY24987

Comments: _____

Printed: 11/11/10 3:29:56 PM
APPL MS SCII - URS

Matrix Spike Recovery
METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Sample ID: AY25003
Client ID: C103-SD12-0.5

Method	Compound Name	Spike Level mg/kg	Matrix Result mg/kg	SPK Result mg/kg	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group	QC Sample
EPA 6010B	Selenium (Se)	52.1	1.7	35.6	65.1 #	80-120	10/29/10	11/02/10	#61SDO-B101029	AY25003

= Recovery is outside QC limits.

Comments:

Printed: 11/08/10 3:47:10 PM
APPL MS SCII - URS

METALS

Sample/Sample Duplicate Results

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

Attn: Tony Sedlacek

Sample ID: AY24987
Client ID: C103-SW03-00

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

ARF: 62914

Method	Analyte	Sample ID	Sample Result	Sample Dup Result	RPD	RPD Max	MDL	PQL	Units	Sample Extract Date	Sample Analysis Date	Sample Dup Extract Date	Sample Dup Analysis Date
6010B/3010A	Selenium (Se) (Dis	AY24987	Not detected	Not detected	NA	20	3.17	10.0	ug/L	10/25/10	10/27/10	10/25/10	10/27/10
6010B/3010A	Silver (Ag) (Dissolv	AY24987	Not detected	Not detected	NA	20	0.25	1.0	ug/L	10/25/10	10/27/10	10/25/10	10/27/10
6010B/3010A	Lead (Pb) (Dissolv	AY24987	Not detected	Not detected	NA	20	1.58	5.0	ug/L	11/09/10	11/11/10	11/09/10	11/11/10

Printed: 11/12/10 9:39:18 AM

Dup-SCII (NoMC)

METALS

Sample/Sample Duplicate Results

URS Group, Inc.
12120 Shamrock Plaza Suite 300
Omaha, NE 68154

Attn: Tony Sedlacek

Project: 16170587 Cannon AF SWMU 103 (Playa Lake)

Sample ID: AY25003
Client ID: C103-SD12-0.5

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

ARF: 62914

Method	Analyte	Sample ID	Sample Result	Sample Dup Result	RPD	RPD Max	MDL	PQL	Units	Sample Extract Date	Sample Analysis Date	Sample Dup Extract Date	Sample Dup Analysis Date
6010B/3050B	Selenium (Se)	AY25003	5.4	4.7	14	20	0.770	1.60	mg/kg	10/29/10	11/02/10	10/29/10	11/02/10

Printed: 11/08/10 3:46:54 PM
Dup-SCII (MCRes-MCLim)

C.2 ANALYTICAL DATA RESULTS

TABLE C-1a
SUMMARY OF PCB CONGENERS AND DIOXINS/FURANS SURFACE WATER ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID					C103-SW01-00			C103-SW02-00			C103-SW03-00		
DATE COLLECTED	NMAC Surface Water Screening Criteria [1]	USEPA Water RSL [2]	Maximum	Frequency	October 18, 2010			October 18, 2010			October 19, 2010		
					Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual
POLYCHORINATED BIPHENYL CONGENERS (PCB) (µg/L)													
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	-	1.70E-02	3.00E-05 J	1 / 6	<	1.80E-05	U	<	2.10E-05	U	<	2.40E-05	U
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	-	1.70E-02	1.80E-05 J	1 / 6	<	1.40E-05	U	<	2.90E-05	U	<	2.00E-05	U
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	-	1.70E-02	5.10E-04	4 / 6	<	4.20E-04	U	3.70E-04	3.70E-04		5.10E-04	5.10E-04	
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	-	1.70E-02	ND	0 / 6	<	4.30E-06	U	<	2.60E-05	U	<	4.30E-06	U
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	-	5.20E-06	ND	0 / 6	<	5.40E-06	U	<	8.40E-06	U	<	5.20E-06	U
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	-	1.70E-02	4.90E-05 J	3 / 6	<	7.80E-06	U	4.90E-05	4.90E-05	J	8.10E-06	8.10E-06	J
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	-	1.70E-02	ND	0 / 6	<	8.10E-06	U	<	4.10E-06	U	<	4.00E-06	U
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	-	1.70E-02	ND	0 / 6	<	7.00E-06	U	<	1.70E-05	U	<	3.50E-06	U
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	-	1.70E-05	ND	0 / 6	<	1.10E-05	U	<	6.00E-06	U	<	5.20E-06	U
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	-	3.5E-04 J	1 / 6	<	3.00E-05	U	3.50E-04	3.50E-04	J	<	1.90E-05	U
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	-	9.00E-04 J	6 / 6	1.20E-04	1.20E-04	J	9.00E-04	9.00E-04	J	5.00E-05	5.00E-05	J
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	-	1.70E-02	ND	0 / 6	<	3.40E-06	U	<	6.90E-06	U	<	2.10E-06	U
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	-	5.20E-03	7.6E-06 J	1 / 6	<	5.20E-06	U	<	7.80E-06	U	<	6.80E-06	U
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	-	1.70E-03	ND	0 / 6	<	3.80E-06	U	<	7.60E-07	U	<	3.00E-06	U
DIOXINS AND FURANS (µg/L)													
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	-	-	ND	0 / 6	<	1.00E-06	U	<	2.10E-06	U	<	8.40E-07	U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	-	-	ND	0 / 6	<	8.80E-07	U	<	1.00E-06	U	<	1.10E-06	U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	-	-	ND	0 / 6	<	1.20E-06	U	<	1.40E-06	U	<	1.50E-06	U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	-	ND	0 / 6	<	2.20E-06	U	<	3.30E-06	U	<	1.60E-06	U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	-	-	ND	0 / 6	<	1.40E-06	U	<	8.50E-07	U	<	8.30E-07	U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	-	ND	0 / 6	<	1.50E-06	U	<	1.80E-06	U	<	1.10E-06	U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	-	ND	0 / 6	<	8.70E-07	U	<	8.40E-07	U	<	7.00E-07	U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	-	-	ND	0 / 6	<	2.10E-06	U	<	1.90E-06	U	<	2.80E-06	U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	-	-	ND	0 / 6	<	1.20E-06	U	<	1.10E-06	U	<	1.00E-06	U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	-	-	ND	0 / 6	<	1.50E-06	U	<	1.40E-06	U	<	8.80E-07	U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	-	-	ND	0 / 6	<	1.10E-06	U	<	1.10E-06	U	<	1.00E-06	U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	-	ND	0 / 6	<	1.00E-06	U	<	1.00E-06	U	<	8.40E-07	U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	-	-	ND	0 / 6	<	1.10E-06	U	<	5.00E-07	UJ	<	6.90E-07	U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	5.10E-08	-	ND	0 / 6	<	9.10E-07	U	<	1.90E-06	U	<	6.50E-07	U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	-	-	ND	0 / 6	<	1.80E-06	U	<	1.60E-06	U	<	1.10E-06	U
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	-	-	1.9E-05 J	1 / 6	<	2.40E-06	U	<	1.30E-05	U	<	1.80E-05	U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	-	-	ND	0 / 6	<	2.10E-06	U	<	2.00E-06	U	<	1.10E-06	U
TEQ	-	-	5.70E-09	1 / 4	<	NA	U	<	NA	U	<	NA	U

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were included if New Mexico Administrative Code screening criteria were not available.
[1] NMAC = New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for interstate and intrastate surface waters. Section 20.6.4.900 Subsection J.
[2] RSL = Regional Screening Level, Tap Water, November 2010 (USEPA 2010)
< = Result less than EDL/EMPC
µg/L = microgram per liter
EDL/EMPC = Estimated Detection Limit/Estimated Maximum Potential Concentration
ID = Identification
J = Estimated
NA = Not Applicable
ND = Not Detected
Qual = Qualifier
TEQ = Toxic Equivalent
U = Nondetect

TABLE C-1a
SUMMARY OF PCB CONGENERS AND DIOXINS/FURANS SURFACE WATER ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID					C103-SW04-00			C103-SW05-00			C103-SW06-00		
DATE COLLECTED	NMAC Surface Water Screening Criteria [1]	USEPA Water RSL [2]	Maximum	Frequency	October 19, 2010			October 19, 2010			October 19, 2010		
					Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual
POLYCHORINATED BIPHENYL CONGENERS (PCB) (µg/L)													
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	-	1.70E-02	3.00E-05 J	1 / 6	3.00E-05	3.00E-05	J	<	2.60E-05	U	<	1.90E-05	U
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	-	1.70E-02	1.80E-05 J	1 / 6	<	7.50E-06	U	1.80E-05	1.80E-05	J	<	2.40E-05	U
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	-	1.70E-02	5.10E-04	4 / 6	<	3.40E-04	U	4.50E-04	4.50E-04		3.90E-04	3.90E-04	
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	-	1.70E-02	ND	0 / 6	<	1.60E-05	U	<	2.60E-06	U	<	5.20E-06	U
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	-	5.20E-06	ND	0 / 6	<	1.10E-05	U	<	3.20E-06	U	<	6.70E-06	U
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	-	1.70E-02	4.90E-05 J	3 / 6	<	6.50E-06	U	1.30E-05	1.30E-05	J	<	6.50E-06	U
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	-	1.70E-02	ND	0 / 6	<	6.50E-06	U	<	2.90E-06	U	<	6.70E-06	U
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	-	1.70E-02	ND	0 / 6	<	5.50E-06	U	<	4.40E-06	U	<	5.70E-06	U
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	-	1.70E-05	ND	0 / 6	<	1.00E-05	U	<	3.80E-06	U	<	9.50E-06	U
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	-	3.5E-04 J	1 / 6	<	1.60E-05	U	<	2.50E-05	U	<	3.20E-05	U
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	-	9.00E-04 J	6 / 6	5.00E-05	5.00E-05	J	5.80E-05	5.80E-05	J	8.70E-05	8.70E-05	J
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	-	1.70E-02	ND	0 / 6	<	2.00E-06	U	<	1.30E-06	U	<	1.30E-06	U
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	-	5.20E-03	7.6E-06 J	1 / 6	<	7.50E-06	U	7.60E-06	7.60E-06	J	<	8.20E-06	U
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	-	1.70E-03	ND	0 / 6	<	6.40E-06	U	<	2.00E-06	U	<	2.80E-06	U
DIOXINS AND FURANS (µg/L)													
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	-	-	ND	0 / 6	<	2.30E-06	U	<	1.30E-06	U	<	3.80E-06	U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	-	-	ND	0 / 6	<	1.70E-06	U	<	1.60E-06	U	<	1.40E-06	U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	-	-	ND	0 / 6	<	2.30E-06	U	<	1.10E-06	U	<	1.30E-05	U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	-	ND	0 / 6	<	1.00E-06	U	<	1.30E-06	U	<	8.70E-07	U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	-	-	ND	0 / 6	<	5.30E-07	U	<	5.20E-07	U	<	1.30E-06	U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	-	ND	0 / 6	<	7.10E-07	U	<	1.20E-06	U	<	1.80E-06	U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	-	ND	0 / 6	<	4.50E-07	U	<	4.40E-07	U	<	1.10E-06	U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	-	-	ND	0 / 6	<	1.00E-06	U	<	3.10E-07	U	<	1.30E-06	U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	-	-	ND	0 / 6	<	6.20E-07	U	<	6.00E-07	U	<	1.50E-06	U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	-	-	ND	0 / 6	<	1.40E-06	U	<	8.50E-07	U	<	1.90E-06	U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	-	-	ND	0 / 6	<	8.20E-07	U	<	7.10E-07	U	<	1.50E-06	U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	-	ND	0 / 6	<	5.40E-07	U	<	5.00E-07	U	<	5.00E-06	U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	-	-	ND	0 / 6	<	5.40E-07	U	<	7.00E-07	U	<	1.50E-06	U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	5.10E-08	-	ND	0 / 6	<	6.50E-07	U	<	4.80E-07	U	<	1.00E-06	U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	-	-	ND	0 / 6	<	1.30E-06	U	<	1.00E-06	U	<	2.20E-06	U
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	-	-	1.9E-05 J	1 / 6	<	2.20E-06	U	1.90E-05	1.90E-05	J	<	1.90E-05	U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	-	-	ND	0 / 6	<	2.20E-06	U	<	1.20E-06	U	<	3.20E-06	U
TEQ	-	-	5.70E-09	1 / 4	<	NA	U	5.70E-09	NA		<	NA	U

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were included if New Mexico Administrative Code screening criteria were not available.
[1] NMAC = New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for interstate and intrastate surface waters. Section 20.6.4.900 Subsection J.
[2] RSL = Regional Screening Level, Tap Water, November 2010 (USEPA 2010)
< = Result less than EDL/EMPC
µg/L = microgram per liter
EDL/EMPC = Estimated Detection Limit/Estimated Maximum Potential Concentration
ID = Identification
J = Estimated
NA = Not Applicable
ND = Not Detected
Qual = Qualifier
TEQ = Toxic Equivalent
U = Nondetect

TABLE C-1b
SUMMARY OF METALS SURFACE WATER ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMAC Surface Water Screening Criteria [1]	USEPA Water RSL [2]	Maximum	Frequency	C103-SW01-00				C103-SW02-00				C103-SW03-00			
DATE COLLECTED					October 18, 2010				October 18, 2010				October 19, 2010			
					Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (µg/L)																
Total Lead	-	-	2.1E+00 J	1 / 6	<	1.58E+00	5.00E+00	U	<	1.58E+00	5.00E+00	U	<	1.58E+00	5.00E+00	U
Total Selenium	-	1.80E+02	ND	0 / 6	<	3.17E+00	1.00E+01	U	<	3.17E+00	1.00E+01	U	<	3.17E+00	1.00E+01	U
Total Silver	-	1.80E+02	1.20E+00	1 / 6	<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U
Dissolved Lead	-	-	4.6E+00 J	1 / 6	<	1.58E+00	5.00E+00	U	<	1.58E+00	5.00E+00	U	<	1.58E+00	5.00E+00	U
Dissolved Selenium	4.20E+03	-	ND	0 / 6	<	3.17E+00	5.00E+00	U	<	3.17E+00	5.00E+00	U	<	3.17E+00	1.00E+01	U
Dissolved Silver	-	1.80E+02	ND	0 / 6	<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were included if New Mexico Administrative Code screening criteria were not available.
[1] NMAC = New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for interstate and intrastate surface waters. Section 20.6.4.900 Subsection J.
[2] RSL = Regional Screening Level, Tap Water, November 2010 (USEPA 2010)
< = Result less than MDL
µg/L = milligram per liter
ID = Identification
J = Estimated
MDL = Method Detection Limit
NA = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE C-1b
SUMMARY OF METALS SURFACE WATER ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMAC Surface Water Screening Criteria [1]	USEPA Water RSL [2]	Maximum	Frequency	C103-SW04-00				C103-SW05-00				C103-SW06-00			
DATE COLLECTED					October 19, 2010				October 19, 2010				October 19, 2010			
					Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (µg/L)																
Total Lead	-	-	2.1E+00 J	1 / 6	<	1.58E+00	5.00E+00	UJ	<	1.58E+00	5.00E+00	U	2.10E+00	1.58E+00	5.00E+00	J
Total Selenium	-	1.80E+02	ND	0 / 6	<	3.17E+00	1.00E+01	U	<	3.17E+00	1.00E+01	U	<	3.17E+00	1.00E+01	U
Total Silver	-	1.80E+02	1.20E+00	1 / 6	1.20E+00	2.50E-01	1.00E+00		<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U
Dissolved Lead	-	-	4.6E+00 J	1 / 6	<	1.58E+00	5.00E+00	UJ	<	1.58E+00	5.00E+00	U	4.60E+00	1.58E+00	5.00E+00	J
Dissolved Selenium	4.20E+03	-	ND	0 / 6	<	3.17E+00	1.00E+01	U	<	3.17E+00	1.00E+01	U	<	3.17E+00	1.00E+01	U
Dissolved Silver	-	1.80E+02	ND	0 / 6	<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were included if New Mexico Administrative Code screening criteria were not available.
[1] NMAC = New Mexico Administrative Code. Title 20 Environmental Protection. Chapter 6 Water Quality. Part 4 Standards for interstate and intrastate surface waters. Section 20.6.4.900 Subsection J.
[2] RSL = Regional Screening Level, Tap Water, November 2010 (USEPA 2010)
< = Result less than MDL
µg/L = milligram per liter
ID = Identification
J = Estimated
MDL = Method Detection Limit
NA = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE C-2a
SUMMARY OF PCB CONGENERS AND DIOXINS/FURANS SEDIMENT ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD01-0.5			C103-SD02-0.5			C103-SD03-0.5		
DATE COLLECTED				October 18, 2010			October 18, 2010			October 19, 2010		
		Maximum	Frequency	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual
POLYCHORINATED BIPHENYL CONGENERS (PCB) (mg/kg)												
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	1.14E+00	1.30E-06	6 / 6	2.30E-08	2.30E-08		1.50E-07	1.50E-07		2.30E-07	2.30E-07	J
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1.14E+00	1.20E-07	5 / 6	<	3.30E-09	U	1.40E-08	1.40E-08		2.00E-08	2.00E-08	J
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	1.14E+00	3.00E-06	5 / 6	<	7.00E-08	U	3.80E-07	3.80E-07	J	5.40E-07	5.40E-07	J
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	1.14E+00	ND	0 / 6	<	6.20E-10	U	<	5.90E-10	U	<	4.50E-10	U
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	3.41E-04	3.60E-08	3 / 6	<	7.50E-10	U	3.40E-09	3.40E-09	J	7.50E-09	7.50E-09	J
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	1.14E+00	3.40E-07	6 / 6	8.60E-09	8.60E-09	J	5.80E-08	5.80E-08		6.40E-08	6.40E-08	J
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	1.14E+00	7.10E-08	4 / 6	2.00E-09	2.00E-09	J	1.10E-08	1.10E-08		<	3.70E-10	U
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	1.14E+00	9.30E-08	3 / 6	<	3.20E-10	U	1.30E-08	1.30E-08		<	3.20E-10	U
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	1.14E-03	ND	0 / 6	<	5.00E-10	U	<	1.00E-09	U	<	4.90E-10	U
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	3.41E-01	2.70E-07 J	5 / 6	3.10E-08	3.10E-08	J	2.30E-07	2.30E-07	J	2.30E-07	2.30E-07	J
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	3.41E+00	5.70E-07 J	6 / 6	5.80E-08	5.80E-08	J	4.40E-07	4.40E-07	J	4.90E-07	4.90E-07	J
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	1.14E+00	6.50E-09 J	2 / 6	9.70E-10	1.00E-09	J	<	5.50E-09	U	<	5.20E-09	U
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	3.41E-01	2.90E-07	6 / 6	6.70E-09	6.70E-09	J	2.10E-08	2.10E-08		6.80E-08	6.80E-08	J
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	1.14E-01	3.40E-08	4 / 6	<	4.20E-10	U	7.30E-10	7.30E-10	J	3.00E-09	3.00E-09	J
DIOXINS AND FURANS (mg/kg)												
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	-	3.50E-05	6 / 6	2.80E-06	2.80E-06	J	2.10E-05	2.10E-05	J	8.10E-06	8.10E-06	J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	-	7.40E-06 J	2 / 6	<	5.20E-07	U	3.10E-06	3.10E-06	J	<	1.90E-06	U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	-	2.90E-06 J	2 / 6	<	1.70E-07	U	<	1.00E-06	UJ	<	5.40E-07	U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	2.40E-06 J	1 / 6	<	3.60E-07	U	<	8.40E-07	UJ	<	7.50E-07	U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	-	2.50E-06 J	2 / 6	<	1.00E-07	U	<	5.00E-07	UJ	<	2.90E-07	U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	1.00E-06 J	1 / 6	<	2.80E-07	U	1.00E-06	1.00E-06	J	<	6.80E-07	U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	ND	0 / 6	<	2.90E-07	U	<	1.50E-06	UJ	<	2.60E-07	U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	-	ND	0 / 6	<	3.60E-07	U	<	6.00E-07	UJ	<	7.30E-07	U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	-	ND	0 / 6	<	1.10E-07	U	<	5.70E-07	UJ	<	4.40E-07	U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	-	ND	0 / 6	<	1.60E-07	U	<	5.10E-07	UJ	<	3.30E-07	U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	-	ND	0 / 6	<	3.90E-07	U	<	5.00E-07	UJ	<	4.40E-07	U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	2.20E-06 J	1 / 6	<	1.60E-06	U	<	7.80E-06	UJ	<	3.10E-07	U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	-	1.70E-06 J	1 / 6	<	2.00E-07	U	<	3.60E-07	UJ	<	4.00E-07	U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	4.50E-05	7.60E-06 J	5 / 6	7.90E-07	7.90E-07	J	7.60E-06	7.60E-06	J	<	1.90E-07	U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	3.74E-04	3.60E-06 J	3 / 6	1.30E-06	1.30E-06	J	3.60E-06	3.60E-06	J	2.50E-06	2.50E-06	J
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	-	2.60E-04	6 / 6	2.00E-05	2.00E-05	J	2.50E-04	2.50E-04	J	5.90E-05	5.90E-05	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	-	1.10E-05 J	3 / 6	<	1.20E-07	U	8.00E-06	8.00E-06	J	<	3.90E-07	U
TEQ	-	8.40E-06	6 / 6	9.50E-07	NA		8.40E-06	NA		3.50E-07	NA	

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels

[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< = Result less than EDL/EMPC
EDL/EMPC = Estimated Detection Limit/Estimated Maximum Potential Concentration
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
NA = Not Applicable
ND = Not Detected
PCB = Polychlorinated Biphenyl Congeners
Qual = Qualifier
TEQ = Toxic Equivalent
U = Nondetect

TABLE C-2a
SUMMARY OF PCB CONGENERS AND DIOXINS/FURANS SEDIMENT ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	NMED Residential Soil SSLs [1]			C103-SD04-0.5			C103-SD05-0.5			C103-SD06-0.5		
DATE COLLECTED				October 19, 2010			October 19, 2010			October 19, 2010		
		Maximum	Frequency	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual
POLYCHORINATED BIPHENYL CONGENERS (PCB) (mg/kg)												
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	1.14E+00	1.30E-06	6 / 6	1.30E-06	1.30E-06		2.30E-07	2.30E-07	J	2.30E-07	2.30E-07	J
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1.14E+00	1.20E-07	5 / 6	1.20E-07	1.20E-07		2.10E-08	2.10E-08	J	2.40E-08	2.40E-08	J
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	1.14E+00	3.00E-06	5 / 6	3.00E-06	3.00E-06		5.80E-07	5.80E-07	J	5.60E-07	5.60E-07	J
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	1.14E+00	ND	0 / 6	<	2.60E-09	U	<	5.90E-10	U	<	1.10E-09	U
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	3.41E-04	3.60E-08	3 / 6	3.60E-08	3.60E-08		<	7.50E-09	U	<	4.00E-09	U
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	1.14E+00	3.40E-07	6 / 6	3.40E-07	3.40E-07		7.30E-08	7.30E-08	J	6.70E-08	6.70E-08	J
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	1.14E+00	7.10E-08	4 / 6	7.10E-08	7.10E-08		1.50E-08	1.50E-08	J	<	6.60E-10	U
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	1.14E+00	9.30E-08	3 / 6	9.30E-08	9.30E-08		2.00E-08	2.00E-08	J	<	5.90E-10	U
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	1.14E-03	ND	0 / 6	<	1.40E-09	U	<	3.70E-10	U	<	9.00E-10	U
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	3.41E-01	2.70E-07 J	5 / 6	<	1.40E-06	U	2.70E-07	2.70E-07	J	2.20E-07	2.20E-07	J
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	3.41E+00	5.70E-07 J	6 / 6	<	1.00E-07	UJ	5.70E-07	5.70E-07	J	4.70E-07	4.70E-07	J
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	1.14E+00	6.50E-09 J	2 / 6	<	1.80E-06	UJ	<	6.80E-09	U	6.50E-09	6.50E-09	J
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	3.41E-01	2.90E-07	6 / 6	2.90E-07	2.90E-07		6.60E-08	6.60E-08	J	5.30E-08	5.30E-08	J
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	1.14E-01	3.40E-08	4 / 6	3.40E-08	3.40E-08		7.60E-09	7.60E-09	J	<	1.80E-09	U
DIOXINS AND FURANS (mg/kg)												
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	-	3.50E-05	6 / 6	3.50E-05	3.50E-05		2.50E-05	2.50E-05		7.00E-06	7.00E-06	J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	-	7.40E-06 J	2 / 6	7.40E-06	7.40E-06	J	<	4.20E-06	U	<	2.10E-06	U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	-	2.90E-06 J	2 / 6	2.80E-06	2.80E-06	J	2.90E-06	2.90E-06	J	<	9.00E-07	U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	2.40E-06 J	1 / 6	2.40E-06	2.40E-06	J	<	2.90E-06	U	<	3.60E-07	U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	-	2.50E-06 J	2 / 6	2.30E-06	2.30E-06	J	2.50E-06	2.50E-06	J	<	4.20E-07	U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	1.00E-06 J	1 / 6	<	2.50E-06	U	<	3.00E-06	U	<	2.50E-07	U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	ND	0 / 6	<	2.30E-06	U	<	2.50E-06	U	<	5.00E-07	U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	-	ND	0 / 6	<	2.40E-06	U	<	1.90E-06	U	<	4.90E-07	U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	-	ND	0 / 6	<	1.60E-06	U	<	2.40E-06	U	<	5.90E-07	U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	-	ND	0 / 6	<	6.50E-07	U	<	4.10E-07	U	<	1.90E-07	U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	-	ND	0 / 6	<	4.40E-07	U	<	3.60E-07	U	<	2.20E-07	U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	2.20E-06 J	1 / 6	2.20E-06	2.20E-06	J	<	8.00E-06	U	<	2.40E-06	U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	-	1.70E-06 J	1 / 6	<	3.00E-07	U	1.70E-06	1.70E-06	J	<	1.80E-07	U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	4.50E-05	7.60E-06 J	5 / 6	1.80E-06	1.80E-06	J	1.40E-06	1.40E-06	J	5.50E-07	5.50E-07	J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	3.74E-04	3.60E-06 J	3 / 6	<	1.60E-06	U	<	2.70E-06	U	<	5.30E-07	
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	-	2.60E-04	6 / 6	2.60E-04	2.60E-04		1.60E-04	1.60E-04		6.70E-05	6.70E-05	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	-	1.10E-05 J	3 / 6	1.10E-05	1.10E-05	J	<	5.40E-06	U	3.00E-06	3.00E-06	J
TEQ	-	8.40E-06	6 / 6	3.00E-06	NA		2.50E-06	NA		6.40E-07	NA	

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels

[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< = Result less than EDL/EMPC
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PCB = Polychlorinated Biphenyl Congeners
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TEQ = Toxic Equivalent
U = Nondetect

TABLE C-2b
SUMMARY OF TPH AND METALS SEDIMENT ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	Residential Soil SSLs [1]			C103-SD01-0.5				C103-SD02-0.5				C103-SD03-0.5			
DATE COLLECTED				October 18, 2010				October 18, 2010				October 19, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12	<	1.30E+00	1.30E+00	U	1.90E+01	1.40E+00	1.40E+00	J	3.60E+01	2.10E+00	2.10E+00	J
Oil Range Organics	8.00E+02	6.80E+01	4 / 12	<	4.60E+00	1.30E+01	U	3.00E+01	5.00E+00	1.40E+01		4.60E+01	7.30E+00	2.10E+01	J
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12	<	4.50E-01	1.30E+00	U	<	4.80E-01	1.40E+00	U	<	7.10E-01	2.10E+00	U
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6	1.60E+00	1.20E-01	6.60E-01		1.60E+00	1.20E-01	7.10E-01		1.60E+00	1.80E-01	1.00E+00	
Selenium	3.91E+02	7.00E+00	14 / 18	3.30E-01	3.20E-01	6.60E-01	J	<	3.50E-01	7.10E-01	U	3.70E+00	5.10E-01	1.00E+00	
Silver	3.91E+02	2.70E+01	12 / 12	7.60E-01	4.80E-02	1.30E-01		1.10E+00	5.10E-02	1.40E-01	J	1.02E+01	7.50E-02	2.10E-01	
Vanadium	7.82E+01	5.22E+01	6 / 6	6.80E+00	7.40E-02	6.60E-01		7.10E+00	7.90E-02	7.10E-01	J	2.97E+01	1.20E-01	1.00E+00	

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
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mg/kg = milligram per kilogram
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ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE C-2b
SUMMARY OF TPH AND METALS SEDIMENT ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	Residential Soil SSLs [1]			C103-SD04-0.5				C103-SD05-0.5				C103-SD06-0.5			
DATE COLLECTED				October 19, 2010				October 19, 2010				October 19, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12	6.30E+01	2.60E+00	2.60E+00		<	2.60E+00	2.60E+00	U	<	1.50E+00	1.50E+00	U
Oil Range Organics	8.00E+02	6.80E+01	4 / 12	6.80E+01	9.10E+00	2.60E+01		<	9.00E+00	2.60E+01	U	4.00E+01	5.30E+00	1.50E+01	
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12	1.90E+01	8.90E-01	2.60E+00	J	<	8.80E-01	2.60E+00	U	<	5.10E-01	1.50E+00	U
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6	3.90E+00	2.30E-01	1.30E+00		3.60E+00	2.30E-01	1.30E+00		2.10E-01	1.30E-01	7.60E-01	J
Selenium	3.91E+02	7.00E+00	14 / 18	7.00E+00	6.40E-01	1.30E+00		4.90E+00	6.30E-01	1.30E+00		7.00E-01	3.70E-01	7.60E-01	J
Silver	3.91E+02	2.70E+01	12 / 12	2.37E+01	9.40E-02	2.60E-01	J	1.65E+01	9.30E-02	1.86E-01		1.80E+00	5.40E-02	1.50E-01	
Vanadium	7.82E+01	5.22E+01	6 / 6	5.21E+01	1.50E-01	1.30E+00		5.22E+01	1.40E-01	2.80E-01		9.50E+00	8.50E-02	7.60E-01	

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
NA = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE C-2b
SUMMARY OF TPH AND METALS SEDIMENT ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	Residential Soil SSLs [1]			C103-SD07-0.5				C103-SD08-0.3				C103-SD09-0.3			
DATE COLLECTED				October 19, 2010				October 19, 2010				October 19, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12												
Oil Range Organics	8.00E+02	6.80E+01	4 / 12												
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12												
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6												
Selenium	3.91E+02	7.00E+00	14 / 18	2.70E+00	6.50E-01	1.30E+00		<	3.00E-01	6.20E-01	U	<	3.70E-01	7.50E-01	U
Silver	3.91E+02	2.70E+01	12 / 12												
Vanadium	7.82E+01	5.22E+01	6 / 6												

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
ID = Identification
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U = Nondetect

TABLE C-2b
SUMMARY OF TPH AND METALS SEDIMENT ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	Residential Soil SSLs [1]			C103-SD10-0.5				C103-SD11-0.5				C103-SD12-0.5			
DATE COLLECTED				October 19, 2010				October 19, 2010				October 19, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12												
Oil Range Organics	8.00E+02	6.80E+01	4 / 12												
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12												
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6												
Selenium	3.91E+02	7.00E+00	14 / 18	<	3.10E-01	6.30E-01	U	4.00E+00	4.80E-01	9.90E-01		5.40E+00	7.70E-01	1.60E+00	J
Silver	3.91E+02	2.70E+01	12 / 12												
Vanadium	7.82E+01	5.22E+01	6 / 6												

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
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ID = Identification
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mg/kg = milligram per kilogram
MDL = Method Detection Limit
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U = Nondetect

TABLE C-2b
SUMMARY OF TPH AND METALS SEDIMENT ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	Residential Soil SSLs [1]			C103-SD13-0.5				C103-SD14-0.5				C103-SD15-0.5			
DATE COLLECTED				October 20, 2010				October 20, 2010				October 20, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12	<	2.20E+00	2.20E+00	U	<	1.90E+00	1.90E+00	U	<	2.60E+00	2.60E+00	U
Oil Range Organics	8.00E+02	6.80E+01	4 / 12	<	7.70E+00	2.20E+01	U	<	6.80E+00	1.90E+01	U	<	9.00E+00	2.60E+01	U
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12	<	7.50E-01	2.20E+00	U	<	6.60E-01	1.90E+00	U	<	8.70E-01	2.60E+00	U
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6												
Selenium	3.91E+02	7.00E+00	14 / 18	1.70E+00	5.40E-01	1.10E+00		1.20E+00	4.80E-01	9.70E-01		5.10E+00	6.20E-01	1.30E+00	
Silver	3.91E+02	2.70E+01	12 / 12	2.90E+00	7.90E-02	2.20E-01		1.40E+00	7.00E-02	1.90E-01		1.66E+01	9.20E-02	2.60E-01	
Vanadium	7.82E+01	5.22E+01	6 / 6												

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
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ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
NA = Not Applicable
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Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE C-2b
SUMMARY OF TPH AND METALS SEDIMENT ANALYTICAL DATA
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	Residential Soil SSLs [1]			C103-SD16-0.5				C103-SD17-0.5				C103-SD18-0.5			
DATE COLLECTED				October 20, 2010				October 20, 2010				October 20, 2010			
		Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)															
Diesel Range Organics	8.00E+02	6.30E+01	3 / 12	<	2.50E+00	2.50E+00	U	<	1.60E+00	1.60E+00	U	<	2.60E+00	2.60E+00	U
Oil Range Organics	8.00E+02	6.80E+01	4 / 12	<	8.80E+00	2.50E+01	U	<	5.70E+00	1.60E+01	U	<	8.90E+00	2.60E+01	U
Gasoline Range Organics	8.00E+02	1.90E+01 J	1 / 12	<	8.50E-01	2.50E+00	U	<	5.60E-01	1.60E+00	U	<	8.70E-01	2.60E+00	U
METALS (mg/kg)															
Arsenic	3.90E+00	3.90E+00	6 / 6												
Selenium	3.91E+02	7.00E+00	14 / 18	4.80E+00	6.10E-01	1.30E+00		2.30E+00	4.00E-01	8.20E-01		6.40E+00	6.20E-01	1.30E+00	J
Silver	3.91E+02	2.70E+01	12 / 12	1.25E+01	9.00E-02	2.50E-01		3.30E+00	5.90E-02	1.60E-01		2.70E+01	9.20E-02	2.60E-01	J
Vanadium	7.82E+01	5.22E+01	6 / 6												

Notes:
Undetermined values display a dash in the associated cell
USEPA Regional Screening Levels were unavailable for all compounds without available NMED Soil Screening Levels
[1] SSLs = New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program Technical Background Document for Development of Soil Screening Levels, Revision 5.0 (NMED 2009)
< =Result is Less Than MDL
ID = Identification
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mg/kg = milligram per kilogram
MDL = Method Detection Limit
NA = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

C.3 FIELD DUPLICATE RESULTS

TABLE C-3a
SURFACE WATER FIELD DUPLICATE COMPARISON
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	C103-SW04-00			C103-SW24-00			
DATE COLLECTED	October 19, 2010			October 19, 2010			
	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	RPD
POLYCHORINATED BIPHENYL CONGENERS (PCB) (µg/L)							
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	3.00E-05	3.00E-05	J	<	1.40E-05	U	<2x
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	<	7.50E-06	U	<	1.50E-05	U	<2x
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	<	3.40E-04	U	3.70E-04	3.70E-04		<2x
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	<	1.60E-05	U	<	5.10E-06	U	<2x
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	<	1.10E-05	U	<	6.50E-06	U	<2x
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	<	6.50E-06	U	<	4.70E-06	U	<2x
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	<	6.50E-06	U	<	4.80E-06	U	<2x
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	<	5.50E-06	U	<	4.10E-06	U	<2x
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	<	1.00E-05	U	<	6.80E-06	U	<2x
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	<	1.60E-05	U	<	5.60E-05	U	<2x
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	5.00E-05	5.00E-05	J	1.20E-04	1.20E-04	J	<2x
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	<	2.00E-06	U	<	1.20E-06	U	<2x
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	<	7.50E-06	U	<	8.20E-06	U	<2x
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	<	6.40E-06	U	<	1.90E-06	U	<2x
DIOXINS AND FURANS (µg/L)							
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	<	2.30E-06	U	<	1.20E-06	U	<2x
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	<	1.70E-06	U	<	4.30E-07	U	<2x
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	<	2.30E-06	U	<	6.00E-07	U	<2x
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	<	1.00E-06	U	<	1.40E-06	U	<2x
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	<	5.30E-07	U	<	6.00E-07	U	<2x
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	<	7.10E-07	U	<	9.90E-07	U	<2x
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	<	4.50E-07	U	1.70E-06	1.70E-06	J	<2x
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	<	1.00E-06	U	<	1.00E-06	U	<2x
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	<	6.20E-07	U	<	7.00E-07	U	<2x
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	<	1.40E-06	U	<	7.40E-07	U	<2x
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	<	8.20E-07	U	<	6.60E-07	U	<2x
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	<	5.40E-07	U	<	3.10E-07	U	<2x
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	<	5.40E-07	U	<	4.60E-07	U	<2x
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	<	6.50E-07	U	<	4.50E-07	U	<2x
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	<	1.30E-06	U	<	4.70E-07	U	<2x
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	<	2.20E-06	U	<	1.60E-05	U	<2x
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	<	2.20E-06	U	<	1.20E-06	U	<2x

Notes:
< = Result less than EDL/EMPC
<2x = Difference between sample results was less than two times the reporting limit
EDL/EMPC = Estimated Detection Limit/Estimated Maximum Potential Concentration
µg/L = microgram per liter
ID = Identification
J = Estimated
NA = Not Applicable
PCB = Polychlorinated Biphenyl Congeners
Qual = Qualifier
RPD = Relative Percent Difference
TEQ = Toxic Equivalent
U = Nondetect

TABLE C-3b
SURFACE WATER FIELD DUPLICATE COMPARISON
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	C103-SW04-00				C103-SW24-00				
DATE COLLECTED	October 19, 2010				October 19, 2010				
	Result	MDL	RL	Qual	Result	MDL	RL	Qual	RPD
METALS (µg/L)									
Total Lead	<	1.58E+00	5.00E+00	UJ	2.38E+01	1.58E+00	5.00E+00	J	**>2x**
Total Selenium	<	3.17E+00	1.00E+01	U	<	3.17E+00	1.00E+01	U	<2x
Total Silver	1.20E+00	2.50E-01	1.00E+00		<	2.50E-01	1.00E+00	U	<2x
Dissolved Lead	<	1.58E+00	5.00E+00	UJ	1.69E+01	1.58E+00	5.00E+00	J	**>2x**
Dissolved Selenium	<	3.17E+00	1.00E+01	U	<	3.17E+00	1.00E+01	U	<2x
Dissolved Silver	<	2.50E-01	1.00E+00	U	<	2.50E-01	1.00E+00	U	<2x

Notes:
< = Result less than MDL
<2x = Difference between sample results was less than two times the reporting limit
>2x = Difference between sample results was greater than two times the reporting limit
µg/L = microgram per liter
ID = Identification
J = Estimated
MDL = Method Detection Limit
NA = Not Applicable
Qual = Qualifier
RL = Reporting Limit
RPD = Relative Percent Difference
U = Nondetect

TABLE C-4a
SEDIMENT FIELD DUPLICATE COMPARISON
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	C103-SD04-0.5			C103-SD24-0.5			
DATE COLLECTED	October 19, 2010			October 19, 2010			
	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	RPD
POLYCHORINATED BIPHENYL CONGENERS (PCB) (mg/kg)							
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	1.30E-06	1.30E-06		1.30E-06	1.30E-06		<2x
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1.20E-07	1.20E-07		1.20E-07	1.20E-07		<2x
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	3.00E-06	3.00E-06		2.90E-06	2.90E-06		<2x
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	<	2.60E-09	U	<	2.00E-09	U	<2x
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	3.60E-08	3.60E-08		<	3.20E-08	U	<2x
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	3.40E-07	3.40E-07		3.40E-07	3.40E-07		<2x
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	7.10E-08	7.10E-08		6.50E-08	6.50E-08		<2x
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	9.30E-08	9.30E-08		8.40E-08	8.40E-08		<2x
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	<	1.40E-09	U	<	5.20E-09	U	<2x
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	<	1.40E-06	U	1.20E-06	1.20E-06	J	<2x
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	<	1.00E-07	UJ	2.60E-06	2.60E-06	J	**>2x**
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	<	1.80E-06	UJ	3.20E-08	3.20E-08	J	**>2x**
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	2.90E-07	2.90E-07		2.80E-07	2.80E-07		<2x
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	3.40E-08	3.40E-08		<	1.20E-08	U	<2x
DIOXINS AND FURANS (mg/kg)							
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	3.50E-05	3.50E-05		1.10E-05	1.10E-05	J	<2x
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	7.40E-06	7.40E-06	J	3.60E-06	3.60E-06	J	<2x
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	2.80E-06	2.80E-06	J	<	8.90E-07	U	<2x
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	2.40E-06	2.40E-06	J	<	1.10E-06	U	<2x
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	2.30E-06	2.30E-06	J	<	1.30E-06	U	<2x
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	<	2.50E-06	U	<	9.00E-07	U	<2x
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	<	2.30E-06	U	<	6.90E-07	U	<2x
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	<	2.40E-06	U	<	1.10E-06	U	<2x
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	<	1.60E-06	U	<	1.20E-06	U	<2x
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	<	6.50E-07	U	<	3.60E-07	U	<2x
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	<	4.40E-07	U	<	4.70E-07	U	<2x
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	2.20E-06	2.20E-06	J	<	6.50E-06	U	<2x
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	<	3.00E-07	U	<	3.00E-07	U	<2x
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1.80E-06	1.80E-06	J	<	1.20E-06	U	<2x
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	<	1.60E-06	U	<	1.40E-06	U	<2x
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	2.60E-04	2.60E-04		7.40E-05	7.40E-05		<2x

TABLE C-4a
SEDIMENT FIELD DUPLICATE COMPARISON
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	C103-SD04-0.5			C103-SD24-0.5			
DATE COLLECTED	October 19, 2010			October 19, 2010			
	Result	EDL/EMPC	Qual	Result	EDL/EMPC	Qual	RPD
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	1.10E-05	1.10E-05	J	<	2.90E-06	U	<2x

Notes:
< = Result less than EDL/EMPC
<2x = Difference between sample results was less than two times the reporting limit
>2x = Difference between sample results was greater than two times the reporting limit
EDL/EMPC = Estimated Detection Limit/Estimated Maximum Potential Concentration
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
NA = Not Applicable
PCB = Polychlorinated Biphenyl Congeners
Qual = Qualifier
RPD = Relative Percent Difference
TEQ = Toxic Equivalent
U = Nondetect

TABLE C-4b
SEDIMENT FIELD DUPLICATE COMPARISON
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	C103-SD04-0.5				C103-SD24-0.5					C103-SD10-0.5					C103-SD20-0.5				
DATE COLLECTED	October 19, 2010				October 19, 2010					October 19, 2010					October 19, 2010				
	Result	MDL	RL	Qual	Result	MDL	RL	Qual	RPD	Result	MDL	RL	Qual	RPD	Result	MDL	RL	Qual	RPD
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																			
Diesel Range Organics	6.30E+01	2.60E+00	2.60E+00		5.60E+01	2.90E+00	2.90E+00		11.8										
Oil Range Organics	6.80E+01	9.10E+00	2.60E+01		6.00E+01	1.00E+01	2.90E+01		<2x										
Gasoline Range Organics	1.90E+01	8.90E-01	2.60E+00		2.10E+01	9.90E-01	2.90E+00	J	10										
METALS (mg/kg)																			
Arsenic	3.90E+00	2.30E-01	1.30E+00		3.80E+00	2.60E-01	1.50E+00		<2x										
Selenium	7.00E+00	6.40E-01	1.30E+00		4.10E+00	7.10E-01	1.50E+00		<2x	<	3.10E-01	6.30E-01	U		<	3.00E-01	6.20E-01	U	<2x
Silver	2.37E+01	9.40E-02	2.60E-01	J	1.43E+01	1.00E-01	2.90E-01	J	**49.5**										
Vanadium	5.21E+01	1.50E-01	1.30E+00		3.99E+01	1.60E-01	1.50E+00		26.5										

Notes:

< =Result is Less Than MDL

<2x = Difference between sample results was less than two times the reporting limit

>2x = Difference between sample results was greater than two times the reporting limit

ID = Identification

J = Estimated

mg/kg = milligram per kilogram

MDL = Method Detection Limit

NA = Not Applicable

Qual = Qualifier

RL = Reporting Limit

RPD = Relative Percent Difference

U = Nondetect

TABLE C-4b
SEDIMENT FIELD DUPLICATE COMPARISON
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

FIELD ID	C103-SD18-0.5				C103-SD28-0.5				
DATE COLLECTED	October 20, 2010				October 20, 2010				
	Result	MDL	RL	Qual	Result	MDL	RL	Qual	RPD
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel Range Organics	<	2.60E+00	2.60E+00	U	<	1.90E+00	1.90E+00	U	<2x
Oil Range Organics	<	8.90E+00	2.60E+01	U	<	6.70E+00	1.90E+01	U	<2x
Gasoline Range Organics	<	8.70E-01	2.60E+00	U	<	6.50E-01	1.90E+00	U	<2x
METALS (mg/kg)									
Arsenic									
Selenium	6.40	0.62	1.30	J	2.5	0.46	0.95	J	**>2x**
Silver	27.00	0.09	0.26	J	10.3	0.069	0.19	J	**89.5**
Vanadium									

Notes:

< =Result is Less Than MDL

<2x = Difference between sample results was less than two tir

>2x = Difference between sample results was greater than twc

ID = Identification

J = Estimated

mg/kg = milligram per kilogram

MDL = Method Detection Limit

NA = Not Applicable

Qual = Qualifier

RL = Reporting Limit

RPD = Relative Percent Difference

U = Nondetect

C.4 QUALIFIED DATA TABLE

TABLE C-5
SUMMARY OF DATA QUALIFICATIONS
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

SDG	Field ID	Matrix	Analysis	Analyte	NEW RL	QUAL Source	URS Qual.	Code	Comments
62880	C103-SD01-0.5	Sediment	PCB Congeners	2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	-	ADR	U	MB	Detected in Method Blank
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	-	ADR	J	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,4,6,7,8-Heptachlorodibenzofuran	-	ADR	J	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,4,7,8,9-Heptachlorodibenzofuran	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,4,7,8-Hexachlorodibenzofuran	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	-	ADR	J	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,6,7,8-Hexachlorodibenzofuran	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,7,8,9-Hexachlorodibenzofuran	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,7,8-Pentachlorodibenzofuran	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	2,3,4,6,7,8-Hexachlorodibenzofuran	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	2,3,4,7,8-Pentachlorodibenzofuran	-	ADR	UJ	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	2,3,7,8-Tetrachlorodibenzo-p-dioxin	-	ADR	J	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	2,3,7,8-Tetrachlorodibenzofuran	-	ADR	J	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	Dioxin/Furans	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	-	ADR	J	ML	MSD Recovery Low
62880	C103-SD02-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	MH	MSD Recovery High
62880	C103-SD02-0.5	Sediment	PCB Congeners	2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	-	ADR	J	ML	MS Recovery Low
62880	C103-SD02-0.5	Sediment	TPH	Diesel Range Organics	-	ADR	J	MH	MS Recovery High
62880	C103-SD02-0.5	Sediment	Metals	Silver	-	ADR	J	MH	MS Recovery High
62880	C103-SW01-00	Surface Water	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	LH	LCS Recovery High
62880	C103-SW02-00	Surface Water	Dioxin/Furans	2,3,4,7,8-Pentachlorodibenzofuran	-	ADR	UJ	ML	MS Recovery Low
62880	C103-SW02-00	Surface Water	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	LH	LCS Recovery High
62880	C103-SW02-00	Surface Water	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	ADR	J	LH	LCS Recovery High
62880	C103-SD01-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	URS	J	CD	Continuing Calibration %R High
62880	C103-SD01-0.5	Sediment	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	URS	J	CD	Continuing Calibration %R High
62880	C103-SD02-0.5	Sediment	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	URS	J	CD	Continuing Calibration %R High
62880	C103-SD02-0.5	Sediment	Metals	Vanadium	-	URS	J	SD	Serial Dilution %D > 10%
62914	C103-SD03-0.5	Sediment	PCB Congeners	2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD03-0.5	Sediment	PCB Congeners	2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD03-0.5	Sediment	PCB Congeners	2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD03-0.5	Sediment	PCB Congeners	3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD03-0.5	Sediment	PCB Congeners	2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD03-0.5	Sediment	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD03-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD03-0.5	Sediment	PCB Congeners	3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD03-0.5	Sediment	PCB Congeners	3,4,4',5-Tetrachlorobiphenyl (PCB 81)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD03-0.5	Sediment	TPH	Diesel Range Organics	-	ADR	J	SH	Surrogate Recovery High
62914	C103-SD03-0.5	Sediment	TPH	Oil Range Organics	-	ADR	J	SH	Surrogate Recovery High
62914	C103-SD04-0.5	Sediment	TPH	Gasoline Range Organics	-	ADR	J	SH	Surrogate Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD05-0.5	Sediment	PCB Congeners	3,4,4',5-Tetrachlorobiphenyl (PCB 81)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD06-0.5	Sediment	PCB Congeners	2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD06-0.5	Sediment	PCB Congeners	2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD06-0.5	Sediment	PCB Congeners	2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD06-0.5	Sediment	PCB Congeners	2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD06-0.5	Sediment	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD06-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD06-0.5	Sediment	PCB Congeners	2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD06-0.5	Sediment	PCB Congeners	3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	-	ADR	J	IS	Internal Standard Recovery High
62914	C103-SD12-0.5	Sediment	Metals	Selenium	-	ADR	J	ML	MS Recovery Low
62914	C103-SD24-0.5	Sediment	TPH	Gasoline Range Organics	-	ADR	J	SH	Surrogate Recovery High
62914	C103-SD03-0.5	Sediment	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	URS	J	CD	Continuing Calibration %R High
62914	C103-SD03-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	URS	J	CD	Continuing Calibration %R High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	URS	J	CD	Continuing Calibration %R High
62914	C103-SD05-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	URS	J	CD	Continuing Calibration %R High
62914	C103-SD24-0.5	Sediment	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	URS	J	CD	Continuing Calibration %R High
62914	C103-SD24-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	URS	J	CD	Continuing Calibration %R High
62914	C103-SD06-0.5	Sediment	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	URS	J	CD	Continuing Calibration %R High
62914	C103-SD06-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	URS	J	CD	Continuing Calibration %R High
62914	C103-SW03-00	Surface Water	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	LH	LCS Recovery High
62914	C103-SW04-00	Surface Water	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	LH	LCS Recovery High

TABLE C-5
SUMMARY OF DATA QUALIFICATIONS
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORCE BASE, NEW MEXICO

SDG	Field ID	Matrix	Analysis	Analyte	NEW RL	QUAL Source	URS Qual.	Code	Comments
62914	C103-SW04-00	Surface Water	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	ADR	U	MB	Detected in Method Blank
62914	C103-SW05-00	Surface Water	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	LH	LCS Recovery High
62914	C103-SW05-00	Surface Water	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	ADR	U	MB	Detected in Method Blank
62914	C103-SW06-00	Surface Water	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	LH	LCS Recovery High
62914	C103-SW06-00	Surface Water	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	ADR	U	MB	Detected in Method Blank
62914	C103-SW24-00	Surface Water	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	ADR	J	LH	LCS Recovery High
62914	C103-SW24-00	Surface Water	PCB Congeners	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	-	ADR	U	MB	Detected in Method Blank
62914	C103-SW04-00	Surface Water	Metals	Total Lead	-	URS	UJ	FD	Field Duplicate Result > 2X RL difference
62914	C103-SW04-00	Surface Water	Metals	Dissolved Lead	-	URS	UJ	FD	Field Duplicate Result > 2X RL difference
62914	C103-SD04-0.5	Sediment	PCB Congeners	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	-	URS	UJ	FD	Field Duplicate Result > 2X RL difference
62914	C103-SD04-0.5	Sediment	PCB Congeners	2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	-	URS	UJ	FD	Field Duplicate Result > 2X RL difference
62914	C103-SD04-0.5	Sediment	Metals	Silver	-	URS	J	FD	Field Duplicate RPD > 50%
62914	C103-SD18-0.5	Sediment	Metals	Selenium	-	URS	J	FD	Field Duplicate Result > 2X RL difference
62914	C103-SD18-0.5	Sediment	Metals	Silver	-	URS	J	FD	Field Duplicate RPD > 50%

%D = Percent Difference
%R = Percent Recovery
> = Greater Than
2X = Two times
CD = Continuing Calibration
FD= Field Duplicate
ID = Identification
IS = Internal Standard Recovery High
J = Estimated
LCS = Laboratory Control Sample
LH = LCS Recovery High
MB = Method Blank
MH = MS/MSD Recovery High
ML = MS/MSD Recovery Low
MS = Matrix Spike
MSD = Matrix Spike Duplicate
PCB = Polychlorinated Biphenyl
Qual = Qualification
RL = Reporting Limit
RPD = Relative Percent Difference
SD = Sediment
SDG = Sample Delivery Group
SH = Surrogate Recovery High
SW = Surface Water
TPH = Total Petroleum Hydrocarbon
U = Nondetect
UJ = Estimated nondetect
URS = URS Group, Inc.

C.5 CHAINS OF CUSTODY

62882

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Page 1 of 1

Project Name	Project No.
SWMU 103 (Playa Lake) Phase III RFI	16170587.00100
Project Location	**Project Manager**
Cannon AFB	Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

*Analytical Parameters

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total Metals (6010B)	Dissolved Metals (6010B)	TPH-GRO (8015B)	TPH-DRO/ORO/Metals (8015B)	PCB Congeners/Dioxin/Furans (1668B) (8290)				Remarks
10/18/10	1345		X	C103-SW02-00	Surface Water	2	1-L Amber	X										4°C
	1345		X	"	"	2	1-L Amber		X									4°C
	1345		X	"	"	1	500mL HDPE			X								4°C + HNO_3
	1345		X	"	"	1	500mL HDPE				X							4°C + HNO_3 ~~+ Dissolved~~ Filtered
	1345		X	C103-SD02-0.5	Sediment	2	4 oz Jar					X						4°C
	1345	X		"	"	1	8 oz Jar						X	~~X~~				4°C
	1345	X		"	"	1	8 oz Jar							X				4°C
	1345		X	C103-SW02-00 ms/msD	Surface Water	2	1-L Amber	X										4°C + Use as ms/msD
	1345		X	"	"	2	1-L Amber		X									4°C + Use as ms/msD
	1345		X	"	"	1	500 mL HDPE			X								4°C + HNO_3 + Use as ms/msD
	1345		X	"	"	1	500mL HDPE				X							4°C + HNO_3 + Filtered + ms/msD
	1345		X	C103-SD02-00 ms/msD	Sediment	2	4 oz Jar					X						4°C + Use as ms/msD
	1345	X		"	"	1	8 oz Jar						X					4°C + Use as ms/msD
	1345	X		"	"	1	8 oz Jar							X				4°C + Use as ms/msD

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10/18/10	1700
Received by:		
Relinquished by:		
Received for Laboratory by: [signature]	10/19/10	930

Shipping Details

Method of Shipment: FEDEX

Airbill No.: 87283921 1988

Lab Address: APPL, Inc. 908 N. Temperance Ave Clovis, CA 93611

Special Instructions

* Project Metals List for Surface Water C103-SW02-00 & C103-SW02-00 ms/msD (Lead, Selenium & Silver) Dissolved Metals were filtered in the field.

** Project metals List for Sediment C103-SD02-0.5 & C103-SD02-0.5 ms/msD (Arsenic, Selenium, Silver, Vanadium)

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Project Name: SWMU 103 (Playa Lake) Phase III RFI	Project No.: 16170587.00100
Project Location: Cannon AFB	Project Manager: Jeff Voelker
Sampler(s): Tony Sedlacek, Skip Wrightson	

Analytical Parameters: PCB Congeners (1668B); Dioxin/Furans (8290); Total metals (6010B)*; Dissolved metals (6010B)*; TPH-GRO (8015B); TPH-DRO/ORO (Metals/8015B)**; PCB Congeners/Dioxin/Furans (1668B/8290)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total metals (6010B)	Dissolved metals (6010B)	TPH-GRO (8015B)	TPH-DRO/ORO (Metals/8015B)	PCB Congeners/Dioxin/Furans (1668B/8290)				Remarks
10/18/10	1130		X	C103-SW01-00	Surface Water	2	1-L Ambers	X										4°C
	1130		X	"	"	2	1-L Ambers		X									4°C
	1130		X	"	"	1	500mL HDPE			X								4°C + HNO3
	1130		X	"	"	1	500mL HDPE				X							4°C + HNO3 + Filtered
	1130		X	C103-SD01-0.5	Sediment	2	4oz Jar					X						4°C
	1130	X		"	"	1	8oz Jar						X					4°C
	1130	X		"	"	1	8oz Jar							X				4°C

Tony Sedlacek

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Relinquished by:		
Received for Laboratory by: [signature]	10/19/10	930

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Method of Shipment: FedEx

Airbill No.: 8728 3921 1988

Lab Address: APPL, INC. 908 N. Temperance Ave Clovis, CA 93611

Special Instructions

* Project Metals List for Surface Water C103-SW01-00 (Lead, Selenium, silver), Dissolved Metals were filtered in the field.

** Project metals List for Sediment C103-SD01-0.5 (Arsenic, Selenium, Silver, Vanadium)

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Project Name: SWMU 103 (Playa Lake) Phase III RFI	Project No.: 16170587.00100
Project Location: Cannon AFB, Clovis NM	Project Manager: Jeff Voelker
Sampler(s): Tony Sedlacek, Skip Wrightson	

Analytical Parameters

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total Metals (6010B)*	Dissolved Metals (6010B)*	TPH-GRO (8015B)	TPH-DRO/ORO	PCB Congeners/Dioxin/Furans (1668B/8290)				Remarks
10/19/10	0837		X	C103-SW03-00	Surface Water	2	1-L Ambers	X										4°C
	0837		X	"	"	2	1-L Ambers		X									4°C
	0837		X	"	"	1	500mL HDPE			X								4°C+HNO3
	0837		X	"	"	1	500mL HDPE				X							4°C+HNO3, Field Filtered
	0837		X	C103-SD03-0.5	Sediment	2	4oz Jar					X						4°C
	0837	X		"	"	1	8oz Jar						X					4°C
	0837	X		"	"	1	8oz Jar							X				4°C
	1127		X	C103-SW05-00	Surface Water	2	1-L Amber	X										4°C
	1127		X	"	"	2	1-L Amber		X									4°C
	1127		X	"	"	1	500mL HDPE			X								4°C+HNO3
	1127		X	"	"	1	500mL HDPE				X							4°C+HNO3, Field Filtered
	1127		X	C103-SD05-0.5	Sediment	2	4oz Jar					X						4°C
	1127	X		"	"	1	8oz Jar						X					4°C
	1127	X		"	"	1	8oz Jar							X				4°C

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10/20/10	1700	Method of Shipment: FEDEX	* Project Metals List for Surface Water C103-SW03-00 & C103-SW05-00 (Lead, Selenium & Silver)
Received by:			Airbill No.: 8728 3921 1999	Dissolved Metals were filtered in the field.
Relinquished by:			Lab Address: APPL, Inc. 908 N. Temperance Ave Clovis, CA 93611	** Project Metals List for Sediment C103-SD03-0.5 & C103-SD05-0.5 (Arsenic, Selenium, Silver, Vanadium
Received for Laboratory by:	10/21/10	1115		

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CHAIN OF CUSTODY RECORD

Project Name: SWMU 103 (Playa Lake) Phase III RFI

Project No.: 16170587.00100

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total Metals (6010B)*	Dissolved Metals (6010B)	TPH-GRO (8158)	TPH-DRO/ORO/Metals (8015B/6010B)**	PCB Congeners/Dioxin/Furans (1668B/8290)				Remarks
10/19/10	0959		X	C103-SW04-00	Surface Water	2	1-L Ambers	X										4°C
	0959		X	"	"	2	1-L Ambers		X									4°C
	0959		X	"	"	1	500 mL HDPE			X								4°C + HNO_3
	0959		X	"	"	1	500 mL HDPE				X							4°C + HNO_3, Field Filtered
	0959		X	C103-SD04-0.5	Sediment	2	4 oz Jar					X						4°C
	0959	X		"	"	1	8 oz Jar						X					4°C
	0959	X		"	"	1	8 oz Jar							X				4°C
	1000		X	C103-SW24-00	Surface Water	2	1-L Amber	X										4°C
	1000		X	"	"	2	1-L Amber		X									4°C
	1000		X	"	"	1	500 mL HDPE			X								4°C + HNO_3
	1000		X	"	"	1	500 mL HDPE				X							4°C + HNO_3, Field Filtered
	1000		X	C103-SD24-0.5	Sediment	2	4 oz Jar					X						4°C
	1000	X		"	"	1	8 oz Jar						X					4°C
	1000	X		"	"	1	8 oz Jar							X				4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10/21/10	1700
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Relinquished by:		
Received for Laboratory by: [signature]	10/21/10	1115

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Method of Shipment: FEDEX

Airbill No.: 8728 3921 1999

Lab Address: APPL, Inc. 608 N. Temperance Ave Clovis, CA 93611

Special Instructions

* Project Metals List for Surface Water C103-SW04-00 & C103-SW24-00 (Lead, Selenium & Silver)

Dissolved Metals were filtered in the field.

** Project Metals List for Sediment C103-SD04-0.5 & C103-SD24-0.5 (Arsenic, Selenium, Silver, Vanadium

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Project Name: SWMU 103 (Playa Lake) Phase III RFI	Project No.: 16170587.00100
Project Location: Cannon AFB, Clovis NM	Project Manager: Jeff Voelker
Sampler(s): Tony Sedlacek, Skip Wrightson	

Analytical Parameters

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	PCB Congeners (1668B)	Dioxin/Furans (8290)	Total Metals (6010B)*	Dissolved Metals (6010B)*	TPH-GRO (8015B)	TPH-DRO/ORO/Metals (8015B)	PCB Congeners/Dioxin/Furans (1668B/8290)	Selenium (6010B)			Remarks
10/19/10	1248		X	C103-SW06-00	Surface Water	2	1-L Amber	X										4°C
	1248		X	"	"	2	1-L Amber		X									4°C
	1248		X	"	"	1	500 mL HDPE			X								4°C + HNO_3
	1248		X	"	"	1	500 mL HDPE				X							4°C + HNO_3, Field Filtered
	1248		X	C103-SD06-0.5	Sediment	2	4 oz Jar					X						4°C
	1248	X		"	"	1	8 oz Jar						X					4°C
	1248	X		"	"	1	8 oz Jar							X				4°C
	1337	X		C103-SD07-0.5	Sediment	1	8 oz Jar								X			4°C
	1430	X		C103-SD08-0.3	"	1	8 oz Jar								X			4°C
	1516	X		C103-SD09-0.3	"	1	8 oz Jar								X			4°C
	1539	X		C103-SD10-0.5	"	1	8 oz Jar								X			4°C
	1600	X		C103-SD20-0.5	"	1	8 oz Jar								X			4°C
	1629	X		C103-SD11-0.5	"	1	8 oz Jar								X			4°C
	1701	X		C103-SD12-0.5	"	1	8 oz Jar								X			4°C

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10/20/10	1300	Method of Shipment: FEDEX	* Project Metals List for Surface Water C103-SW06-00 (Lead, Selenium, Silver) Dissolved Metals were filtered in the field.
Received by:			Airbill No.: 8728 3921 1999	
Relinquished by:			Lab Address: APPL, Inc 908 N. Temperance Ave Clovis, CA 93611	~~** C103-SD06-0.5~~ TS Project metals List for Sediment C103-SD06-0.5 (Arsenic, Selenium, Silver, Vanadium
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CHAIN OF CUSTODY RECORD

Project Name: SWMU 103 (Playa Lake) Phase III RFI

Project No.: 16170587.00100

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrighton

Analytical Parameters: Selenium (6010B)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	Selenium (6010B)	Remarks
10/19/10	1701	X		C103-SD12-0.5 ms/msD	Sediment	1	8oz Jar	X	4°C; use as ms/msD

Tony Sedlacek 10/20/10

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10/20/10	1700	Method of Shipment: FEDEX	
Received by:			Airbill No.: ~~187~~ 8728 3921 1999	
Relinquished by:			Lab Address: APPL Inc, 908 N. Temperance Ave, Clovis, CA 93611	
Received for Laboratory by:	10/21/10	1115		

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Project Name: SWMU 103 (Playa Lake) Phase III RFI	Project No.: 16170587.00100
Project Location: Cannon AFB, Clovis NM	Project Manager: Jeff Voelker
Sampler(s): Tony Sedlacek, Skip Wrightson	

Analytical Parameters: TPH-GRO (8015B); TPH-DRO/ORO/Metals (8015B/6010B)*

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO/ORO/Metals (8015B/6010B)*	Remarks
10/20/10	0810		X	C103-SD13-0.5	Sediment	2	4oz Jar	X		4°C Hold for Analysis
	0810	X		"		1	8 oz Jar		X	4°C
	0831		X	C103-SD14-0.5		2	4oz Jar	X		4°C
	0831	X		"		1	8 oz Jar		X	4°C
	0845		X	C103-SD15-0.5		2	4oz Jar	X		4°C
	0845	X		"		1	8 oz Jar		X	4°C
	0955		X	C103-SD16-0.5		2	4oz Jar	X		4°C
	0955	X		"		1	8 oz Jar		X	4°C
	1011		X	C103-SD17-0.5		2	4oz Jar	X		4°C
	1011	X		"		1	8 oz Jar		X	4°C
	1034		X	C103-SD18-0.5		2	4oz Jar	X		4°C
	1034	X		"		1	8 oz Jar		X	4°C
	1100		X	C103-SD28-0.5		2	4oz Jar	X		4°C
	1100	X		"		1	8 oz Jar		X	4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10/21/10	1900
Received by:		
Relinquished by:		
Received for Laboratory by: [signature]	10/21/10	1115

Shipping Details

Method of Shipment: Fedex

Airbill No.: 8728 3921 1999

Lab Address: APPL, Inc. 908 N. Temperance Ave Clovis, CA 93611

Special Instructions

* Project Metals List for Sediment Samples (Arsenic, Selenium, Silver, Vanadium)

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1.1 PURPOSE AND METHODOLOGY

The purpose of this ERA is to incorporate new data in the evaluation of potential environmental risks associated with Playa Lake (SWMU 103) at Cannon AFB, Clovis, New Mexico. Previous evaluations of Playa Lake (SWMU 103) were completed using data collected from the Phase I RFI (W-C 1998, URS 2010). The results of the 2010 ERA were used, along with other considerations, as a guide to focus future sampling efforts. Based on the Phase I RFI data, no significant risks were found to be associated with Playa Lake (SWMU 103) soil (URS 2010). However, the potential for adverse effects were indicated for the sediment invertebrate community from exposure to silver and selenium; effects on water column organisms could not be evaluated completely because water quality standards for some metals are based on dissolved concentrations, and the Phase I RFI surface water samples were only analyzed for total concentrations. Additional sediment and surface water samples were collected in October 2010. In addition to COPECs identified using the Phase I RFI data, analyses of the Phase III RFI samples included a suite of PCB congeners, dioxin and furan congeners, and selected petroleum hydrocarbons. These additional analyses were included at the request of NMED because of the proximity of Playa Lake (SWMU 103) to former burn areas. The Phase III RFI sediment and surface water samples were analyzed as follows:

Surface Water Analytes	Sediment Analytes
PCB Congeners	PCB Congeners
Dioxins/Furans	Dioxins/Furans
Lead (total and dissolved)	Arsenic
Selenium (total and dissolved)	Selenium
Silver (total and dissolved)	Silver
	Vanadium
	Diesel Range Organics
	Oil Range Organics
	Gasoline Range Organics

This report presents an ERA incorporating the Phase III RFI data. This ERA follows the procedures of the HWB of NMED Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment (NMED 2008), USEPA's Ecological Risk Assessment Guidance for Superfund (USEPA 1997a), and USEPA's Guidelines for Ecological Risk Assessment (USEPA 1998). Details of the procedures used in this risk assessment were presented in the previous ERA (URS 2010).

1.2 DATA EVALUATION

Because considerable changes have been made at Cannon AFB since 1994 that have affected Playa Lake (SWMU 103), specifically the installation of a new WWTP in 1998, the types of

discharges that Playa Lake (SWMU 103) now receives have changed since the Phase I RFI sampling. Therefore, the 2010 data are a better reflection of current conditions in surface water. In addition, surface water samples collected in Phase I RFI were not analyzed for the dissolved concentration of metals. Water quality standards for lead and silver are based on the dissolved concentration. For these reasons, only the surface water results from 2010 were used in this risk assessment. Summary statistics for the surface water samples are presented in **Table 1**.

Sediment, on the other hand, has low mobility and contaminants, particularly metals, may persist over time. The sediment on the bottom of Playa Lake (SWMU 103) is likely to contain the deposits present in Phase I RFI, as well as deposition accumulated through 2010. Therefore, data from both sampling events (Phase I RFI and Phase III RFI) were used to estimate exposure concentrations for metals. Note that PCBs and dioxins/furans were not included in the Phase I RFI sample analyses. Summary statistics for sediment samples are presented in **Table 2**.

1.3 PROBLEM FORMULATION

Ecological problem formulation addresses the environmental setting, contaminant fate and transport, and potential ecological receptor species that may be exposed to contaminants present. A detailed problem formulation was developed in the 2010 ERA (URS 2010). Playa Lake (SWMU 103) occupies approximately 13 acres within Cannon AFB. This shallow pond is maintained at approximately total capacity by inflow from the wastewater treatment plant located to the west. The lake is an estimated 1,000 feet across the widest part and an estimated 5 feet deep at the deepest area with a gradually sloping bottom. A detailed description of the site, site history, current, and future use, potential fate and transport, and assessment and measurement endpoints were presented in the 2010 ERA (URS 2010). The conceptual site exposure model (CSEM) for aquatic receptors is included as **Figure 7-5** of the Phase III RFI report. The assessment endpoints for the present ERA are those selected in the 2010 ERA (URS 2010) for aquatic receptors and are:

- Viability and Function of the Water Column Community
- Viability and Function of the Benthic Sediment Community
- Survival, Growth, and Reproduction of Omnivorous Aquatic Birds
- Survival, Growth, and Reproduction of Predatory Aquatic Birds

1.3.1 Identification of Chemicals of Potential Ecological Concern

Chemicals of potential ecological concern (COPECs) were selected by comparing maximum concentrations of chemicals with ESVs, Selection of ESVs and their sources were presented in the 2010 ERA (URS 2010). However, PCBs and dioxins/furans were not included in the previous evaluation.

Because PCBs, dioxins and furans have been shown to cause toxic responses similar to those caused by 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), the most potent congener, a

methodology for estimating the combined exposure and toxicity of these mixtures was applied. Toxicity equivalency factors (TEFs) have been developed for each congener that reflects its toxicity relative to TCDD (NMED 2000). Exposure was estimated by applying the appropriate TEF to each congener and then summing the results to calculate a TCDD toxic equivalent (TEQ) that can be compared with toxicity reference values (TRVs) for TCDD. This methodology was applied in the screening step of this risk assessment using the maximum detected concentration for surface water (**Tables 1**) and sediment (**Table 2**). For ecological receptors, it has been shown that the relative toxicity of the various congeners differs between mammals and birds (Van den Berg et al. 1998). Because the higher-trophic level assessment endpoints selected for SWMU 103 are aquatic birds, bird-specific TEFs were used to derive TEQs for surface water and sediment. Calculation of the avian TEQ is presented in **Table 3**.

USEPA Region 5 (USEPA 2003) has developed surface water and sediment ESLs for TCDD. The surface water ESL for TCDD (3.0E-9 µg/L) is a chronic value derived to be protective of wildlife receptors. The sediment ESL (1.20E-7 mg/kg) was, in turn, derived based on equilibrium partitioning using the surface water ESL (USEPA 2003).

For surface water, the maximum concentration of lead (dissolved) exceeded its ESV (**Table 1**). Therefore, lead was retained as a COPEC. Selenium was not detected in either the dissolved or total analyses and is not retained as a COPEC. Although silver was detected in the analysis measuring the total concentration, it was not detected in the dissolved analysis upon which the ESV is based. Therefore, it was not considered a COPEC. PCBs and dioxin/furans were retained as COPECs for higher trophic-level receptors because of their bioaccumulation potential and will be evaluated as 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)-toxic equivalents.

For sediments, arsenic, selenium, and silver exceeded their respective sediment ESVs and were retained as COPECs (**Table 2**). A sediment ESV was not available for vanadium. The uncertainty associated with the lack of relevant toxicity information for vanadium is discussed in the Uncertainty Assessment (**Section 1.6.2**). Vanadium has a low bioaccumulation potential and was, therefore, not considered a potential risk to higher trophic-level receptors. Similarly, arsenic has a low bioaccumulation potential and was not considered a potential risk to higher trophic-level receptors. Selenium is considered potentially bioaccumulative and was therefore retained for evaluation of both direct and ingestion exposures. Silver was also retained for both direct and ingestion exposures. Although generally not considered a bioaccumulative constituent, silver was evaluated for the ingestion pathway consistent with the 2010 ERA. PCBs And dioxins/furans were retained as ingestion COPECs because their cumulative TEQs exceeded the ESV. Sediment COPECs are arsenic, selenium, silver, PCBs and dioxins/furans. PCBs and dioxins/furans were evaluated as TCDD-toxic-equivalents.

1.3.1.1 Inorganic Background Comparisons

There are no background data for sediment and surface water; therefore, all inorganics were retained as COPECs.

1.3.2 COPEC and Assessment Endpoint Summary

A summary of COPECs for specific assessment endpoints is presented in the following table:

Assessment Endpoint	COPEC and Media
Viability and Function of the Water Column Community	Direct exposure to lead in surface water
Viability and Function of the Benthic Sediment Community	Direct exposure to arsenic, selenium, and silver in sediment
Survival, Growth, and Reproduction of Omnivorous Aquatic Birds	Ingestion exposure to selenium, silver, PCBs, and dioxins/furans in sediment and PCBs and dioxins/furans in surface water
Survival, Growth, and Reproduction of Predatory Aquatic Birds	Ingestion exposure to selenium, silver, PCBs, and dioxins/furans in sediment and PCBs and dioxins/furans in surface water

1.4 EXPOSURE ASSESSMENT

The exposure analysis addresses two exposure routes: (1) direct exposures for plant and benthic invertebrate community endpoints, and (2) ingestion exposures for higher trophic-level receptors that may be consuming contaminated prey and sediment. The ingestion exposure model used for higher-trophic level receptors was presented in the 2010 ERA (URS 2010), and the same model and assumptions were used in the current ERA with the exception of PCBs and dioxins/furans (discussed below).

1.4.1 Calculation of Exposure Point Concentrations

A reasonable and conservative estimate of the chemical concentration that an organism is exposed to is represented by the upper 95% confidence limit of the mean (95% UCL). USEPA recommends a minimum of eight samples for calculating UCLs (USEPA 2007). For sample sizes of eight or greater, USEPA's ProUCL 4.00.05 software (USEPA 2010) was used to calculate 95% UCLs. The exposure point concentrations (EPCs) used to estimate risk were the lower of the maximum and the 95% UCL. For analytes with fewer than eight samples, the maximum concentration was used as the EPC. Data distribution and methodology for calculating 95% UCLs are presented in **Table 4**. ProUCL output tables for UCLs are provided in **Attachment 1**.

As noted in Section 1.3.1, the various isomers of dioxins and furans have different levels of toxicity, with TCDD being the most toxic. In addition, certain PCBs are similar to dioxin in the nature of their toxicity. For risk assessment purposes, a toxicity equivalence procedure was used to describe the cumulative toxicity of complex mixtures of these compounds. Because there were only six samples analyzed for PCBs and dioxins/furans, the maximum detected concentration was used to calculate individual TEQs. TEQs were totaled separately for PCBs and dioxin/furans. TEQ calculations are presented in **Table 3**.

It is noted that the presence of outliers can result in an EPC that over-estimates potential exposure. Therefore, data for COPECs with greater than eight samples were evaluated using the outlier test available in USEPA's ProUCL 4.00.05 software. ProUCL outputs for outlier tests are provided in **Attachment 1**. For sediment, one outlier each was found for arsenic, selenium, silver and vanadium. Arsenic, selenium, and silver outliers were found in the Phase I RFI dataset and in one sample: CAN103-1031-5001. For arsenic, the outlier concentration was 10.8 mg/kg; the selenium outlier was 13.2 mg/kg; the silver outlier was 33.7, and the vanadium outlier was 130 mg/kg. The presence of outliers and their affects on the risk assessment is discussed in the Uncertainty Analysis (**Section 1.6.2**).

1.4.2 Estimating COPEC Concentrations in Diet Items

The average daily dose (ADD) of each COPEC includes an estimate of tissue concentrations in the dietary items for the mallard and black-crowned night heron. The concentration of COPECs in food items is estimated using a biotic uptake/accumulation factor specific to the COPEC and prey organism. Factors and algorithms for uptake of selenium and silver were presented and discussed in detail in the 2010 ERA (URS 2010). PCBs and dioxins/furans were not included in the Phase I RFI analyses evaluated in the 2010 ERA; therefore, values and rationale for selecting biotic uptake factors are presented here. While the 2010 ERA estimated selenium and silver concentrations in fish (as a surrogate for the salamander) by the relationship between the concentrations in prey (invertebrates) relative to fish tissue, such data were not readily available for the subject PCB congeners and dioxins/furans. Therefore, benthic invertebrate and fish tissue concentrations were estimated using the relationship between sediment concentrations and fish tissue concentrations.

USEPA's Biota-Sediment Accumulation Factor (BSAF) Database (USEPA 2009) was searched for freshwater, sediment-to-benthic invertebrate and sediment-to-fish BSAFs for PCBs and dioxins/furans. Fish BSAFs were used for estimating the exposure concentration in salamanders inhabiting Playa Lake (SWMU 103). Uptake data for benthic invertebrate and demersal fish were found for several congeners of PCBs. A weighted-mean BSAF for benthic invertebrates was calculated to be 1.65 using data for PCB congeners applicable to this ERA. Similarly, a weighted mean fish BSAF for PCBs was calculated to be 1.99. BSAF data and calculations for PCBs are presented in **Table 5**. From the same database, a sediment-to-fish BSAF was calculated as 0.178 for dioxins/furans using data on demersal fish (**Table 6**). Because a benthic invertebrate BSAF for dioxins/furans was not identified, the value for fish was selected as a surrogate value. BSAFs for PCBs and dioxins/furans are expressed on a wet weight basis while ADD estimates are in dry weight. A conversion factor assuming 75 percent water content was used for fish and benthic invertebrates (USEPA 1993). Note that the BSAFs for PCBs and dioxins/furans are based on the percent organic carbon in the sediment and percent lipids in the organism. BSAF was used to estimate PCB and dioxins/furan concentrations in invertebrates and fish tissue as follows:

$$C_{prey} = C_{sediment} * BSAF * f_{lipid}/f_{OC}$$

where:

C_{prey} = concentration in invertebrate or fish tissue (mg/kg wet weight)

$C_{sediment}$ = concentration in sediment (mg/kg dry weight)

f_{lipid} = fraction lipid:

- invertebrates - 1% based on average of 0.45% from McKee (1992) and 1.7% from Morrison et al. (1996). 1% also approximates the average lipid content for the aquatic worm *Lumbriculus variegatus* from the USACE Waterways Experiment Station BSAF database (USACE 2009).
- Fish - 5% based on average wholebody lipids in demersal and pelagic freshwater fish (page C-16, USEPA 1997b).

f_{OC} = fraction organic carbon - assumed 1%

Biotic uptake factors for inorganics are expressed in dry weight and are not dependent on organic carbon or lipid content; therefore, no conversion was necessary.

1.5 TOXICITY ASSESSMENT

Two types of toxicity data were necessary for this risk assessment: (1) direct exposure toxicity reference values (TRVs) for sediment and water column organisms; and, (2) indirect oral exposure TRVs for evaluating the ingestion pathway for aquatic birds.

1.5.1 Direct Exposure Toxicity Reference Values

For surface water, lead was the only direct exposure COPEC identified. The TRV used for lead is the New Mexico surface water quality standard. In order to better evaluate potential risks in sediments, a range was defined with the lower bracket being a no-effects concentration and the upper bracket a lowest-effects concentration. For sediment, the no-effects level is referred to as a threshold effect concentration (TEC), below which adverse effects are unlikely. The lowest effects concentration is referred to as the probable effects concentration (PEC), above which adverse effects are likely. The rationale for selection of TRVs was included in the 2010 ERA (URS 2010). Although the sediment ESV (selected from Region 5's ESLs) is considered protective of all aquatic life, the value was derived using a wildlife exposure model. Toxicity studies on the direct effects of TCCD and related compounds were not found. A study by West et al. (1997) found some species of freshwater benthic invertebrates exposed to TCDD in their diet were able to accumulate relatively high concentrations of TCDD in their tissue without experiencing toxic effects. This suggests that the benthic invertebrate community may not be as sensitive to TCDD as are birds and mammals, and that levels protective of birds is also protective of aquatic organisms in general.

1.5.1.1 Sediment TRVs for Silver

The ESV used for silver in sediment was the lowest TEC-equivalent found in the literature (1 mg silver/kg). The source of this value was a study by Long et al. (1995) in which toxicity data on a number of organics and inorganics were reviewed. However, the data were generally associated with co-occurring contaminants and the predictive ability specific to silver is unknown. Furthermore, their review focused on marine and estuarine sediment; the similarity of marine/estuarine and freshwater systems in terms of toxicity is unknown. More recent empirical studies on the toxicity specific to silver in freshwater sediment found no observed effects concentrations (NOECs) and lowest observed effects concentrations (LOECs) to range from 12 mg/kg to 2,200 mg/kg (Call et al. 1999, 2006). The NOEC and LOEC for the most sensitive species, *Hyalella azteca*, were 12 mg/kg and 31 mg/kg, respectively. Therefore, these values were used to further evaluate silver in sediment.

1.5.2 Oral Toxicity Reference Values

TRVs for the ingestion pathway are chemical-specific, daily oral doses expressed in relation to body weight (mg/kg body weight per day [BW/day]). As with direct exposures in sediments, values were selected to represent a range of possible effects. The lower bracket selected was a no-observed-adverse-effects level (NOAEL) and the upper bracket a lowest-observed-adverse-effects level (LOAEL). With the exception of PCBs and dioxins/furans, NOAELs and LOAELs and the rationale for selecting them were presented in the 2010 ERA (URS 2010), as listed below.

Because the subject PCB congeners are similar in toxicity to dioxins/furans, PCBs and dioxins/furans were evaluated as TCDD-equivalents, expressed as the sum of their respective TEQs. Few data were available on the toxicity of TCDD to avian species. Following the selection rationale outlined in the 2010 ERA, toxicity data were reviewed for oral TRVs appropriate to the receptor species. Gilbertson (1983; as cited in Eisler 1986) reported a decrease in reproduction for herring gulls fed 0.001 mg dioxins/kgBW/day for 21 days. A NOAEL was not reported for this study; however, the LOAEL was divided by an uncertainty factor of 10 to generate a NOAEL of 0.0001 mg TCDD/kgBW/day.

Table 7 presents a summary of oral TRVs for selenium, silver, and TCDD.

1.6 RISK CHARACTERIZATION

The function of the risk characterization is to evaluate the multiple lines of evidence collected during the ERA in order to characterize the potential risks to the assessment endpoints. Risk characterization has two principle components: risk estimation and risk description. These two components are bridged by an uncertainty analysis which provides a qualitative discussion of the uncertainties inherent in each step of the ERA process and how they may affect the risk estimation. The risk description then provides an interpretation of potential risks in the context

of uncertainty. This information is provided to help the risk managers judge the likelihood and ecological significance of the risk estimation.

1.6.1 Risk Estimation

This section provides an estimate of risk in the form of ecological screening quotients (ESQs) for single chemicals. The ESQ is the ratio of the exposure concentration (or dose) to the TRV concentration (or dose). ESQs are presented and discussed in the following sections for each assessment endpoint.

1.6.1.1 Viability and Function of the Water Column Community

The COPEC identified for surface water was lead. Lead was detected once in the six samples collected in 2010. The dissolved concentration (4.6 µg/L) compared with the water quality standard (3 µg/L) results in an ESQ of 1.5. However, the dissolved concentration reported for lead was higher than that reported for the total concentration (2.1 µg/L). The reason for this is not apparent. The uncertainty associated with this result is discussed in the Uncertainty Assessment below.

1.6.1.2 Viability and Function of the Benthic Sediment Community

COPECs for sediment-dwelling invertebrates were arsenic, selenium, and silver. The TEC-based and PEC-based ESQs were greater than one for selenium (**Table 8**); however, the TEC-based ESQ and the PEC-based ESQ were relatively small (1.9 and 1.2, respectively). The TEC-based ESQ for silver was 1.5, and the PEC-based ESQ was less than 1 (0.6). This suggests a low probability of risk for the benthic sediment community from exposure to these constituents. Although the sediment ESV for TCDD was exceeded, the ESV is based on a wildlife exposure model (USEPA 2003); the ESV is assumed to be protective of the benthic and aquatic communities.

1.6.1.3 Survival, Growth and Reproduction of Omnivorous Aquatic Birds

The ADDs for the omnivorous mallard are presented in **Table 9** and the ESQs in **Table 10**. All NOAEL- and LOAEL-based ESQs are less than one. This suggests a low probability of risk for omnivorous aquatic birds.

1.6.1.4 Survival, Growth and Reproduction of Predatory Aquatic Birds

The black-crowned night heron was selected as a representative of predatory aquatic birds. The ADDs for the heron are presented in **Table 9** and the ESQs in **Table 10**. All NOAEL- and LOAEL-based ESQs are less than one. This suggests a low probability of risk for predatory aquatic birds.

1.6.2 Uncertainty Analysis

Within any of the steps of the ecological risk evaluation process, assumptions must be made due to a lack of absolute scientific knowledge. Regulatory risk evaluation methodology requires that conservative assumptions be made throughout the risk evaluation to ensure that receptor populations are protected and ecological risks are appropriately quantified. As a result of cumulative conservatism, when all of the assumptions are combined, it is more likely that risks are overestimated rather than underestimated. Sources of uncertainties associated with the ERA are:

- Data collection and evaluation
- Exposure assessment
- Toxicity assessment
- Risk estimation

These sources of uncertainty were discussed in depth in the 2010 ERA (URS 2010). Only uncertainties specific to the current ERA are discussed below.

1.6.2.1 Uncertainties Associated with Data Collection and Evaluation

The number of surface water samples collected in 2010 was limited (n = 6). The degree to which these samples represent water quality in the lake contributes to uncertainty. However, samples were located close to where contamination was known to occur. Detection frequencies were low (0% to 17%), as were the detected concentrations. It is unlikely that the risk estimates for exposure to surface water are under-estimated. However, there is uncertainty in the reliability of surface water results for lead because the dissolved concentration exceeded the total concentration. Possible reasons for this could be introduction of contamination or interference in the filtering process. Therefore, it is premature to conclude that lead in surface water has a potential for adverse effects. The fact that lead was detected in only one of the six samples suggests that lead is unlikely to be of ecological concern.

Sediment data collected in the Phase I RFI and Phase III RFI were combined for calculating risks estimates. It was assumed that sediment present during the Phase I RFI would still be present during the Phase III RFI. It is possible that sediment present during the Phase I RFI has been transported, dispersed, and diluted by discharge, surface runoff or seasonal turnover in the lake and that the Phase III RFI data are indeed representative of current conditions. Because maximum concentrations of inorganics were detected in the earlier data, potential risks may be overestimated.

A further consideration is the presence of outliers in the data that have likely produced an inflated UCL. Maximum detected concentrations were shown to be outliers for arsenic, selenium, silver and vanadium and were all found in the same sample. In Phase III, previous sediment sampling locations were re-sampled; repeat sampling of these locations is likely to have introduced a bias that would result in an over-estimate of potential risk.

1.6.2.2 Uncertainties Associated with the Exposure Assessment

For the exposure assessment, uncertainties are associated with selection of PCB and TCDD BSAFs for the ingestion COPECs. BSAF data were not inclusive of all congeners of the subject PCBs and dioxins/furans. BSAFs may be greater or less than the value used; thus risks may be over- or under-estimated.

1.6.2.3 Uncertainties Associated with the Toxicity Assessment

Uncertainties associated with the toxicity assessment are discussed in detail in the 2010 ERA (URS 2010). For the current ERA, uncertainty applies to the minimal availability of avian oral toxicity data for TCDD. This may result in an over- or under-estimate of potential risks.

1.6.2.4 Uncertainties Associated with the Risk Estimation

An uncertainty in the risk estimation for this ERA is the degree to which the EPCs represent the exposures at the site. Because there were outliers in the dataset, exposures and subsequent risk estimates are likely to be overestimated. This applies only to arsenic, selenium, and vanadium in sediment for which outliers were statistically identified. The outliers for all of these constituents were detected in the Phase I RFI dataset, and specifically in sample CAN103-1032-5001. Although not a statistical outlier, the maximum for silver was also detected in this sample.

Potential risks to sediment-dwelling organisms could not be evaluated for vanadium or dioxins/furans because toxicity data were lacking. This may lead to an underestimate of risk with respect to evaluation of the benthic sediment community. However, some freshwater benthic organisms have been shown to be relatively tolerant of elevated concentrations of TCDD and related compounds in their environment, diet, and tissue (West et al. 1997). It is assumed that the screening values derived for the protection of higher trophic level receptors is protective of other aquatic organisms.

1.6.3 Risk Description

The main objective of risk management decisions is to reduce ecological risks to levels that will result in recovery and maintenance of healthy local populations and communities of biota (USEPA 1999). Risk description provides an interpretation and discussion of potential risks to assessment endpoints in the context of uncertainty and provides information to help the risk manager judge the likelihood and ecological significance of the risk estimates. As discussed in the Uncertainty Analysis, conservative assumptions were used in estimating risk to all assessment endpoints.

In this evaluation, the risk process consisted of comparing an EPC with a TRV, the ratio of which was expressed as a hazard quotient. These HQs contribute to the “line-of-evidence” for interpreting the potential for ecological impact. The HQ tool as applied in the ecological risk evaluation should not be construed as an accurate “measure” of risk, but rather as an “indication” of the potential for risk to be used in conjunction with other lines of evidence in determining

whether further evaluation may be warranted. NOAELs should not be interpreted as a concentration or dose above which an effect will occur; it is a no-effects level. The LOAEL is the upper-bound threshold above which toxic effects are more likely to occur. For most assessment endpoints evaluated in this ecological risk assessment, LOAEL- or LOEC-based concentrations were not exceeded. The HQ_{LOAEL} for the benthic invertebrate community exposed to selenium was, at 1.2, slightly greater than one.

Because ecological receptors are potentially exposed to multiple COPECs, consideration should be given to their combined effects. A cumulative ESQ can be derived by summing ESQs for COPECs provided that they affect the same target organs/systems, the measurement endpoints were similar, and the tests were of the same exposure durations (NMED 2008). In the case of the ingestion COPECs identified for Playa Lake, these criteria are not met. The measurement endpoint for the selenium TRVs was mortality after a two-week study duration, the TRVs for silver were based on changes in growth after five weeks of exposure, and effects on reproduction was the measurement endpoint for the TCDD TRVs (**Appendix D**, **Table 7**). Because the TRVs for the COPECs in this evaluation were derived from toxicity studies of differing durations and addressing different endpoints, their ESQs cannot be viewed as additive. The measurement endpoint that would be expected to have the greatest impact on receptor populations is mortality; mortality is associated with exposure to selenium (**Appendix D**, **Table 7**). ESQLOAELs for selenium were less than 1 for both the mallard and the heron (Appendix D, Table 10). The measurement endpoint for silver was related to growth. Because ESQs for silver were much less than 1, and because growth reduction has a more subtle effect on receptor populations than does mortality, potential risk from simultaneous exposure to both selenium and silver are expected to be low. ESQs for TCDDs were less than 0.05 and are not expected to contribute significantly to potential risk.

1.7 CONCLUSIONS AND RECOMMENDATIONS

The results of this ERA are summarized in the following table.

Ecological Risk Assessment Summary

Assessment Endpoint	Screening Conclusion
Viability and Function of the Benthic Sediment Community	Low potential for risk.
Viability and Function of the Water Column Community	Low potential for risk.
Survival, Growth, and Reproduction of Omnivorous Aquatic Birds	Low potential for risk.
Survival, Growth, and Reproduction of Predatory Aquatic Birds	Low potential for risk.

1.8 REFERENCES

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ATTACHMENT 1

TABLE 1
DATA SUMMARY AND IDENTIFICATION OF CHEMICALSOF POTENTIAL ECOLOGICAL CONCERN IN SURFACE WATER
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

ANALYTE	Detections	Percent Detected	Minimum Non-Detect	Maximum Non-Detect	Minimum Detection	Maximum Detection	Surface Water ESV	pCOPEC? Yes/No	Rationale
Metals (µg/L)									
Lead, Total	1 / 6	17%	5.00E-03	5.00E-03	2.10E+00	2.10E+00	3 (D)	**Yes**	a
Lead, Dissolved	1 / 6	17%	5.00E+00	5.00E+00	4.60E+00	4.60E+00			
Selenium, Total	0 / 6	0%	1.00E+01	1.00E+01	Not Detected	Not Detected	5 (T)	No	b
Selenium, Dissolved	0 / 6	0%	5.00E+00	5.00E+00	Not Detected	Not Detected			
Silver, Total	1 / 6	44%	1.00E+00	1.00E+00	1.20E+00	1.20E+00	2.4 (D-Acute)	No	b
Silver, Dissolved	0 / 6	0%	1.00E+00	1.00E+00	Not Detected	Not Detected			
POLYCHORINATED BIPHENYL CONGENERS (PCB) (pg/L)									
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	1 / 6	17%	1.00E+02	1.00E+02	3.00E+01	3.00E+01			
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1 / 6	17%	1.00E+02	1.00E+02	1.80E+01	1.80E+01			
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	4 / 6	67%	1.00E+02	1.00E+02	Not Detected	5.10E+02			
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	0 / 6	0%	1.00E+02	1.00E+02	Not Detected	Not Detected			
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	0 / 6	0%	1.00E+02	1.00E+02	Not Detected	Not Detected			
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	3 / 6	50%	1.00E+02	1.00E+02	8.10E+00	4.90E+01			
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	0 / 6	0%	1.00E+02	1.00E+02	Not Detected	Not Detected	See Avian TEQ below		
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	0 / 6	0%	1.00E+02	1.00E+02	Not Detected	Not Detected			
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	0 / 6	0%	1.00E+02	1.00E+02	Not Detected	Not Detected			
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	4 / 6	67%	1.00E+02	1.00E+02	1.60E+01	3.50E+02			
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	6 / 6	100%	1.00E+02	1.00E+02	5.00E+01	9.00E+02			
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	0 / 6	0%	1.00E+02	1.00E+02	Not Detected	Not Detected			
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	1 / 6	17%	1.00E+02	1.00E+02	7.60E+00	7.60E+00			
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	0 / 6	0%	1.00E+02	1.00E+02	Not Detected	Not Detected			
DIOXINS AND FURANS (pg/L)									
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			

TABLE 1
DATA SUMMARY AND IDENTIFICATION OF CHEMICALSOF POTENTIAL ECOLOGICAL CONCERN IN SURFACE WATER
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

ANALYTE	Detections	Percent Detected	Minimum Non-Detect	Maximum Non-Detect	Minimum Detection	Maximum Detection	Surface Water ESV	pCOPEC? Yes/No	Rationale
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected		See Avian TEQ below	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0 / 6	0%	1.25E+02	1.25E+02	Not Detected	Not Detected			
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0 / 6	0%	5.00E+01	5.00E+01	Not Detected	Not Detected			
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0 / 6	0%	5.00E+01	5.00E+01	Not Detected	Not Detected			
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	1 / 6	17%	2.50E+02	2.50E+02	1.90E+01	1.90E+01			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	0 / 6	0%	2.50E+02	2.50E+02	Not Detected	Not Detected			
Total Avian Surface Water TEQ[1]						3.97E-01	3.00E-03	**Yes**	a

Note: Chronic criterion for silver not available; value is the acute criterion for the dissolved concentration

ESV = Ecological Screening Value (based on New Mexico chronic freshwater standards)

pCOPEC = Preliminary Contaminant of Potential Ecological Concern

1 = See Table 3 for calculation of Avian TEQ

D = Dissolved chronic criterion (based on hardness = 100)

T = Total chronic criterion

unc = Uncertain

a = Maximum detection exceeds ESV

b = Maximum detection less than ESV

c = Uncertain; maximum reporting limit exceeds ESV

d = Chemical not detected; assumed less than ecological effects level

µg/L = microgram per liter

pg/L = picogram per liter

TABLE 2
DATA SUMMARY AND IDENTIFICATION OF CHEMICALS OF POTENITAL ECOLOGICAL CONCERN IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

ANALYTE	Detections	Percent Detected	Minimum Non-Detect	Maximum Non-Detect	Minimum Detection	Maximum Detection	Sediment ESV	pCOPEC? Yes/No	Rationale
Metals (mg/kg)									
Arsenic	10 / 10	100%	All detects	All detects	2.40E+00	1.08E+01	9.79E+00	**Yes**	c
Selenium	18 / 22	82%	6.20E-01	7.50E-01	3.30E-01	1.32E+01	2.50E+00	**Yes**	c
Silver	10 / 10	100%	All detects	All detects	9.80E+00	3.37E+01	1.00E+00	**Yes**	c
Vandium	10 / 10	100%	All detects	All detects	6.80E+00	1.30E+02	N/A	**unc**	a
POLYCHORINATED BIPHENYL CONGENERS (PCB) (pg/kg)									
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	6 / 6	100%	All detects	All detects	2.30E+01	1.30E+03			
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	5 / 6	83%	1.00E+01	1.00E+01	1.40E+01	1.20E+02			
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	6 / 6	100%	All detects	All detects	7.00E+01	3.00E+03			
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	0 / 6	0%	1.00E+01	1.00E+01	Not Detected	Not Detected			
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	3 / 6	50%	1.00E+01	1.00E+01	7.50E-01	3.60E+01			
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	6 / 6	100%	All detects	All detects	8.60E+00	3.40E+02			
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	4 / 6	67%	1.00E+01	1.00E+01	2.00E+00	7.10E+01			
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	3 / 6	50%	1.00E+01	1.00E+01	1.30E+01	9.30E+01			
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	0 / 6	0%	1.00E+01	1.00E+01	Not Detected	Not Detected			
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	5 / 6	83%	1.00E+01	1.00E+01	3.10E+01	2.70E+02			
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	6 / 6	100%	All detects	All detects	5.80E+01	5.70E+02			
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	2 / 6	33%	1.00E+01	1.00E+01	9.70E-01	6.50E+00			
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	6 / 6	100%	All detects	All detects	6.70E+00	2.90E+02			
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	4 / 6	67%	1.00E+01	1.00E+01	7.30E-01	3.40E+01			
DIOXINS AND FURANS (pg/g)									
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	6 / 6	100%	All detects	All detects	2.80E+00	3.50E+01			
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	2 / 6	33%	1.25E+01	1.25E+01	3.10E+00	7.40E+00			
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	2 / 6	33%	1.25E+01	1.25E+01	2.80E+00	2.90E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1 / 6	17%	1.25E+01	1.25E+01	2.40E+00	2.40E+00			
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	2 / 6	33%	1.25E+01	1.25E+01	2.30E+00	2.40E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1 / 6	17%	1.25E+01	1.25E+01	1.00E+00	1.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0 / 6	0%	1.25E+01	1.25E+01	Not Detected	Not Detected			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0 / 6	0%	1.25E+01	1.25E+01	Not Detected	Not Detected			
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0 / 6	0%	1.25E+01	1.25E+01	Not Detected	Not Detected			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0 / 6	0%	1.25E+01	1.25E+01	Not Detected	Not Detected			
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0 / 6	0%	1.25E+01	1.25E+01	Not Detected	Not Detected			
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	1 / 6	17%	1.25E+01	1.25E+01	2.20E+00	2.20E+00			
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	1 / 6	17%	1.25E+01	1.25E+01	1.70E+00	1.70E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	5 / 6	83%	1.25E+01	1.25E+01	7.90E-01	7.60E+00			
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	3 / 6	50%	1.25E+01	1.25E+01	1.30E+00	3.60E+00			
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	6 / 6	100%	All detects	All detects	3.20E+02	2.60E+02			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	3 / 6	50%	1.25E+01	1.25E+01	3.00E+00	1.10E+01			

TABLE 2
DATA SUMMARY AND IDENTIFICATION OF CHEMICALS OF POTENITAL ECOLOGICAL CONCERN IN SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

ANALYTE	Detections	Percent Detected	Minimum Non-Detect	Maximum Non-Detect	Minimum Detection	Maximum Detection	Sediment ESV	pCOPEC? Yes/No	Rationale
Total Avian Sediment TCDD-Equivalents[1] (pg/kg)						1.37E+04	1.20E+02	**Yes**	c
TOTAL PETROLEUM HYDROCARBONS (mg/kg)									
Diesel Range Organics	3 / 6	50%	1.30E+00	2.60E+00	1.90E+01	6.30E+01	5.89E+03	No	b
Oil Range Organics	4 / 6	67%	1.30E+01	2.60E+01	3.00E+01	6.80E+01	5.89E+03	No	b
Gasoline Range Organics	1 / 6	17%	1.30E+00	2.60E+00	1.90E+01	1.90E+01	5.89E+03	No	b

ESV = Ecological Screening Value

pCOPEC = Preliminary Contaminant of Potential Ecological Concern

N/A = Not available

unc = Uncertain; ESV not available

1 = See Table 3 for calculation of Avian TEQ; dioxins/furans data were reported in pg/g and have been converted to pg/kg

a = Uncertainty due to absence of ESV

b = Maximum detection less than ESV

c = Maximum concentration exceeds ESV

mg/kg = milligram per kilogram

pg/g = picogram per gram

pg/kg = picogram per kilogram

TABLE 3
CALCULATION OF TCDD-TOXICITY EQUIVALENTS FOR SEDIMENT AND SURFACE WATER
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

ANALYTE	Surface Water				Sediment			
	Detections	Maximum Detection	Avian TEF	Avian TEQ	Detections	Maximum Detection	Avian TEF	Avian TEQ
POLYCHORINATED BIPHENYL CONGENERS (PCB)		pg/L		pg/L		pg/kg		mg/kg
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	1 / 6	3.00E+01	1.00E-04	3.00E-03	6 / 6	1.30E+03	1.00E-04	1.30E-01
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	1 / 6	1.80E+01	1.00E-04	1.80E-03	5 / 6	1.20E+02	1.00E-04	1.20E-02
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	4 / 6	5.10E+02	1.00E-05	5.10E-03	6 / 6	3.00E+03	1.00E-05	3.00E-02
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	0 / 6	Not Detected	1.00E-05	0.00E+00	0 / 6	Not Detected	1.00E-05	0.00E+00
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	0 / 6	Not Detected	1.00E-01	0.00E+00	3 / 6	3.60E+01	1.00E-01	3.60E+00
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	3 / 6	4.90E+01	1.00E-04	4.90E-03	6 / 6	3.40E+02	1.00E-04	3.40E-02
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	0 / 6	Not Detected	1.00E-04	0.00E+00	4 / 6	7.10E+01	1.00E-04	7.10E-03
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	0 / 6	Not Detected	1.00E-05	0.00E+00	3 / 6	9.30E+01	1.00E-05	9.30E-04
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	0 / 6	Not Detected	1.00E-03	0.00E+00	0 / 6	Not Detected	1.00E-03	0.00E+00
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	4 / 6	3.50E+02	N/A	0.00E+00	5 / 6	2.70E+02	N/A	0.00E+00
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	6 / 6	9.00E+02	N/A	0.00E+00	6 / 6	5.70E+02	N/A	0.00E+00
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	0 / 6	Not Detected	1.00E-05	0.00E+00	2 / 6	6.50E+00	1.00E-05	6.50E-05
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	1 / 6	7.60E+00	5.00E-02	3.80E-01	6 / 6	2.90E+02	5.00E-02	1.45E+01
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	0 / 6	Not Detected	1.00E-01	0.00E+00	4 / 6	3.40E+01	1.00E-01	3.40E+00
Total Avian PCB TCDD-TEQ				3.95E-01				2.17E+01
DIOXINS AND FURANS		pg/L		µg/L		pg/g		
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0 / 6	Not Detected	1.00E-03	0.00E+00	6 / 6	3.50E+01	1.00E-03	3.50E-02
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0 / 6	Not Detected	1.00E-02	0.00E+00	2 / 6	7.40E+00	1.00E-02	7.40E-02
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0 / 6	Not Detected	1.00E-02	0.00E+00	2 / 6	2.90E+00	1.00E-02	2.90E-02
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0 / 6	Not Detected	5.00E-02	0.00E+00	1 / 6	2.40E+00	5.00E-02	1.20E-01
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0 / 6	Not Detected	1.00E-01	0.00E+00	2 / 6	2.40E+00	1.00E-01	2.40E-01
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0 / 6	Not Detected	1.00E-02	0.00E+00	1 / 6	1.00E+00	1.00E-02	1.00E-02
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0 / 6	Not Detected	1.00E-01	0.00E+00	0 / 6	Not Detected	1.00E-01	0.00E+00
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0 / 6	Not Detected	1.00E-01	0.00E+00	0 / 6	Not Detected	1.00E-01	0.00E+00
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0 / 6	Not Detected	1.00E-01	0.00E+00	0 / 6	Not Detected	1.00E-01	0.00E+00
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0 / 6	Not Detected	1.00E+00	0.00E+00	0 / 6	Not Detected	1.00E+00	0.00E+00
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0 / 6	Not Detected	1.00E-01	0.00E+00	0 / 6	Not Detected	1.00E-01	0.00E+00

TABLE 3
CALCULATION OF TCDD-TOXICITY EQUIVALENTS FOR SEDIMENT AND SURFACE WATER
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

ANALYTE	Surface Water				Sediment			
	Detections	Maximum Detection	Avian TEF	Avian TEQ	Detections	Maximum Detection	Avian TEF	Avian TEQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0 / 6	Not Detected	1.00E-01	0.00E+00	1 / 6	2.20E+00	1.00E-01	2.20E-01
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0 / 6	Not Detected	1.00E+00	0.00E+00	1 / 6	1.70E+00	1.00E+00	1.70E+00
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0 / 6	Not Detected	1.00E+00	0.00E+00	5 / 6	7.60E+00	1.00E+00	7.60E+00
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0 / 6	Not Detected	1.00E+00	0.00E+00	3 / 6	3.60E+00	1.00E+00	3.60E+00
1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)	1 / 6	1.90E+01	1.00E-04	1.90E-03	6 / 6	2.60E+02	1.00E-04	2.60E-02
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	0 / 6	Not Detected	1.00E-04	0.00E+00	3 / 6	1.10E+01	1.00E-04	1.10E-03
Total Avian Dioxins/Furans TCDD TEQ				1.90E-03				1.37E+01
	Total Avian Surface Water TEQ (pg/L)			3.97E-01	**Total Avian Sediment TEQ (pg/kg)**			1.37E+04

Notes: Non-detects are assumed to be zero, as per USEPA 2005.

USEPA. 2005. USEPA National Functional Guidelines for Chlorinated Dioxin and Furan Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. EPA-540-R-05-001. September

mg/kg = milligram per kilogram

pg/kg = picogram per kilogram

pg/L = picogram per liter

µg/L = microgram per liter

TEF = Toxicity Equivalency Factor

TEQ = Toxicity Equivalency

TABLE 4
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SEDIMENT
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

Analyte	Number of Samples	Frequency of Detection	Distribution	Maximum Detection	Mean of Detected	UCL Method	UCL	EPC
Arsenic	10	100%	Gamma	1.08E+01	3.35E+00	95% Approximate Gamma	5.93E+00	5.93E+00
Selenium	22	82%	Lognormal	1.32E+01	4.26E+00	95% Kaplan-Meier (BCA)	4.80E+00	4.80E+00
Silver	10	100%	Normal/Lognormal	3.37E+01	1.19E+01	95% Kaplan-Meier (BCA)	1.80E+01	1.80E+01

UCL = Upper confidence limit of the mean

EPC = Exposure point concentration; the lesser of the UCL or maximum

TABLE 5
CALCULATION OF BIOTA-SEDIMENT ACCUMULATION FACTORS FOR PCBs
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

Organism Common Name	Organism Latin Name	Biota Tissue	Chemical	BSAF	Mean of PCB Congener	Weighted Mean
DEMERSAL FISH						
white perch	Morone americana	whole body	PCB 116| PCB 117| PCB 85	1.56E+00	1.97E+00	1.99E+00
white perch	Morone americana	whole body	PCB 116| PCB 117| PCB 85	4.56E+00		
white perch	Morone americana	whole body	PCB 116| PCB 117| PCB 85	1.54E+00		
white perch	Morone americana	whole body	PCB 116| PCB 117| PCB 85	2.17E-01		
white Sucker	Catostomus commersonii	whole body	PCB 137| PCB 176	9.21E-01	9.21E-01	
white sucker	Catostomus commersoni	whole body	PCB 170| PCB 190	2.64E+00	2.93E+00	
white sucker	Catostomus commersoni	whole body	PCB 170| PCB 190	8.74E-01		
white sucker	Catostomus commersoni	whole body	PCB 170| PCB 190	4.13E+00		
white sucker	Catostomus commersoni	whole body	PCB 170| PCB 190	4.09E+00		
white perch	Morone americana	whole body	PCB 61| PCB 70| PCB 74| PCB 76	6.30E-01	6.69E-01	
white perch	Morone americana	whole body	PCB 61| PCB 70| PCB 74| PCB 76	1.28E+00		
white perch	Morone americana	whole body	PCB 61| PCB 70| PCB 74| PCB 76	6.99E-01		
white perch	Morone americana	whole body	PCB 61| PCB 70| PCB 74| PCB 76	6.85E-02		
white Sucker	Catostomus commersonii	whole body	PCB 77| PCB 110	6.15E-01	3.48E+00	
white sucker	Catostomus commersoni	whole body	PCB 77| PCB 110	1.12E+01		
white sucker	Catostomus commersoni	whole body	PCB 77| PCB 110	2.24E+00		
white sucker	Catostomus commersoni	whole body	PCB 77| PCB 110	9.45E-01		
white sucker	Catostomus commersoni	whole body	PCB 77| PCB 110	2.23E+00		
white sucker	Catostomus commersoni	whole body	PCB 77| PCB 110	3.63E+00		
BENTHIC INVERTEBRATES						
benthic invertebrates		whole body	PCB 105	3.31E+00	1.21E+00	1.65E+00
benthic invertebrates		whole body	PCB 105	1.29E-01		
benthic invertebrates		whole body	PCB 105	2.70E-02		
benthic invertebrates		whole body	PCB 105	2.15E+00		
benthic invertebrates		whole body	PCB 105	4.19E-01		
benthic invertebrates		whole body	PCB 114	2.10E+00	2.10E+00	
benthic invertebrates		whole body	PCB 118	4.01E+00	1.48E+00	
benthic invertebrates		whole body	PCB 118	1.56E-01		
benthic invertebrates		whole body	PCB 118	2.79E-02		
benthic invertebrates		whole body	PCB 118	2.53E+00		
benthic invertebrates		whole body	PCB 118	6.92E-01		
benthic invertebrates		whole body	PCB 156	3.18E+00	1.77E+00	
benthic invertebrates		whole body	PCB 156	1.51E-01		
benthic invertebrates		whole body	PCB 156	1.98E+00		
benthic invertebrates		whole body	PCB 157	1.86E+00	1.86E+00	
benthic invertebrates		whole body	PCB 167	1.88E+00	1.88E+00	
benthic invertebrates		whole body	PCB 189	1.78E+00	1.78E+00	
benthic invertebrates		whole body	PCB 77	2.78E+00	1.15E+00	
benthic invertebrates		whole body	PCB 77	6.66E-02		
benthic invertebrates		whole body	PCB 77	8.45E-02		
benthic invertebrates		whole body	PCB 77	2.68E+00		
benthic invertebrates		whole body	PCB 77	1.22E-01		

Source: BSAF Database (USEPA 2009)

BSAF = Biota-sediment-accumulation-factor

BSAF units = (kg sediment organic carbon)kg/lipid

PCB = Polychlorinated biphenyl

TABLE 6
CALCULATION OF FISH BIOTA SEDIMENT ACCUMULATION FACTOR FOR TCDDs
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

Organism Common Name	Organism Latin Name	Biota Tissue	Chemical	BSAF	Mean BSAF by Congener	Weighted Mean BSAF
white sucker	Catostomus commersoni	whole body	1,2,3,4,6,7,8-HpCDD	2.05E-03	7.45E-03	1.78E-01
white sucker	Catostomus commersoni	whole body	1,2,3,4,6,7,8-HpCDD	2.43E-03		
white sucker	Catostomus commersoni	whole body	1,2,3,4,6,7,8-HpCDD	3.71E-03		
white sucker	Catostomus commersoni	whole body	1,2,3,4,6,7,8-HpCDD	2.95E-03		
white catfish	Ictalurus catus	whole body	1,2,3,4,6,7,8-HpCDD	4.32E-04		
white catfish	Ictalurus catus	whole body	1,2,3,4,6,7,8-HpCDD	5.37E-02		
white catfish	Ictalurus catus	whole body	1,2,3,4,6,7,8-HpCDD	2.74E-03		
white catfish	Ictalurus catus	whole body	1,2,3,4,6,7,8-HpCDD	4.01E-03		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,4,6,7,8-HpCDD	1.23E-03		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,6,7,8-HpCDD	6.17E-03		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,4,6,7,8-HpCDD	1.36E-03		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,6,7,8-HpCDD	8.70E-03		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,6,7,8-HPCDF	2.95E-02	2.81E-02	
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,6,7,8-HPCDF	1.49E-01		
yellow perch	Perca flavescens	whole body	1,2,3,4,6,7,8-HPCDF	1.31E-02		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,4,6,7,8-HpCDF	1.48E-03		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,6,7,8-HpCDF	3.38E-03		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,4,6,7,8-HpCDF	2.28E-06		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,6,7,8-HpCDF	1.42E-05		
white sucker	Catostomus commersoni	whole body	1,2,3,4,7,8-HxCDD	3.15E-02	5.82E-02	
white catfish	Ictalurus catus	whole body	1,2,3,4,7,8-HxCDD	5.15E-02		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,4,7,8-HxCDD	4.57E-02		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,7,8-HxCDD	1.25E-01		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,4,7,8-HxCDD	1.27E-02		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,7,8-HxCDD	8.22E-02		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,4,7,8-HxCDF	1.33E-02	1.27E-02	
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,7,8-HxCDF	3.76E-02		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,4,7,8-HxCDF	1.22E-06		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,4,7,8-HxCDF	1.31E-05		
white sucker	Catostomus commersoni	whole body	1,2,3,6,7,8-HxCDD	1.76E-02	5.21E-02	
white sucker	Catostomus commersoni	whole body	1,2,3,6,7,8-HxCDD	2.12E-02		
white sucker	Catostomus commersoni	whole body	1,2,3,6,7,8-HxCDD	5.10E-02		
white sucker	Catostomus commersoni	whole body	1,2,3,6,7,8-HxCDD	4.19E-02		
white catfish	Ictalurus catus	whole body	1,2,3,6,7,8-HxCDD	9.63E-03		
white catfish	Ictalurus catus	whole body	1,2,3,6,7,8-HxCDD	4.10E-02		
white catfish	Ictalurus catus	whole body	1,2,3,6,7,8-HxCDD	6.11E-02		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,6,7,8-HxCDD	4.32E-02		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,6,7,8-HxCDD	1.27E-01		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,6,7,8-HxCDD	2.57E-02		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,6,7,8-HxCDD	1.34E-01		
white sucker	Catostomus commersoni	whole body	1,2,3,6,7,8-HxCDF	2.94E-02	1.80E-02	
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,6,7,8-HxCDF	1.83E-02		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,6,7,8-HxCDF	4.24E-02		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,6,7,8-HxCDF	2.03E-06		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,6,7,8-HxCDF	1.58E-05		
white sucker	Catostomus commersoni	whole body	1,2,3,7,8,9-HxCDD	7.20E-03	1.57E-02	
white catfish	Ictalurus catus	whole body	1,2,3,7,8,9-HxCDD	3.35E-03		
white catfish	Ictalurus catus	whole body	1,2,3,7,8,9-HxCDD	1.87E-02		
white catfish	Ictalurus catus	whole body	1,2,3,7,8,9-HxCDD	2.94E-02		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,7,8,9-HxCDD	1.08E-02		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,7,8,9-HxCDD	3.02E-02		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,7,8,9-HxCDD	2.36E-03		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,7,8,9-HxCDD	2.35E-02		

TABLE 6
CALCULATION OF FISH BIOTA SEDIMENT ACCUMULATION FACTOR FOR TCDDs
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

Organism Common Name	Organism Latin Name	Biota Tissue	Chemical	BSAF	Mean BSAF by Congener	Weighted Mean BSAF
white sucker	Catostomus commersoni	whole body	1,2,3,7,8-PeCDF	1.08E-01	1.49E+00	
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,7,8-PECDF	5.84E-01		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,7,8-PECDF	2.46E+00		
yellow perch	Perca flavescens	whole body	1,2,3,7,8-PECDF	4.57E-01		
yellow perch	Perca flavescens	whole body	1,2,3,7,8-PECDF	1.89E+00		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,7,8-PECDF	7.63E+00		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,7,8-PECDF	4.14E+00		
yellow perch	Perca flavescens	whole body	1,2,3,7,8-PECDF	2.29E+00		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,7,8-PECDF	1.58E-01		
yellow perch	Perca flavescens	whole body	1,2,3,7,8-PECDF	3.10E-01		
yellow perch	Perca flavescens	whole body	1,2,3,7,8-PECDF	1.93E+00		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,7,8-PeCDF	1.22E-01		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,7,8-PeCDF	1.96E-01		
black crappie	Pomoxis nigromaculatus	whole body	1,2,3,7,8-PeCDF	4.95E-06		
brown bullhead	Ictalurus nebulosus	whole body	1,2,3,7,8-PeCDF	1.68E-05		
white sucker	Catostomus commersoni	whole body	2,3,4,6,7,8-HxCDF	2.07E-02	1.66E-02	
yellow perch	Perca flavescens	whole body	2,3,4,6,7,8-HXCDF	2.58E-02		
black crappie	Pomoxis nigromaculatus	whole body	2,3,4,6,7,8-HxCDF	1.26E-02		
brown bullhead	Ictalurus nebulosus	whole body	2,3,4,6,7,8-HxCDF	4.07E-02		
black crappie	Pomoxis nigromaculatus	whole body	2,3,4,6,7,8-HxCDF	1.01E-05		
brown bullhead	Ictalurus nebulosus	whole body	2,3,4,6,7,8-HxCDF	7.70E-05		
white sucker	Catostomus commersoni	whole body	2,3,4,7,8-PeCDF	2.01E-01	3.15E-01	
white sucker	Catostomus commersoni	whole body	2,3,4,7,8-PeCDF	1.41E-01		
brown bullhead	Ictalurus nebulosus	whole body	2,3,4,7,8-PECDF	2.42E-01		
brown bullhead	Ictalurus nebulosus	whole body	2,3,4,7,8-PECDF	2.55E-01		
brown bullhead	Ictalurus nebulosus	whole body	2,3,4,7,8-PECDF	1.02E+00		
brown bullhead	Ictalurus nebulosus	whole body	2,3,4,7,8-PECDF	1.18E+00		
yellow perch	Perca flavescens	whole body	2,3,4,7,8-PECDF	3.79E-01		
brown bullhead	Ictalurus nebulosus	whole body	2,3,4,7,8-PECDF	4.56E-02		
black crappie	Pomoxis nigromaculatus	whole body	2,3,4,7,8-PeCDF	6.66E-02		
brown bullhead	Ictalurus nebulosus	whole body	2,3,4,7,8-PeCDF	2.57E-01		
black crappie	Pomoxis nigromaculatus	whole body	2,3,4,7,8-PeCDF	1.44E-05		
brown bullhead	Ictalurus nebulosus	whole body	2,3,4,7,8-PeCDF	1.69E-04		
white sucker	Catostomus commersoni	whole body	2,3,7,8-TCDD	3.03E-01	2.92E-01	
white sucker	Catostomus commersoni	whole body	2,3,7,8-TCDD	3.28E-01		
white sucker	Catostomus commersoni	whole body	2,3,7,8-TCDD	3.65E-01		
white sucker	Catostomus commersoni	whole body	2,3,7,8-TCDD	1.73E-01		
white sucker	Catostomus commersoni	whole body	2,3,7,8-TCDD	4.55E-01		
white sucker	Catostomus commersoni	whole body	2,3,7,8-TCDD	2.13E-01		
white sucker	Catostomus commersoni	whole body	2,3,7,8-TCDD	3.87E-01		
white catfish	Ictalurus catus	whole body	2,3,7,8-TCDD	1.15E-01		
white catfish	Ictalurus catus	whole body	OCDD	1.51E-04	1.05E-02	
white catfish	Ictalurus catus	whole body	OCDD	6.63E-02		
white catfish	Ictalurus catus	whole body	OCDD	1.13E-03		
white catfish	Ictalurus catus	whole body	OCDD	1.94E-03		
brown bullhead	Ictalurus nebulosus	whole body	OCDD	9.26E-04		
brown bullhead	Ictalurus nebulosus	whole body	OCDD	1.25E-03		
white catfish	Ictalurus catus	whole body	OCDD	1.54E-03		
white catfish	Ictalurus catus	whole body	OCDF	2.16E-03	2.16E-03	

Source: BSAF Database (USEPA 2009)

TABLE 7
ORAL TOXICITY REFERENCE VALUES FOR COPECS
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

COPEC	Receptor of Concern	Endpoint	Test Species	Study Duration	Effect	Dose mg/kgBW/day	References
SELENIUM	Birds	NOAEL	Chicken	2 weeks	Mortality	2.90E-01	El-Begearmi and Combs, 1982
		LOAEL	Chicken	2 weeks	Mortality	5.79E-01	El-Begearmi and Combs, 1982
SILVER	Birds	NOAEL	Lowest LOAEL for growth divided by 10			2.02E+00	USEPA 2006
		LOAEL	Turkey	5 weeks	Bodyweight changes	2.02E+01	Jensen et al., 1974
TCDD	Birds	NOAEL	Herring Gulls	21 days	Reproduction	1.00E-04	LOAEL÷10
		LOAEL	Herring Gulls	21 days	Reproduction	1.00E-03	Gilbertson 1983

References:

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TABLE 8
ECOLOGICAL SCREENING QUOTIENTS FOR BENTHIC INVERTEBRATES
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

ANALYTE	Detections	Frequency of Detection	EPC (95% UCL) mg/kg	Sediment TEC mg/kg	Sediment PEC mg/kg	TEC ESQ	PEC ESQ
Arsenic	10 / 10	100%	5.93E+00	9.79E+00	3.30E+01	6.06E-01	1.80E-01
Selenium	18 / 22	82%	4.80E+00	2.50E+00	4.00E+00	**1.92E+00**	**1.20E+00**
Silver	10 / 10	100%	1.80E+01	1.20E+01	3.10E+01	**1.50E+00**	5.80E-01

EPC = Ecxposure Point Concentration

UCL = Upper Confidence Limit of the Mean

TEC = Threshold Effect Concentration

PEC = Probable Effect Concentration

ESQ = Ecological Screening Quotient

TABLE 9
CALCULATION OF AVERAGE DAILY DOSE INGESTED BY AQUATIC RECEPTORS
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

COPEC	Sediment EPC (mg/kg)	Surface Water EPC (total, µg/L)	Surface Water EPC (diss, µg/L)	Plant BAF Foliage[a]	Concentration in Plant Tissue mg/kg dw	Invertebrate BAF/BSAF[b]	Concentration in Inverterbrate Tissue mg/kg dw	Vertebrate BAF/BSAF[b]	Concentration in Salamander mg/kg dw	ADD mg/kgBW-d			
										Mallard		Black-crowned Night Heron	
Selenium	4.80E+00	0.00E+00	0.00E+00	c	6.47E+00	c	2.70E-01	c	5.83E-01	2.58E-01		3.34E-02	
Silver	1.80E+01	1.20E+00	0.00E+00	1.40E-02	2.52E-01	1.80E-01	3.24E+00	1.50E+01	1.80E+01	6.72E-02		1.02E+00	
TCDD TEQ (PCBs)	2.17E-08	3.95E-07	NA	1.80E-02	3.91E-10	1.65E+00	1.43E-07	1.99E+00	8.66E-07	1.91E-09	1.49E-07	4.88E-08	2.80E-06
TCDD TEQ (dioxins/furans)	1.37E-05	1.90E-09	NA	1.80E-02	2.47E-07	1.78E-01	9.75E-06	1.78E-01	4.88E-05	1.48E-07		2.75E-06	

ADD = Average Daily Dose

EPC = Exposure Point Concentration

BAF = Bioaccumulation factor (for selenium and silver)

BSAF = Biota-sediment accumulation factor (for TCDD EEQs)

NA - Not available

a = Bioaccumulation for silver based on soil-to-plant

b = BAF for TCDD (PCBs) and TCDD (dioxins/furans) are based on fraction of organic carbon in sediment and lipid content of fish (assumptions below)

Fraction Organic Carbon in Sediments	0.01	(default assumption)
Fraction Lipids in Invertebrates	0.01	(USEPA 1997b)
Fraction Lipids in Vertebrate Prey	0.05	(USEPA 1997b)

(based on fish as a surrogate for the salamander)

c = BAF based on equation (see URS 2010)

PCBs and dioxins/furans in fish and invertebrates converted to dw assuming 75% moisture content

TABLE 10
ECOLOGICAL SCREENING QUOTIENTS FOR AQUATIC RECEPTORS
PLAYA LAKE (SWMU 103)
PHASE III RFI
CANNON AIR FORE BASE, NEW MEXICO

COPEC	Sediment EPC (mg/kg)	Surface Water EPC (ug/L)	ADD (mg/kgBW/d)		Ingestion TRV (mg/kgBW/d)		Mallard		Black-crowned Night Heron	
			Mallard	Black-Crowned Night Heron	NOAEL	LOAEL	ESQ_{NOAEL}	EEQ_{LOAEL}	ESQ_{NOAEL}	ESQ_{LOAEL}
Selenium	1.3E+01	0.0E+00	2.58E-01	3.34E-02	2.90E-01	5.97E-01	8.9E-01	4.5E-01	1.2E-01	5.8E-02
Silver	3.4E+01	9.2E+00	2.30E-01	1.02E+00	2.20E+00	2.02E+01	1.1E-01	1.2E-02	4.6E-01	5.0E-02
TCDD TEQ	1.37E-05	3.97E-07	1.49E-07	8.89E-07	1.00E-04	1.00E-03	1.5E-03	1.5E-04	2.8E-02	2.8E-03

EPC - Exposure point concentration
ESQ - Ecological screening quotient
NOAEL - No-observed-adverse-effects level
LOAEL - Lowest-observed-adverse-effects level
A value reported as 0.0 is less than 0.05

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	Selenium											
10												
11						General Statistics						
12						Number of Valid Data	22			Number of Detected Data		18
13						Number of Distinct Detected Data	18			Number of Non-Detect Data		4
14										Percent Non-Detects		18.18%
15												
16				Raw Statistics						Log-transformed Statistics		
17						Minimum Detected	0.33			Minimum Detected		-1.109
18						Maximum Detected	13.2			Maximum Detected		2.58
19						Mean of Detected	4.257			Mean of Detected		1.167
20						SD of Detected	2.945			SD of Detected		0.887
21						Minimum Non-Detect	0.62			Minimum Non-Detect		-0.478
22						Maximum Non-Detect	0.75			Maximum Non-Detect		-0.288
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		6
25	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		16
26	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		27.27%
27												
28						UCL Statistics						
29				Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only		
30						Shapiro Wilk Test Statistic	0.876			Shapiro Wilk Test Statistic		0.9
31						5% Shapiro Wilk Critical Value	0.897			5% Shapiro Wilk Critical Value		0.897
32				Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level		
33												
34				Assuming Normal Distribution						Assuming Lognormal Distribution		
35						DL/2 Substitution Method				DL/2 Substitution Method		
36						Mean	3.545			Mean		0.758
37						SD	3.068			SD		1.195
38						95% DL/2 (t) UCL	4.67			95% H-Stat (DL/2) UCL		9.202
39												
40						Maximum Likelihood Estimate(MLE) Method				Log ROS Method		
41						Mean	3.013			Mean in Log Scale		0.88
42						SD	3.747			SD in Log Scale		1.014
43						95% MLE (t) UCL	4.388			Mean in Original Scale		3.604
44						95% MLE (Tiku) UCL	4.464			SD in Original Scale		3.006
45										95% t UCL		4.706
46										95% Percentile Bootstrap UCL		4.646
47										95% BCA Bootstrap UCL		4.824
48												

	A	B	C	D	E	F	G	H	I	J	K	L
49	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
50					k star (bias corrected)	1.644	Data appear Gamma Distributed at 5% Significance Level					
51					Theta Star	2.589						
52					nu star	59.19						
53												
54					A-D Test Statistic	0.469	Nonparametric Statistics					
55					5% A-D Critical Value	0.753					Kaplan-Meier (KM) Method	
56					K-S Test Statistic	0.753					Mean	3.552
57					5% K-S Critical Value	0.206					SD	2.991
58	Data appear Gamma Distributed at 5% Significance Level										SE of Mean	0.656
59											95% KM (t) UCL	4.681
60	Assuming Gamma Distribution										95% KM (z) UCL	4.631
61			Gamma ROS Statistics using Extrapolated Data								95% KM (jackknife) UCL	4.646
62					Minimum	0.33					95% KM (bootstrap t) UCL	4.96
63					Maximum	13.2					95% KM (BCA) UCL	4.801
64					Mean	3.663					95% KM (Percentile Bootstrap) UCL	4.705
65					Median	3.5					95% KM (Chebyshev) UCL	6.412
66					SD	2.949					97.5% KM (Chebyshev) UCL	7.65
67					k star	1.382					99% KM (Chebyshev) UCL	10.08
68					Theta star	2.649						
69					Nu star	60.83	Potential UCLs to Use					
70					AppChi2	43.89					95% KM (BCA) UCL	4.801
71					95% Gamma Approximate UCL	5.076						
72					95% Adjusted Gamma UCL	5.203						
73	Note: DL/2 is not a recommended method.											
74												
75	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
76	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
77	For additional insight, the user may want to consult a statistician.											
78												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Variables**							
2				**User Selected Options**								
3				From File	WorkSheet.wst							
4				Full Precision	OFF							
5				Test for Suspected Outliers with Dixon test	1							
6				Test for Suspected Outliers with Rosner test	1							
7												
8												
9			**Dixon's Outlier Test for Vanadium**									
10												
11	Number of data = 10											
12	10% critical value: 0.409											
13	5% critical value: 0.477											
14	1% critical value: 0.597											
15												
16	**1. Data Value 130 is a Potential Outlier (Upper Tail)?**											
17												
18	Test Statistic: 0.416											
19												
20	For 10% significance level, 130 is an outlier.											
21	For 5% significance level, 130 is not an outlier.											
22	For 1% significance level, 130 is not an outlier.											
23												
24	**2. Data Value 6.8 is a Potential Outlier (Lower Tail)?**											
25												
26	Test Statistic: 0.004											
27												
28	For 10% significance level, 6.8 is not an outlier.											
29	For 5% significance level, 6.8 is not an outlier.											
30	For 1% significance level, 6.8 is not an outlier.											
31												

OCTOBER 2010 VISUAL INSPECTION PHOTOGRAPHIC LOG

Playa Lake (SWMU 103) Phase III RFI **Cannon Air Force Base, New Mexico**	**USACE – Omaha District**	**Contract No. W9128F-04-0001** **Task Order 71, Mod. 01**

Photo No. 01	**Date:** 18-Oct-10

Description: Playa Lake (SWMU 103) facing east-southeast

Photo No. 02	**Date:** 19-Oct-10

Description: Boat used to maneuver between surface water and sediment sample locations

OCTOBER 2010 VISUAL INSPECTION PHOTOGRAPHIC LOG

Playa Lake (SWMU 103) Phase III RFI **Cannon Air Force Base, New Mexico**	**USACE – Omaha District**	**Contract No. W9128F-04-0001** **Task Order 71, Mod. 01**

Photo No. 03	**Date:** 18-Oct-10
Description: Culvert on west end of Playa Lake (SWMU 103) discharging treated water from Cannon AFB wastewater treatment plant into Playa Lake (SWMU 103)	
Photo No. 04	**Date:** 18-Oct-10
Description: Collecting surface water sample by immersion at sample location SW01/SD01	

OCTOBER 2010 VISUAL INSPECTION PHOTOGRAPHIC LOG

Playa Lake (SWMU 103) Phase III RFI **Cannon Air Force Base, New Mexico**	**USACE – Omaha District**	**Contract No. W9128F-04-0001** **Task Order 71, Mod. 01**

Photo No. 05	**Date:** 19-Oct-10

Description: Field filtering metals surface water sample with hand pump

Photo No. 06	**Date:** 19-Oct-10

Description: Preparing surface water sample for turbidity measurement

OCTOBER 2010 VISUAL INSPECTION PHOTOGRAPHIC LOG

Playa Lake (SWMU 103) Phase III RFI **Cannon Air Force Base, New Mexico**	**USACE – Omaha District**	**Contract No. W9128F-04-0001** **Task Order 71, Mod. 01**

Photo No. 07	**Date:** 19-Oct-10

Description: Measuring turbidity of surface water sample using Hanna turbidity meter

Photo No. 08	**Date:** 19-Oct-10

Description: Collecting water quality parameters using a Oakton water quality probe

OCTOBER 2010 VISUAL INSPECTION PHOTOGRAPHIC LOG

Playa Lake (SWMU 103) Phase III RFI **Cannon Air Force Base, New Mexico**	**USACE – Omaha District**	**Contract No. W9128F-04-0001** **Task Order 71, Mod. 01**

Photo No. 09	**Date:** 18-Oct-10

Description: Wading through water to sample location with hand auger utilizing a split spoon sampler and GPS unit

Photo No. 10	**Date:** 19-Oct-10

Description: Collecting sediment sample with a split spoon hand auger at sample location SW01/SD01

OCTOBER 2010 VISUAL INSPECTION PHOTOGRAPHIC LOG

Playa Lake (SWMU 103) Phase III RFI **Cannon Air Force Base, New Mexico**	**USACE – Omaha District**	**Contract No. W9128F-04-0001** **Task Order 71, Mod. 01**

Photo No. 11	**Date:** 19-Oct-10

Description: Collecting sediment sample with a hand auger utilizing a split spoon sampler from the stern of boat

Photo No. 12	**Date:** 19-Oct-10

Description: Sediment sample

OCTOBER 2010 VISUAL INSPECTION PHOTOGRAPHIC LOG

Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 71, Mod. 01

Photo No. 13	Date: 19-Oct-10

Description:
Labeling sediment sample

Photo No. 14	Date: 19-Oct-10

Description:
Decontamination of sediment split spoon sampler

OCTOBER 2010 VISUAL INSPECTION PHOTOGRAPHIC LOG

Playa Lake (SWMU 103) Phase III RFI **Cannon Air Force Base, New Mexico**	**USACE – Omaha District**	**Contract No. W9128F-04-0001** **Task Order 71, Mod. 01**

Photo No. 15	**Date:** 19-Oct-10

Description: Sign posted on east end of Playa Lake (SWMU 103)

Photo No. 16	**Date:** 19-Oct-10

Description: Aquatic birds (consisting of mostly ducks) on west end of Playa Lake (SWMU 103)

RESPONSE TO COMMENTS
PLAYA LAKE (SWMU 103) PHASE III RCRA FACILITY INVESTIGATION REPORT
EPA ID NO. NM7572124454
HWB-CAFB-11-001
CANNON AFB, NEW MEXICO

Comments by John E. Kieling, Acting Chief Hazardous Waste Bureau, NMED, dated August 12, 2011.

The New Mexico Environment Department (NMED) received Cannon Air Force Base's (Permittee's), *Playa Lake (SWMU 103) Phase III RCRA Facility Investigation Report,* (Report) dated May 2011. NMED has reviewed the Report and hereby issues this Notice of Disapproval (NOD). The Permittee must address the following comments.

The Permittee must address all comments as directed in this NOD in a revised Report. The revised Report must be accompanied by a response letter that describes where all revisions have been made, cross referencing NMED's numbered comments. The Permittee must provide one electronic and two paper copies of the revised Report. In addition, an electronic version of the revised Report must be submitted identifying where all changes have been made to the Report in redline-strikeout format. The revised Report and response must be submitted to NMED no later than October 31, 2011.

Comment 1. Executive Summary, page ES-1 and Section 7.2 (Phase III RFI Results), page 7-2:

Permittee's Statement: Executive Summary: "[s]urface water analytical results were evaluated using current New Mexico Administrative Code (NMAC) Surface Water Screening Levels (SWSLs) (NMAC 2009) and surface water [ecological screening values] ESVs (NMED 2008)." Section 7.2: "[t]he maximum surface water concentrations were compared to NMAC SWSLs, and ESVs. However, since NMAC SWSLs were not available for surface water, maximum concentrations were compared to [United States Environmental Protection Agency] USEPA [regional screening levels] RSLs (USEPA 2010)."

NMED Comment: It is not clear from the above statements if the NMAC SWSLs were applied or why these were not available. In addition, it is not clear where the surface water ESVs were obtained. Revise the Report to clarify if surface water quality standards were applied, and if so, for which constituents, and if not explain why they were not available. Clarify the source of the surface water ESVs.

The Report references COPCs and COPECs in various sections of the Report (Section 4.2, 4.2.3, 4.5). The specific COPCs and COPECs are not defined. Revise the Report to clearly define the COPCs and COPECs in the appropriate portions of Section 4.0 or 7.0 and indicate how these were determined.

> **Response:** Agree. The following text will be added after the fourth sentence of the second paragraph of the Executive Summary, after the second sentence in Section 4.2.2, and after the fifth sentence in Section 4.5 "*An NMAC SWSL (NMAC 2009) was available*

for dissolved selenium only, USEPA RSLs (USEPA 2010) were available for total selenium and silver and were used for human health screening. NMAC SWSLs and USEPA RSLs were unavailable for lead; therefore, lead results were evaluated using the Maximum Contaminant Level (MCL) for human health screening."

The fifth sentence in Section 4.5 will be revised to read "~~However, since~~ *If* NMAC ~~Surface Water Screening Levels~~ ~~(~~SWSLs~~)~~ were not available for surface water, COPCs were compared to USEPA RSLs (USEPA 2010) *and if USEPA RSLs were not available, COPCs were compared to the Maximum Contaminant Level (MCL) (USEPA 2009).*

The fourth and fifth sentences of the third paragraph in Section 7.2 will be revised to read "The maximum surface water concentrations were compared to NMAC SWSLs, and ESVs, *when available*. However, since NMAC SWSLs were not available for *all chemicals* for surface water, maximum *surface water* concentrations were *also* compared to USEPA RSLs *for tapwater* (USEPA 2010) *or the MCL (USEPA 2009)."*

The following text will be added to Section 7.4 – Human Health Risk Evaluation – "*No COPCs were identified in surface water or sediment based on human health screening.*" Section 7.5 – Ecological Risk Evaluation – *"Lead was identified as a COPEC in surface water (Table 7-2). Selenium and silver were identified as COPECs in sediment (Table 7-4)."* In addition, footnotes will be added to Tables 7-2 and 7-4 to identify the sources of ecological screening values.

A detailed discussion of sources and rationale for selecting ecological screening values was presented in the Ecological Risk Assessment (Appendix F) of the Phase II RFI report (URS 2010); readers are referred to this previous document on page D-2 of Appendix D of the subject report. Text will be added to Section 1.3.1 of Appendix D to provide more specific direction to the tables and text of the Phase II RFI in which this information was presented. Text will also be added providing the source and rationale for identifying and selecting ESVs not discussed in the previous report (e.g., TCDD surface water and sediment ESVs [see response to Comment 10 below]). COPECs are listed in a text table in Section 4.6 (page 4-6); the text will be revised to specifically state that the listed chemicals are the COPECs identified in the Phase II risk evaluation or COPECs added based on new data (i.e., dioxins/furans/dioxin-like PCBs).

Comment 2. Section 2.5, *(Hydrogeology)*, pages 2-4 and 2-5:

This Section indicates that the presence of water in playas may allow deep percolation to the aquifer. As such, the soil-to-groundwater pathway is a potentially complete pathway and must be evaluated in the risk assessment. Revise the Report to include an evaluation of site data relative to the applicable soil-to-groundwater screening levels (dilution attenuation factors).

Response: Agree. Table 7-4 will be updated to include a column with site-specific soil-to-groundwater screening levels (DAF values) for target analytes and a comparison of the maximum detected concentrations will be completed. Because arsenic exceeded the generic Soil to Groundwater SSL with a dilution attenuation factor (DAF) of 20, a

site-specific Soil to Groundwater SSL was calculated. To calculate a site-specific DAF for SWMU 103, NMED Equation 17 (NMED 2006) was used:

$$DAF = 1 + \left(\frac{K \times i \times D}{I \times L} \right)$$

Where:

$$D = \left(0.0112 \times L^2\right)^{0.5} + D_a \left(1 - \exp\left[\frac{-L \times I}{K \times i \times D_a} \right] \right)$$

Parameter	Definition (units)	Site-Specific Value (basis)
DAF	Dilution/attenuation factor (unitless)	Calculated
K	Aquifer Hydraulic conductivity (m/yr)	34,713 (Radian 1994)
i	Hydraulic gradient (m/m)	0.0032 (Lee Wan 1990)
D	Mixing zone depth (m)	Calculated
I	Infiltration rate (m/yr)	0.033* (Wood and Sanford 1995)
L	Length of source parallel to groundwater flow (m)	30 (Figure 7-1)
D_a	Aquifer thickness (m)	36.6 (Lee Wan 1990)

* Because of the presence of surface water in the Playa Lake, the standard infiltration rate of 0.011 m/yr was multiplied by a factor of 3. According to Wood and Sanford (1995), recharge in ephemeral playas is facilitated by desiccation cracks and macropores that form after each wetting-drying cycle. Because Playa Lake contains water year round, and would not contain cracks and macropores resulting from the typical wetting-drying cycle, a recharge value of 0.033 m/yr is believed to be a conservative site-specific estimate for Playa Lake (SWMU 103).

Inserting the site-specific values used for each parameter, resulted in a calculated, site-specific DAF for SWMU 103 of 358.2. As shown in the table below, multiplying this site-specific DAF by the generic migration to groundwater SSLs for a DAF of 1 produces SWMU 103-specific migration to groundwater SSLs for arsenic, which is greater than the maximum concentration identified at the site. This site-specific SSL is used in Table 7-4.

Metal	DAF 1	Site-Specific Migration to Groundwater SSL	Maximum Detected Concentration
Arsenic	0.0131 mg/kg	4.70 mg/kg	3.9 mg/kg

Comment 3. Section 4.5.1 *(Derivation of NMED [soil screening levels] SSLs)*, pages 4-5 and 4-6:

The text indicates that if more than one noncarcinogen detection was observed in the Phase III RFI data, then the noncarcinogenic NMED SSL was divided by 10. It is not clear why this approach was applied in lieu of the methodology outlined in the NMED SSL Guidance. Further, it is not clear that the SSL data contained in the data summary tables employed this approach. For example, the SSLs for metals, which are based on noncarcinogenic effects, were not divided by a value of 10. Clarify how and where this revision of SSLs was applied.

Response: Agree. The noncarcinogenic NMED SSL division approach was included in the text in error and the last two sentences in the third paragraph of Section 4.5.1 will be deleted: "~~It should be noted that the values for noncarcinogens do not account for chemical mixtures. If more than one noncarcinogen detection were observed in te Phase III RFI data, then the noncarcinogenic SSL was divided by 10.~~" The noncarcinogenic SSLs were not adjusted for cumulative effects. Instead, the maximum concentrations were divided by the screening levels to obtain a hazard quotient to account for cumulative noncarcinogenic effects. The sum of the hazard quotients should not exceed 1.

Comment 4. Section 5 (Field Sampling), page 5-1:

Permittee's Statement: "[i]n accordance with the applicable standard operating procedures (SOPs), collocated surface water and sediment samples were collected."

NMED Comment: A written description of the actual work performed must be included in the Report (i.e., written description in the text or included in table format) rather than a reference to SOPs that may or may not have been followed in the field. Revise the Report to describe actual field activities conducted at the site.

Response: Agree. A brief description indicating how surface water and sediment samples were collected was included in the third and fourth sentence of the first paragraph in Section 5.1. The first two sentences in Section 5.2 will be deleted, "~~The sampling equipment and procedures used to collect samples are described in the SOPs contained in Appendix C of the WP (URS 2010). These SOPs are consistent with procedures identified and described by the USEPA."~~ The following text will replace the deleted text in Section 5.2, "*The sample locations where both surface water and sediment were collected were collocated. Surface water samples were collected by immersion and dissolved metals samples were collected using a transfer jar and prepared using a hand held pump that utilized a 0.45 micron in-line filter. Before collecting surface water samples, the outside of all sample containers were triple rinsed with the surface water being sampled and water quality parameters including pH, temperature, conductivity and turbidity were measured. Water quality parameters were measured using an Oakton 300 water quality meter without a flow through cell and turbidity was measured using a Hanna turbidity meter.*

Sediment samples were collected using a stainless-steel hand auger utilizing a split spoon sampler. Upon arrival to the sample location, the depth of water overlying the sediment sample location was measured using the hand auger extension rods. The extension rods were decontaminated, which included an Alconox wash, tap water rinse, followed by two deionized water rinses. Sediment samples were collected by pushing the sampler into the sediment, and a slide hammer attached to the auger extension rods was used to reach the desired sample depth (i.e., top 6 inches of sediment). Once the sample was collected, the sampler was opened and TPH-GRO samples were collected from the center of the top 2 inches of sediment material. After the TPH-GRO samples were collected, the sample lithography was recorded, the remaining sample was composited, the other required sample analyses were collected, and all samples were placed on ice. After all samples were collected, the sampler and auger extension rods were decontaminated, which included an Alconox wash, tap water rinse, followed by two deionized water rinses."

Comment 5. Section 7.1.2 *(Phase II RFI)*, page 7-1:

Permittee's Statement: "[a] maximum [total recoverable petroleum hydrocarbons] TRPH concentration of 734 [milligrams per kilogram] mg/kg was detected and compared to the New Mexico Action Level of 100 mg/kg (USEPA had not established a toxicity factor for the combined chemicals, so an appropriate RBC could not be calculated)."

NMED Comment: Revise the Report to explain what constituent(s) the "New Mexico Action Level of 100 mg/kg" is referring to and identify the source of this action level. Note that the New Mexico TPH screening guidelines (for potable groundwater) are 200 mg/kg for unknown oil.

> **Response:** Agree. The first sentence of the second paragraph in Section 7.1.2 will be revised to read: "A maximum TRPH concentration of 734 mg/kg was detected and compared to the New Mexico *petroleum contaminated soils* action level of 100 mg/kg *for total petroleum hydrocarbon as indicated in Title 20 Environmental Protection, Chapter 9 Solid Waste, Part 2 Solid Waste Management General Requirements, Section 20.9.2.7, Subsection S.13.i of the New Mexico Administrative Code (NMAC 2007)* (USEPA had not established a toxicity factor for the combined chemicals, so an appropriate RBC could not be calculated)."

Comment 6. Section 7.2 (Phase III RFI Results), third paragraph, penultimate sentence, page 7-3:

Permittee's Statement: "[t]he difference between the total and dissolved lead results is uncertain."

NMED Comment: The meaning of the statement is not clear; total and dissolved metals are typically "different" from each other due to the filtering step needed for dissolved metals samples. Remove the statement or clarify its meaning.

> **Response:** Agree. The sentence will be deleted, "~~The difference between the total and dissolved lead results is uncertain.~~" It will be replaced with the text "*Typically the concentrations for total metal analysis are higher than dissolved metal concentrations since total metals includes the metals content both dissolved in the water and present in the particulates in the water*."

Comment 7. Section 7.4 *(Human Health Risk Evaluation)*, page 7-3:

The sampling results were reportedly screened against the NMED residential SSLs, NMAC SWSLs, USEPA RSLs and TRPH screening guidelines. The text states "[s]ince all results and [toxic equivalents] TEQs were below the screening levels, a risk assessment was not warranted. Therefore, no unacceptable risks to human health exist at the Playa Lake (SWMU 103)." The results of this screening were not provided in the Report. Provide this analysis.

Further, it does not appear that any consideration was given to cumulative effects. Per NMED Guidance a total site risk/hazard must be determined when there are multiple contaminants. Not considering the effect of additivity when screening multiple chemicals results is misuse of the

SSLs. Risk/hazard must be calculated for each receptor, pathway, and cumulative exposure scenario.

> **Response:** Agree. Results of the screening process are shown in Tables 7-2 and 7-4. The chemical concentrations were divided by their respective screening values to obtain a hazard quotient. The sum of the hazard quotients should not exceed 1 for the noncarcinogenic chemicals. The hazard quotient calculations will be included in Tables 7-2 and 7-4. Only vanadium in sediment approached a hazard quotient of 1; however, all sediment concentrations were below the screening level. See Response to Comment 18 for ecological risk characterization text.

Comment 8. Table 7-2 *(Comparison of Maximum Surface Water Concentrations to NMAC SWSLs Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico),* page 1 of 1:

A toxicity equivalency factor (TEF) was not applied to determine an equivalent screening criterion for the dioxin congener (1,2,3,4,6,7,8,9-OCDD). Following standard risk assessment guidance, TEFs should be used for dioxin/furan congeners to calculate toxic equivalency concentrations (TEQs) and subsequent risk. This process is based on the toxicity of each congener relative to the toxicity of TCDD. The NMED SSL table (Table A-1) provides a tap water screening value for 2,3,7,8-TCDD to which the TEF of 0.0003 (WHO 2005) should have been applied to derive an appropriate screening level for OCDD. Revise the Report accordingly.

> **Response:** Comment noted. The evaluation of environmental dioxin mixtures consists of multiplying the detected concentration of each individual chemical by its corresponding TEF to produce a toxicity equivalent (TEQ) concentration, then summing the TEQs for a total TEQ concentration based on toxicity relative to TCDD. The concentrations reported by the laboratory have already been adjusted by the chemical-specific TEF; therefore, the total TEQ should only be compared with the screening value for TCDD.

Comment 9. Table 7-2 *(Comparison of Maximum Surface Water Concentrations to NMAC SWSLs Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico),* page 1 of 1:

The RSLs for tap water as listed in the table are based on a carcinogenic risk level of 1E-06. Note that NMED applies a target risk level of 1E-05. Ensure that when additive risks are calculated (as required by these comments), the RSL tap water values are adjusted accordingly.

> **Response:** Agree. Target carcinogenic risk levels utilized for calculating additive risks in Sections 7.4.1 and 7.5.1 will be 1E-05. The screening levels from the USEPA RSLs for the PCB congeners will be increased by a factor of 10 to represent a target risk of 1E-05.

Comment 10. Table 7-2 *(Comparison of Maximum Surface Water Concentrations to NMAC SWSLs Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico),* page 1 of 1:

Ecological screening levels are not provided for either the polychlorinated biphenyl (PCB) congeners or dioxin furans for water. However, screening levels are available for these. As an example, USEPA Region 5 (http://www.epa.gov/reg5rcra/ca/ESL.pdf) has ecological screening levels that could be used along with appropriate TEFs. Revise the Report accordingly.

Response: Agree. USEPA Region 5 ESLs are available for PCBs (total), 2,3,7,8-TCDD and polychlorinated dibenzo-p-dioxins (PCDDs). Region 5 does not have an ESL for polychlorinated dibenzofurans (PCDFs). As noted by the reviewer in Comment 10, the toxicity of the various congeners of dioxins, furans and PCBs have been defined relative to TCDD and can be combined to estimate a 2,3,7,8-TCDD toxic equivalent (TEQ). However, rather than applying TEFs to the ESVs as suggested, it is proposed that the PCB, PCDD and PCDF concentrations all be converted to 2,3,7,8-TCDD toxicity equivalents (TEQs), and the resulting sum compared with the ESV for 2,3,7,8-TCDD. Following the procedure described in NMED (2000), TEQs are calculated for each PCB and dioxin/furan congener by multiplying the maximum detected concentration by the assigned TEF. Then the individual TEQs are summed for comparison with the TCDD ESV. For ecological receptors, it has been shown that the relative toxicity of the various congeners differs between mammals and birds (Van den Berg et al. 1998). Therefore, bird-specific TEFs were used to derive TEQs for surface water and sediment. TEFs for birds are from Van den Berg et al. (1998). TEQ calculations for birds were presented in Table 4-3 of Appendix D. Lines showing total TEQs for birds have been added to Tables 7-2 and 7-4 and to Tables 1 and 2 of Appendix D.

The following references will be included in Section 1.8 of Appendix D:

- NMED. 2000. Risk-based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites, Position Paper. New Mexico Environmental Department, Hazardous and Radioactive Materials Bureau. March.

- Van den Berg, M., et al. 1998. Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environmental Health Perspectives 106(12):775-792.

Comment 11. Table 7-2 *(Comparison of Maximum Surface Water Concentrations to NMAC SWSLs Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico)*, page 1 of 1:

Both the RSL tables and the NMED SSL tables contain a tap water screening level for selenium. These must not be excluded from the table. Revise the Report accordingly.

Response: Agree. The RSL (1.80E+02 µg/L), which is slightly more stringent than the SSL (1.83E+02 µg/L), will be included in Table 7-2.

Comment 12. Table 7-2 *(Comparison of Maximum Surface Water Concentrations to NMAC SWSLs Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico)*, page 1 of 1:

No tap water ingestion screening levels were available for total and dissolved lead. As a check, the concentrations were compared to the Federal Maximum Contaminant Level (MCL) for lead

(15 micrograms per liter (µg/L)). The maximum detected concentrations for SWMU 103 were less than the MCL. No response to this comment is required.

Response: Comment noted.

Comment 13. Table 7-4 *(Comparison of Maximum Sediment Concentrations to NMED SSLs and Background Concentrations, Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico)*, page 1 and 2 of 2:

No ecological screening levels are provided for either the PCB congeners or dioxin furans for sediment. However, screening levels are available for these. As an example, EPA Region 5 (http://www.epa.gov/reg5rcra/ca/ESL.pdf) has ecological screening levels for sediment that could be used along with appropriate TEFs. Revise the Report accordingly.

Response: Agree. Please see response to Comment 10.

Comment 14. Table 7-4 *(Comparison of Maximum Sediment Concentrations to NMED SSLs and Background Concentrations, Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico)*, page 1 and 2 of 2:

It is not clear why TEFs were not applied to determine an equivalent screening criterion for the dioxin/furan congeners. Revise the Report accordingly.

Response: Agree. Please see response to Comment 10.

Comment 15. Appendix A.1 *(Daily Quality Control Report)*:

"Water sample collection field sheets" are included that contain field measurement data. The Report does not discuss the methods for collection of field measurements nor is the equipment used to collect the field data discussed. Revise the Report to include discussion of the methods and instruments used to collect field measurements.

Response: Agree. A discussion of the methods for collection of field measurements and equipment will be included in Section 5.2. Please see response to Comment 4.

Comment 16. Appendix A.2 *(Sample Collection Field Sheets, Soil Sample Collection Field Sheet)*

Methane is odorless; no revision is necessary.

Response: Comment noted.

Comment 17. Table 7-2, Comparison of Maximum Surface Water Concentrations to NMACSWLS:

A toxicity equivalency factor (TEF) was not applied to determine an equivalent screening criterion for the dioxin congener (1,2,3,4,6,7,8,9-OCDD). Following standard risk assessment guidance, TEFs should be used for dioxin/furan congeners to calculate toxic equivalency concentrations (TEQs) and subsequent risk. This process is based on the toxicity of each congener relative to the toxicity of TCDD. The NMED SSL table does provide a tap water

screening value for 2,3,7,8-TCDD to which the TEF of 0.0003 (WHO 2005) should have been applied to derive an appropriate screening level for OCDD. Revise the Report accordingly.

Response: Agree. Please see responses to Comments 8 and 10.

Comment 18. Appendix D *(Ecological Risk Assessment)*:

Additive hazards were not estimated for ecological impacts. Evaluation of hazard quotients was done on an individual basis which does not account for additivity. Conservatively, as an initial screen, those chemicals that have an associated Hazard Quotient (HQ) of 0.3 are retained for additional analysis. Revise the risk assessment to include estimates of HQs as part of the screening analysis. In addition, if any chemicals have an HQ of 0.3 or greater, additional analyses are warranted and additive risk must be assessed. Make appropriate revisions to the Report.

Response: Agree. The text will be amended to add a subsection under Risk Characterization entitled Risk Description. In this section, a discussion will be added that better integrates risk estimation (HQs) and uncertainty to provide a clearer interpretation of the ERA results. In addition, the text will address the degree of confidence that the conclusions are sufficiently protective. As part of this discussion, text will address exposure to multiple COPECs. Specifically, the text regarding multiple COPEC in Section 1.6.3 will be as follows:

Because ecological receptors are potentially exposed to multiple COPECs, consideration should be given to their combined effects. A cumulative ESQ can be derived by summing ESQs for COPECs provided that they affect the same target organs/systems, the measurement endpoints were similar and the tests were of the same exposure durations (NMED 2008). In the case of COPECs identified for Playa Lake, these criteria are not met. The measurement endpoint for the selenium TRVs was mortality after a two-week study duration, the TRVs for silver were based on changes in growth after five weeks of exposure, and effects on reproduction was the measurement endpoint for the TCDD TRVs (Appendix D, Table 7). Because the TRVs for the COPECs in this evaluation were derived from toxicity studies of differing durations and addressing different endpoints, their ESQs cannot be viewed as additive. The measurement endpoint that would be expected to have the greatest impact on receptor populations is mortality; mortality is associated with exposure to selenium (Appendix D, Table 7). ESQLOAELs for selenium were less than 1 for both the mallard and the heron (Appendix D, Table 10). The measurement endpoint for silver was related to growth. Because ESQs for silver were much less than 1, and because growth reduction has a more subtle effect on receptor populations than does mortality, potential risk from simultaneous exposure to both selenium and silver are expected to be low. ESQs for TCDDs were less than 0.05 and are not expected to contribute significantly to potential risk.

Comment 19. Appendix D, Table 1 *(Data Summary And Identification of Chemicals of Potential Ecological Concern in Surface Water Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico)*, page 1 and 2 of 2:

Ecological screening levels are indicated as not being available for the PCB and dioxin/furan congeners. However, screening levels are available for these. As an example, USEPA Region 5 has ecological screening levels that could be used along with appropriate TEFs. *See* http://www.epa.gov/reg5rcra/ca/ESL.pdf. Revise the Report accordingly.

Response: Please see response to Comment 10.

Comment 20. Appendix D, Table 10 *(Ecological Screening Quotients for Aquatic Receptors Playa Lake (SWMU 103) Phase III RFI Cannon Air Force Base, New Mexico),* page 1 of 1:

The ecological HQs are presented on this table, but there is no determination of His. Revise the table to include appropriate His and adjust the His based on effects (e.g., reproductive) as appropriate.

Response: Agree. Please see response to Comment 18. The TRVs for selenium are based on mortality in chickens, the TRVs for silver are based on body weight changes in turkeys and herring gull reproduction provide the basis for the TCDD TRVs. Because of the disparity in measurement endpoints and test species, HIs were not calculated.