

**FINAL
GROUNDWATER PERIODIC MONITORING REPORT
FOR
APRIL THROUGH OCTOBER 2011
(VERSION 1)**

**FORT WINGATE DEPOT ACTIVITY
McKinley County, New Mexico**

May 2012

Prepared by:

**U.S. Army Corps of Engineers
Albuquerque District**



Prepared for:

Base Realignment and Closure Division

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BIA = Bureau of Indian Affairs

BIA-NR = Bureau of Indian Affairs – Navajo Regional Office

BIA-Zuni = Bureau of Indian Affairs – Zuni Agency

BRACD = U.S. Army Base Realignment and Closure Division

FWDA = Fort Wingate Depot Activity

FWDA-AR = Fort Wingate Depot Activity - Administrative Record

FWDA-BEC = Fort Wingate Depot Activity Base Realignment and Closure – Environmental Coordinator

NMED-HWB = New Mexico Environment Department – Hazardous Waste Bureau

NN = Navajo Nation

POZ = Pueblo of Zuni

USACE SPA = U.S. Army Corps of Engineers – Albuquerque District

USACE SWF = U.S. Army Corps of Engineers – Fort Worth District

USAEC = U.S. Army Environmental Command

USEPA = U.S. Environmental Protection Agency

USGS = U.S. Geological Survey

E.S.1.0 EXECUTIVE SUMMARY

In April 2008, the U.S. Army Corps of Engineers (USACE) began monitoring groundwater at Fort Wingate Depot Activity (FWDA) at the request of the U.S. Department of Defense, U.S. Army Base Realignment and Closure (BRAC) Division. This ongoing project is being conducted under Resource Conservation and Recovery Act (RCRA) Permit (EPA ID NM 6213820974) (NMED 2005). Groundwater samples are collected semi-annually, and groundwater elevation measurements are made quarterly. On a semi-annual basis, activities are reported to the New Mexico Environment Department (NMED) – Hazardous Waste Bureau (HWB). This Groundwater Periodic Monitoring Report (GPMR) was prepared for submission to NMED–HWB and describes April through October 2011 groundwater monitoring activities and results at FWDA.

E.S.1.1 Purpose

The purpose of this GPMR is to describe the results of groundwater monitoring program executed by the USACE, on behalf of BRAC for the reporting period of April through October 2011. This report summarizes groundwater sampling and monitoring field activities, chemical analytical results of groundwater samples, and the evaluation of groundwater elevation measurements.

E.S.1.2 Investigation

The depth to water (DTW) in monitoring wells was measured during the months April, July and October 2011. Groundwater samples were collected from 64 monitoring wells during the month of April 2011; during October 2011, samples were collected from 72 monitoring wells, including eight new monitoring wells and two sentinel wells installed during the summer of 2011. Groundwater samples were analyzed for constituent groups shown in Table 2-1 of this report. The monitoring wells are located in two major areas of FWDA (Figure 1-1): the Northern Area, and the Open Burn and Open Detonation (OB/OD) Area. Monitoring wells are discussed throughout the report relative to the area in which they are located.

E.S.1.2.1 Groundwater Measurements

USACE evaluated DTW measurements from monitoring wells located in the Northern Area of the installation to determine the gradient of groundwater in alluvium and bedrock. Additionally, DTW measurements from U.S. Geological Survey (USGS) piezometers along the South Fork of the Rio Puerco were incorporated into the evaluation of the groundwater gradient and flow in the Northern Area. Likewise, OB/OD Area monitoring well DTW measurements were evaluated to determine the gradient of groundwater in the OB/OD Area.

E.S.1.2.2 Groundwater Sampling

Samples were collected from 48 groundwater monitoring wells located in the Northern Area during the month of April 2011 and 56 monitoring wells in October 2011 (Figure 2-1). These monitoring wells were installed primarily to characterize releases from the

2,4,6-trinitrotoluene (TNT) Leaching Beds Area, Administration Area [multiple Solid Waste Management Units (SWMUs) and areas of concern (AOCs)] located in Parcels 6, 7, 11, 21 and 22, Eastern Landfill Area, and the Buildings 542 and 600 Area (TPMC 2008). Groundwater samples collected from these monitoring wells were analyzed for constituents/constituent groups identified in Table 2-1 of this report.

Samples were also collected from 16 existing groundwater monitoring wells located in the OB/OD Area (Figure 2-1). As noted in the April 2010 Interim Facility-Wide Groundwater Monitoring Plan (GWMP), existing monitoring wells were installed to characterize releases from the Hazardous Waste Management Unit (HWMU) and SWMUs located in Parcel 3 (TPMC 2008). Groundwater samples collected during April and October 2011 from monitoring wells located in the OB/OD Area were analyzed for constituents/constituent groups identified in Table 2-1 of this report.

E.S.1.3 Results

Northern Area groundwater flow in the alluvium is generally from potentiometric highs in the east, north, and south to a potentiometric low in the Administration Area. From the Administration Area, groundwater locally flows to the west (Figures 4-1 through 4-3). This trend is consistent with previous reporting periods. In addition to the alluvial groundwater flow, groundwater is also present in fine grained sandstone beneath the Workshop Area (Figures 4-4 through 4-6). Bedrock monitoring well measurements indicate bedrock groundwater flow is generally in a westerly direction in this sandstone. Groundwater elevation measurements for the OB/OD Area indicate a general northern gradient that roughly follows the topography.

Figures 4-1 through 4-6 of this report are groundwater elevation contour maps for the Northern Area, and Figures 4-7 through 4-9 are groundwater elevation contour maps for the OB/OD Area. Tables 4-1, 4-2 and 4-4 tabulate DTW measurements and groundwater elevations of monitoring wells and piezometers in the Northern Area, and Table 4-3 tabulates DTW measurements and groundwater elevations of monitoring wells in the OB/OD Area.

Groundwater samples were collected from all monitoring wells that yielded sufficient groundwater volume and/or discharge. Groundwater samples were not collected from those wells that were dry or nearly dry. Nitrate, volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), 1,3-dinitrobenzene, nitrobenzene, 2,4-dinitrobenzene, pesticides, perchlorate, and metals were detected above regulatory health standards in the northern portion of the installation. Other constituents were detected but at concentrations below regulatory health standards. Groundwater samples collected from monitoring wells located in the OB/OD Area contained nitrate, SVOCs, RDX, 1,3-dinitrobenzene, and metals above regulatory limits. Other constituents were detected in OB/OD Area groundwater samples, but these concentrations were below established regulatory health standards.

Chemical results for this reporting period are tabulated in Tables 5-1 through 5-15. Figures 5-1 through 5-10 illustrate constituent concentrations for Northern Area monitoring wells, and Figure 5-11 and 5-12 illustrate constituent concentrations for OB/OD Area monitoring wells. Appendix E (Appendices E1 through E10) contain the laboratory analytical results, Data Validation Reports (DVR), and Quality Control Summary Reports (QCSR) for all groundwater samples analyzed. A Comparison of April 2010, October 2010, April 2011, and October 2011 chemical analytical results is presented in Tables 5-16 through 5-23.

E.S.1.4 New Findings

Eight new monitoring wells were installed during the summer of 2011. These monitoring wells were installed to further delineate perchlorate in bedrock and the alluvium. Chemical analytical results of groundwater samples collected from new monitoring wells provide more information as to the extent of perchlorate in these two groundwater systems. The perchlorate plume in bedrock extends to the north, beyond new monitoring well TMW40D. In the alluvium, an additional perchlorate plume is present near monitoring wells TMW31S, TMW39S (new monitoring well), and TMW01. Additional information related to chemical results of groundwater samples collected from new monitoring wells is presented in Section 5.0. A discussion of these new findings is presented in Section 5.3, New Findings and Comparative Trends. Figures 5-6 and 5-8 contain concentration contours that were developed based on chemical analytical results from new and existing monitoring wells, and Table 5-6 tabulate these chemical results.

In addition to these new monitoring wells, two sentinel wells were installed near the northwest boundary of the facility (Figure 2-1). Groundwater samples were not collected from these wells during the October 2011 sampling event. However, the U.S. Geological Survey (USGS) collected groundwater samples from these wells in September 2011, after their development. No constituents related to FWDA were detected. Section 6 of this report describes chemical analytic results of these samples, and Appendix H contains USGS sampling documentation and laboratory reports for these samples.

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LIST ACRONYMS

AOC	Areas Of Concern
APPL	Agriculture & Priority Pollutant Laboratories
BIA	Bureau of Indian Affairs
BRAC	Base Realignment and Closure
°C	Degrees Celsius
CFR	Code of Federal Regulations
1,2-DCA	1,2- Dichloroethane
DO	Dissolved Oxygen
DRO	Diesel Range Organics
DTW	Depth To Water
DVR	Data Validation Report
EPA	U.S. Environmental Protection Agency
ft	Foot/Feet
ft-btoc	Feet Below Top Of Casing
ft-msl	Feet Above Mean Sea Level
FWDA	Fort Wingate Depot Activity
GMS	Groundwater Modeling System
GPMR	Groundwater Periodic Monitoring Report
GRO	Gasoline Range Organics
GWMP	Groundwater Monitoring Plan
HWB	Hazardous Waste Bureau
HWMR	New Mexico Hazardous Waste Management Regulations
HWMU	New Mexico Hazardous Waste Management Unit
ID	Identification
IDW	Investigation Derived Waste
LDPE	Low Density Polyethylene
MCL	Maximum Contaminant Level
mg/L	Milligrams Per Liter
MSL	Mean Sea Level
MSSL	Medium Specific Screening Level
N	Nitrogen
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMHWAA	New Mexico Hazardous Waste Act
NMOSE	New Mexico Office of the State Engineer
NMSA	New Mexico State Rules Act
NO ₃	Nitrate
NTU	Nephelometric Turbidity Unit
OB/OD	Open Burn/Open Detonation
PCB	Polychlorinated Biphenyls
pg/L	Picograms Per Liter
pH	Scale Used To Measure The Concentration Of Hydrogen Atoms (Acidity) Of A Sample.
PPE	Personal Protective Equipment
QA	Quality Assurance

QC	Quality Control
QCSR	Quality Control Summary Report
RCRA	Resource Conservation and Recovery Act
RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine
RFI	RCRA Facility Investigation
RSL	Regional Screening Level
SU	Standard Unit
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxic Characteristics Leaching Procedure
TNT	2,4,6-trinitrotoluene
TOC	Top of Casing
TPH	Total Petroleum Hydrocarbons
µg/L	Micrograms Per Liter
USACE	United States Army Corps of Engineers
µS/cm	Micro-Siemens Per Centimeter
USGS	United States Geological Survey
VOC	Volatile Organic Compound
VC	Vinyl Chloride
WQCC	New Mexico Water Quality Control Commission
ZIST	Zone Isolation Sampling Technology

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1.0 INTRODUCTION

This Groundwater Periodic Monitoring Report (GPMR) for Fort Wingate Depot Activity (FWDA) describes groundwater monitoring activities conducted as part of the FWDA Environmental Restoration Program. The GPMR was prepared by the U.S. Army Corps of Engineers (USACE), Albuquerque District, and reviewed by USACE, Fort Worth District. The GPMR was prepared on behalf of the U.S. Army Base Realignment and Closure (BRAC) Division for submission to the New Mexico Environment Department (NMED) – Hazardous Waste Bureau (HWB) as required by Section V.A of the Resource, Conservation, and Recovery Act (RCRA) Permit (hereinafter referred to as “the Permit”) for FWDA. The Permit (NM 6213820974) was finalized in December 2005 and became effective 31 December 2005 (NMED 2005).

FWDA currently occupies approximately 24 square miles (approximately 15,277 acres) of land in McKinley County in northwestern New Mexico. The installation is located approximately seven miles east of Gallup on U.S. Highway 66 and approximately 130 miles west of Albuquerque on Interstate 40 (Figure 1-1) (TPMC 2007). FWDA is almost entirely surrounded by Federally owned or administered lands, including both National Forest and Tribal lands. North and west of FWDA are Navajo Nation Tribal Trust and Allotment lands. East of FWDA is land administered by the Bureau of Indian Affairs (BIA). City of Gallup Red Rock Park, an El Paso Natural Gas fractioning plant and housing area, the Navajo Nation community of Church Rock, and transportation corridors for Interstate 40, U.S. Highway 66 and the Burlington and Santa Fe Railroad, are located north of the installation (TPMC 2006). The town of Fort Wingate is located to the east of FWDA on BIA administered land and was the original Fort Wingate headquarters site (TPMC 2006). Cibola National Forest borders the south and southeast of the installation and is mostly undeveloped forestlands (TPMC 2006).

FWDA is now an inactive U.S. Army depot whose former mission was to receive, store, ship and dispose of obsolete/deteriorated explosives and military munitions (TPMC 2007). Facilities at FWDA were used to operate a reserve storage activity providing for the care, preservation, and minor maintenance of assigned commodities, primarily conventional military munitions (TPMC 2006). The active mission of FWDA ceased and the installation closed in January 1993 as a result of the Defense Authorization Amendments and BRAC Act of 1988.

2.0 SCOPE OF SERVICES

This section summarizes the scope of activities conducted for the reporting period beginning in April 2011 and ending in October 2011. USACE measured and recorded groundwater elevations and collected groundwater samples from monitoring wells in accordance with the Interim Facility-Wide Groundwater Monitoring Plan (GWMP), as revised in 2010 and 2011 (TPMC 2008; NMED 2010; HGS 2011). Activities during April were conducted in accordance with the 2008 GWMP, as revised by change pages submitted in March of 2010. October activities were conducted in accordance with the 2011 GWMP requirements.

2.1 GROUNDWATER ELEVATIONS

Depth to water (DTW) was measured in 77 monitoring wells and piezometers in April and July. In October, DTW was measured in 87 monitoring wells and piezometers. Monitoring well and piezometer locations are shown in Figure 2-1. The DTW was measured from the top of casing (TOC) of each monitoring well and piezometer by lower the tape measure of a Solinst™ water level meter into the monitoring well or piezometer casing down to the top of groundwater. Refer to Appendix A for water level measuring equipment specifications. Measurements from the TOC surveyed reference mark were then recorded to the nearest 0.01 feet (ft) in field books. Appendix B contains copies of field books. To calculate the elevation of groundwater from mean sea level (MSL), static water level measurements were subtracted from the TOC surveyed reference mark elevation. Section 4 of this GPMR contains groundwater measurement details and the interpretation of groundwater flow and gradient.

2.2 GROUNDWATER SAMPLING

Groundwater samples were collected from 64 monitoring wells in April and 72 from monitoring wells in October. Table 2-1 summarizes sampling plan requirements: April is based on the 2010 revised GWMP, and October is based on the 2011 revised GWMP. Section 5 contains a description of sampling activities, chemical analytical results, and interpretation of chemical data. Variances or deviation from the revised GWMP requirements are discussed in Section 5.5.

Samples were collected from monitoring wells using several sampling techniques. Groundwater was sampled by low-flow sampling technique, low-flow sampling with zone isolation sampling technology (ZIST), pumping or bailing monitoring wells dry, or by removing three times the volume of water in the casing and annular space with pumps or bailers. Appendix A4 through A8 contain specifications and information related to dedicated pumps, reusable 12-volt pumps and disposable hand bailers. Monitoring wells having low-flow pumps, and low-flow pumps with ZIST assemblies were low-flow purged in accordance with the GWMP and in accordance with the NMED position paper *Use of Low-Flow and Other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring*. The NMED position paper, *Use of Low-Flow and Other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring*, is presented in Appendix C.

During the low-flow purge cycle, samplers monitored purge water quality parameters and recorded: dissolved oxygen (DO) in milligrams per liter (mg/L), turbidity in nephelometric turbidity units (NTU), conductivity in micro-Siemens per centimeter ($\mu\text{S}/\text{cm}$), pH in standard units (SU), and temperature in degrees Celsius ($^{\circ}\text{C}$). Purge water was monitored until parameters stabilized within the following specifications: turbidity ($\pm 10\%$), DO ($\pm 10\%$), conductance ($\pm 3\%$), temperature ($\pm 10\%$), and pH (± 0.5 unit). These parameters are in accordance with the GWMP (HSG 2011). Groundwater parameters, except for turbidity, were measured using a transparent flow-through cell attached to the water-quality meter. Refer to Appendix A for equipment specifications, and operating procedures. Turbidity was measured using a separate, hand-held meter. Parameter measurements were recorded on well sampling data forms. Tables 2-2 and 2-3 tabulate April and October water quality parameter measurements recorded during the purging process. Appendix D contains copies of well sampling data forms from both sampling events.

Several wells could not be sampled using low-flow purging techniques due to extremely limited formation discharge rates. These monitoring wells were purged and sampled with dedicated Bennett pumps, a 12-volt-battery pump, or disposable bailers. Samplers collected groundwater samples from these wells after three volumes of water standing in the well casing and annular space were removed, or, if the monitoring well emptied before three volumes were removed, samples were collected the following day, or later, when formation water refilled the well casing.

At least three sets of groundwater quality parameters were recorded for monitoring wells that were pumped or hand-bailed. For hand-bailed monitoring wells, groundwater was poured from the bailer directly into a graduated beaker, and parameters were measured with hand-held meters and recorded on well sampling data forms. When pumps were used, the graduated beaker was filled via the discharge tube of the pump and parameters were measured in the graduated beaker.

After the purging process, groundwater samples were collected. Groundwater samples were collected in their respective bottles, preserved as specified in the GWMP, placed in a cooler, and shipped overnight to RTI Laboratories at the end of each day. When laboratory groundwater sample chemical results were received, USACE submitted the results to Laboratory Data Consultants, Inc. for independent validation. Validated data were then compared to applicable regulatory requirements or health standards.

Primary and QC blind duplicate samples were sent to RTI Laboratories in Livonia, Michigan, for analysis. QA triplicate samples were shipped to Agriculture & Priority Pollutants Laboratories (APPL) in Clovis, California. Primary, QC, and QA samples were shipped overnight to the appropriate laboratory via Federal Express on the day of collection.

USACE collected QA and QC groundwater samples from approximately 10% of the total samples collected. QC samples were submitted to the primary laboratory as blind duplicates with fictitious monitoring well identifications. Blind duplicate groundwater

samples were collected from six monitoring wells. An additional seventh duplicate sample was also collected, but from an off-site well. The results of the off-site well sample are reported in a separate report. The six on-site QA/QC samples were collected from TMW11 with QC identification FW01, MW22D with QC identification FW02, TMW18 with QC identification FW03, TMW13 with QC identification FW04, TMW15 with QC identification FW05, and TMW36 with QC identification FW07. QA triplicate groundwater samples were collected from the same monitoring wells as the QC blind duplicate samples and sent to APPL Laboratory. The field sample identification for QA triplicate samples has the same corresponding field sample identification number used to identify samples submitted to RTI Laboratories. Appendix E contains additional information on the QA/QC program.

Investigative Derived Waste (IDW), such as purge water and decontamination fluids were handled in accordance with the GWMP (HGS 2011). USACE placed purge water in an evaporation tank. During monitoring well purging, water discharged from each monitoring well was temporarily placed five-gallon buckets, and sealed. At the end of each day, purge water was transported in these five-gallon buckets and poured into the evaporation tank. All decontamination fluid was poured into the evaporation tank. All solid waste, such as used non-decontaminated disposable sampling equipment and personal protective equipment (PPE), general refuse, and decontaminated sampling equipment/PPE, was placed in FWDA refuse containers. No hazardous waste was generated for either sampling event.

3.0 REGULATORY CRITERIA

On December 1, 2005, NMED issued a RCRA Permit (EPA ID No. NM6213820974) to the United States Department of the Army (Permittee), the owner and operator of FWDA located in McKinley County, New Mexico. The Permit established the general and specific standards and requirements for these activities pursuant to the New Mexico Hazardous Waste Act (NMHWA), as amended; New Mexico State Rules Act (NMSA) 1978, §§ 74-4-1 *et seq.*; and the New Mexico Hazardous Waste Management Regulations (HWMR), 20.4.1 New Mexico Administrative Code (NMAC) (NMED 2005).

As required by Section V.A of the Permit, the Army developed and implemented the groundwater monitoring program. A GWMP was prepared in consultation with the Pueblo of Zuni and the Navajo Nation according to provisions of the Permit, Section VIII.B.1 [(20.4.1.500 NMAC, incorporating 40 Code of Federal Regulations (CFR) 264.101)] (TPMC 2008). NMED approved the initial GWMP in March 2008, which has been revised three times. Revisions were submitted to NMED in 2009, 2010, and 2011. Therefore, all groundwater monitoring, sampling, and reporting activities are conducted in compliance with the Permit, applicable Permit attachments, and the approved GWMP.

Attachment 7 of the Permit provides cleanup levels applicable to the FWDA groundwater monitoring program. Groundwater chemical results are evaluated and compared to these cleanup levels (referred to as regulatory health standards). Therefore, the following documents and regulations are used to determine if the concentration of a particular hazardous constituent exceeds the Permit cleanup level (NMED 2005).

- New Mexico Water Quality Control Commission (WQCC) standards of 20.6.2.4103.A and B NMAC.
- U.S. Environmental Protection Agency (EPA) drinking water maximum contaminant level (MCL) under 40 CFR Parts 141 and 142.
- If both a WQCC standard and an EPA MCL have been established for a contaminant, the lower of the two was used as a criterion.
- If no WQCC standard or EPA MCL has been established for a particular carcinogenic hazardous constituent, the April 2011 (applied to the April 2011 analytical results) and November 2011 (applied to the October 2011 analytical results) versions of the EPA regional screening level (RSL) for tap water were used.
- If no WQCC standard or EPA MCL has been established for a particular noncarcinogenic hazardous constituent, the April 2011 (applied to the April 2011 analytical results) and November 2011 (applied to the October 2011 analytical results) versions of the EPA RSL for tap water were used.

- Currently, there is no WQCC groundwater standard or MCL for perchlorate; however, perchlorate concentrations were compared to the value noted in the Permit, 6 micrograms per liter (µg/L).

The Permit, Section V.A.2, requires the Army to submit periodic monitoring reports within 60-day of receipt of groundwater chemical analytical results in format consistent with the NMED *General Reporting Requirements for Routine Groundwater Monitoring at RCRA Sites* (NMED 2003). Therefore, results and activities conducted from April through October are presented in the format recommended by this guidance document. Due to laboratory failures, however, April 2011 groundwater chemical results were submitted to USACE late, in October 2011. Because of this failure, USACE requested an extension for reporting April 2011 chemical analytical results, which lead to combining April 2011 and October 2011 groundwater chemical analytical results into one single report. USACE received the October 2011 validated groundwater chemical analytical results on January 31, 2012. This combined report (GPMR) is due to NMED and stakeholders by April 30, 2012.

4.0 GROUNDWATER ELEVATION

This section summarizes static water level measurements and the evaluation of groundwater flow and gradient. Static water levels were measured at monitoring wells and USGS piezometers. These measurements were used to determine the gradient and flow of groundwater in the Northern Area alluvium, Northern Area bedrock, and the OB/OD Area.

4.1 NORTHERN AREA GROUNDWATER ELEVATIONS

Two groundwater systems are monitored in the Northern Area, one in alluvium and the other in bedrock. Table 4-1 contains tabulated data for wells screened in the alluvial system and Table 4-2 contains tabulated data for wells screened in the bedrock system. Additionally, U.S. Geological Survey (USGS) piezometer elevation measurements are tabulated in Table 4-4. Figures 4-1 through 4-6 present Northern Area groundwater elevation contour maps. Groundwater elevation contours presented in these figures were developed with the Groundwater Modeling System (GMS) software, Version 6.5.

4.1.1 *Northern Area Alluvial Groundwater System*

Groundwater elevation data from monitoring wells screened in the alluvium and the USGS piezometers, also screened in alluvium, were used to construct groundwater elevation contour maps (Figures 4-1 through 4-3). Groundwater in the alluvial system locally flows from potentiometric highs in the north and south to a potentiometric low in the Administration Area. A groundwater mound was observed in the center of the Administration Area, which may be caused by a leaking water storage cistern. This mounding effect has been documented in previous reports and does not appear to influence the general flow of groundwater. From the Administration Area, groundwater locally flows to the west. This trend is consistent with previous reporting periods. The general groundwater gradient in the alluvium is 0.01 ft/ft, although, it is steeper to the south.

4.1.2 *Northern Area Bedrock Groundwater System*

Groundwater connectivity in the sandstone-bedrock is not completely understood in the Northern Area, but connectivity is assumed given the relatively smooth potentiometric surface and observed migration of perchlorate found in bedrock monitoring wells. However, the static water levels measured in TMW02 does not correspond with other measured static water levels found in the alluvial or sandstone-bedrock monitoring wells in this area of FWDA. Static water levels measured in TMW02, Figures 4-4 through 4-6, are 10 to 25 feet different than that of other nearby sandstone-bedrock monitoring wells. It is because of this difference in static water level measurements that TMW02 was not included in the contour interpolations for Figures 4-4 through 4-6. TMW02 is thought to be constructed in a locally discontinuous sandstone that is stratigraphically higher than the sandstone containing the perchlorate plume.

Figures 4-4 through 4-6 are sandstone-bedrock groundwater elevation contour maps for April, July, and October 2011. Bedrock groundwater generally flows west. This is a common trend noted in previous reporting periods. The general horizontal groundwater gradient in the bedrock is 0.006 ft/ft.

New bedrock monitoring wells were installed into the target sandstone during the summer of 2011, TMW38, TMW39D, TMW40D, TMW48, and TMW49. Static water level measurements from these new monitoring wells were included in the interpolation of the groundwater elevation contours shown in Figure 4-6. All contours are dashed in this figure because of the steep gradient shown west of TMW36. Since this steep gradient was first noticed in October 2011, USACE will re-evaluation elevation data associated with newly installed monitoring wells. A geodetic survey was performed at each of these new monitoring wells, but elevations may not be accurate, which would create this anomaly. USACE will conduct a new geodetic survey in April 2012 at these new wells and present the findings of the new survey in the next groundwater periodic monitoring report. Until then, groundwater elevation contours shown in Figure 4-6 are speculative.

4.2 OB/OD AREA GROUNDWATER ELEVATIONS

Table 4-3 tabulates OB/OD Area groundwater elevation data. Figures 4-7 through 4-9 are groundwater elevation contour maps for April, July, and October 2011. USACE also developed groundwater elevation contours for the OB/OD Area using GMS software, Version 6.5. Groundwater flows in a northerly direction, approximately following the surface topography. This is a general trend noted in previous reporting periods. The general horizontal groundwater gradient in the OB/OD area is 0.03 ft/ft.

Monitoring wells KMW09, KMW10, KMW11, KMW12, and KMW13 are screened in the Cretaceous or Jurassic formations associated with the Hogback (PMC 1999). Bedding planes of these formations dip steeply, between 42° and 64°, to the west and contain mudstone and claystone beds (the Mancos Shale), which potentially prevents the horizontal flow of groundwater (NMT 2003). USACE did not include static water level measurements from KMW09, KMW10, KMW11, or KMW12 in the evaluation of groundwater movement in the OB/OD Area. KMW13 is a dry well.

Groundwater contour maps in Figures 4-7, 4-8, and 4-9 are based only on the static water levels measured in monitoring wells CMW02, CMW04, CMW07, CMW10, CMW14, CMW17, CMW19, CMW22, CMW23, CMW24, and CMW25. USACE assumes that these monitoring wells are screened in one of two units, either the Painted Desert or the Sonsela Members of the Triassic Petrified Forest Formation (PMC 1999). Geologic descriptions provided in well logs for these monitoring wells supports our assumption.

5.0 GROUNDWATER CHEMICAL ANALYTICAL DATA RESULTS

Sampling crews mobilized in April and October of 2011 to the FWDA facility to collect groundwater samples in accordance with the 2010 and 2011 GWMPs. During the April event, groundwater samples were collected from 64 monitoring wells. During October, groundwater samples were collected from 72 monitoring wells, which included collecting samples from ten new monitoring wells installed during the summer of 2011 in the Northern Area. New monitoring wells are TMW38, TMW39S, TMW39D, TMW40S, TMW40D, TMW41, TMW48, and TMW49. The following is a summary of the findings related to chemical analytical results for this reporting period.

5.1 NORTHERN AREA CHEMICAL ANALYTICAL RESULTS

Tables 5-1 through 5-15 present chemical analytical results of groundwater samples. Tables 5-16 through 5-23 compare the results of the four most recent sampling events, providing a 2-year comparative summary. The following paragraphs summarize chemical constituents detected in Northern Area groundwater samples collected during the April and October sampling events.

Note: *Because TMW02 is thought to be screened in a discontinuous sandstone, constituent concentrations detected in groundwater samples from this location were not used in the interpolation of concentration contours. As with groundwater elevation measurements, TMW02 sample results do not correlate with chemical analytical results reported in groundwater samples from nearby monitoring wells.*

5.1.1 Nitrate and Nitrite

Tables 5-1 and 5-2 tabulate nitrate and nitrite results. Figures 5-1 through 5-4 present concentration contours for nitrate in groundwater. Figures 5-1 and 5-2 are the April and October isoconcentration maps for nitrate in alluvium. Figures 5-3 and 5-4 show nitrate and nitrite results for each bedrock monitoring well for April and October, respectively. For both nitrate and nitrite, the MCL is the applicable regulatory health standard. MCLs for nitrate and nitrite are 10.0 and 1.0 mg/L, respectively.

Nitrate concentrations above the MCL were detected in April groundwater samples collected from monitoring wells MW03, MW20, MW22D, MW22S, TMW02, TMW04, TMW06, TMW21, TMW23, TMW30, TMW31D, TMW34, and TMW35. The highest nitrate concentration detected was 100 mg/L from the groundwater sample collected from monitoring well TMW02. In past sampling events, groundwater samples collected from TMW03 contained the highest concentration for nitrate; however, TMW03 was reported as non-detection for the April 2011 event. This is, in all likelihood, an error. For consistency, TMW03 was given an estimated nitrate concentration of 160 mg/L for mapping purposes. Figure 5-1 is an isoconcentration map based on this estimated value for TMW03.

October nitrate concentrations were detected above the MCL in groundwater samples collected from monitoring wells MW20, MW22D, MW22S, TMW02, TMW03, TMW04, TMW06, TMW14A, TMW22, TMW23, TMW30, TMW34, TMW35, TMW40S, and TMW48. The highest nitrate concentration detected was 160 mg/L from the

groundwater sample collected at monitoring well TMW03. This result supports that the April 2011 non-detection was erroneous.

Nitrite was detected above the MCL of 1.0 mg/L in two groundwater samples in April. These groundwater samples were collected from monitoring wells MW20 and TMW03, with the highest concentration of 4.9 mg/L found in the sample collected from MW20. In October nitrite was detected above the MCL in samples collected from MW20 and TMW40S, with the highest concentration of 7.0 mg/L found in the sample collected from MW20.

5.1.2 *Total Explosives*

Tables 5-3 and 5-4 tabulate total explosives results. Of the explosive compounds that were analyzed for, hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), 1,3-dinitrobenzene, 2,4-dinitrotoluene, and nitrobenzene were the only compounds detected above a regulatory health standards. Because there are no MCL or WQCC standards for these explosives, RSL values were used for comparison.

Groundwater samples collected from TMW03, TMW04 and TMW23 in April contained RDX at concentrations of 360 µg/L, 17 µg/L, and 50 µg/L, respectively. In October, RDX was reported in samples from TMW03, TMW04 and TMW23 at concentrations of 466 µg/L, 2.3 µg/L, and 93.3 µg/L, respectively. The RSL for RDX is 0.61 µg/L.

In April, 1,3-dinitrobenzene was detected above the RSL of 3.7 µg/L in the groundwater sample collected from MW18D at a concentration of 40 µg/L. 2,4-dinitrotoluene was detected above the RSL of 0.2 µg/L in groundwater samples collected from TMW03 at concentrations of 0.35 µg/L. Nitrobenzene was detected above the RSL of 3.4 µg/L in the groundwater sample collected from TMW03 at a concentration of 7.4 µg/L.

In October, 2,4-dinitrotoluene was the only explosive compound detected above a regulatory health standard other than RDX. 2,4-dinitrotoluene was detected in the groundwater sample collected from TMW03 at a concentration of 0.36 µg/L.

RDX was the most spatially prevalent explosive compound detected in groundwater samples for both sampling events; therefore, RDX results were used to construct the concentration contours shown in Figures 5-5 and 5-6 to represent the explosives plume in the alluvium groundwater. Other explosive compounds were detected in groundwater samples but at concentrations below their respective regulatory health standards.

5.1.3 *Perchlorate*

Tables 5-5 and 5-6 tabulate perchlorate results. Figure 5-5 presents April perchlorate and explosive compounds concentrations in the alluvium with concentration contours for RDX. Figure 5-6 shows October perchlorate and explosives concentrations in the alluvium with concentration contours for RDX and perchlorate. Figures 5-7 and 5-8 show April and October concentration contours for perchlorate in bedrock groundwater.

USACE compared perchlorate results to the value noted in the Permit, 6 µg/L. Groundwater samples collected in April from TMW30, TMW31D, TMW31S, and TMW32

contained perchlorate above 6 µg/L. Of these monitoring wells, only TMW31S is screened in the alluvium. TMW30, TMW31D, and TMW32 are screened in the sandstone-bedrock. The groundwater sample collected from TMW30 contained the highest concentration at 3280 µg/L.

October groundwater samples collected from TMW01, TMW30, TMW31D, TMW31S, TMW32, TMW39D, TMW39S, TMW40D, TMW40S, TMW48, and TMW49 contained perchlorate above 6 µg/L. TMW01, TMW31S, TMW39S, and TMW40S are screened in the alluvium. TMW30, TMW31D, TMW32, TMW39D, TMW40D, TMW48, and TMW49 monitoring wells are screened in the bedrock. The groundwater sample collected from TMW30 contained the highest concentration of perchlorate at 2700 µg/L. Perchlorate was detected in other groundwater samples collected in April and October but at concentrations below 6 µg/L.

5.1.4 Volatile Organic Compounds

Tables 5-7 and 5-8 tabulate volatile organic compounds (VOC) results. In April, only 1,2-dichloroethane (1,2-DCA) was detected above the regulatory health standard. The applicable regulatory health standard for 1,2-DCA is the MCL set at 5.0 µg/L. Groundwater samples collected from MW18D, MW20, and TMW33 contained 1,2-DCA above the MCL with concentrations of 110 µg/L, 8.9 µg/L, and 40 µg/L, respectively.

In October, 1,2-DCA was detected above the MSL in the same three monitoring wells at concentrations of 87 µg/L for MW18D, 9.6 µg/L for MW20, and 33 µg/L for TMW33. In addition, a second VOC, vinyl chloride, was found above the applicable regulatory limit of 1.0 µg/L (a WQCC standard) at TMW39S, with a concentration of 3.8 µg/L.

Other VOCs were detected in April and October groundwater samples, but at concentrations below applicable regulatory health standards. No isoconcentration map was developed for VOCs; however, Figures 5-9 and 5-10 show all VOCs detected at each monitoring well sampled.

5.1.5 Semi-Volatile Organic Compounds

Tables 5-9 and 5-10 tabulate semi-volatile organic compounds (SVOC) results. 2,4-dinitrotoluene and bis(2-ethylhexyl)phthalate were detected above applicable regulatory health standards. In April, 2,4-dinitrotoluene was detected above the RSL of 0.2 µg/L in TMW03 and TMW04 at concentrations of 0.41 µg/L and 1.8 µg/L, respectively. Bis(2-ethylhexyl)phthalate was detected above the MSL of 6 µg/L in TMW07 and TMW19 at concentrations of 6.2 µg/L and 21 µg/L, respectively.

In October, 2,4-dinitrotoluene, bis(2-ethylhexyl)phthalate, along with N-nitroso-di-N-propylamine, 2,4-dinitrophenol, and bis(2-chloro-1-methylethyl)ether, were detected above applicable regulatory health standards. 2,4-dinitrotoluene was detected above the RSL in TMW03 and TMW06 at concentrations of 0.96 µg/L and 0.28 µg/L, respectively. Bis(2-ethylhexyl)phthalate was detected above the MSL in TMW14A and TMW39S at concentrations of 8.5 µg/L and 6.5 µg/L, respectively. N-nitroso-di-N-propylamine was detected above the RSL of 0.0093 µg/L in MW22D and TMW18 at concentrations of 0.31 µg/L and 1.1 µg/L, respectively. 2,4-dinitrophenol was detected

above the RSL of 30 µg/L in TMW03 at a concentration of 37 µg/L. Bis(2-chloro-1-methylethyl)ether was detected above the RSL of 0.31 µg/L in EMW04 at a concentration of 9.3 µg/L.

Other SVOC were detected in groundwater samples but at concentrations below applicable regulatory health standards. An isoconcentration map could not be constructed for SVOC compounds because there was no pattern associated with constituent concentrations; however, Figures 5-9 and 5-10 show the concentrations of the SVOC detected at each sampled monitoring well.

5.1.6 *Diesel and Gasoline Range Organics*

No diesel range organics (DRO) or gasoline range organics (GRO) constituents were detected in groundwater samples collected in 2011.

5.1.7 *Total and Dissolved Metals, Including Mercury*

Because metals and mercury are naturally occurring, it is difficult to determine if laboratory results represent natural conditions or anthropogenic impacts; therefore, the results presented in Tables 5-11 and 5-12 are values only for those metals that exceed applicable regulatory health standards. Tables 5-11 and 5-12 show both dissolved and total metals/mercury. However, only dissolved metals were flagged to indicate a value that exceeded an MCL, RSL or WQCC. Total, non-filtered, metals results exceeding an MCL, RSL, WQCC are shown for information only. Appendices E3 (April 2011) and E8 (October 2011) present the remaining results with detectable concentrations below an applicable regulatory health standards. In the future, metals results will be compared to a background value after completion of a background study.

5.1.8 *Dioxins and Furans*

Table 5-13 tabulates the April 2011 dioxins and furans results. Figure 5-9 include the results for these constituents. Regulatory health standards do not exist for the dioxins and furans compounds detected in groundwater samples collected from monitoring wells located in the Northern Area.

Both the 2010 and the 2011 GWMP revisions required analyses of dioxins and furans, however, USACE presented evidence in the April 2010 GPMR showing that these constituents were not of concern at FWDA (USACE 2010). NMED concurred with this evidence and dioxins and furans analysis was eliminated from the groundwater monitoring program (NMED 2011). Dioxins and furans were not analyzed for in October 2011 samples.

5.1.9 *Pesticides*

Tables 5-14 and 5-15 tabulate pesticides compound results, and Figures 5-9 and 5-10 show results of pesticide compounds at each monitoring well. In April, Aldrin was the only pesticide compound detected above a regulatory health standard. The regulatory health standard for Aldrin is the RSL at 0.004 µg/L. The groundwater sample collected from MW22S contained Aldrin with a concentration of 0.0064 µg/L. Other pesticide compounds were detected in April groundwater samples, but at concentrations below

their regulatory health standards. In October, no pesticide compounds were detected above an applicable regulatory health standard.

5.1.10 *Total Cyanide*

In April, total cyanide groundwater samples were collected from monitoring wells TMW30, TMW31S, TMW31D, TMW32, TMW33, TMW34, TMW35, TMW36, and TMW37. The applicable regulatory health standard for total cyanide is the MCL. No groundwater sample total cyanide result exceeded the MCL. Total cyanide was detected in the groundwater sample collected from TMW36, but at a concentration below the MCL. This sample was reported above laboratory instrumentation detection limits and therefore “J” flagged indicating that the result was an estimated value.

No total cyanide samples were collected in October. Based on historical analytical results, total cyanide was determined not to be of concern and removed from the sampling program (HGS 2011; NMED 2009).

5.2 OB/OD AREA SAMPLING RESULTS

OB/OD Area monitoring wells have prefixes KMW and CMW. Groundwater samples collected from these monitoring wells were analyzed for constituents and constituent groups presented in Table 2-1. No isoconcentration maps could be constructed for the OB/OD Area because constituents detected in groundwater samples do not have a pattern that can be interpreted. However, Figures 5-11 and 5-12 show the results for all detections, except for metals and mercury.

5.2.1 *Nitrate and Nitrite*

Tables 5-1 and 5-2 tabulate nitrate and nitrite results. No OB/OD Area groundwater sample results exceeded the nitrate or the nitrite MCL.

5.2.2 *Total Explosives*

In April, RDX and 1,3-dinitrobenzene explosive compounds were detected at concentrations above a regulatory health standard in the OB/OD Area. RDX was above the RSL in groundwater samples collected from monitoring wells CMW17 and CMW18 with concentrations of 1.1 µg/L and 48 µg/L, respectively. 1,3-dinitrobenzene was detected above the RSL in groundwater samples collected from CMW19, CMW24, and KNW09 with concentrations of 11 µg/L, 12 µg/L, and 12 µg/L, respectively.

In October, RDX was detected above the RSL in groundwater samples collected from monitoring wells CMW17 and CMW18 with concentrations of 1.8 µg/L and 70.1 µg/L, respectively.

Other explosive compounds were detected in groundwater samples collected in April and October but at concentrations below applicable regulatory health standards. Tables 5-3 and 5-4 tabulate groundwater sample results of all detected total explosives compounds.

5.2.3 *Perchlorate*

Tables 5-5 and 5-6 tabulate perchlorate results. No OB/OD Area groundwater samples exceeded 6 µg/L.

5.2.4 *Volatile Organic Compounds*

Tables 5-7 and 5-8 tabulate VOC results. No OB/OD Area groundwater samples exceeded a VOC applicable regulatory health standard.

5.2.5 *Semi-Volatile Organic Compounds*

Tables 5-9 and 5-10 tabulate the SVOCs results. No OB/OD Area groundwater samples exceeded applicable regulatory health standards in April. In October, 2,4-dinitrotoluene was detected above the RSL in CMW14 with a concentration of 0.38 µg/L. Also in October, N-nitroso-di-N-propylamine was detected above the RSL in CMW14 with a concentration of 0.33 µg/L.

5.2.6 *Total and Dissolved Metals, Including Mercury*

Refer to Subsection 5.1.7 for total and dissolved metals/mercury discussions.

5.2.7 *Dioxins and Furans*

Refer to Subsection 5.1.8 for the dioxin and furan discussion.

5.2.8 *Pesticides*

Tables 5-14 and 5-15 tabulate pesticide results. No OB/OD Area groundwater samples exceeded applicable pesticide compound regulatory health standards.

5.3 NEW FINDINGS AND COMPARATIVE TRENDS

Tables 5-16 through 5-23 tabulate chemical analytical results of four consecutive sampling events, inclusive of April 2011 and October 2011. With the exception of TMW14A, concentrations are comparable across multiple sampling events. Concentrations are relatively stable. The October 2011 nitrate concentration from the groundwater sample collected from TMW14A was 17 mg/L. Previous reported concentrations of nitrate in groundwater samples collected from this monitoring well have been below detection levels or below the MCL of 10 mg/L. USACE will continue to monitor future nitrate concentrations in groundwater samples collected from this well to determine if new trends developing.

The USGS, under contract with USACE, installed eight new monitoring wells in the Northern Area during the summer of 2011. Specific information related to each of these monitoring wells is location in Appendix F, which contains drilling logs, construction diagrams, geodetic survey, and well development logs. These monitoring wells were installed to further delineate perchlorate in bedrock and the alluvial groundwater systems. Chemical analytical results of groundwater samples collected from new monitoring wells provided more information as to the extent of perchlorate in these two groundwater systems. USACE constructed new concentration contours based on these

new findings, shown in Figures 5-6 and 5-8. The bedrock perchlorate plume extends north beyond the new well, TMW40D. The concentration of perchlorate in the farthest reaches of the bedrock plume is substantially less than the presumed center near TMW30, but concentrations are not below the 6 ug/L clean up criteria required by the Permit. Additional characterization is required to bound the north and west sides of this plume.

In the alluvium, an additional perchlorate plume was found near monitoring wells TMW01, TMW31S, and TMW39S. TMW39S is a new well. The sample collected from TMW39S indicates an increasing concentration to the east, which is counter to prevailing knowledge. Groundwater in the alluvium is not known to extend much farther east of TMW39S, as indicated by dry boreholes that were drilled during the Parcel 22 RCRA Facility Investigation (RFI). The monitoring wells and boreholes drilled during the execution of the Parcel 22 RFI indicate that the alluvium is unsaturated to the east and southeast of TMW39S (USACE 2011). Parcel 22 RFI dry boreholes are shown on Figure 5-6. There was a dry borehole drilled less than a ¼ mile southeast of the alluvial perchlorate plume. Additional characterization is required in order to understand the nature and extent of the perchlorate in alluvium.

Vinyl chloride was detected above the WQCC limit of 1.0 µg/L in the groundwater sample collected from TMW39S with a concentration of 3.8 µg/L. No VOCs have been detected in the alluvium this far south. To date, the only significant concentrations of VOCs have been found in monitoring wells MW18D, MW20, and TMW33. The most common VOC detected above a regulatory health standard is 1, 2 – DCA. Since TMW39S is a newly installed monitoring well sampled for the first time in October 2011, USACE will monitor this anomaly to determine whether this result was a one-time phenomenon caused by laboratory contamination or sampling error. Detected VOCs are tabulated in Tables 5-7 and 5-8 and shown on Figure 5-10.

5.4 FIELD VARIANCES FROM WORK PLAN

The purpose of this section is to describe any variances from the established work plan or sampling program. Several discrepancies were identified during the development of this report. Most discrepancies relate to this reporting period, but an error in the way USACE reported nitrate and nitrite concentrations in calendar year 2010 was discovered while evaluating data for this reporting period. The following subsections describe variances and discrepancies for this reporting period and for reporting periods during the year of 2010.

5.4.1 *Variation between Sampling Plan and Sample Collection*

A perchlorate sample was collected at TMW01 in April; however, it was inadvertently not shipped to the laboratory. TMW01 was noted in tables and figures as not sampled for perchlorate in April. Additional QC procedures have been implemented to prevent future occurrences.

Dioxins and furans analyses were eliminated from the October 2011 sampling plan because USACE submitted evidence that detected concentrations of these compounds in groundwater samples were insignificant and were not of concern to the FWDA

groundwater monitoring program (USACE 2011). NMED concurred with this evidence in August of 2011 and documented in the *Approval with Modifications, FWDA Groundwater Periodic Monitoring Report for April 2010 to July 2010* letter (NMED 2011).

In October, the following samples were inadvertently missed. An explosives sample was not collected at CMW19, a perchlorate samples was not collected at TMW19, and a VOC sample was not collected at FW31.

Eight new monitoring wells were installed in the summer of 2011. These monitoring wells are TMW39S, TMW40S, and TMW41, screened in the alluvium, and TMW38, TMW39D, TMW40D, TMW48, and TMW49, screened in the bedrock. Neither the 2010, nor the 2011, GWMP specifically addressed collecting samples from these new monitoring wells. USACE collected a standard suite of groundwater samples from each new monitoring well. Each new monitoring well had groundwater samples collected and analyzed for nitrate/nitrite, total explosives, perchlorate, VOCs, SVOS, pesticides, and metals (totals and dissolved).

5.4.2 TMW40S Sample Results

The perchlorate groundwater sample collected from TMW40S in October 2011 may be suspect. This result may be anomalously high and not reflect the actual concentration of surrounding formation water. At this time, this concentration is thought to be a result of the well installation. TMW40S and TMW40D were constructed in a single borehole, referred to as a nested or dual completion well. During its construction, when the upper well screen was being placed for TMW40S, lower formation water may have drained into the alluvium while the temporary casing was being pulled. The amount of lower formation water that may have entered the alluvium was calculated to be approximately 60 gallons.

TMW40S was drilled in accordance with the *Fort Wingate Depot Activity Monitoring Well Installation and Abandonment Work Plan* (USGS). There is no indication that the grout and seals between TMW40S and TMW40D are defective. Well construction diagrams and drilling logs indicate that the grout and seal were installed properly. See Appendix F for drilling logs and completion diagrams. There is approximately 62 feet of bentonite grout between TMW40D and TMW40S screens, plus an 11-foot bentonite seal on top of the TMW40D filter pack. The likelihood of there being a problem with seal and grout is extremely remote.

TMW40S will be redeveloped and pumped or hand-bailed dry several times before collecting groundwater samples again in April 2012. USACE recommends continued monitoring of the perchlorate at TMW40S until a determination of the extent of perchlorate contamination in the alluvium can be verified. TMW40S groundwater chemical analytical results will be re-evaluated every six months to determine if they represent alluvial groundwater. If condition of TMW40S cannot be ascertained, and if chemical analytical results remain suspect, TMW40S may need to be abandoned. However, the presence of TMW40S does not present a continued risk to the environment.

5.4.1 Calendar Year 2010 Nitrate and Nitrite Reported Results

In April and October 2010, nitrate (NO_3) and nitrite (NO_2) concentrations were reported by 'nitrate as NO_3 ' ($\text{NO}_3\text{-NO}_3$) and 'nitrite as NO_2 ' ($\text{NO}_2\text{-NO}_2$). The Permit implies that nitrate and nitrite results are to be reported as a concentration of nitrogen ($\text{NO}_3\text{-N}$ and $\text{NO}_2\text{-N}$). As a result, the concentrations presented in 2010 are misleading and incorrectly compared. The results reported were valid, but the values were incorrectly interpreted. This gave each detection a higher concentration by a factor of 4.425 for nitrate and 3.300 for nitrite. Therefore, $\text{NO}_3\text{-N} \times 4.425$ is equivalent to $\text{NO}_3\text{-NO}_3$, correspondingly, $\text{NO}_3\text{-NO}_3 \times 0.226$ is equivalent to $\text{NO}_3\text{-N}$.

EPA analytical Method 300 allows laboratories to report nitrate concentrations as total NO_3 , denoted in the methodology as $\text{NO}_3\text{-NO}_3$ or report as nitrogen, denoted as $\text{NO}_3\text{-N}$. $\text{NO}_3\text{-NO}_3$ takes into account the molecular weight of oxygen as well as nitrogen when calculating the concentration. $\text{NO}_3\text{-N}$ refers only to molecular weight of nitrogen when calculating concentration. This difference affects which regulatory health standard to apply. For example, the MCL for nitrate in drinking water is 10 mg/L when reported as $\text{NO}_3\text{-N}$. The MCL for nitrate in drinking water when reported as $\text{NO}_3\text{-NO}_3$ is 45 mg/L. Unless otherwise specified, nitrate and nitrite levels usually refer to the amount of N present, therefore the applicable MCL is 10 mg/L for nitrate and 1.0 mg/L for nitrite.

Nitrate and nitrite concentrations for April 2010 (USACE 2010) and October 2010 (USACE 2011) were inadvertently reported as $\text{NO}_3\text{-NO}_3$ and $\text{NO}_2\text{-NO}_2$. Prior to April 2010 and in 2011, USACE's laboratories reported nitrate and nitrite concentrations as $\text{NO}_3\text{-N}$ and $\text{NO}_2\text{-N}$, respectively. During the data review for this report, USACE discovered the discrepancy in the reported laboratory values for 2010 nitrate and nitrite. Normally, this would have been detected by comparing the primary laboratory results to the results from the QA laboratory. However, the primary and QA laboratories in 2010 reported nitrate and nitrite concentrations as $\text{NO}_3\text{-NO}_3$ and $\text{NO}_2\text{-NO}_2$.

Appendix G contains a revision of the nitrate plumes for 2010 and a table that converts the 2010 results from $\text{NO}_3\text{-NO}_3$ and $\text{NO}_2\text{-NO}_2$ to $\text{NO}_3\text{-N}$ and $\text{NO}_2\text{-N}$. Table 5-16, April 2010 – October 2011 Nitrate and Nitrite Detected, was revised with these converted values. A note will be made in the project database to identify that the 2010 nitrate and nitrite results were reported as $\text{NO}_3\text{-NO}_3$ and $\text{NO}_2\text{-NO}_2$.

6.0 ANCILLARY ACTIVITIES

Additional activities related to the groundwater monitoring program were executed during this reporting period. During the summer of 2010, USACE installed eight new monitoring wells and two sentinel wells in the Northern Area of the installation. During this same project, ten Northern Area dry monitoring wells were abandoned. These efforts were conducted under the *FWDA Monitoring Well Installation and Abandonment Work Plan* submitted and approved by NMED in the spring of 2011 (USGS 2011). A report summarizing the monitoring well installation and abandonment activities conducted under the approved work plan will be submitted to NMED later in 2012, after all planned monitoring wells are installed.

The purpose of the monitoring well installations and abandonments was to aid in the further delineation of groundwater contaminant plumes, establish background concentrations levels, monitor potential off-site migration, and remove from service several dry monitoring wells. Monitoring wells TMW05, FW07, FW08, FW10, FW11, FW12, FW13, FW27, FW28, and FW29 were abandoned because of their historical lack of water.

As noted in previous sections, monitoring wells TMW38, TMW39S, TMW39D, TMW40S, TMW40D, TMW41, TMW48, and TMW49 were installed to further delineate the alluvial and bedrock perchlorate plumes. TMW39S, TMW40S, TMW41, and TMW49 are screened in the alluvium. Because perchlorate and nitrate plumes comingle, these wells also aid in defining the alluvium nitrate plume. TMW38, TMW39D, TMW40D, and TMW48 are screened in the sandstone-bedrock. These eight monitoring wells were sampled during the October 2011 groundwater sampling event. The laboratory results of the groundwater samples collected from these new monitoring wells have been incorporated and discussed in previous sections of this report.

MW23 and MW24 were installed in the northwest portion of the facility's property as sentinel wells with the primary objective of monitoring potential off-site migration of chemical constituents from FWDA. Their locations are shown in Figure 2-1. These two wells *were not* sampled during the October 2011 groundwater sampling event, but were sampled after well development activities in September 2011 by the USGS. Groundwater samples collected from these wells were analyzed for total and dissolved metals, nitrate/nitrite, VOCs, DRO, GRO, dioxins and furans, total explosives, and perchlorate, in accordance with the *Fort Wingate Depot Activity Monitoring Well Installation and Abandonment Work Plan* (USGS 2011).

Groundwater samples were collected from MW23 and MW24 after purging three times the volume of water in the casing and annular space with a 12-volt-battery pump. Groundwater samples were collected in their respective bottles, preserved as applicable to the analytical methodology, placed in a cooler, and shipped overnight to Test America Laboratories in Denver, Colorado for analysis. USACE did not have an independent validation conducted on the chemical analytical results from the samples collected from MW23 and MW24. However, the results were fully validated in-laboratory by Test America, and an informal in-house validation was performed by a

USACE chemist. This in-house validation determined that there were VOC detections in the trip blanks for MW23 and MW24. This indicates that the low-level VOC detections in the samples are unproven and could be due to trip blank contamination. Tables 6-1 and 6-2 tabulate the compounds detected in the samples collected at MW23 and MW24, including the trip blank detections. Appendix H contains the laboratory reports, chain of custody, and sampling data forms for groundwater samples collected from these wells in September by the USGS. Future samples from MW23 and MW24 will be subject to the, semi-annual sampling event, facility-wide independent validation program.

No compound was detected above a regulatory health standard in samples from MW23. In samples from MW24, dissolved iron and dissolved manganese were the only compounds detected above a regulatory health standard. Dissolved iron was detected above the WQCC of 1.0 mg/L at a concentration of 1.7 mg/L. Dissolved manganese was detected above the WQCC of 0.2 mg/L at a concentration of 0.52 mg/L.

7.0 GROUNDWATER MONITORING AND SAMPLING ACTIVITY SUMMARY

Monitoring well static water levels measured in April, July, and October 2011, were evaluated to determine groundwater flow and gradient. In the Northern Area of the installation, groundwater in the alluvial system locally flows from potentiometric highs in the north and south to a potentiometric low under the Administration Area. In the area around monitoring wells MW01, MW02, and MW03, a groundwater mound is present, Figures 4-1 through 4-3. This mound is thought to be the result of a leaking water storage cistern. A deep water well (Well 69), near MW01, supplies groundwater to the facility. Groundwater flows from this Well 69 into this cistern. Cracks in the concrete lining of the cistern are clearly visible. From the Administration Area, groundwater locally flows to the west. This trend is shown for previous reporting periods. In addition to the alluvial groundwater, groundwater is also present in bedrock beneath the workshop area, in a fine grained sandstone. Bedrock monitoring well measurements indicates bedrock groundwater flows in a westerly direction. Groundwater elevation measurements for the OB/OD Area indicate a general northern flow that roughly follows the topography.

Groundwater samples were collected during April and October 2011 from all monitoring wells that yielded sufficient groundwater volume and/or discharge. Groundwater samples were not collected from those wells that were dry or nearly dry. Nitrate, nitrite, VOCs, SVOCs, explosives, pesticides, perchlorate, and metals were detected in groundwater samples above regulatory health standards in Northern Area monitoring wells. Other constituents were detected but at concentrations below applicable regulatory health standards.

New monitoring wells were installed to define the extent of the perchlorate in alluvial and bedrock Northern Area groundwater systems. Chemical analytical results of groundwater samples from new bedrock monitoring wells indicate that the bedrock perchlorate plume extends beyond TMW40D. The chemical analytical results of groundwater samples from new alluvial monitoring wells show additional perchlorate in the alluvium in the vicinity of monitoring wells TMW01, TMW31D and TMW39s.

In all, there are five distinct plumes in groundwater located in the Northern Area, a perchlorate plume in the sandstone-bedrock groundwater, an RDX plume in the alluvial groundwater, a nitrate plume in the alluvial groundwater, a low concentration 1,2-DCA plume in the alluvial groundwater, and a perchlorate plume in the alluvial groundwater. In addition to these plumes, nitrate concentrations above the MCL are found in samples collected from bedrock monitoring wells. This bedrock nitrate appears to be comingled with the perchlorate plume but not especially definable. USACE has attempted to correlate bedrock nitrate concentrations, but no definitive pattern has been found. Since some of these nitrate results are from new monitoring wells, it may take several sampling events to evaluate this particular condition.

Groundwater samples collected from monitoring wells located in the OB/OD Area contained SVOCs, explosives, and metals above applicable regulatory health standards. Additional chemical constituents were detected in OB/OD Area groundwater

samples, but these concentrations were below established regulatory health standards. Because no apparent pattern exists in OB/OD groundwater sample results, no isoconcentration maps were created. However, results are shown in Figure 5-11 and 5-12.

Two sentinel wells were installed near the northwest boundary of the FWDA installation. The primary objective of these sentinel wells is to monitor for, and to detect, chemical constituents before they migrate beyond the boundaries of the installation. Other than two metals, dissolved iron and manganese, no chemical constituents were detected above any established Permit required limit or applicable regulatory health standards. As of September 2011, there is no evidence of off-site contaminant migration.

8.0 RECOMMENDATIONS

USACE recommends further delineation of the perchlorate in the bedrock and alluvial groundwater systems. The new monitoring wells installed during the summer of 2011 did not define the limits of perchlorate in bedrock, northwest of TMW40D. In the alluvium, perchlorate may be present east of TMW39S and TMW48. USACE recommends subsurface investigations east of TMW38 and TMW48 monitoring wells. In addition to this subsurface investigation, new monitoring wells are needed to define the extent of the perchlorate plume in the bedrock. The Army and USACE proposes to coordinate with NMED and stakeholders to develop appropriate actions and work plans in order to continue characterizing the extent of perchlorate in the Northern Area bedrock and alluvial groundwater systems.

9.0 REFERENCES

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**April and October 2011
Tables**

Table 2-1: 2011 Revised Monitoring Plan Sampling Requirement

Well ID	Total Explosives Method 8330A	TCL VOC Method 8260C	TCL SVOC Method 8270D	Dioxins and Furans Method 8290A	TCL Pesticides Method 8081A	TAL Total Metals Methods 6020B/7470	TAL Diss Metals Methods 6020B/7470	Total Nitrate Method 300.0	Perchlorate Method 6850	TPH DRO Method 8015B	TPH GRO Method 8015B	Cyanide Method 335.2	Herbicides Method 8151A
OB/OD Area Monitoring Wells													
CMW02		X		X	X	X	X	X	X				
CMW04	X	X				X	X						
CMW07	X	X		X		X	X		X				
CMW10	X	X	X	X		X	X	X	X				
CMW14	X	X	X			X	X	X	X				
CMW17	X	X				X	X	X	X				
CMW18	X	X	X	X		X	X	X	X				
CMW19	X	X	X	X	X	X	X	X	X				
CMW22		X		X		X	X	X					
CMW23	X	X				X	X		X				
CMW24	X	X	X	X	X	X	X	X					
CMW25		X		X	X	X	X	X					
KMW09	X	X		X		X	X	X	X				
KMW10		X	X			X	X	X	X				
KMW11	X	X		X		X	X	X	X				
KMW12	X	X				X	X	X					
Northern Area Monitoring Wells Alluvial Monitoring Wells													
FW31	X		X	X		X	X	X					
FW35	X	X	X			X	X	X					
MW01	X	X			X	X	X	X	X	X	X		
MW02	X	X			X	X	X	X	X	X	X		
MW03	X	X				X	X	X	X	X	X		
MW18D	X	X				X	X	X	X	X	X		
MW20	X	X	X		X	X	X	X	X	X	X		
MW22D	X	X	X	X	X	X	X	X	X	X	X		
MW22S	X	X	X	X	X	X	X	X	X	X	X		
SMW01	X	X	X			X	X	X	X				
TMW01	X	X		X		X	X	X	X				
TMW03	X	X	X			X	X	X	X				
TMW04	X	X	X			X	X	X	X				
TMW06	X	X	X			X	X	X					
TMW07	X	X	X	X		X	X	X					
TMW08		X			X	X	X	X	X				
TMW10	X	X				X	X	X	X				
TMW11	X	X		X		X	X	X	X				
TMW13		X		X		X	X	X	X				

Table 2-1: 2011 Revised Monitoring Plan Sampling Requirement

Well ID	Total Explosives Method 8330A	TCL VOC Method 8260C	TCL SVOC Method 8270D	Dioxins and Furans Method 8290A	TCL Pesticides Method 8081A	TAL Total Metals Methods 6020B/7470	TAL Diss Metals Methods 6020B/7470	Total Nitrate Method 300.0	Perchlorate Method 6850	TPH DRO Method 8015B	TPH GRO Method 8015B	Cyanide Method 335.2	Herbicides Method 8151A
TMW15	X	X	X	X		X	X	X	X				
TMW21	X	X				X	X	X	X				
TMW22	X	X	X			X	X	X	X				
TMW23	X	X		X	X	X	X	X	X				
TMW24	X	X			X	X	X	X	X				
TMW25	X	X				X	X	X					
TMW26	X	X				X	X	X	X				
TMW27		X		X		X	X		X				
TMW28		X				X	X						
TMW29	X	X				X	X	X	X				
TMW31S	X	X	X	X	X	X	X	X	X	X		X _{1,3}	X _{1,3}
TMW33		X	X			X	x	x		X	X	X _{1,3}	X _{1,3}
TMW34		X				X	X	X	X	X	X	X _{1,3}	X _{1,3}
TMW35		X	X			X	X	X		X	X	X _{1,3}	X _{1,3}
TMW39S ₅	X	X	X		X	X	X	X	X				
TMW40S ₅	X	X	X		X	X	X	X	X				
TMW41 ₅	X	X	X		X	X	X	X	X				
Northern Area Monitoring Wells Monitoring Bedrock Wells													
EMW01	X	X	X	X	X	X	X		X				
EMW02	X	X	X		X	X	X	X					
EMW03	X	X	X	X	X	X	X	X					
EMW04		X	X			X	X	X					
TMW02	X	X		X		X	X	X	X				
TMW14A	X	X	X	X		X	X	X	X				
TMW16	X	X	X	X		X	X		X				
TMW17		X				X	X	X	X				
TMW18	X	X	X			X	X	X	X				
TMW19	X	X	X			X	X						
TMW30	X	X	X	X	X	X	X	X	X	X _{2,4}		X _{1,3}	X _{1,3}
TMW31D	X	X	X	X	X	X	X	X	X	X _{2,4}		X _{1,3}	X _{1,3}
TMW32	X	X	X	X	X	X	X	X	X	X _{2,4}		X _{1,3}	X _{1,3}
TMW36	X	X	X	X	X	X	X	X	X	X _{2,4}		X _{1,3}	X _{1,3}
TMW37	X	X	X	X	X	X	X	X	X	X _{2,4}		X _{1,3}	X _{1,3}
TMW38 ₅	X	X	X		X	X	X	X	X				
TMW39D ₅	X	X	X		X	X	X	X	X				
TMW40D ₅	X	X	X		X	X	X	X	X				

Table 2-1: 2011 Revised Monitoring Plan Sampling Requirement

Well ID	Total Explosives Method 8330A	TCL VOC Method 8260C	TCL SVOC Method 8270D	Dioxins and Furans Method 8290A	TCL Pesticides Method 8081A	TAL Total Metals Methods 6020B/7470	TAL Diss Metals Methods 6020B/7470	Total Nitrate Method 300.0	Perchlorate Method 6850	TPH DRO Method 8015B	TPH GRO Method 8015B	Cyanide Method 335.2	Herbicides Method 8151A
TMW48 ₅	X	X	X		X	X	X	X	X				
TMW49 ₅	X	X	X		X	X	X	X	X				

VOC: Volatile Organic Compounds

SVOC: Semi-Volatile Organic Compounds

TAL: Target Analyte List

TCL: Target Compound List

TPH: Total Petroleum Hydrocarbons

GRO/DRO: Gasoline Range Organics/Diesel Range Organics

X: Sample To Be Collected

NOTES: 1: The 2011 sampling plan revision discontinued these constituents from the monitoring program, and were not collected in October 2011
 2: The 2011 sampling plan revision discontinued these constituents from the monitoring program, but were collected in April and October 2011
 3: As of April 2011, these constituents/constituent groups are no longer reported
 4: As October 2011, DRO are no longer be analyzed for from these monitoring wells
 5: New monitoring well installed during the summer of 2011

Table 2-2: April 2011 Groundwater Purge Records

Well ID	Casing Dia. (in)	Well TD (ft-btoc)	Screen Length (ft)	Date	Purge Method	Start DTW (ft-btoc)	End DTW (ft-btoc)	Purge Time (min)	Average Flow Rate (mL/min)	Purge Volume (gals)	pH	Cond. (uS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)
CMW02	2	37.9	10	04/11/11	ZIST low flow	13.05	13.06	37	200	2	8.2	743	9.37	0.00	0.13
CMW04	2	137.91	20	04/06/11	ZIST low flow	45.54	48.85	85	200	4	8.21	5010	11.41	0.00	1
CMW07	2	66.6	20	04/06/11	Low flow	39.79	40.13	42	120	1.3	7.8	1479	13.68	0.00	0.89
CMW10	2	73.1	20	04/05/11	Bailed dry	64.04	Dry	45	N/A	4	10.63	5640	12.01	65.0	7.47
CMW14	2	96.75	10	04/08/11	ZIST low flow	29.91	29.91	44	100	1.2	12.18	5860	13.84	0.08	0.31
CMW17	2	54.24	20	04/05/11	Bailed dry	20.77	Dry	60	N/A	15	8.9	1108	12.00	363.80	6.53
CMW18	2	54.1	20	04/07/11	Low flow	40.34	40.64	37	200	2	7.32	860	11.60	1.18	5.31
CMW19	2	51.3	15	04/08/11	ZIST low flow	23.19	23.2	70	40	0.75	9.53	1296	13.64	41.43	0.07
CMW22	2	120.23	20	04/05/11	Bailed dry	114.57	Dry	45	N/A	2	8.44	179	13.27	197.60	3.51
CMW23	2	106.6	20	04/05/11	Bailed dry	97.36	Dry	15	N/A	3	8.35	5665	12.54	145.1	5.73
CMW24	2	262.34	30	04/06/11	Low flow	46.97	49.75	30	50	1.06	8.74	2800	14.58	0.24	0.08
CMW25	2	98.78	25	04/11/11	Low flow	37.19	37.21	28	150	2.69	8.83	1043	12.82	36.11	0.81
KMW09	2	72.9	10	04/05/11	ZIST low flow	39.93	39.94	54.00	110	1.71	7.65	3580	13.91	1.52	0.21
KMW10	2	171.02	10	04/05/11	Bailed dry	166.80	Dry	29.00	N/A	4.00	7.42	943	12.85	89.78	6.41
KMW11	2	57.44	20	04/07/11	Low flow	31.46	32.27	54.00	100	1.16	8.83	1001	10.63	0.9	0.17
KMW12	2	75.49	20	04/05/11	Bennett pump	48.72	Dry	16.00	N/A	19.00	6.89	4120	11.30	45.33	3.28
KMW13	2	53.83	20						Dry						
EMW01	2	120.7	15	04/07/11	Pumped dry	98.21	Dry	210	70	7.5	8.67	8070	13.69	19.64	1.32
EMW02	2	108.4	15	04/12/11	Pumped dry	31.31	Dry	210	200	19	8.25	6830	9.78	1.12	1.05
EMW03	2	92.9	15	04/09/11	Pumped dry	28.92	Dry	21	200	18.5	10.41	5810	12.03	1.74	1.64
EMW04	2	115	15	04/05/11	Bennett pump	102.72	114.25	10	1893	3	7.36	1298	13.14	25.90	2.95
FW31	4	52	40	04/05/11	12-volt pump	41.61	Dry	15	N/A	12	8.34	2290	12.74	8.74	5.45
FW35	4	32.15	20	04/05/11	12-volt pump	20.75	Dry	11	NA	12	7.16	4110	12.28	12.62	2.89
TMW01	2	61.23	15	04/14/11	Low flow	36.21	36.85	24	250	1.65	7.49	2840	12.13	1.94	0.63
TMW02	2	84.09	14	04/15/11	Low flow	55.32	56.85	27	200	3.5	*	*	*	*	*
TMW03	2	72.06	20	04/08/11	Low flow	56.75	56.9	40	200	3.17	7.81	4420	13.33	1.25	1.44
TMW04	2	72.36	20	04/12/11	Low flow	56.34	56.96	24	160	1.28	7.92	3940	13.3	2.71	1.29
TMW05	2	37.61	10						Dry						
TMW06	2	57.24	10	04/11/11	Low flow	47.23	48.73	21	80	0.71	7.60	3780	12.86	0.25	1.23
TMW07	2	67.37	10	04/11/11	Bailed dry	47.30	Dry	30	N/A	5	7.80	4920	12.07	1.6	2.49
TMW08	2	62.41	30	04/11/11	Low flow	36.77	36.88	45	150	1.5	7.16	1610	11.81	27.32	0.27
TMW10	2	61.8	30	04/14/11	Low flow	24.69	37.53	52	120	1.67	7.44	8830	13.56	0.91	1.51

Table 2-2: April 2011 Groundwater Purge Records

Well ID	Casing Dia. (in)	Well TD (ft-btoc)	Screen Length (ft)	Date	Purge Method	Start DTW (ft-btoc)	End DTW (ft-btoc)	Purge Time (min)	Average Flow Rate (mL/min)	Purge Volume (gals)	pH	Cond. (uS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)
TMW11	2	82.68	25	04/13/11	Low flow	65.63	66.33	64	200	3.4	7.74	2170	13.6	1.18	2.63
TMW13	2	73.78	10	04/13/11	Low flow	59.62	60.34	27	400	4.17	7.63	2310	13.21	0.00	0.28
TMW14A	2	112.2	15	04/13/11	ZIST low flow	62.64	62.65	66	60	1.1	8.70	1890	17.89	0.74	0.86
TMW15	2	76.65	15	04/15/11	Low flow	63.61	64.12	50	125	2.48	7.68	2220	12.24	0.02	2.21
TMW16	2	142.2	15	04/08/11	Bennett pump	44.62	Dry	33	N/A	30	8.61	1810	12.94	336.2	5.35
TMW17	2	130.45	15	04/15/11	ZIST low flow	61.46	66	45	50	0.75	9.71	1700	12.42	1.68	0.88
TMW18	2	160.7	10	04/08/11	Bennett pump	54.11	Dry	30	N/A	26	9.95	2920	13.16	37.0	3.25
TMW19	2	187.97	15	04/06/11	Bennet pump	42.00	Dry	67	N/A	50	8.45	2880	12.77	44	1.44
TMW21	2	61.43	10	04/08/11	Low flow	50.48	52.33	80	100	1.35	7.84	2540	14.34	0.6	0.39
TMW22	2	65.23	10	04/22/11	Bailed dry	48.94	Dry	35	NA	5	7.70	3560	13.04	330.4	4.03
TMW23	2	59.57	10	04/12/11	Bailed dry	45.59	Dry	N/A	N/A	5	7.84	3180	12.74	295.60	4.70
TMW24	2	55.41	10	04/12/11	Low flow	38.98	44.93	59	130	1.54	7.85	3800	12.5	1.20	1.19
TMW25	2	55	10	04/12/11	Low flow	39.02	42.92	30	200	3.43	7.47	3920	12.81	6.14	0.9
TMW26	2	58.24	10	04/12/11	Low flow	26.08	28.11	49	150	1.54	7.89	3540	13.82	1.24	0.85
TMW27	2	73.26	10	04/09/11	Low flow	27.55	28.45	34	100	0.9	7.69	1500	11.56	0.00	0.10
TMW28	2	50.3	10	04/09/11	Low flow	17.62	18.55	78	125	4.16	7.13	1443	13.1	5.05	0.09
TMW29	2	61.65	10	04/09/11	Bailed dry	56.97	Dry	42	N/A	2	7.74	2540	12.61	539.70	5.95
TMW30	2	46.65	10	04/08/11	12-volt pump	38.72	41.85	35	N/A	22	7.60	2210	12.45	2.74	6.68
TMW31D	2	107.03	30	04/14/11	Low flow	35.53	36.03	39	250	3.17	7.66	2500	12.12	2.02	1.29
TMW31S	2	62.85	10	04/06/11	12-volt pump	35.46	Dry	32	N/A	14	7.17	2870	13.04	213.40	4.14
TMW32	2	139.1	20	04/14/11	Low flow	38.85	39.61	50	100	3.17	8.74	3050	13.39	0.74	0.10
TMW33	2	60.65	20	04/11/11	12-volt pump	43.50	Dry	30	NA	24	7.04	9730	15.59	23.17	3.02
TMW34	2	60.01	20	04/11/11	Low flow	45.60	45.84	42	300	4.91	7.16	6000	14.86	0.60	1.06
TMW35	2	57.31	20	04/14/11	Low flow	43.44	44.10	30	200	3.5	7.27	4980	14.88	1.02	0.28
TMW36	2	154.35	20	04/11/11	Bennett pump	25.40	Dry	42	N/A	46	8.47	2840	12.88	53.71	4.82
TMW37	2	110.7	20	04/12/11	Bennett pump	44.76	Dry	36	NA	30	9.10	2410	12.91	22.72	4.54
MW01	4	54.8	20	04/08/11	Bailed dry	41.79	Dry	10	N/A	2.6	7.74	3670	14.26	340.3	3.07
MW02	2	49.45	10	04/08/11	Bailed dry	38.56	Dry	20	N/A	2.5	7.11	2280	14.63	366.5	3.96
MW03	2	56.2	10	04/11/11	Low flow	46.17	46.65	47	100	1.25	7.27	5000	14.1	0.27	0.16
MW18D	2	59.9	10	04/11/11	Low flow	43.08	43.75	40	80	0.85	7.26	7900	12.32	65.1	1.97
MW18S	2	38.28	10						Dry						
MW20	2	59.4	10	04/12/11	Low flow	44.87	45.92	28	300	4	6.75	1880	13.97	0.01	0.81

Table 2-2: April 2011 Groundwater Purge Records

Well ID	Casing Dia. (in)	Well TD (ft-btoc)	Screen Length (ft)	Date	Purge Method	Start DTW (ft-btoc)	End DTW (ft-btoc)	Purge Time (min)	Average Flow Rate (mL/min)	Purge Volume (gals)	pH	Cond. (uS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)
MW22D	2	58.7	10	04/12/11	Low flow	41.58	41.88	50	250	3.3	7.07	4990	15.66	0.37	0.06
MW22S	2	43.54	10	04/06/11	Bailed dry	41.47	Dry	20	N/A	0.75	7.4	4270	14.52	>1100	5.31
SMW01	2	52.15	20	04/13/11	Low flow	27.71	30.15	50	160	2.21	7.87	1980	12.51	1.57	0.81

Dia.: Diameter
 in: Inches
 TD: Total Depth
 ft: Feet
 btoc: Below Top of Casing
 DTW: Depth to Water
 min: Minutes
 mL/min: Milliliters per Minute
 gals: Gallons
 Cond.: Conductivity
 uS/cm: MicroSiemens per Centimeter
 Temp. (C): Temperature in Celsius
 NTU: Nephelometric Turbidity Units
 DO: Dissolved Oxygen
 mg/L: Milligrams per Liter
 ZIST: Zone Isolation System Technology
 N/A: Not Applicable

Table 2-3: October 2011 Groundwater Purge Records

Well ID	Casing Dia. (in)	Well TD (ft-btoc)	Screen Length (ft)	Date	Purge Method	Start DTW (ft-btoc)	End DTW (ft-btoc)	Purge Time (min)	Average Flow Rate (mL/min)	Purge Volume (gals)	pH	Cond. (uS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)
CMW02	2	37.9	10	10/11/11	Low flow	15.75	15.75	25	200	1.33	8.35	768	10.81	0.21	0.16
CMW04	2	137.91	20	10/14/11	Low flow	46.14	46.15	24	200	1.28	8.25	5140	13.43	0.24	0.24
CMW07	2	66.6	20	10/14/11	Low flow	41.41	41.45	23	100	1.3	7.83	1510	16.40	0.10	0.43
CMW10	2	73.1	20	10/12/11	Bailed dry	64.79	70.28	44	N/A	5.5	11.49	5660	12.19	39.6	6.04
CMW14	2	96.75	10	10/11/11	ZIST, pump dry	30.6	57.91	63	100	11.5	12.3	5820	13.36	6.19	3.14
CMW17	2	54.24	20	10/11/11	12-volt pump	19.5	Dry	26	N/A	15	8.89	1057	11.90	750.00	6.53
CMW18	2	54.1	20	10/12/11	Low flow	41.44	41.71	40	200	2.13	7.21	829	13.55	0.35	4.6
CMW19	2	51.3	15	10/13/11	ZIST low flow	25.41	25.89	50	50	0.67	9.21	1350	17.51	90.16	0.95
CMW22	2	120.23	20	10/11/11	Bailed dry	114.49	Dry	39	N/A	2.25	8.42	705	12.30	137.00	2.27
CMW23	2	106.6	20	10/11/11	Bailed dry	97.16	Dry	46	N/A	2.8	8.34	6110	11.63	93.1	2.56
CMW24	2	262.34	30	10/13/11	Low flow	45.32	51.28	24	80	2	8.70	2810	14.39	0.25	1.17
CMW25	2	98.78	25	10/14/11	Low flow	37.36	37.4	24	150	2.2	8.78	1075	14.99	32.63	0.78
KMW09	2	72.9	10	10/11/11	Low flow	40.41	40.41	49	100	1.30	7.50	3530	13.75	0.62	0.28
KMW10	2	171.02	10	10/11/11	Bailed dry	166.72	Dry	20	N/A	3.00	7.32	941	13.19	16.13	5.14
KMW11	2	57.44	20	10/13/11	Low flow	32.46	33.11	50	70	1.05	8.57	1020	12.86	0.3	1.30
KMW12	2	75.49	20	10/11/11	Bennett pump	49.06	Dry	25	N/A	22.00	7.63	3750	11.30	3.06	2.63
EMW01	2	120.7	15	10/15/11	Low flow	108.18	108.86	32	40	0.34	8.75	8150	13.48	3.08	0.47
EMW02	2	108.4	15	10/13/11	Besst pump	74	76.27	9	100	18.5	8.18	6860	15.56	0.01	1.75
EMW03	2	92.9	15	10/17/11	Low flow	36.81	41.24	40	100	1.29	9.97	5777	14.48	0.00	0.30
EMW04	2	115	15	10/11/11	Bennett pump	100.16	114.00	19	N/A	5	7.54	1102	13.3	16.13	1.68
FW31	4	52	40	10/13/11	12-volt pump	41.88	Dry	16	N/A	12	8.25	2363	12.7	8.78	3.49
FW35	4	32.15	20	10/12/11	12-volt pump	23.17	Dry	10	NA	10	7.18	4060	12	56.1	1.16
TMW01	2	61.23	15	10/17/11	Low flow	36.59	37.12	21	250	2.1	1.55	2900	13.91	0.26	0.07
TMW02	2	84.09	14	10/18/11	Low flow	55.46	56.25	18	110	1.3	8.02	4470	12.86	0	0.1
TMW03	2	72.06	20	10/14/11	Low flow	56.9	57.1	22	150	0.88	7.7	4400	15.05	0.18	0.26
TMW04	2	72.36	20	10/14/11	Low flow	56.4	56.86	18	180	1.5	7.77	4000	13.96	1.51	2.13
TMW06	2	57.24	10	10/13/11	Low flow	46.98	48.05	38	130	1.44	7.53	4160	14.71	0.18	0.38
TMW07	2	67.37	10	10/13/11	Bailed dry	47.26	Dry	31	N/A	5	7.74	5150	13.57	20.9	3.72
TMW08	2	62.41	30	10/13/11	Low flow	36.64	36.75	31	130	7.1	7.27	1630	13.18	25.24	0.27
TMW10	2	61.8	30	10/18/11	Low flow	37.41	37.78	35	100	0.93	7.43	8710	14.66	0.78	1.15
TMW11	2	82.68	25	10/17/11	Low flow	66.09	66.74	60	200	3.2	7.61	2280	13.95	1.66	2.61
TMW13	2	73.78	10	10/17/11	Low flow	59.78	60.19	30	240	2.6	7.61	2330	13.52	0.49	0.51
TMW14A	2	112.2	15	10/17/11	ZIST low flow	63.08	63.09	48	60	0.77	8.66	1800	17.63	0.62	0.68
TMW15	2	76.65	15	10/18/11	Low flow	63.94	64.28	40	250	2.67	7.72	2210	13.19	0.00	3.21
TMW16	2	142.2	15	10/12/11	Bennett pump	55.31	Dry	53	N/A	33	8.41	2074	13.2	45.3	0.92
TMW17	2	130.45	15	10/18/11	Low flow	61.88	74.2	15	40	2.7	9.4	1850	17.8	1.38	0.21
TMW18	2	160.7	10	10/11/11	Bennett pump	54.35	Dry	30	N/A	23	9.60	2677	13.3	4.5	1.03

Table 2-3: October 2011 Groundwater Purge Records

Well ID	Casing Dia. (in)	Well TD (ft-btoc)	Screen Length (ft)	Date	Purge Method	Start DTW (ft-btoc)	End DTW (ft-btoc)	Purge Time (min)	Average Flow Rate (mL/min)	Purge Volume (gals)	pH	Cond. (uS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)
TMW19	2	187.97	15	10/12/11	Bennet pump	42.14	Dry	80	N/A	31	8.18	2934	13	12	0.90
TMW21	2	61.43	10	10/11/11	Low flow	49.54	52.83	15	60	1.5	7.68	2640	15.65	4.0	0.90
TMW22	2	65.23	10	10/11/11	Bailed dry	48.65	Dry	30	NA	5	7.64	3590	13.17	452.8	2.22
TMW23	2	59.57	10	10/17/11	Bailed dry	45.57	Dry	50	N/A	5.1	7.84	3310	12.49	245.60	2.55
TMW24	2	55.41	10	10/17/11	Low flow	38.92	45.30	75	200	3.45	7.75	3880	13.75	0.83	1.09
TMW25	2	55	10	10/12/11	Low flow	39.08	43.3	17	170	2	7.63	3770	12.91	5.56	0.16
TMW26	2	58.24	10	10/13/11	Low flow	26.58	29.16	50	200	2.53	7.89	3590	12.07	0.96	1.58
TMW27	2	73.26	10	10/15/11	Low flow	28.04	28.84	33	100	0.88	8.07	1510	14.95	0.79	0.16
TMW28	2	50.3	10	10/12/11	Low flow	18.48	19.81	24	160	2.1	7.34	1440	12	1.04	1.01
TMW29	2	61.65	10	10/18/11	Bailed dry	57.18	Dry	24	N/A	2.5	7.64	2520	11.48	100.20	2.30
TMW30	2	46.65	10	10/13/11	12-volt pump	39.21	39.21	33	N/A	30	7.63	2290	12.7	5.13	6.55
TMW31D	2	107.03	30	10/17/11	Low flow	36.02	36.44	35	250	2.38	7.73	2654	14.06	0.00	1.05
TMW31S	2	62.85	10	10/13/11	12-volt pump	35.84	37.14	13	N/A	11	7.45	2941	13.3	243.00	3.65
TMW32	2	139.1	20	10/17/11	Low flow	38.59	38.72	50	90	1.11	8.46	3531	16.44	0.98	0.26
TMW33	2	60.65	20	10/14/11	12-volt pump	43.48	Dry	12	NA	12	7.20	1112	15.6	559.00	1.76
TMW34	2	60.01	20	10/18/11	Low flow	45.66	45.81	30	160	1.6	7.18	6240	16.71	2.34	0.08
TMW35	2	57.31	20	10/18/11	Low flow	43.59	43.97	40	200	2.17	7.54	4464	14.93	2.17	0.20
TMW36	2	154.35	20	10/14/11	Bennett pump	25.96	Dry	63	N/A	56	8.26	3020	13.4	5.70	0.71
TMW37	2	110.7	20	10/14/11	Bennett pump	44.84	Dry	25	N/A	36	8.31	2344	13.3	6.40	0.80
TMW38	2	115.02	40	10/19/11	Bennett pump	46.98	Dry	174	N/A	68	8.69	2532	13.6	740.00	0.44
TMW39D	2	102.77	30	10/19/11	Low flow	34.61	34.61	27	400	2.88	7.76	2620	13.67	2.58	0.27
TMW40D	2	158.13	20	10/19/11	Low flow	31.00	31.11	21	200	4.39	8.30	3120	14.19	1.42	0.78
TMW40S	2	62	10	10/17/11	Bailed	59.66	59.66	50	N/A	2	10.84	3050	13	>1000	2.14
TMW41	2	67.8	10	10/17/11	12-volt pump	40.83	Dry	24	N/A	16	7.97	3820	12.9	162.00	3.33
TMW48	2	93.55	20	10/19/11	Low flow	34.48	34.50	30	450	3.36	7.43	2490	12.93	3.06	2.77
TMW49	2	62.17	20	10/18/11	12-volt pump	42.73	42.71	43	N/A	28	7.87	2756	12.4	155.00	6.37
MW01	4	54.8	20	10/11/11	Bailed dry	41.81	Dry	23	N/A	3.25	7.9	3710	14.87	244.5	4.88
MW02	2	49.45	10	10/11/11	Bailed dry	38.72	Dry	18	N/A	2.25	6.88	2390	14.96	175.8	3.9
MW03	2	56.2	10	10/17/11	Low flow	45.92	46.51	33	120	1.5	7.34	4940	14.64	0.37	0.09
MW18D	2	59.9	10	10/14/11	Low flow	42.92	43.92	30	90	0.7	7.82	7950	14.26	1.62	0.13
MW20	2	59.4	10	10/14/11	Low flow	44.94	45.35	28	100	1	6.88	1810	18.26	0.4	1.54
MW22D	2	58.7	10	10/14/11	Low flow	41.8	42.04	40	200	2.1	7.52	5518	16.12	0.41	0.28
MW22S	2	43.54	10	10/11/11	Bailed dry	43.54	Dry	20	N/A	0.75	6.95	4290	15.47	738.3	3.65
SMW01	2	52.15	20	10/14/11	Low flow	28.86	31.01	15	150	3.4	7.82	2010	14.19	1.53	0.74

Dia.: Diameter
in: Inches
TD: Total Depth
ft: Feet

Table 2-3: October 2011 Groundwater Purge Records

Well ID	Casing Dia. (in)	Well TD (ft-btoc)	Screen Length (ft)	Date	Purge Method	Start DTW (ft-btoc)	End DTW (ft-btoc)	Purge Time (min)	Average Flow Rate (mL/min)	Purge Volume (gals)	pH	Cond. (uS/cm)	Temp. (C)	Turbidity (NTU)	DO (mg/L)
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btoc: Below Top of Casing
DTW: Depth to Water
min: Minutes
mL/min: Milliliters per Minute
gals: Gallons
Cond.: Conductivity
uS/cm: MicroSiemens per Centimeter
Temp. (C): Temperature in Celsius
NTU: Nephelometric Turbidity Units
DO: Dissolved Oxygen
mg/L: Milligrams per Liter
ZIST: Zone Isolation System Technology
N/A: Not Applicable

Table 4-1: April 2010-October 2011 Northern Area Alluvial Groundwater Elevations

Well ID	TOC ft-msl	5 & 6-Apr-10		22 & 23-Jul-10		5 to 13-Oct-10		19-Jan-11		1-Apr-11		11-Jul-11		10-Oct-10	
		DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl
FW31	6832.49	41.38	6791.11	41.49	6791.00	41.57	6790.92	41.51	6790.98	41.6	6790.89	41.73	6790.76	41.84	6790.65
FW35	6711.11	19.07	6692.04	20.78	6690.33	*21.29	6689.82	20.58	6690.53	20.75	6690.36	22.3	6688.81	23.15	6687.96
MW01	6685.94	41.86	6644.08	41.99	6643.95	41.97	6643.97	41.79	6644.15	42.16	6643.78	41.76	6644.18	41.89	6644.05
MW02	6685.22	38.72	6646.50	38.38	6646.84	38.48	6646.74	38.52	6646.70	38.62	6646.60	38.63	6646.59	38.75	6646.47
MW03	6689.53	45.80	6643.73	45.98	6643.55	45.93	6643.60	45.71	6643.82	46.12	6643.41	45.88	6643.65	45.88	6643.65
MW18D	6686.32	42.94	6643.38	42.92	6643.40	42.96	6643.36	43.02	6643.30	43.03	6643.29	42.8	6643.52	42.91	6643.41
MW20	6687.67	44.73	6642.94	44.89	6642.78	44.91	6642.76	44.72	6642.95	44.94	6642.73	44.91	6642.76	44.99	6642.68
MW22D	6684.55	41.46	6643.09	41.67	6642.88	41.88	6642.67	41.49	6643.06	41.75	6642.80	41.71	6642.84	41.80	6642.75
MW22S	6684.69	41.40	6643.29	41.58	6643.11	41.66	6643.03	41.42	6643.27	41.64	6643.05	41.57	6643.12	41.65	6643.04
MW23	6654.50													14.45	6640.05
MW24	6657.08													19.41	6637.67
SMW01	6669.94	29.16	6640.78	28.77	6641.17	*28.13	6641.81	27.46	6642.48	27.8	6642.14	28.41	6641.53	28.79	6641.15
TMW01	6711.84	35.96	6675.88	36.23	6675.61	35.96	6675.88	35.77	6676.07	36.21	6675.63	36.36	6675.48	36.59	6675.25
TMW03	6702.43	56.78	6645.65	56.89	6645.54	*56.94	6645.49	56.75	6645.68	56.91	6645.52	56.81	6645.62	56.89	6645.54
TMW04	6700.86	56.26	6644.60	56.37	6644.49	*56.32	6644.54	56.24	6644.62	56.42	6644.44	56.31	6644.55	56.35	6644.51
TMW06	6690.63	46.81	6643.82	47.01	6643.62	46.95	6643.68	46.74	6643.89	47.11	6643.52	46.95	6643.68	46.96	6643.67
TMW07	6690.47	47.22	6643.25	47.93	6642.54	47.42	6643.05	47.54	6642.93	47.27	6643.20	47.8	6642.67	47.27	6643.20
TMW08	6680.31	36.44	6643.87	36.57	6643.74	*36.68	6643.63	36.33	6643.98	36.68	6643.63	36.58	6643.73	36.45	6643.86
TMW10	6680.04	36.89	6643.15	37.16	6642.88	37.23	6642.81	36.96	6643.08	37.24	6642.80	37.23	6642.81	37.31	6642.73
TMW11	6718.28	65.86	6652.42	65.62	6652.66	*65.62	6652.66	65.55	6652.73	65.64	6652.64	65.87	6652.41	66.04	6652.24
TMW13	6707.49	59.71	6647.78	59.77	6647.72	*59.69	6647.80	59.54	6647.95	59.59	6647.90	59.72	6647.77	59.75	6647.74
TMW15	6713.89	63.85	6650.04	63.80	6650.09	63.67	6650.22	63.57	6650.32	63.57	6650.32	63.82	6650.07	63.88	6650.01
TMW21	6695.14	50.41	6644.73	50.56	6644.58	50.68	6644.46	50.45	6644.69	50.62	6644.52	50.61	6644.53	50.60	6644.54
TMW22	6691.74	48.76	6642.98	48.92	6642.82	48.88	6642.86	48.61	6643.13	48.94	6642.80	45.82	6645.92	49.12	6642.62
TMW23	6687.66	45.63	6642.03	45.73	6641.93	45.68	6641.98	45.39	6642.27	45.74	6641.92	45.57	6642.09	45.50	6642.16
TMW24	6680.42	39.12	6641.30	39.30	6641.12	39.21	6641.21	38.82	6641.60	39.11	6641.31	38.37	6642.05	38.86	6641.56
TMW25	6672.88	39.18	6633.70	39.29	6633.59	**	**	38.86	6634.02	39.12	6633.76	39.06	6633.82	39.05	6633.83
TMW26	6677.71	27.68	6650.03	26.64	6651.07	*26.71	6651.00	26.14	6651.57	26.3	6651.41	26.27	6651.44	26.47	6651.24
TMW27	6668.13	28.06	6640.07	28.17	6639.96	*28.12	6640.01	27.75	6640.38	27.69	6640.44	27.79	6640.34	28.02	6640.11
TMW28	6689.17	16.36	6672.81	18.01	6671.16	*17.5	6671.67	17.55	6671.62	17.68	6671.49	18.31	6670.86	18.41	6670.76
TMW29	6702.88	57.03	6645.85	57.15	6645.73	57.07	6645.81	56.99	6645.89	57.07	6645.81	57.08	6645.80	57.14	6645.74
TMW31S	6710.20	35.22	6674.98	35.48	6674.72	35.25	6674.95	34.98	6675.22	35.46	6674.74	35.58	6674.62	35.80	6674.40
TMW33	6686.60	43.63	6642.97	43.72	6642.88	43.46	6643.14	43.14	6643.46	43.45	6643.15	43.29	6643.31	43.39	6643.21
TMW34	6687.29	45.10	6642.19	45.32	6641.97	45.28	6642.01	45.42	6641.87	45.61	6641.68	45.57	6641.72	45.65	6641.64
TMW35	6686.52	43.21	6643.31	43.42	6643.10	43.49	6643.03	43.28	6643.24	43.53	6642.99	43.38	6643.14	43.51	6643.01
TMW39S	6708.61													37.53	6671.08
TMW40S	6706.40													59.65	6646.75
TMW41	6705.21													41.77	6663.44
Wingate89	6663.69	NM	NM	15.15	6648.54	***	***	15.10	6648.59	14.92	6648.77	15.09	6648.60	15.27	6648.42
Wingate90	6656.49	13.32	6643.17	13.67	6642.82	***	***	13.09	6643.40	13.01	6643.48	13.2	6643.29	13.25	6643.24

Table 4-1: April 2010-October 2011 Northern Area Alluvial Groundwater Elevations

Well ID	TOC ft-msl	5 & 6-Apr-10		22 & 23-Jul-10		5 to 13-Oct-10		19-Jan-11		1-Apr-11		11-Jul-11		10-Oct-10	
		DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl
Wingate91	6659.74	14.16	6645.58	14.35	6645.39	***	***	13.77	6645.97	13.66	6646.08	13.89	6645.85	14.09	6645.65

NM: Not Measured
 btoc: Below Top of Casing
 msl: Mean Sea Level
 DTW: Depth to Water
 TOC: Top of Casing

ft: Feet
NOTES: * DTW measurement data from Sampling Data Form. The field book containing these DTW measurements was lost during the October 2010 field work
 ** DTW measurements is not entered because it does not correlate with previous and January 2011 measurements
 *** The field book containing these DTW measurements was lost during the October 2010 field work.
 ■ Indicates that these wells were drilled in the summer of 2011

Table 4-2: April 2010-October 2011 Northern Area Bedrock Groundwater Elevations

Well ID	TOC ft-msl	5 & 6-Apr-10		22 & 23-Jul-10		5 to 13-Oct-10		19-Jan-11		1-Apr-11		11-Jul-11		10-Oct-10	
		DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl
East Landfill Monitoring Wells (assumed completed in the Painted Desert Member in silt/claystone with extremely low hydraulic conductivity)															
EMW01	6718.38	80.28	6638.10	81.75	6636.63	80.40	6637.98	80.88	6637.50	80.02	6638.36	81.04	6637.34	79.94	6638.44
EMW02	6702.49	30.63	6671.86	31.80	6670.69	31.73	6670.76	31.79	6670.70	31.31	6671.18	32.03	6670.46	31.72	6670.77
EMW03	6701.09	28.72	6672.37	29.11	6671.98	28.95	6672.14	28.84	6672.25	28.92	6672.17	29.35	6671.74	29.10	6671.99
EMW04	6708.30	101.04	6607.26	106.81	6601.49	102.56	6605.74	107.09	6601.21	102.73	6605.57	105.49	6602.81	100.15	6608.15
Northern Area Bedrock Monitoring Wells (assumed completed in the Painted Desert Member in a discontinuous sandstone lens)															
TMW02	6705.35	55.01	6650.34	55.22	6650.13	55.20	6650.15	55.06	6650.29	55.33	6650.02	55.27	6650.08	55.38	6649.97
Northern Area Bedrock Monitoring Wells (assumed screened in the Painted Desert Member in a sandstone unit)															
TMW14A	6723.54	62.05	6661.49	62.24	6661.30	62.22	6661.32	62.24	6661.30	62.70	6660.84	62.88	6660.66	62.95	6660.59
TMW16	6714.15	54.91	6659.24	55.02	6659.13	54.94	6659.21	54.86	6659.29	55.01	6659.14	55.18	6658.97	55.28	6658.87
TMW17	6719.89	61.47	6658.42	61.25	6658.64	61.22	6658.67	63.75	6656.14	61.45	6658.44	61.6	6658.29	61.75	6658.14
TMW18	6713.49	54.17	6659.32	54.30	6659.19	54.15	6659.34	54.07	6659.42	54.11	6659.38	54.33**	**	51.25	6662.24
TMW19	6700.52	42.02	6658.50	42.22	6658.30	41.99	6658.53	41.80	6658.72	42.00	6658.52	42.11	6658.41	42.11	6658.41
TMW30	6714.59	38.58	6676.01	38.85	6675.74	38.10	6676.49	38.43	6676.16	38.80	6675.79	39.14	6675.45	39.17	6675.42
TMW31D	6710.44	35.10	6675.34	35.35	6675.09	35.09	6675.35	35.21	6675.23	35.61	6674.83	35.78	6674.66	36.00	6674.44
TMW32	6709.31	38.27	6671.04	38.46	6670.85	38.27	6671.04	38.47	6670.84	38.70	6670.61	38.9	6670.41	38.51	6670.80
TMW36	6699.04	25.09	6673.95	25.36	6673.68	*25.36	6673.68	25.21	6673.83	25.43	6673.61	25.7	6673.34	26.01	6673.03
TMW37	6713.09	44.45	6668.64	44.54	6668.55	44.44	6668.65	44.61	6668.48	44.79	6668.30	45	6668.09	44.78	6668.31
TMW38	6706.79													47.35	6659.44
TMW39D	6708.61													33.22	6675.39
TMW40D	6706.15													30.91	6675.24
TMW48	6709.84													34.40	6675.44
TMW49	6714.71													42.68	6672.03

NM: Not Measured
 btoc: Below Top of Casing
 msl: Mean Sea Level
 DTW: Depth to Water
 TOC: Top of Casing

ft: Feet

NOTES: * DTW measurement data from Sampling Data Form. The field book containing these DTW measurements was lost during the October 2010 field work.

** This value was transcribed incorrectly and was not used to model groundwater elevations for Oct 2011

█ Indicates that these wells were drilled in the summer of 2011

Table 4-3: April 2010-October 2011 OB/OD Area Groundwater Elevations

Well ID	TOC ft-msl	5 & 6-Apr-10		22 & 23-Jul-10		4-Oct-10		19-Jan-11		1-Apr-11		11-Jul-11		10-Oct-10	
		DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl	DTW ft-btoc	Water Level ft-msl
CMW02	7258.00	12.55	7245.45	10.90	7247.10	13.50	7244.50	NM	NM	12.81	7245.19	15.78	7242.22	15.68	7242.32
CMW04	7251.15	45.10	7206.05	45.10	7206.05	45.08	7206.07	NM	NM	45.56	7205.59	45.95	7205.20	46.13	7205.02
CMW07	7235.16	39.38	7195.78	38.74	7196.42	39.08	7196.08	NM	NM	39.78	7195.38	40.26	7194.90	41.13	7194.03
CMW10	7179.31	64.81	7114.50	66.87	7112.44	63.70	7115.61	NM	NM	64.04	7115.27	67.92	7111.39	64.88	7114.43
CMW14	7153.06	30.10	7122.96	27.77	7125.29	27.43	7125.63	NM	NM	29.93	7123.13	30.52	7122.54	30.59	7122.47
CMW17	7145.18	10.44	7134.74	17.00	7128.18	17.51	7127.67	NM	NM	20.77	7124.41	22.11	7123.07	19.54	7125.64
CMW18	7158.24	31.39	7126.85	38.28	7119.96	39.42	7118.82	NM	NM	40.31	7117.93	40.94	7117.30	41.41	7116.83
CMW19	7129.85	25.03	7104.82	22.39	7107.46	23.29	7106.56	NM	NM	23.30	7106.55	25.19	7104.66	25.88	7103.97
CMW20	7194.68	4.15	7190.53	3.00	7191.68	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CMW21	7088.19	Buried	Buried	Buried	Buried	Buried	Buried	Buried	Buried	Buried	Buried	Buried	Buried	Buried	Buried
CMW22	7081.94	114.52	6967.42	114.65	6967.29	114.63	6967.31	NM	NM	115.56	6966.38	114.62	6967.32	114.51	6967.43
CMW23	7035.58	97.13	6938.45	97.38	6938.20	97.32	6938.26	NM	NM	97.31	6938.27	97.38	6938.20	97.21	6938.37
CMW24	7099.68	45.90	7053.78	45.75	7053.93	45.65	7054.03	NM	NM	47.47	7052.21	45.63	7054.05	45.32	7054.36
CMW25	7007.52	36.49	6971.03	36.28	6971.24	36.31	6971.21	NM	NM	37.18	6970.34	**	**	37.35	6970.17
FW24	6999.19	NM	NM	24.05	6975.14	*	*	NM	NM	NM	NM	NM	NM	NM	NM
FW38	7172.02	8.21	7163.81	Dry	Dry	Dry	Dry	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry
KMW09	7187.93	39.15	7148.78	39.29	7148.64	39.50	7148.43	NM	NM	39.91	7148.02	40.35	7147.58	40.39	7147.54
KMW10	7131.38	166.70	6964.68	166.73	6964.65	166.71	6964.67	NM	NM	166.90	6964.48	166.75	6964.63	166.72	6964.66
KMW11	7108.78	31.33	7077.45	36.83	7071.95	31.27	7077.51	NM	NM	31.51	7077.27	32.06	7076.72	32.42	7076.36
KMW12	7193.08	48.26	7144.82	48.66	7144.42	47.59	7145.49	NM	NM	48.71	7144.37	49.30	7143.78	49.07	7144.01

NM: Not Measured
 btoc: Below Top of Casing
 ft-msl: Mean Sea Level
 DTW: Depth to Water
 TOC: Top of Casing

ft: Feet

NOTES: * DTW measurement data from Sampling Data Form. The field book containing these DTW measurements was lost during the October 2010 field work

** This value was transcribed incorrectly and was not used to model groundwater elevations for Oct 2011

Indicates that these wells were drilled in the summer of 2011

Table 4-4: April 2010-October 2011 USGS Piezometer Groundwater Elevations

ID	Ground Elevation (msl)	Stick-Up (ft)	TOC Elevation (msl)	5-Apr-10		22-Jul-10		4-Oct-10		19-Jan-11		4-Apr-11		11-Jul-11		10-Oct-11	
				DTW (ft-btoc)	Water Level (msl)	DTW (ft-btoc)	Water Level (msl)	DTW (ft-btoc)	Water Level (msl)	DTW (ft-btoc)	Water Level (msl)	DTW (ft-btoc)	Water Level (msl)	DTW (ft-btoc)	Water Level (msl)	DTW (ft-btoc)	Water Level (msl)
PZ01	6674.71	2.581	6677.29	24.04	6650.67	24.16	6650.55	24.00	6650.71	23.58	6651.13	26.45	6650.84	26.39	6650.90	26.36	6650.93
PZ02	6672.50	2.454	6674.95	21.23	6651.27	21.25	6651.25	20.43	6652.07	20.16	6652.34	22.52	6652.43	22.52	6652.43	22.70	6652.25
PZ03	6676.86	2.581	6679.44	24.24	6652.62	24.27	6652.59	24.18	6652.68	23.49	6653.37	26.02	6653.42	26.07	6653.37	26.22	6653.22
PZ04	6674.17	2.506	6676.68	25.44	6648.73	25.63	6648.54	25.44	6648.73	25.06	6649.11	27.51	6649.17	27.58	6649.10	27.78	6648.90
PZ05	6671.53	2.623	6674.15	17.38	6654.15	17.95	6653.58	17.64	6653.89	16.86	6654.67	19.37	6654.78	19.57	6654.58	20.12	6654.03
PZ06	6673.29	2.751	6676.04	15.35	6657.94	17.38	6655.91	16.44	6656.85	15.26	6658.03	17.86	6658.18	19.51	6656.53	19.04	6657.00
PZ07	6682.38	2.150	6684.53	3.13	6679.25	9.66	6672.72	8.26	6674.12	9.89	6672.49	12.85	6671.68	13.66	6670.87	13.09	6671.44
PZ08	6684.11	2.697	6686.81	6.38	6677.73	13.48	6670.63	11.95	6672.16	13.22	6670.89	16.41	6670.40	17.49	6669.32	16.04	6670.77
PZ09	6651.12	2.495	6653.61	12.65	6638.47	13.76	6637.36	12.96	6638.16	12.11	6639.01	14.34	6639.27	15.30	6638.31	15.36	6638.25
PZ10	6654.83	2.436	6657.27	16.48	6638.35	17.59	6637.24	16.83	6638.00	15.93	6638.90	19.18	6638.09	19.17	6638.10	19.21	6638.06

BTOC: Below Top of Casing
 BGS: Below Ground Surface
 MSL: Mean Sea Level
 DTW: Depth to Water
 TOC: Top of Casing
 ft: Feet

Notes: In previous reports, groundwater measurements were obtained from the USGS. Groundwater elevation measurements were calculated from the ground elevation. As of April 2011, measurements were made in the field with water level sounders, and groundwater elevations were calculated from the top of the casing.

Table 5-1: April 2011 Nitrate and Nitrite Detected

ANALYTICAL METHOD 300.0												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW02	Nitrate	14797-55-8	0.30	0.048	3.0	mg/L				10	MCL	No
CMW10	Nitrate	14797-55-8	0.30	0.048	3.7	mg/L				10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.21	mg/L	J	J	J	1	MCL	No
CMW14	Nitrate	14797-55-8	0.30	0.048	2.0	mg/L				10	MCL	No
CMW17	Nitrate	14797-55-8	0.30	0.048	2.0	mg/L				10	MCL	No
CMW18	Nitrate	14797-55-8	0.30	0.048	0.098	mg/L	J	J	J	10	MCL	No
CMW19	Nitrate	14797-55-8	0.30	0.048	0.095	mg/L	JH	J	J	10	MCL	No
CMW22	Nitrate	14797-55-8	0.30	0.048	0.089	mg/L	J	J	J	10	MCL	No
KMW09	Nitrate	14797-55-8	0.30	0.048	0.36	mg/L		J	J	10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.26	mg/L	J	J	J	1	MCL	No
KMW10	Nitrate	14797-55-8	0.30	0.048	9.2	mg/L				10	MCL	No
KMW11	Nitrate	14797-55-8	0.30	0.048	0.26	mg/L	J	J	J	10	MCL	No
Northern Area Monitoring Alluvial Wells												
FW31	Nitrate	14797-55-8	0.30	0.048	0.091	mg/L	J	J	J	10	MCL	No
FW35	Nitrate	14797-55-8	0.30	0.048	0.98	mg/L				10	MCL	No
MW01	Nitrate	14797-55-8	0.30	0.048	7.1	mg/L				10	MCL	No
MW02	Nitrate	14797-55-8	0.30	0.048	0.75	mg/L				10	MCL	No
MW03	Nitrate	14797-55-8	0.30	0.048	12	mg/L				10	MCL	Yes
MW20	Nitrate	14797-55-8	0.30	0.048	29	mg/L	H	J	J	10	MCL	Yes
	Nitrite	14797-65-0	0.30	0.054	4.9	mg/L	H	J	J	1	MCL	Yes
MW22D	Nitrate	14797-55-8	0.30	0.048	24	mg/L				10	MCL	Yes
MW22S	Nitrate	14797-55-8	0.30	0.048	26	mg/L		J	J	10	MCL	Yes
TMW01	Nitrate	14797-55-8	0.30	0.048	8.9	mg/L				10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.19	mg/L	J	J	J	1	MCL	No
TMW03	Nitrite	14797-65-0	0.30	0.054	3.1	mg/L				1	MCL	Yes
TMW04	Nitrate	14797-55-8	0.30	0.048	46	mg/L		J	J	10	MCL	Yes
TMW06	Nitrate	14797-55-8	0.30	0.048	21	mg/L				10	MCL	Yes
TMW07	Nitrate	14797-55-8	0.30	0.048	0.98	mg/L				10	MCL	No
TMW08	Nitrate	14797-55-8	0.30	0.048	5.0	mg/L				10	MCL	No
TMW10	Nitrate	14797-55-8	0.30	0.048	0.21	mg/L	J	J	J	10	MCL	No
TMW11	Nitrate	14797-55-8	0.30	0.048	3.5	mg/L		J	J	10	MCL	No
TMW13	Nitrate	14797-55-8	0.30	0.048	2.0	mg/L		J	J	10	MCL	No
TMW15	Nitrate	14797-55-8	0.30	0.048	1.6	mg/L				10	MCL	No

Table 5-1: April 2011 Nitrate and Nitrite Detected

ANALYTICAL METHOD 300.0												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
TMW21	Nitrate	14797-55-8	0.30	0.048	50	mg/L				10	MCL	Yes
	Nitrite	14797-65-0	0.30	0.054	0.83	mg/L				1	MCL	No
TMW22	Nitrate	14797-55-8	0.30	0.048	9.5	mg/L				10	MCL	No
TMW23	Nitrate	14797-55-8	0.30	0.048	33	mg/L		J	J	10	MCL	Yes
	Nitrite	14797-65-0	0.30	0.054	0.20	mg/L	J	J	J	1	MCL	No
TMW25	Nitrate	14797-55-8	0.30	0.048	0.80	mg/L				10	MCL	No
TMW29	Nitrate	14797-55-8	0.30	0.048	3.5	mg/L				10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.53	mg/L				1	MCL	No
TMW31S	Nitrate	14797-55-8	0.30	0.048	4.8	mg/L		J	J	10	MCL	No
TMW34	Nitrate	14797-55-8	0.30	0.048	47	mg/L				10	MCL	Yes
TMW35	Nitrate	14797-55-8	0.30	0.048	22	mg/L				10	MCL	Yes
Northern Area Monitoring Bedrock Wells												
EMW02	Nitrate	14797-55-8	0.30	0.048	0.20	mg/L	J	J	J	10	MCL	No
EMW03	Nitrate	14797-55-8	0.30	0.048	0.16	mg/L	J	J	J	10	MCL	No
EMW04	Nitrate	14797-55-8	0.30	0.048	3.1	mg/L				10	MCL	No
TMW02	Nitrate	14797-55-8	0.30	0.048	100	mg/L				10	MCL	Yes
TMW14A	Nitrate	14797-55-8	0.30	0.048	0.077	mg/L	J	J	J	10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.19	mg/L	J	J	J	1	MCL	No
TMW30	Nitrate	14797-55-8	0.050	0.0080	19	mg/L				10	MCL	Yes
TMW31D	Nitrate	14797-55-8	0.30	0.048	16	mg/L				10	MCL	Yes
TMW32	Nitrate	14797-55-8	0.30	0.048	1.4	mg/L				10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.22	mg/L	J	J	J	1	MCL	No
TMW36	Nitrate	14797-55-8	0.30	0.048	0.093	mg/L	J	J	J	10	MCL	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

mg/L: milligrams per Liter

H: Holding time has been exceeded

J: Estimated, but detected value

JH: Estimated, but detected value and holding time has been exceeded

MCL: U.S. EPA Maximum Contaminant Level

Table 5-2: October 2011 Nitrate and Nitrite Detected

ANALYTICAL METHOD 300.0												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW02	Nitrate	14797-55-8	0.30	0.048	3.1	mg/L				10	MCL	No
CMW10	Nitrate	14797-55-8	0.30	0.048	4.1	mg/L		J	J	10	MCL	No
CMW17	Nitrate	14797-55-8	0.30	0.048	2.4	mg/L				10	MCL	No
CMW18	Nitrate	14797-55-8	0.30	0.048	4.5	mg/L				10	MCL	No
CMW25	Nitrite	14797-65-0	0.30	0.054	0.27	mg/L	J	J	J	1	MCL	No
KMW10	Nitrate	14797-55-8	0.30	0.048	10	mg/L	H	J	J	10	MCL	No
KMW11	Nitrate	14797-55-8	0.30	0.048	0.21	mg/L	JH	J	J	10	MCL	No
KMW12	Nitrate	14797-55-8	0.30	0.048	0.51	mg/L				10	MCL	No
KMW12	Nitrite	14797-65-0	0.30	0.054	0.39	mg/L				1	MCL	No
Northern Area Alluvial Monitoring Wells												
FW31	Nitrate	14797-55-8	0.30	0.048	0.19	mg/L	J	J	J	10	MCL	No
FW31	Nitrite	14797-65-0	0.30	0.054	0.22	mg/L	J	J	J	1	MCL	No
FW35	Nitrate	14797-55-8	0.30	0.048	0.88	mg/L		J	J	10	MCL	No
MW01	Nitrate	14797-55-8	0.30	0.048	7.5	mg/L				10	MCL	No
MW02	Nitrate	14797-55-8	0.30	0.048	1.4	mg/L				10	MCL	No
MW03	Nitrate	14797-55-8	0.30	0.048	10	mg/L				10	MCL	No
MW18D	Nitrate	14797-55-8	0.30	0.048	0.18	mg/L	J	J	J	10	MCL	No
MW20	Nitrate	14797-55-8	0.30	0.048	21	mg/L				10	MCL	Yes
	Nitrite	14797-65-0	0.30	0.054	7.0	mg/L				1	MCL	Yes
MW22D	Nitrate	14797-55-8	0.30	0.048	28	mg/L				10	MCL	Yes
	Nitrite	14797-65-0	0.30	0.054	0.16	mg/L	J	J	J	1	MCL	No
MW22S	Nitrate	14797-55-8	0.30	0.048	25	mg/L				10	MCL	Yes
TMW01	Nitrate	14797-55-8	0.30	0.048	9.3	mg/L				10	MCL	No
TMW03	Nitrate	14797-55-8	0.30	0.048	160	mg/L				10	MCL	Yes
TMW03	Nitrite	14797-65-0	0.30	0.054	0.49	mg/L				1	MCL	No
TMW04	Nitrate	14797-55-8	0.30	0.048	49	mg/L				10	MCL	Yes
TMW06	Nitrate	14797-55-8	0.30	0.048	25	mg/L				10	MCL	Yes
TMW07	Nitrate	14797-55-8	0.30	0.048	9.2	mg/L		J	J	10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.56	mg/L		J	J	1	MCL	No
TMW08	Nitrate	14797-55-8	0.30	0.048	4.0	mg/L				10	MCL	No
TMW10	Nitrate	14797-55-8	0.30	0.048	0.25	mg/L	JH	J	J	10	MCL	No
TMW11	Nitrate	14797-55-8	0.30	0.048	4.8	mg/L	H	J	J	10	MCL	No
TMW13	Nitrate	14797-55-8	0.30	0.048	1.9	mg/L				10	MCL	No
TMW15	Nitrate	14797-55-8	0.30	0.048	3.3	mg/L	H	J	J	10	MCL	No

Table 5-2: October 2011 Nitrate and Nitrite Detected

ANALYTICAL METHOD 300.0												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
TMW21	Nitrate	14797-55-8	0.30	0.048	8.2	mg/L				10	MCL	No
TMW22	Nitrate	14797-55-8	0.30	0.048	11	mg/L				10	MCL	Yes
TMW23	Nitrate	14797-55-8	0.30	0.048	35	mg/L				10	MCL	Yes
TMW24	Nitrate	14797-55-8	0.30	0.048	0.16	mg/L	J	J	J	10	MCL	No
TMW25	Nitrate	14797-55-8	0.30	0.048	1.2	mg/L				10	MCL	No
TMW29	Nitrate	14797-55-8	0.30	0.048	4.0	mg/L				10	MCL	No
TMW31S	Nitrate	14797-55-8	0.30	0.048	8.4	mg/L				10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.13	mg/L	J	J	J	1	MCL	No
TMW34	Nitrate	14797-55-8	0.30	0.048	51	mg/L	H	J	J	10	MCL	Yes
TMW35	Nitrate	14797-55-8	0.30	0.048	23	mg/L	H	J	J	10	MCL	Yes
TMW39S	Nitrate	14797-55-8	0.30	0.048	9.8	mg/L	H	J	J	10	MCL	No
TMW40S	Nitrate	14797-55-8	0.30	0.048	28	mg/L				10	MCL	Yes
	Nitrite	14797-65-0	0.30	0.054	6.9	mg/L				1	MCL	Yes
TMW41	Nitrate	14797-55-8	0.30	0.048	5.7	mg/L	H	J	J	10	MCL	No
Northern Area Bedrock Monitoring Wells												
EMW04	Nitrate	14797-55-8	0.30	0.048	2.2	mg/L		J	J	10	MCL	No
TMW02	Nitrate	14797-55-8	0.30	0.048	110	mg/L	H	J	J	10	MCL	Yes
TMW14A	Nitrate	14797-55-8	0.30	0.048	17	mg/L				10	MCL	Yes
TMW17	Nitrate	14797-55-8	0.30	0.048	0.23	mg/L	JH	J	J	10	MCL	No
TMW30	Nitrate	14797-55-8	0.30	0.048	18	mg/L				10	MCL	Yes
TMW32	Nitrate	14797-55-8	0.30	0.048	1.2	mg/L				10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.27	mg/L	J	J	J	1	MCL	No
TMW37	Nitrate	14797-55-8	0.30	0.048	0.14	mg/L	JH	J	J	10	MCL	No
TMW39D	Nitrate	14797-55-8	0.30	0.048	9.4	mg/L		J	J	10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.62	mg/L		J	J	1	MCL	No
TMW40D	Nitrate	14797-55-8	0.30	0.048	2.8	mg/L				10	MCL	No
	Nitrite	14797-65-0	0.30	0.054	0.38	mg/L				1	MCL	No
TMW48	Nitrate	14797-55-8	0.30	0.048	20	mg/L		J	J	10	MCL	Yes
	Nitrite	14797-65-0	0.30	0.054	0.20	mg/L	J	J	J	1	MCL	No
TMW49	Nitrate	14797-55-8	0.30	0.048	8.4	mg/L				10	MCL	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

Table 5-2: October 2011 Nitrate and Nitrite Detected

ANALYTICAL METHOD 300.0												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

mg/L: milligrams per Liter

H: Holding time has been exceeded

J: Estimated, but detected value

JH: Estimated, but detected value and holding time has been exceeded

MCL: U.S. EPA Maximum Contaminant Level

Table 5-3: April 2011 Total Explosives Detected

ANALYTICAL METHOD 8330												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Well												
CMW04	Dinitrobenzene, 1,3-	99-65-0	0.20	0.025	3.3	ug/L	M			3.7	NC	No
CMW14	Dinitrobenzene, 1,3-	99-65-0	1.0	0.12	2.2	ug/L				3.7	NC	No
	Tetryl (Trinitrophenylmethylnitramine)	479-45-8	1.5	0.44	14	ug/L				150	NC	No
	Trinitrotoluene, 2,4,6-	118-96-7	1.0	0.090	1.7	ug/L				2.2	CA	No
CMW17	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.50	0.028	1.1	ug/L				0.61	CA	Yes
CMW18	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	0.20	0.023	1.7	ug/L		J	J	73	NC	No
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.20	0.023	1.8	ug/L		J	J	73	NC	No
CMW18	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	10	0.56	48	ug/L				0.61	CA	Yes
CMW18	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	2691-41-0	10	0.52	14	ug/L				1800	NC	No
CMW18	Trinitrotoluene, 2,4,6-	118-96-7	0.20	0.018	0.17	ug/L	J	J	J	2.2	CA	No
CMW19	Dinitrobenzene, 1,3-	99-65-0	0.44	0.056	11	ug/L		J	J	3.7	NC	Yes
CMW24	Dinitrobenzene, 1,3-	99-65-0	2.0	0.25	12	ug/L				3.7	NC	Yes
KMW09	Dinitrobenzene, 1,3-	99-65-0	2.0	0.25	12	ug/L	M			3.7	NC	Yes
Northern Area Monitoring Alluvial Wells												
MW01	Dinitrobenzene, 1,3-	99-65-0	0.20	0.025	0.26	ug/L	M	J	J	3.7	NC	No
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.20	0.023	0.13	ug/L	JM	J	J	73	NC	No
MW18D	Dinitrobenzene, 1,3-	99-65-0	6.7	0.83	40	ug/L	M			3.7	NC	Yes
MW22S	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.44	0.051	0.072	ug/L	JM	J	J	73	NC	No
	Nitrotoluene, p-	99-99-0	0.44	0.13	0.32	ug/L	JM	J	J	4.2	CA	No
SMW01	Dinitrobenzene, 1,3-	99-65-0	0.20	0.025	0.096	ug/L	J	J	J	3.7	NC	No
TMW03	Dinitrobenzene, 1,3-	99-65-0	0.20	0.025	0.036	ug/L	JM	J	J	3.7	NC	No
	Dinitrotoluene, 2,4-	121-14-2	0.10	0.030	0.35	ug/L		J	J	0.22	CA	Yes
	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	0.20	0.023	0.68	ug/L	M	J	J	73	NC	No
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.20	0.023	1.0	ug/L		J	J	73	NC	No
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	50	2.8	360	ug/L				0.61	CA	Yes
	Nitrobenzene	98-95-3	2.0	0.49	7.4	ug/L	M			3.4	NC	Yes
	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	2691-41-0	5.0	0.26	5.0	ug/L	J			1800	NC	No
TMW04	Trinitrobenzene, 1,3,5-	99-35-4	0.20	0.019	1.5	ug/L		J	J	1100	NC	No
	Dinitrotoluene, 2,4-	121-14-2	0.10	0.031	0.091	ug/L	J	J	J	0.22	CA	No
	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	0.20	0.023	1.8	ug/L				73	NC	No
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.20	0.023	2.2	ug/L				73	NC	No
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.51	0.029	17	ug/L	E	J	J	0.61	CA	Yes
Trinitrobenzene, 1,3,5-	99-35-4	0.20	0.019	6.4	ug/L	E	J	J	1100	NC	No	
TMW11	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.50	0.028	0.12	ug/L	J	J	J	0.61	CA	No
TMW23	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	11	0.63	50	ug/L				0.61	CA	Yes

Table 5-3: April 2011 Total Explosives Detected

ANALYTICAL METHOD 8330												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
TMW26	Dinitrobenzene, 1,3-	99-65-0	0.20	0.025	1.3	ug/L				3.7	NC	No
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.20	0.023	0.043	ug/L	JM	J	J	73	NC	No
Northern Area Monitoring Bedrock Wells												
EMW03	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.20	0.023	0.030	ug/L	JM	J	J	73	NC	No
	Nitrobenzene	98-95-3	0.20	0.049	0.089	ug/L	JM	J	J	3.4	NC	No
TMW14A	Dinitrobenzene, 1,3-	99-65-0	0.20	0.025	1.3	ug/L				3.7	NC	No
TMW18	Tetryl (Trinitrophenylmethylnitramine)	479-45-8	0.30	0.088	0.23	ug/L	J	J	J	150	NC	No
TMW19	Dinitrobenzene, 1,3-	99-65-0	0.20	0.025	0.48	ug/L				3.7	NC	No
	Trinitrobenzene, 1,3,5-	99-35-4	0.20	0.019	0.23	ug/L	M			1100	NC	No
TMW36	Dinitrobenzene, 1,3-	99-65-0	0.20	0.025	0.40	ug/L		J	J	3.7	NC	No
	Trinitrobenzene, 1,3,5-	99-35-4	0.20	0.019	0.072	ug/L	J	J	J	1100	NC	No
TMW37	Dinitrobenzene, 1,3-	99-65-0	0.20	0.025	0.76	ug/L				3.7	NC	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

E: The result exceeds the calibration range of gas chromatograph/mass spectrometry

J: Estimated, but detected value

JM: Estimated, but detected value and compound has been manually integrated

M: Compound has been manually integrated

CA: U.S. EPA Regional Screening Levels for carcinogenic (May 2011 and November 2011)

NC: U.S. EPA Regional Screening Levels for non-carcinogenic (May 2011 and November 2011)

Table 5-4: October 2011 Total Explosives Detected

ANALYTICAL METHOD 8330												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OB Area Monitoring Wells												
CMW17	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.10	0.030	1.8	ug/L				0.61	CA	Yes
	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	2691-41-0	0.10	0.030	0.20	ug/L	J	J	J	780	NC	No
CMW18	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	0.10	0.060	2.3	ug/L				30	NC	No
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.10	0.070	2.7	ug/L				30	NC	No
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.50	0.15	70.1	ug/L				0.61	CA	Yes
	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	2691-41-0	0.50	0.15	20.9	ug/L				780	NC	No
CMW23	Trinitrotoluene, 2,4,6-	118-96-7	0.10	0.091	0.24	ug/L				2.2	CA	No
CMW24	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	0.10	0.061	0.064	ug/L	J	J	J	30	NC	No
KMW09	Tetryl (Trinitrophenylmethylnitramine)	479-45-8	0.21	0.15	0.47	ug/L		J	J	63	NC	No
Northern Area Monitoring Alluvial Wells												
FW35	Trinitrotoluene, 2,4,6-	118-96-7	0.10	0.091	0.14	ug/L	J			2.2	CA	No
MW01	Trinitrotoluene, 2,4,6-	118-96-7	0.10	0.090	0.097	ug/L	J	J	J	2.2	CA	No
MW02	Trinitrotoluene, 2,4,6-	118-96-7	0.10	0.091	0.30	ug/L				2.2	CA	No
MW22S	Trinitrotoluene, 2,4,6-	118-96-7	0.10	0.090	0.34	ug/L				2.2	CA	No
TMW03	Dinitrobenzene, 1,3-	99-65-0	0.10	0.030	0.20	ug/L	J			1.5	NC	No
	Dinitrotoluene, 2,4-	121-14-2	0.10	0.030	0.36	ug/L				0.2	CA	Yes
	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	0.10	0.061	0.74	ug/L				30	NC	No
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.10	0.071	1.2	ug/L				30	NC	No
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	5.1	1.5	466	ug/L				0.61	CA	Yes
	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	2691-41-0	0.10	0.030	5.9	ug/L		J	J	780	NC	No
	Trinitrobenzene, 1,3,5-	99-35-4	0.10	0.061	0.51	ug/L				460	NC	No
TMW04	Dinitrotoluene, 2,4-	121-14-2	0.10	0.031	0.14	ug/L	J			0.2	CA	No
	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	0.10	0.062	1.5	ug/L				30	NC	No
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	0.10	0.072	2.2	ug/L				30	NC	No
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.10	0.031	2.3	ug/L				0.61	CA	Yes
	Trinitrobenzene, 1,3,5-	99-35-4	0.10	0.062	1.4	ug/L				460	NC	No
TMW11	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.10	0.031	0.14	ug/L	J			0.61	CA	No
TMW23	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	1.0	0.31	93.3	ug/L				0.61	CA	Yes
TMW31S	Trinitrotoluene, 2,4,6-	118-96-7	0.10	0.091	0.15	ug/L	J			2.2	CA	No
TMW41	Trinitrotoluene, 2,4,6-	118-96-7	0.10	0.091	0.11	ug/L	J			2.2	CA	No

Table 5-4: October 2011 Total Explosives Detected

ANALYTICAL METHOD 8330												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
Northern Area Monitoring Bedrock Wells												
TMW16	Trinitrotoluene, 2,4,6-	118-96-7	0.10	0.090	0.18	ug/L	J			2.2	CA	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

J: Estimated, but detected value

CA: U.S. EPA Regional Screening Levels for carcinogenic (May 2011 and November 2011)

NC: U.S. EPA Regional Screening Levels for non-carcinogenic (May 2011 and November 2011)

Table 5-5: April 2011 Perchlorate Detected

ANALYTICAL METHOD 6850												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW02	Perchlorate	14797-73-0	0.200	0.050	0.815	ug/L				6	Permit	No
CMW10	Perchlorate	14797-73-0	0.200	0.050	0.942	ug/L				6	Permit	No
CMW14	Perchlorate	14797-73-0	0.200	0.050	0.0676	ug/L	J	J	J	6	Permit	No
CMW17	Perchlorate	14797-73-0	0.800	0.200	1.88	ug/L				6	Permit	No
CMW18	Perchlorate	14797-73-0	2.00	0.500	4.19	ug/L				6	Permit	No
CMW23	Perchlorate	14797-73-0	0.200	0.050	0.144	ug/L	J	J	J	6	Permit	No
KMW10	Perchlorate	14797-73-0	1.00	0.250	2.50	ug/L				6	Permit	No
KMW11	Perchlorate	14797-73-0	0.200	0.050	0.546	ug/L				6	Permit	No
Northern Area Alluvial Monitoring Wells												
MW20	Perchlorate	14797-73-0	0.200	0.050	0.746	ug/L				6	Permit	No
MW22D	Perchlorate	14797-73-0	0.200	0.050	0.434	ug/L				6	Permit	No
MW22S	Perchlorate	14797-73-0	0.200	0.050	0.143	ug/L	J	J	J	6	Permit	No
TMW03	Perchlorate	14797-73-0	0.400	0.100	1.00	ug/L				6	Permit	No
TMW04	Perchlorate	14797-73-0	0.200	0.050	0.360	ug/L				6	Permit	No
TMW11	Perchlorate	14797-73-0	0.200	0.050	0.143	ug/L	J	J	J	6	Permit	No
TMW13	Perchlorate	14797-73-0	0.200	0.050	0.0743	ug/L	J	J	J	6	Permit	No
TMW15	Perchlorate	14797-73-0	0.200	0.050	0.117	ug/L	J	J	J	6	Permit	No
TMW23	Perchlorate	14797-73-0	0.200	0.050	0.053	ug/L	J	J	J	6	Permit	No
TMW29	Perchlorate	14797-73-0	0.200	0.050	0.123	ug/L	J	J	J	6	Permit	No
TMW31S	Perchlorate	14797-73-0	200	50.0	495	ug/L				6	Permit	Yes
TMW34	Perchlorate	14797-73-0	0.200	0.050	0.280	ug/L				6	Permit	No
Northern Area Bedrock Monitoring Bedrock Wells												
EMW01	Perchlorate	14797-73-0	0.200	0.050	0.0796	ug/L	J	J	J	6	Permit	No
TMW02	Perchlorate	14797-73-0	0.800	0.200	1.44	ug/L				6	Permit	No
TMW30	Perchlorate	14797-73-0	1000	250	3280	ug/L				6	Permit	Yes
TMW31D	Perchlorate	14797-73-0	400	100	1450	ug/L				6	Permit	Yes
TMW32	Perchlorate	14797-73-0	100	25.0	254	ug/L				6	Permit	Yes

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

J: Estimated, but detected value

Permit: Permit established limit

Table 5-6: October 2011 Perchlorate Detected

ANALYTICAL METHOD 6850												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW17	Perchlorate	14797-73-0	2	1	1.8	ug/L	J	J	J	6	Permit	No
CMW18	Perchlorate	14797-73-0	2	1	4.5	ug/L				6	Permit	No
KMW10	Perchlorate	14797-73-0	2	1	2.3	ug/L				6	Permit	No
Northern Area Monitoring Alluvial Wells												
TMW01	Perchlorate	14797-73-0	20	10	270	ug/L				6	Permit	Yes
TMW31S	Perchlorate	14797-73-0	200	100	500	ug/L				6	Permit	Yes
TMW39S	Perchlorate	14797-73-0	50	25	640	ug/L				6	Permit	Yes
TMW40S	Perchlorate	14797-73-0	20	10	140	ug/L				6	Permit	Yes
TMW41	Perchlorate	14797-73-0	2	1	1.5	ug/L	J	J	J	6	Permit	No
Northern Area Monitoring Bedrock Wells												
TMW02	Perchlorate	14797-73-0	2	1	1.5	ug/L	J	J	J	6	Permit	No
TMW30	Perchlorate	14797-73-0	1000	500	2700	ug/L				6	Permit	Yes
TMW31D	Perchlorate	14797-73-0	400	200	1400	ug/L				6	Permit	Yes
TMW32	Perchlorate	14797-73-0	20	10	190	ug/L				6	Permit	Yes
TMW39D	Perchlorate	14797-73-0	100	50	810	ug/L				6	Permit	Yes
TMW40D	Perchlorate	14797-73-0	50	25	320	ug/L				6	Permit	Yes
TMW48	Perchlorate	14797-73-0	200	100	1600	ug/L				6	Permit	Yes
TMW49	Perchlorate	14797-73-0	200	100	2100	ug/L				6	Permit	Yes

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

J: Estimated, but detected value

Permit: Permit established limit

Table 5-7: April 2011 Volatile Organic Compounds Detected

ANALYTICAL METHOD 8270												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW10	Caprolactam	105-60-2	50	50	140	ug/L				18000	NC	No
CMW14	Phenol	108-95-2	5.0	0.14	0.20	ug/L	J	J	J	5	WQCC	No
CMW24	Nitrosodiphenylamine, N-	86-30-6	5.0	0.16	0.44	ug/L	J	J	J	14	CA	No
KMW10	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.53	ug/L	J	J	J	6	MCL	No
	Dibutyl Phthalate	84-74-2	5.0	0.20	0.24	ug/L	J	J	J	3700	NC	No
Northern Area Alluvial Monitoring Wells												
FW31	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.41	ug/L	J	J	J	6	MCL	No
FW35	Bis(2-ethylhexyl)phthalate	117-81-7	4.7	0.25	0.64	ug/L	J	J	J	6	MCL	No
TMW03	Dinitrophenol, 2,4-	51-28-5	9.9	5.6	9.6	ug/L	J	J	J	73	NC	No
	Dinitrotoluene, 2,4-	121-14-2	5.0	0.25	0.41	ug/L	J	J	J	0.2	NC	Yes
TMW04	Dinitrotoluene, 2,4-	121-14-2	5.0	0.25	1.8	ug/L	J	J	J	0.2	NC	Yes
	Nitroaniline - 2	88-74-4	5.0	0.24	0.30	ug/L	J	J	J	370	NC	No
TMW07	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	6.2	ug/L		J	J	6	MCL	Yes
TMW33	Diethyl Phthalate	84-66-2	4.6	0.15	0.41	ug/L	J	J	J	29000	NC	No
Northern Area Bedrock Monitoring Wells												
TMW19	Bis(2-ethylhexyl)phthalate	117-81-7	4.7	0.25	21	ug/L		J	J	6	MCL	Yes
	Dinitrotoluene, 2,6-	606-20-2	4.7	0.26	0.39	ug/L	J	J	J	37	NC	No
TMW36	2-Methylphenol	95-48-7	5.0	0.18	0.58	ug/L	J	J	J	1800	NC	No
TMW37	Cresol - m,p	1319-77-3	9.8	0.38	9.60	ug/L	J	J	J	930	NC	No
	2-Methylphenol	95-48-7	4.9	0.18	5.6	ug/L				1800	NC	No
	Phenol	108-95-2	4.9	0.14	0.29	ug/L	J	J	J	5	WQCC	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

J: Estimated, but detected value

CA: U.S. EPA Regional Screening Levels for carcinogenic (May 2011 and Nov. 2011)

MCL: U.S. EPA Maximum Contaminant Level

NC: U.S. EPA Regional Screening Levels for non-carcinogenic (May 2011 and Nov. 2011)

WQCC: New Mexico Water Quality

Table 5-8: October 2011 Volatile Organic Compounds Detected

ANALYTICAL METHOD 8260												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW04	Carbon Disulfide	75-15-0	1.0	0.15	1.5	ug/L				720	NC	No
CMW07	Carbon Disulfide	75-15-0	1.0	0.15	0.88	ug/L	J	J	J	720	NC	No
CMW14	Acetone	67-64-1	5.0	0.44	5.0	ug/L	J	J	J	12000	NC	No
	Benzene	71-43-2	1.0	0.20	0.58	ug/L	J	J	J	5	MCL	No
	Chloromethane	74-87-3	1.0	0.22	1.4	ug/L				190	NC	No
CMW19	Carbon Disulfide	75-15-0	1.0	0.15	0.93	ug/L	J	J	J	720	NC	No
CMW22	Dichloroethylene, 1,2-cis-	156-59-2	1.0	0.17	0.68	ug/L	J	J	J	70	MCL	No
CMW24	Carbon Disulfide	75-15-0	1.0	0.15	6.4	ug/L				720	NC	No
KMW11	Tetrachloroethylene	127-18-4	1.0	0.26	1.4	ug/L				5	MCL	No
Northern Area Alluvial Monitoring Wells												
MW01	Dichloroethane, 1,2-	107-06-2	1.0	0.19	1.6	ug/L				5	MCL	No
MW18D	Benzene	71-43-2	1.0	0.20	0.71	ug/L	J	J	J	5	MCL	No
	Carbon Disulfide	75-15-0	1.0	0.15	3.2	ug/L				720	NC	No
	Dichloroethane, 1,2-	107-06-2	1.0	0.19	87	ug/L				5	MCL	Yes
MW20	Dichloroethane, 1,2-	107-06-2	1.0	0.19	9.6	ug/L				5	MCL	Yes
MW22S	Dichloroethane, 1,1-	75-34-3	1.0	0.25	0.83	ug/L	J	J	J	25	WQCC	No
	Dichloroethane, 1,2-	107-06-2	1.0	0.19	0.61	ug/L	J	J	J	5	MCL	No
	Trichloroethane, 1,1,1-	71-55-6	1.0	0.16	4.0	ug/L				60	WQCC	No
TMW23	Chloroform	67-66-3	1.0	0.19	0.48	ug/L	JH	J	J	100	WQCC	No
	Toluene	108-88-3	1.0	0.20	0.22	ug/L	JH	J	J	750	WQCC	No
TMW24	Carbon Disulfide	75-15-0	1.0	0.15	0.40	ug/L	J	J	J	720	NC	No
TMW27	Carbon Disulfide	75-15-0	1.0	0.15	0.55	ug/L	J	J	J	720	NC	No
TMW33	Dichloroethane, 1,2-	107-06-2	1.0	0.19	33	ug/L				5	MCL	Yes
TMW35	Dichloroethane, 1,2-	107-06-2	1.0	0.19	1.4	ug/L				5	MCL	No
TMW39S	Dichloroethylene, 1,2-cis-	156-59-2	1.0	0.17	5.1	ug/L				70	MCL	No
	Toluene	108-88-3	1.0	0.20	0.57	ug/L	J	J	J	750	WQCC	No
	Vinyl chloride	75-01-4	1.0	0.24	3.8	ug/L				1	WQCC	Yes
Northern Area Bedrock Monitoring Wells												
TMW14A	2-Hexanone	591-78-6	5.0	0.21	3.4	ug/L	J	J	J	47	NC	No
	Carbon Disulfide	75-15-0	1.0	0.15	1.3	ug/L				720	NC	No
TMW17	Toluene	108-88-3	1.0	0.20	0.83	ug/L	J	J	J	750	WQCC	No
TMW18	Chloroform	67-66-3	1.0	0.19	1.2	ug/L	H	J	J	100	WQCC	No
	Tetrachloroethylene	127-18-4	1.0	0.26	0.38	ug/L	JH	J	J	5	MCL	No
	Toluene	108-88-3	1.0	0.20	47	ug/L	H	J	J	750	WQCC	No
TMW36	Toluene	108-88-3	1.0	0.20	210	ug/L	E	J	J	750	WQCC	No

Table 5-8: October 2011 Volatile Organic Compounds Detected

ANALYTICAL METHOD 8260												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
TMW37	Carbon Disulfide	75-15-0	1.0	0.15	3.5	ug/L	H	J	J	720	NC	No
	Toluene	108-88-3	1.0	0.20	47	ug/L	H	J	J	750	WQCC	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

E: The result exceeds the calibration range of gas chromatograph/mass spectrometry

H: Holding time has been exceeded

J: Estimated, but detected value

JH: Estimated, but detected value and holding time has been exceeded

MCL: U.S. EPA Maximum Contaminant Level

NC: U.S. EPA Regional Screening Levels for non-carcinogenic (May 2011 and November 2011)

WQCC: New Mexico Water Quality Control Standard

Table 5-9: April 2011 Semi-Volatile Compounds Detected

ANALYTICAL METHOD 8270												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW10	Caprolactam	105-60-2	50	50	140	ug/L				18000	NC	No
CMW14	Phenol	108-95-2	5.0	0.14	0.20	ug/L	J	J	J	5	WQCC	No
CMW24	Nitrosodiphenylamine, N-	86-30-6	5.0	0.16	0.44	ug/L	J	J	J	14	CA	No
KMW10	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.53	ug/L	J	J	J	6	MCL	No
	Dibutyl Phthalate	84-74-2	5.0	0.20	0.24	ug/L	J	J	J	3700	NC	No
Northern Area Alluvial Monitoring Wells												
FW31	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.41	ug/L	J	J	J	6	MCL	No
FW35	Bis(2-ethylhexyl)phthalate	117-81-7	4.7	0.25	0.64	ug/L	J	J	J	6	MCL	No
TMW03	Dinitrophenol, 2,4-	51-28-5	9.9	5.6	9.6	ug/L	J	J	J	73	NC	No
	Dinitrotoluene, 2,4-	121-14-2	5.0	0.25	0.41	ug/L	J	J	J	0.022	CA	Yes
TMW04	Dinitrotoluene, 2,4-	121-14-2	5.0	0.25	1.8	ug/L	J	J	J	0.22	NC	Yes
	Nitroaniline - 2	88-74-4	5.0	0.24	0.30	ug/L	J	J	J	370	NC	No
TMW07	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	6.2	ug/L		J	J	6	MCL	Yes
TMW33	Diethyl Phthalate	84-66-2	4.6	0.15	0.41	ug/L	J	J	J	29000	NC	No
Northern Area Bedrock Monitoring Wells												
TMW19	Bis(2-ethylhexyl)phthalate	117-81-7	4.7	0.25	21	ug/L		J	J	6	MCL	Yes
	Dinitrotoluene, 2,6-	606-20-2	4.7	0.26	0.39	ug/L	J	J	J	37	NC	No
TMW36	2-Methylphenol	95-48-7	5.0	0.18	0.58	ug/L	J	J	J	1800	NC	No
TMW37	Cresol - m,p	1319-77-3	9.8	0.38	9.60	ug/L	J	J	J	930	NC	No
	2-Methylphenol	95-48-7	4.9	0.18	5.6	ug/L				1800	NC	No
	Phenol	108-95-2	4.9	0.14	0.29	ug/L	J	J	J	5	WQCC	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

J: Estimated, but detected value

CA: U.S. EPA Regional Screening Levels for carcinogenic (May 2011 and Nov. 2011)

MCL: U.S. EPA Maximum Contaminant Level

NC: U.S. EPA Regional Screening Levels for non-carcinogenic (May 2011 and Nov. 2011)

WQCC: New Mexico Water Quality

Table 5-10: October 2011 Semi-Volatile Compounds Detected

ANALYTICAL METHOD 8270												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW10	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.29	ug/L	J	J	J	6	MCL	No
CMW14	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.32	ug/L	J	J	J	6	MCL	No
	Caprolactam	105-60-2	5.0	5.0	5.6	ug/L				7700	NC	No
	Dinitrotoluene, 2,4-	121-14-2	5.0	0.25	0.38	ug/L	J	J	J	0.2	CA	Yes
	Nitroso-di-N-propylamine, N-	621-64-7	5.0	0.32	0.33	ug/L	J	J	J	0.0093	CA	Yes
CMW19	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.53	ug/L	J	J	J	6	MCL	No
CMW24	Bis(2-ethylhexyl)phthalate	117-81-7	5.6	0.30	0.42	ug/L	J	J	J	6	MCL	No
	Nitrosodiphenylamine, N-	86-30-6	5.6	0.17	0.49	ug/L	J	J	J	10	CA	No
KMW10	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.48	ug/L	J	J	J	6	MCL	No
Northern Area Alluvial Monitoring Wells												
FW31	Bis(2-ethylhexyl)phthalate	117-81-7	5.1	0.27	1.9	ug/L	J	J	J	6	MCL	No
FW35	Bis(2-ethylhexyl)phthalate	117-81-7	5.1	0.27	0.42	ug/L	J	J	J	6	MCL	No
	Dibutyl Phthalate	84-74-2	5.1	0.20	0.22	ug/L	J	J	J	670	NC	No
	Diethyl Phthalate	84-66-2	5.1	0.17	0.62	ug/L	J	J	J	11000	NC	No
MW20	Bis(2-ethylhexyl)phthalate	117-81-7	5.1	0.27	0.39	ug/L	J	J	J	6	MCL	No
	Dibutyl Phthalate	84-74-2	5.1	0.20	0.23	ug/L	J	J	J	670	NC	No
MW22D	Bis(2-chloro-1-methylethyl) ether	108-60-1	4.2	0.20	0.28	ug/L	J	J	J	0.31	CA	No
	Nitroso-di-N-propylamine, N-	621-64-7	4.2	0.26	0.31	ug/L	J	J	J	0.0093	CA	Yes
MW22S	Bis(2-ethylhexyl)phthalate	117-81-7	5.2	0.28	0.29	ug/L	J	J	J	6	MCL	No
	Dibutyl Phthalate	84-74-2	5.2	0.21	0.24	ug/L	J	J	J	670	NC	No
TMW03	Dinitrophenol, 2,4-	51-28-5	10	5.7	37	ug/L				30	NC	Yes
	Dinitrotoluene, 2,4-	121-14-2	5.0	0.25	0.96	ug/L	J	J	J	0.2	CA	Yes
TMW04	2-Nitroaniline	88-74-4	5.0	0.24	0.32	ug/L	J	J	J	370	NC	No
	Dinitrotoluene, 2,6-	606-20-2	5.0	0.28	0.29	ug/L	J	J	J	15	NC	No
TMW06	Dinitrotoluene, 2,4-	121-14-2	5.0	0.25	0.28	ug/L	J	J	J	0.2	CA	Yes
TMW07	Bis(2-ethylhexyl)phthalate	117-81-7	5.2	0.27	0.64	ug/L	J	J	J	6	MCL	No
	Dibutyl Phthalate	84-74-2	5.2	0.21	0.24	ug/L	J	J	J	670	NC	No
TMW15	Diethyl Phthalate	84-66-2	5.0	0.16	0.23	ug/L	J	J	J	11000	NC	No
TMW22	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.85	ug/L	J	J	J	6	MCL	No
TMW31S	Bis(2-ethylhexyl)phthalate	117-81-7	0.51	0.027	0.066	ug/L	J	J	J	6	MCL	No
	Diethyl Phthalate	84-66-2	0.51	0.017	0.026	ug/L	J	J	J	11000	NC	No

Table 5-10: October 2011 Semi-Volatile Compounds Detected

ANALYTICAL METHOD 8270												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
TMW33	Bis(2-ethylhexyl)phthalate	117-81-7	5.1	0.27	1.4	ug/L	J	J	J	6	MCL	No
	Dibutyl Phthalate	84-74-2	5.1	0.20	0.22	ug/L	J	J	J	670	NC	No
TMW35	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.31	ug/L	J	J	J	6	MCL	No
	Phenol	108-95-2	5.0	0.14	0.31	ug/L	J	J	J	5	WQCC	No
TMW39S	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	6.5	ug/L				6	MCL	Yes
	Caprolactam	105-60-2	5.0	5.0	46	ug/L				7700	NC	No
	Phenol	108-95-2	5.0	0.14	0.21	ug/L	J	J	J	5	WQCC	No
TMW41	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.65	ug/L	J	J	J	6	MCL	No
Northern Area Bedrock Monitoring Wells												
EMW01	Bis(2-ethylhexyl)phthalate	117-81-7	5.1	0.27	0.28	ug/L	J	J	J	6	MCL	No
	Diethyl Phthalate	84-66-2	5.1	0.17	0.28	ug/L	J	J	J	11000	NC	No
EMW04	Bis(2-chloro-1-methylethyl) ether	108-60-1	5.0	0.24	9.3	ug/L				0.31	CA	Yes
	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.48	ug/L	J	J	J	6	MCL	No
	Cresol, o-	95-48-7	5.0	0.18	1.2	ug/L	J	J	J	720	NC	No
TMW14A	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.26	8.5	ug/L				6	MCL	Yes
TMW16	Bis(2-ethylhexyl)phthalate	117-81-7	5.1	0.27	0.74	ug/L	J	J	J	6	MCL	No
	Dibutyl Phthalate	84-74-2	5.1	0.20	0.26	ug/L	J	J	J	670	NC	No
TMW18	Acetophenone	98-86-2	5.0	5.0	5.1	ug/L				1500	NC	No
	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	1.7	ug/L	J	J	J	6	MCL	No
	Diethyl Phthalate	84-66-2	5.0	0.16	0.30	ug/L	J	J	J	11000	NC	No
	Nitroso-di-N-propylamine, N-	621-64-7	5.0	0.32	1.1	ug/L	J	J	J	0.0093	CA	Yes
TMW19	Bis(2-ethylhexyl)phthalate	117-81-7	5.1	0.27	1.8	ug/L	J	J	J	6	MCL	No
	Dibutyl Phthalate	84-74-2	5.1	0.20	0.32	ug/L	J	J	J	670	NC	No
	Diethyl Phthalate	84-66-2	5.1	0.17	0.30	ug/L	J	J	J	11000	NC	No
TMW30	Bis(2-ethylhexyl)phthalate	117-81-7	5.3	0.28	0.32	ug/L	J	J	J	6	MCL	No
TMW36	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.64	ug/L	J	J	J	6	MCL	No
	Cresol, o-	95-48-7	5.0	0.18	1.3	ug/L	J	J	J	720	NC	No
	Diethyl Phthalate	84-66-2	5.0	0.16	0.27	ug/L	J	J	J	11000	NC	No
TMW37	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	3.6	ug/L	J	J	J	6	MCL	No
	Cresol, o-	95-48-7	5.0	0.18	3.7	ug/L	J	J	J	720	NC	No
TMW38	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	1.3	ug/L	J	J	J	6	MCL	No
	Cresol, o-	95-48-7	5.0	0.18	0.52	ug/L	J	J	J	720	NC	No
TMW48	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	0.32	ug/L	J	J	J	6	MCL	No

Table 5-10: October 2011 Semi-Volatile Compounds Detected

ANALYTICAL METHOD 8270												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
TMW49	Bis(2-ethylhexyl)phthalate	117-81-7	5.0	0.27	3.0	ug/L	J	J	J	6	MCL	No
	Cresol, o-	95-48-7	5.0	0.18	0.69	ug/L	J	J	J	720	NC	No
	Diethyl Phthalate	84-66-2	5.0	0.16	0.76	ug/L	J	J	J	11000	NC	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

J: Estimated, but detected value

CA: U.S. EPA Regional Screening Levels for carcinogenic (May 2011 and November 2011)

MCL: U.S. EPA Maximum Contaminant Level

NC: U.S. EPA Regional Screening Levels for non-carcinogenic (May 2011 and November 2011)

WQCC: New Mexico Water Quality Control Standard

Table 5-11: April 2011 Mercury and Metals Detected Above Regulatory Health Standards

ANALYTICAL METHOD 6020 (TOTAL)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OB Area Monitoring Wells												
CMW10	Selenium	7782-49-2	0.0020	0.00058	0.051	mg/L				0.05	MCL	NA
CMW14	Chromium	7440-47-3	0.0040	0.00012	0.45	mg/L				0.1	MCL	NA
CMW24	Manganese	7439-96-5	0.0010	0.000053	0.23	mg/L				0.2	WQCC	NA
KMW09	Manganese	7439-96-5	0.0020	0.00011	0.23	mg/L				0.2	WQCC	NA
KMW11	Arsenic	7440-38-2	0.00030	0.00012	0.027	mg/L				0.01	MCL	NA
KMW12	Manganese	7439-96-5	0.010	0.00053	0.75	mg/L				0.2	WQCC	NA
Northern Area Alluvial Monitoring Wells												
EMW04	Manganese	7439-96-5	0.0020	0.00011	0.24	mg/L				0.2	WQCC	NA
MW01	Manganese	7439-96-5	0.020	0.0011	0.69	mg/L				0.2	WQCC	NA
MW02	Manganese	7439-96-5	0.020	0.0011	1.3	mg/L				0.2	WQCC	NA
MW18D	Manganese	7439-96-5	0.0020	0.00011	0.77	mg/L				0.2	WQCC	NA
MW20	Manganese	7439-96-5	0.020	0.0011	2.8	mg/L				0.2	WQCC	NA
TMW03	Selenium	7782-49-2	0.0020	0.00058	0.078	mg/L				0.05	MCL	NA
TMW07	Manganese	7439-96-5	0.0020	0.00011	0.34	mg/L				0.2	WQCC	NA
TMW08	Selenium	7782-49-2	0.0050	0.0015	0.062	mg/L				0.05	MCL	NA
TMW27	Arsenic	7440-38-2	0.00060	0.00024	0.021	mg/L				0.01	MCL	NA
	Manganese	7439-96-5	0.0020	0.00011	0.68	mg/L				0.2	WQCC	NA
TMW28	Manganese	7439-96-5	0.0020	0.00011	0.29	mg/L				0.2	WQCC	NA
TMW33	Manganese	7439-96-5	0.0020	0.00011	0.66	mg/L				0.2	WQCC	NA
TMW35	Selenium	7782-49-2	0.0020	0.00058	0.052	mg/L				0.05	MCL	NA
Northern Area Bedrock Monitoring Wells												
EMW04	Manganese	7439-96-5	0.0020	0.00011	0.24	mg/L				0.2	WQCC	NA
TMW02	Selenium	7782-49-2	0.0020	0.00058	0.087	mg/L				0.05	MCL	NA

Table 5-11: April 2011 Mercury and Metals Detected Above Regulatory Health Standards

ANALYTICAL METHOD 6020 (DISSOLVED)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW14	Chromium	7440-47-3	0.0040	0.00012	0.43	mg/L				0.1	MCL	Yes
CMW24	Manganese	7439-96-5	0.0020	0.00011	0.23	mg/L				0.2	WQCC	Yes
KMW09	Manganese	7439-96-5	0.0020	0.00011	0.26	mg/L				0.2	WQCC	Yes
KMW11	Arsenic	7440-38-2	0.00060	0.00024	0.030	mg/L				0.01	MCL	Yes
KMW12	Manganese	7439-96-5	0.0050	0.00027	1.1	mg/L				0.2	WQCC	Yes
Northern Area Alluvial Monitoring Wells												
MW02	Manganese	7439-96-5	0.010	0.00053	1.2	mg/L				0.2	WQCC	Yes
MW18D	Manganese	7439-96-5	0.0020	0.00011	0.76	mg/L				0.2	WQCC	Yes
MW20	Arsenic	7440-38-2	0.0060	0.0024	0.018	mg/L				0.01	MCL	Yes
	Manganese	7439-96-5	0.020	0.0011	2.9	mg/L				0.2	WQCC	Yes
	Selenium	7782-49-2	0.020	0.0058	0.26	mg/L				0.05	MCL	Yes
TMW02	Selenium	7782-49-2	0.0020	0.00058	0.097	mg/L				0.05	MCL	Yes
TMW03	Selenium	7782-49-2	0.0020	0.00058	0.088	mg/L				0.05	MCL	Yes
TMW04	Selenium	7782-49-2	0.0020	0.00058	0.12	mg/L				0.05	MCL	Yes
TMW07	Manganese	7439-96-5	0.0020	0.00011	0.30	mg/L				0.2	WQCC	Yes
TMW08	Selenium	7782-49-2	0.0050	0.0015	0.066	mg/L				0.05	MCL	Yes
TMW27	Manganese	7439-96-5	0.0020	0.00011	0.63	mg/L				0.2	WQCC	Yes
TMW28	Manganese	7439-96-5	0.0020	0.00011	0.32	mg/L				0.2	WQCC	Yes
TMW33	Manganese	7439-96-5	0.020	0.0011	0.69	mg/L				0.2	WQCC	Yes
TMW35	Selenium	7782-49-2	0.0020	0.00058	0.063	mg/L				0.05	MCL	Yes
Northern Area Bedrock Monitoring Wells												
EMW04	Manganese	7439-96-5	0.0050	0.00027	0.28	mg/L				0.2	WQCC	Yes
TMW02	Selenium	7782-49-2	0.0020	0.00058	0.097	mg/L				0.05	MCL	Yes

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

mg/L: milligrams per Liter

MCL: U.S. EPA Maximum Contaminant Level

WQCC: New Mexico Water Quality

NA: Not Applicable to Total Metals - Regulatory Limits are Based on Dissolved Phase

Table 5-12: October 2011 Mercury and Metals Detected Above Regulatory Health Standards

ANALYTICAL METHOD 6020 (TOTAL)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW10	Selenium	7782-49-2	0.0020	0.00058	0.051	mg/L				0.05	MCL	NA
CMW14	Chromium	7440-47-3	0.0040	0.00012	0.18	mg/L				0.05	WQCC	NA
CMW24	Manganese	7439-96-5	0.0020	0.00011	0.21	mg/L				0.2	WQCC	NA
KMW09	Manganese	7439-96-5	0.0020	0.00011	0.26	mg/L				0.2	WQCC	NA
KMW11	Arsenic	7440-38-2	0.00060	0.00024	0.025	mg/L				0.01	MCL	NA
KMW12	Iron	7439-89-6	0.040	0.019	1.4	mg/L				1	WQCC	NA
	Manganese	7439-96-5	0.0020	0.00011	0.63	mg/L				0.2	WQCC	NA
Northern Area Alluvial Monitoring Wells												
FW35	Iron	7439-89-6	0.040	0.019	1.2	mg/L				1	WQCC	NA
MW18D	Manganese	7439-96-5	0.0020	0.00011	0.56	mg/L				0.2	WQCC	NA
MW20	Manganese	7439-96-5	0.010	0.00053	2.4	mg/L				0.2	WQCC	NA
	Selenium	7782-49-2	0.010	0.0029	0.22	mg/L				0.05	MCL	NA
TMW03	Selenium	7782-49-2	0.0020	0.00058	0.069	mg/L				0.05	MCL	NA
TMW04	Selenium	7782-49-2	0.0020	0.00058	0.087	mg/L				0.05	MCL	NA
TMW07	Manganese	7439-96-5	0.0050	0.00027	0.39	mg/L				0.2	WQCC	NA
TMW08	Iron	7439-89-6	0.080	0.019	3.3	mg/L				1	WQCC	NA
	Manganese	7439-96-5	0.0020	0.00011	0.37	mg/L				0.2	WQCC	NA
TMW25	Manganese	7439-96-5	0.0020	0.00011	0.27	mg/L				0.2	WQCC	NA
TMW27	Arsenic	7440-38-2	0.00060	0.00024	0.020	mg/L				0.01	MCL	NA
	Manganese	7439-96-5	0.0020	0.00011	0.55	mg/L				0.2	WQCC	NA
TMW28	Manganese	7439-96-5	0.0020	0.00011	0.31	mg/L				0.2	WQCC	NA
TMW29	Manganese	7439-96-5	0.0020	0.00011	0.33	mg/L				0.2	WQCC	NA
TMW33	Manganese	7439-96-5	0.0020	0.00011	0.28	mg/L				0.2	WQCC	NA
TMW34	Manganese	7439-96-5	0.0020	0.00011	0.22	mg/L				0.2	WQCC	NA
	Selenium	7782-49-2	0.0020	0.00058	0.11	mg/L				0.05	MCL	NA
TMW35	Selenium	7782-49-2	0.0020	0.00058	0.054	mg/L				0.05	MCL	NA
TMW39S	Manganese	7439-96-5	0.0020	0.00011	0.33	mg/L				0.2	WQCC	NA
Northern Area Berdock Monitoring Wells												
EMW04	Cobalt	7440-48-4	0.0020	0.000048	0.0056	mg/L				0.0047	NC	NA
	Iron	7439-89-6	0.040	0.019	2.3	mg/L				1	WQCC	NA
	Manganese	7439-96-5	0.0020	0.00011	0.23	mg/L				0.2	WQCC	NA
TMW02	Selenium	7782-49-2	0.0020	0.00058	0.075	mg/L				0.05	MCL	NA
TMW38	Iron	7439-89-6	0.040	0.019	3.6	mg/L				1	WQCC	NA
	Manganese	7439-96-5	0.0020	0.00011	0.21	mg/L				0.2	WQCC	NA

Table 5-12: October 2011 Mercury and Metals Detected Above Regulatory Health Standards

ANALYTICAL METHOD 6020 (DISSOLVED)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW14	Chromium	7440-47-3	0.0040	0.00012	0.17	mg/L				0.05	WQCC	Yes
KMW09	Manganese	7439-96-5	0.0020	0.00011	0.23	mg/L				0.2	WQCC	Yes
KMW11	Arsenic	7440-38-2	0.00060	0.00024	0.021	mg/L				0.01	MCL	Yes
KMW12	Manganese	7439-96-5	0.0020	0.00011	0.51	mg/L				0.2	WQCC	Yes
Northern Area Alluvial Monitoring Wells												
MW03	Selenium	7782-49-2	0.0020	0.00058	0.062	mg/L				0.05	MCL	Yes
MW20	Arsenic	7440-38-2	0.0015	0.00061	0.019	mg/L				0.01	MCL	Yes
	Iron	7439-89-6	0.040	0.019	1.7	mg/L				1	WQCC	Yes
	Manganese	7439-96-5	0.0050	0.00027	0.60	mg/L		J	J	0.2	WQCC	Yes
TMW03	Selenium	7782-49-2	0.0020	0.00058	0.079	mg/L				0.05	MCL	Yes
TMW04	Selenium	7782-49-2	0.0020	0.00058	0.088	mg/L				0.05	MCL	Yes
TMW07	Manganese	7439-96-5	0.0020	0.00011	0.39	mg/L		J	J	0.2	WQCC	Yes
TMW18D	Manganese	7439-96-5	0.0020	0.00011	0.58	mg/L				0.2	WQCC	Yes
TMW27	Arsenic	7440-38-2	0.00060	0.00024	0.021	mg/L				0.01	MCL	Yes
	Manganese	7439-96-5	0.0020	0.00011	0.57	mg/L				0.2	WQCC	Yes
TMW28	Manganese	7439-96-5	0.0020	0.00011	0.29	mg/L				0.2	WQCC	Yes
TMW33	Manganese	7439-96-5	0.0020	0.00011	0.29	mg/L				0.2	WQCC	Yes
TMW34	Selenium	7782-49-2	0.0020	0.00058	0.10	mg/L				0.05	MCL	Yes
TMW35	Selenium	7782-49-2	0.0020	0.00058	0.060	mg/L				0.05	MCL	Yes
Northern Area Berdock Monitoring Wells												
EMW04	Cobalt	7440-48-4	0.00080	0.000048	0.0067	mg/L				0.0047	NC	Yes
	Manganese	7439-96-5	0.0020	0.00011	0.28	mg/L				0.2	WQCC	Yes
TMW02	Selenium	7782-49-2	0.0020	0.00058	0.085	mg/L				0.05	MCL	Yes

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

mg/L: milligrams per Liter

J: Estimated, but detected value

MCL: U.S. EPA Maximum Contaminant Level

NC: U.S. EPA Regional Screening Levels for non-carcinogenic (May 2011 & Nov. 2011)

WQCC: New Mexico Water Quality Control Standard

NA: Not Applicable to Total Metals - Regulatory Limits are Based on Dissolved Phase

Table 5-13: April 2011 Dioxins and Furans Detected

ANALYTICAL METHOD 8290												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW25	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	50.1	2.20	2.34	pg/L	J	J	J	NRL	NRL	NRL
Northern Area Alluvial Monitoring Wells												
MW22D	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	47.1	0.508	6.27	pg/L	J	J	J	NRL	NRL	NRL
	HpCDF, 2,3,7,8-	38998-75-3	47.1	0.508	8.66	pg/L	J	J	J	NRL	NRL	NRL
	HxCDF, 2,3,7,8-	55684-94-1	47.1	2.07	7.55	pg/L	J	J	J	NRL	NRL	NRL
	OCDD	3268-87-9	94.1	8.13	46.4	pg/L	J	J	J	NRL	NRL	NRL
	Total Tetrachlorodibenzofuran	55722-27-5	9.41	0.508	0.904	pg/L	J	J	J	NRL	NRL	NRL
TMW15	Total Pentachlorodibenzofuran	30402-15-4	47.4	1.13	1.29	pg/L	J	J	J	NRL	NRL	NRL
TMW31S	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	50.2	0.542	0.963	pg/L	J	J	J	NRL	NRL	NRL
Northern Area Bedrock Monitoring Wells												
TMW02	Total Pentachlorodibenzofuran	30402-15-4	47.8	1.14	1.32	pg/L	J	J	J	NRL	NRL	NRL

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

pg/L: picograms per Liter

J: Estimated, but detected value

NRL: No Regulatory Limit

Table 5-14: April 2011 Pesticides Detected

ANALYTICAL METHOD 8081												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW02	Heptachlor	76-44-8	0.0099	0.0028	0.038	ug/L				0.4	MCL	No
CMW25	Methoxychlor	72-43-5	0.011	0.0032	0.011	ug/L				40	MCL	No
Northern Area Alluvial Monitoring Wells												
MW01	Heptachlor	76-44-8	0.0099	0.0028	0.028	ug/L		J	J	0.4	MCL	No
MW22D	Methoxychlor	72-43-5	0.0099	0.0030	0.0037	ug/L	J	J	J	40	MCL	No
MW22S	Aldrin	309-00-2	0.0099	0.0030	0.0064	ug/L	J	J	J	0.004	CA	Yes
	Methoxychlor	72-43-5	0.0099	0.0030	0.040	ug/L		J	J	40	MCL	No
TMW23	Methoxychlor	72-43-5	0.0099	0.0030	0.028	ug/L		J	J	40	MCL	No
Northern Area Bedrock Monitoring Wells												
TMW36	Heptachlor	76-44-8	0.0099	0.0028	0.0038	ug/L	J	J	J	0.4	MCL	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

J: Estimated, but detected value

CA: U.S. EPA Regional Screening Levels for carcinogenic (May 2011 and November 2011)

MCL: U.S. EPA Maximum Contaminant Level

Table 5-15: October 2011 Pesticides Detected

Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
OB/OD Area Monitoring Wells												
CMW24	DDD-4,4'	72-54-8	0.010	0.0030	0.0096	ug/L	JM	J	J	0.28	CA	No

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

ug/L: micrograms per Liter

J: Estimated, but detected value

JM: Estimated, but detected value and compound has been manually integrated

CA: U.S. EPA Regional Screening Levels for carcinogenic (May 2011 and November 2011)

Table 5-16: April 2010 – October 2011 Nitrate and Nitrite Detected

ANALYTICAL METHOD 300.0										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (mg/L)	Flag	Result (mg/L)	Flag	Result (mg/L)	Flag	Result (mg/L)	Flag
OB/OD Area Monitoring Wells										
CMW02	Nitrate	14797-55-8	2.21		1.34	J	3.0		3.1	
CMW10	Nitrate	14797-55-8	4.58		4.02		3.7		4.1	J
	Nitrite	14797-65-0	0.026	J	ND		0.21	J	ND	
CMW14	Nitrate	14797-55-8	0.0099	J	ND		2.0		ND	
CMW17	Nitrate	14797-55-8	0.937		0.0323		2.0		2.4	
	Nitrite	14797-65-0	0.0027	J	ND		ND		ND	
CMW18	Nitrate	14797-55-8	3.66		6.19	J	0.098	J	4.5	
CMW19	Nitrate	14797-55-8	0.0047	J	ND		0.095	J	ND	
	Nitrite	14797-65-0	ND		0.059	J	ND		ND	
CMW22	Nitrate	14797-55-8	ND		ND		0.089	J	ND	
	Nitrite	14797-65-0	0.012	J	ND		ND		ND	
CMW25	Nitrate	14797-55-8	0.0009	J	ND		ND		ND	
	Nitrite	14797-65-0	ND		ND		ND		0.27	J
KMW09	Nitrate	14797-55-8	ND		ND		0.36	J	ND	
	Nitrite	14797-65-0	ND		ND		0.26	J	ND	
KMW10	Nitrate	14797-55-8	9.76		8.6	J	9.2		10	J
KMW11	Nitrate	14797-55-8	0.395	J	0.262		0.26	J	0.21	J
KMW12	Nitrate	14797-55-8	0.219		0.223	J	ND		0.51	
	Nitrite	14797-65-0	0.034		0.056	J	ND		0.39	
Northern Area Alluvial Monitoring Wells										
FW31	Nitrate	14797-55-8	0.037		0.0039		0.091	J	0.19	J
	Nitrite	14797-65-0	ND		ND		ND		0.22	J
FW35	Nitrate	14797-55-8	1.04		0.951		0.98		0.88	J
MW01	Nitrate	14797-55-8	7.73		7.16	J	7.1		7.5	
MW02	Nitrate	14797-55-8	1.21		0.98		0.75		1.4	
MW03	Nitrate	14797-55-8	11.5	J	11.5	J	12		10	
MW18D	Nitrate	14797-55-8	ND		ND		ND		0.18	J
MW20	Nitrate	14797-55-8	34.8		28.9	J	29	J	21	
	Nitrite	14797-65-0	1.23		6.48	J	4.9	J	7.0	
MW22D	Nitrate	14797-55-8	17.5		18.4	J	24		28	
	Nitrite	14797-65-0	ND		ND		ND		0.16	J
MW22S	Nitrate	14797-55-8	31.2	J	26.2	J	26	J	25	
TMW01	Nitrate	14797-55-8	8.7		7.66	J	8.9		9.3	
	Nitrite	14797-65-0	ND		ND		0.19	J	ND	
TMW03	Nitrate	14797-55-8	154		142	J	ND		160	
	Nitrite	14797-65-0	0.142		0.056	J	3.1		0.49	
TMW04	Nitrate	14797-55-8	47.4		42.5	J	46	J	49	
TMW06	Nitrate	14797-55-8	29.8		26.2	J	21		25	
TMW07	Nitrate	14797-55-8	0.0063	J	0.309		0.98		9.2	J
	Nitrite	14797-65-0	ND		ND		ND		0.56	J

Table 5-16: April 2010 – October 2011 Nitrate and Nitrite Detected

ANALYTICAL METHOD 300.0										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (mg/L)	Flag	Result (mg/L)	Flag	Result (mg/L)	Flag	Result (mg/L)	Flag
TMW08	Nitrate	14797-55-8	1.99		2.37	J	5.0		4.0	
TMW10	Nitrate	14797-55-8	ND		0.488		0.21	J	0.25	J
TMW11	Nitrate	14797-55-8	0.6		1.36		3.5	J	4.8	J
TMW13	Nitrate	14797-55-8	1.97		1.58		2.0	J	1.9	
TMW15	Nitrate	14797-55-8	1.02		0.985		1.6		3.3	J
TMW21	Nitrate	14797-55-8	8.2	J	7.39	J	50		8.2	
	Nitrite	14797-65-0	0.025	J	ND		0.83		ND	
TMW22	Nitrate	14797-55-8	9.6		9.15	J	9.5		11	
TMW23	Nitrate	14797-55-8	29.6		33	J	33	J	35	
	Nitrite	14797-65-0	0.109	J	ND		0.20	J	ND	
TMW24	Nitrate	14797-55-8	0.0023	J	ND		ND		0.16	J
TMW25	Nitrate	14797-55-8	0.739		0.621		0.80		1.2	
TMW29	Nitrate	14797-55-8	4.31		4.26		3.5		4.0	
	Nitrite	14797-65-0	0.014	J	ND		0.53		ND	
TMW31S	Nitrate	14797-55-8	7.91		7.59	J	4.8	J	8.4	
	Nitrite	14797-65-0	ND		ND		ND		0.13	J
TMW34	Nitrate	14797-55-8	40		40.2	J	47		51	J
TMW35	Nitrate	14797-55-8	19.1		18.7	J	22		23	J
TMW39S	Nitrate	14797-55-8	NS		NS		NS		9.8	J
TMW40S	Nitrate	14797-55-8	NS		NS		NS		28	
	Nitrite	14797-65-0	NS		NS		NS		6.9	
TMW41	Nitrate	14797-55-8	NS		NS		NS		5.7	J
Northern Area Bedrock Monitoring Wells										
EMW02	Nitrate	14797-55-8	0.157		0.407	J	0.20	J	0.87	
EMW03	Nitrate	14797-55-8	0.0987	J	ND		0.16	J	ND	
EMW04	Nitrate	14797-55-8	3.52	J	3.39	J	3.1		2.2	J
TMW02	Nitrate	14797-55-8	99.4		90.6	J	100		110	J
TMW14A	Nitrate	14797-55-8	0.046		ND		0.077	J	17	
	Nitrite	14797-65-0	ND		ND		0.19	J	ND	
TMW17	Nitrate	14797-55-8	0.0044	J	ND		ND		0.23	J
TMW30	Nitrate	14797-55-8	20.13		18.9	J	19		18	
TMW31D	Nitrate	14797-55-8	13.3		14.5	J	16		ND	
TMW32	Nitrate	14797-55-8	1.23		1.26		1.4		1.2	
	Nitrite	14797-65-0	0.034	J	0.0176	J	0.22	J	0.27	J
TMW36	Nitrate	14797-55-8	ND		ND		0.093	J	ND	
TMW37	Nitrate	14797-55-8	0.117		ND		ND		0.14	J
TMW39D	Nitrate	14797-55-8	NS		NS		NS		9.4	J
	Nitrite	14797-65-0	NS		NS		NS		0.62	J
TMW40D	Nitrate	14797-55-8	NS		NS		NS		2.8	
	Nitrite	14797-65-0	NS		NS		NS		0.38	

Table 5-16: April 2010 – October 2011 Nitrate and Nitrite Detected

ANALYTICAL METHOD 300.0										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (mg/L)	Flag	Result (mg/L)	Flag	Result (mg/L)	Flag	Result (mg/L)	Flag
TMW48	Nitrate	14797-55-8	NS		NS		NS		20	J
	Nitrite	14797-65-0	NS		NS		NS		0.20	J
TMW49	Nitrate	14797-55-8	NS		NS		NS		8.4	

CASRN: Chemical Abstract Services Registry Number

mg/L: milligrams per Liter

ND: Not Detected

NS: Not Sampled

J: Estimated, but detected value

Table 5-17: April 2010 – October 2011 Total Explosives Detected

ANALYTICAL METHOD 8330										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
OB/OD Area Monitoring Wells										
CMW04	Dinitrobenzene, 1,3-	99-65-0	ND		ND		3.3		ND	
CMW14	Dinitrobenzene, 1,3-	99-65-0	ND		ND		2.2		ND	
	Methyl-2,4,6-trinitrophenylnitramine	479-45-8	ND		ND		14		ND	
	Trinitrotoluene, 2,4,6-	118-96-7	ND		ND		1.7		ND	
CMW17	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	1.09		1.48		1.1		1.8	
	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	2691-41-0	0.304	J	ND		ND		0.20	J
CMW18	Dinitrotoluene, 2,4-	121-14-2	0.0856	J	ND		ND		ND	
	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	3.89	J	1.95		1.7	J	2.3	
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	6.13	J	2.48		1.8	J	2.7	
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	126	J	59.6		48		70.1	
	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	2691-41-0	27.9	J	15.8		14		20.9	
	Trinitrotoluene, 2,4,6-	118-96-7	ND		ND		0.17	J	ND	
CMW19	Dinitrobenzene, 1,3-	99-65-0	ND		ND		11	J	ND	
CMW23	Nitrotoluene, o-	88-72-2	ND		0.205	J	ND		ND	
	Trinitrotoluene, 2,4,6-	118-96-7	ND		ND		ND		0.24	
CMW24	Dinitrobenzene, 1,3-	99-65-0	ND		ND		12		ND	
	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	ND		ND		ND		0.064	J
KMW09	Dinitrobenzene, 1,3-	99-65-0	ND		ND		12		ND	
	Tetryl (Trinitrophenylmethyl nitramine)	479-45-8	ND		ND		ND		0.47	J
Northern Area Alluvial Monitoring Wells										
FW35	Trinitrotoluene, 2,4,6-	118-96-7	ND		ND		ND		0.14	
MW01	Dinitrobenzene, 1,3-	99-65-0	ND		ND		0.26	J	ND	
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	ND		ND		0.13	J	ND	
	Trinitrotoluene, 2,4,6-	118-96-7	ND		ND		ND		0.097	J
MW02	Trinitrotoluene, 2,4,6-	118-96-7	ND		ND		ND		0.30	
MW18D	Dinitrobenzene, 1,3-	99-65-0	ND		ND		40		ND	
MW22S	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	ND		ND		0.072	J	ND	
	Nitrotoluene, p-	99-99-0	ND		ND		0.32	J	ND	
	Trinitrotoluene, 2,4,6-	118-96-7	ND		ND		ND		0.34	
TMW03	Dinitrobenzene, 1,3-	99-65-0	ND		ND		0.036	J	0.20	
	Dinitrotoluene, 2,4-	121-14-2	ND		ND		0.35	J	0.36	
	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	ND		0.777		0.68	J	0.74	
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	ND		1.38		1.0	J	1.2	
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	927		497		360		466	
	Nitrobenzene	98-95-3	ND		ND		7.4		ND	
	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	2691-41-0	4.11		126		5.0		5.9	J
Trinitrobenzene, 1,3,5-	99-35-4	1.44		2.00		1.5	J	0.51		
TMW04	Dinitrotoluene, 2,4-	121-14-2	ND		ND		0.091	J	0.14	
	Dinitrotoluene, 2-Amino-4,6-	35572-78-2	1.81	J	1.85		1.8		1.5	

Table 5-17: April 2010 – October 2011 Total Explosives Detected

ANALYTICAL METHOD 8330										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
TMW04	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	3.58	J	2.61		2.2		2.2	
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	ND		2.17		17		2.3	
	Trinitrobenzene, 1,3,5-	99-35-4	10.7	J	6.55		6.4		1.4	
TMW11	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	ND		ND		0.12	J	0.14	
TMW23	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	43.8	J	50.2	J	50		93.3	
	Trinitrobenzene, 1,3,5-	99-35-4	0.266	J	ND		ND		ND	
TMW26	Dinitrobenzene, 1,3-	99-65-0	ND		ND		1.3		ND	
	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	ND		ND		0.043	J	ND	
TMW31S	Trinitrotoluene, 2,4,6-	118-96-7	ND		ND		ND		0.15	
TMW41	Trinitrotoluene, 2,4,6-	118-96-7	NS		NS		NS		0.11	
Northern Area Bedrock Monitoring Wells										
EMW03	Dinitrotoluene, 4-Amino-2,6-	19406-51-0	ND		ND		0.030	J	ND	
	Nitrobenzene	98-95-3	ND		ND		0.089	J	ND	
TMW14A	Dinitrobenzene, 1,3-	99-65-0	ND		ND		1.3		ND	
TMW16	Trinitrotoluene, 2,4,6-	118-96-7	ND		ND		ND		0.18	
TMW18	Methyl-2,4,6-trinitrophenylnitramine	479-45-8	ND		ND		0.23	J	ND	
TMW19	Dinitrobenzene, 1,3-	99-65-0	ND		ND		0.48		ND	
	Trinitrobenzene, 1,3,5-	99-35-4	ND		ND		0.23		ND	
TMW36	Dinitrobenzene, 1,3-	99-65-0	ND		ND		0.40	J	ND	
	Trinitrobenzene, 1,3,5-	99-35-4	ND		ND		0.072	J	ND	
TMW37	Dinitrobenzene, 1,3-	99-65-0	ND		ND		0.76		ND	

CASRN: Chemical Abstract Services Registry Number

ug/L: micrograms per Liter

ND: Not Detected

NS: Not Sampled

J: Estimated, but detected value

Table 5-18: April 2010 – October 2011 Perchlorate Detected

ANALYTICAL METHOD 6850										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
OB/OD Area Monitoring Wells										
CMW02	Perchlorate	14797-73-0	0.529		0.689		0.815		ND	
CMW10	Perchlorate	14797-73-0	0.713		0.920		0.942		ND	
CMW14	Perchlorate	14797-73-0	0.857		ND		0.0676	J	ND	
CMW17	Perchlorate	14797-73-0	0.876		ND		1.88		1.8	J
CMW18	Perchlorate	14797-73-0	12.1		4.10		4.19		4.5	
CMW23	Perchlorate	14797-73-0	ND		ND		0.144	J	ND	
KMW09	Perchlorate	14797-73-0	0.190	J	ND		ND		ND	
KMW10	Perchlorate	14797-73-0	2.32		2.26		2.50		2.3	
KMW11	Perchlorate	14797-73-0	0.518		0.555		0.546		ND	
Northern Area Alluvial Monitoring Wells										
MW01	Perchlorate	14797-73-0	5.96		ND		ND		ND	
MW20	Perchlorate	14797-73-0	0.814		0.825		0.746		ND	
MW22D	Perchlorate	14797-73-0	0.181	J	0.237		0.434		ND	
MW22S	Perchlorate	14797-73-0	0.260		0.352		0.143	J	ND	
SMW01	Perchlorate	14797-73-0	ND		1.66		ND		ND	
TMW01	Perchlorate	14797-73-0	14.2	J	288		NS		270	
TMW03	Perchlorate	14797-73-0	0.850		0.869		1.00		ND	
TMW04	Perchlorate	14797-73-0	0.320		0.398		0.360		ND	
TMW11	Perchlorate	14797-73-0	ND		ND		0.143	J	ND	
TMW13	Perchlorate	14797-73-0	ND		ND		0.0743	J	ND	
TMW15	Perchlorate	14797-73-0	ND		ND		0.117	J	ND	
TMW23	Perchlorate	14797-73-0	ND		ND		0.053	J	ND	
TMW27	Perchlorate	14797-73-0	ND		0.312		ND		ND	
TMW29	Perchlorate	14797-73-0	ND		ND		0.123	J	ND	
TMW31S	Perchlorate	14797-73-0	465		554		495		500	
TMW34	Perchlorate	14797-73-0	0.549		0.282		0.280		ND	
TMW39S	Perchlorate	14797-73-0	NS		NS		NS		640	
TMW40S	Perchlorate	14797-73-0	NS		NS		NS		140	
TMW41	Perchlorate	14797-73-0	NS		NS		NS		1.5	J
Northern Area Bedrock Monitoring Wells										
EMW01	Perchlorate	14797-73-0	ND		ND		0.0796	J	ND	
TMW02	Perchlorate	14797-73-0	ND		1.51		1.44		1.5	J
TMW30	Perchlorate	14797-73-0	1900		5010		3280		2700	
TMW31D	Perchlorate	14797-73-0	1420		1660		1450		1400	
TMW32	Perchlorate	14797-73-0	232		2680		254		190	
TMW39D	Perchlorate	14797-73-0	NS		NS		NS		810	
TMW40D	Perchlorate	14797-73-0	NS		NS		NS		320	
TMW48	Perchlorate	14797-73-0	NS		NS		NS		1600	

Table 5-18: April 2010 – October 2011 Perchlorate Detected

ANALYTICAL METHOD 6850											
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011		
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	
TMW49	Perchlorate	14797-73-0	NS		NS		NS		2100		

CASRN: Chemical Abstract Services Registry Number

ug/L: micrograms per Liter

ND: Not Detected

NS: Not Sampled

J: Estimated, but detected value

Table 5-19: April 2010 – October 2011 Volatile Organic Compounds Detected

ANALYTICAL METHOD 8260										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
OB/OD Area Monitoring Wells										
CMW02	Acetone	67-64-1	3.11	J	ND		ND		ND	
CMW04	Carbon Disulfide	75-15-0	1.18		0.660	J	ND		1.5	
CMW07	Carbon Disulfide	75-15-0	ND		ND		ND		0.88	J
CMW10	Acetone	67-64-1	3.67	J	8.16	J	ND		ND	
CMW14	Acetone	67-64-1	23.8		12.3		15	J	5.0	J
	Benzene	71-43-2	1.35		1.18		1.2		0.58	J
	Chloromethane	74-87-3	1.32		1.75		2.0		1.4	
	Methyl Isobutyl Ketone	108-10-1	0.660	J	ND		ND		ND	
CMW17	Acetone	67-64-1	3.26	J	5.49	J	ND		ND	
CMW19	Carbon Disulfide	75-15-0	0.650		0.770		ND		0.93	J
CMW22	Dichloroethylene, 1,2-cis-	156-59-2	ND		ND		ND		0.68	J
CMW23	Acetone	67-64-1	ND		5.57	J	ND		ND	
CMW24	Carbon Disulfide	75-15-0	17.5		18.9		7.1		6.4	
CMW25	Carbon Disulfide	75-15-0	2.85		1.91		ND		ND	
KMW09	Carbon Disulfide	75-15-0	1.19		ND		ND		ND	
KMW11	Acetone	67-64-1	5.80		ND		ND		ND	
	Tetrachloroethylene	127-18-4	2.63		1.73		2.5		1.4	
KMW12	Carbon Disulfide	75-15-0	ND		0.520	J	ND		ND	
	Toluene	108-88-3	0.380	J	1.17	J	ND		ND	
Northern Area Alluvial Monitoring Wells										
EMW01	Toluene	108-88-3	1.28		ND		ND		ND	
EMW03	Acetone	67-64-1	ND		5.48	J	ND		ND	
EMW04	Toluene	108-88-3	9.13		1.07		0.46	J	ND	
MW01	Dichloroethane, 1,2-	107-06-2	1.39		1.61	J	0.46	J	1.6	
MW02	Dichloroethane, 1,2-	107-06-2	0.410	J	ND		ND		ND	
	Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.210	J	ND		ND		ND	
MW03	Dichloroethane, 1,2-	107-06-2	0.180	J	ND		ND		ND	
MW18D	Benzene	71-43-2	ND		ND		ND		0.71	J
	Carbon Disulfide	75-15-0	0.470	J	ND		ND		3.2	
	Dichloroethane, 1,2-	107-06-2	110	J	97.1	J	110		87	
	Methylcyclohexane	108-87-2	0.320	J	ND		ND		ND	
MW20	Acetone	67-64-1	5.00		ND		ND		ND	
	Dichloroethane, 1,2-	107-06-2	8.88		11.6	J	8.9		9.6	
MW22D	Dichloroethane, 1,2-	107-06-2	0.330	J	ND		ND		ND	
MW22S	Dichloroethane, 1,1-	75-34-3	0.580		0.560		ND		0.83	J
	Dichloroethane, 1,2-	107-06-2	0.650		0.690	J	ND		0.61	J
	Trichloroethane, 1,1,1-	71-55-6	4.14	J	4.14		4.3		4.0	

Table 5-19: April 2010 – October 2011 Volatile Organic Compounds Detected

ANALYTICAL METHOD 8260										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
TMW07	Acetone	67-64-1	4.43	J	ND		ND		ND	
TMW08	Carbon Disulfide	75-15-0	0.180	J	ND		ND		ND	
TMW23	Chloroform	67-66-3	ND		ND		ND		0.48	J
	Toluene	108-88-3	ND		ND		ND		0.22	J
TMW24	Carbon Disulfide	75-15-0	0.260	J	ND		ND		0.40	J
TMW26	Ethylbenzene	100-41-4	ND		ND		0.30	J	ND	
TMW27	Carbon Disulfide	75-15-0	0.350	J	0.630		ND		0.55	J
TMW28	Carbon Disulfide	75-15-0	0.920		0.550		ND		ND	
TMW33	Dichloroethane, 1,2-	107-06-2	30.7	J	30.8	J	40		33	
	Toluene	108-88-3	ND		ND		1.3		ND	
TMW34	Acetone	67-64-1	3.17	J	ND		ND		ND	
TMW35	Dichloroethane, 1,2-	107-06-2	0.980		1.44	J	ND		1.4	
TMW39S	Dichloroethylene, 1,2-cis-	156-59-2	NS		NS		NS		5.1	
	m,p-Xylene	179601-23-1	NS		NS		NS		1.1	J
	Toluene	108-88-3	NS		NS		NS		0.57	J
	Vinyl chloride	75-01-4	NS		NS		NS		3.8	
Northern Area Bedrock Monitoring Wells										
TMW14A	2-Hexanone	591-78-6	ND		ND		ND		3.4	J
	Carbon Disulfide	75-15-0	0.520		ND		ND		1.3	
TMW16	Toluene	108-88-3	8.23		63.9		ND		ND	
TMW17	Carbon disulfide	75-15-0	25.9		23.5		1.5		ND	
	Chloromethane	74-87-3	1.68		1.91		ND		ND	
	Toluene	108-88-3	ND		ND		ND		0.83	J
TMW18	Chloroform	67-66-3	ND		ND		ND		1.2	J
	Tetrachloroethylene	127-18-4	ND		ND		ND		0.38	J
	Toluene	108-88-3	295	J	520		120		47	J
TMW19	Toluene	108-88-3	51.0		14.7		ND		ND	
TMW32	Toluene	108-88-3	ND		1.00	J	ND		ND	
TMW36	Chloroform	67-66-3	1.08		ND		ND		ND	
	Methyl Isobutyl Ketone	108-10-1	ND		1.60	J	ND		ND	
	Toluene	108-88-3	ND		1180	J	490		210	J

Table 5-19: April 2010 – October 2011 Volatile Organic Compounds Detected

ANALYTICAL METHOD 8260										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
TMW37	Carbon Disulfide	75-15-0	ND		5.94		2.2		3.5	J
	Methyl Isobutyl Ketone	108-10-1	ND		2.24	J	ND		ND	
	Toluene	108-88-3	ND		1120	J	120		47	J

CASRN: Chemical Abstract Services Registry Number

ug/L: micrograms per Liter

ND: Not Detected

NS: Not Sampled

J: Estimated, but detected value

Table 5-20: April 2010 – October 2011 Semi-Volatile Organic Compounds Detected

ANALYTICAL METHOD 8270										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
OB/OD Area Monitoring Wells										
CMW10	Bis(2-ethylhexyl)phthalate	117-81-7	ND		1.68	J	ND		0.29	J
	Caprolactam	105-60-2	ND		ND		140		ND	
	Dibutyl Phthalate	84-74-2	1.58	J	2.66	J	ND		ND	
	Phenol	108-95-2	1.69	J	ND		ND		ND	
CMW14	Acetophenone	98-86-2	1.15	J	ND		ND		ND	
	Benzaldehyde	100-52-7	0.550	J	ND		ND		ND	
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		ND		ND		0.32	J
	Caprolactam	105-60-2	ND		8.86	J	ND		5.6	
	Dibutyl Phthalate	84-74-2	1.26	J	ND		ND		ND	
	Dinitrotoluene, 2,4-	121-14-2	ND		ND		ND		0.38	J
	Nitroso-di-N-propylamine, N-Phenol	621-64-7	ND		ND		ND		0.33	J
CMW18	Dibutyl Phthalate	84-74-2	1.16	J	ND		ND		ND	
	Phenol	108-95-2	2.74	J	ND		ND		ND	
CMW19	Bis(2-ethylhexyl)phthalate	117-81-7	ND		3.07	J	ND		0.53	J
	Dibutyl Phthalate	84-74-2	1.19	J	2.17	J	ND		ND	
	Phenol	108-95-2	2.22	J	ND		ND		ND	
CMW24	Bis(2-ethylhexyl)phthalate	117-81-7	ND		1.69	J	ND		0.42	J
	Nitrosodiphenylamine, N-	86-30-6	ND		ND		0.44	J	0.49	J
KMW10	Bis(2-ethylhexyl)phthalate	117-81-7	1.61	J	ND		0.53	J	0.48	J
	Dibutyl phthalate	84-74-2	ND		ND		0.24	J	ND	
	Di-n-octyl phthalate	117-84-0	0.250	J	ND		ND		ND	
Northern Area Alluvial Monitoring Wells										
FW31	Acetophenone	98-86-2	0.212	J	ND		ND		ND	
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		ND		0.41	J	1.9	J
FW35	Bis(2-ethylhexyl)phthalate	117-81-7	ND		ND		0.64	J	0.42	J
	Dibutyl Phthalate	84-74-2	ND		ND		ND		0.22	J
	Diethyl Phthalate	84-66-2	ND		ND		ND		0.62	J
MW20	Bis(2-ethylhexyl)phthalate	117-81-7	ND		ND		ND		0.39	J
	Dibutyl Phthalate	84-74-2	ND		ND		ND		0.23	J
MW22D	Bis(2-chloro-1-methylethyl) ether	108-60-1	ND		ND		ND		0.28	J
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		2.25	J	ND		ND	
	Nitroso-di-N-propylamine, N-	621-64-7	ND		ND		ND		0.31	J
MW22S	Bis(2-ethylhexyl)phthalate	117-81-7	ND		ND		ND		0.29	J
	Dibutyl Phthalate	84-74-2	ND		ND		ND		0.24	J
TMW03	Dinitrophenol, 2,4-	51-28-5	40.6		45.2		9.6	J	37	
	Dinitrotoluene, 2,4-	121-14-2	0.692	J	ND		0.41	J	0.96	J
	Phenol	108-95-2	1.83	J	1.26	J	ND		ND	
TMW04	2-Nitroaniline	88-74-4	ND		ND		0.30	J	0.32	J
	Acetophenone	98-86-2	0.254	J	ND		ND		ND	

Table 5-20: April 2010 – October 2011 Semi-Volatile Organic Compounds Detected

ANALYTICAL METHOD 8270										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
TMW04	Dinitrotoluene, 2,4-	121-14-2	0.842	J	ND		1.8	J	ND	
	Dinitrotoluene, 2,6-	606-20-2	ND		ND		ND		0.29	J
	Phenol	108-95-2	ND		1.14	J	ND		ND	
TMW06	Cresol, o-	95-48-7	ND		3.01	J	ND		ND	
	Dinitrotoluene, 2,4-	121-14-2	ND		ND		ND		0.28	J
TMW07	Bis(2-ethylhexyl)phthalate	117-81-7	3.12	J	ND		6.2	J	0.64	J
	Dibutyl Phthalate	84-74-2	ND		ND		ND		0.24	J
	Di-n-octyl phthalate	117-84-0	ND		ND		0.82	J	ND	
TMW15	Bis(2-ethylhexyl)phthalate	117-81-7	ND		1.51	J	ND		ND	
	Dibutyl Phthalate	84-74-2	ND		2.42	J	ND		ND	
	Diethyl Phthalate	84-66-2	ND		ND		ND		0.23	J
TMW22	Bis(2-ethylhexyl)phthalate	117-81-7	2.39	J	ND		ND		0.85	J
TMW31S	Bis(2-ethylhexyl)phthalate	117-81-7	6.90		ND		ND		0.066	J
	Caprolactam	105-60-2	16.8	J	ND		ND		ND	
	Diethyl Phthalate	84-66-2	ND		ND		ND		0.026	J
TMW33	Bis(2-ethylhexyl)phthalate	117-81-7	15.2		ND		ND		1.4	J
	Dibutyl Phthalate	84-74-2	1.70	J	ND		ND		0.22	J
	Diethyl phthalate	84-66-2	ND		ND		0.41	J	ND	
	Phenol	108-95-2	2.41	J	ND		ND		ND	
TMW35	Bis(2-ethylhexyl)phthalate	117-81-7	ND		ND		ND		0.31	J
	Dimethyl phthalate	131-11-3	ND		ND		0.27	J	ND	
	Phenol	108-95-2	1.74	J	ND		ND		0.31	J
TMW39S	Bis(2-ethylhexyl)phthalate	117-81-7	NS		NS		NS		6.5	
	Caprolactam	105-60-2	NS		NS		NS		46	
	Phenol	108-95-2	NS		NS		NS		0.21	J
TMW41	Bis(2-ethylhexyl)phthalate	117-81-7	NS		NS		NS		0.65	J
Northern Area Bedrock Monitoring Wells										
EMW01	Bis(2-ethylhexyl)phthalate	117-81-7	ND		2.26	J	ND		0.28	J
	Diethyl Phthalate	84-66-2	ND		ND		ND		0.28	J
	Phenol	108-95-2	1.16	J	ND		ND		ND	
EMW02	Dimethyl phthalate	131-11-3	ND		ND		0.22	J	ND	
	Phenol	108-95-2	1.59	J	ND		ND		ND	
EMW03	Dibutyl Phthalate	84-74-2	1.39	J	ND		ND		ND	
	Phenol	108-95-2	1.92	J	1.18	J	ND		ND	
EMW04	Bis(2-chloro-1-methylethyl) ether	108-60-1	ND		ND		ND		9.3	
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		2.18	J	ND		0.48	J
	Cresol, o-	95-48-7	ND		ND		ND		1.2	J
	Phenol	108-95-2	1.30	J	ND		ND		ND	
TMW14A	Bis(2-ethylhexyl)phthalate	117-81-7	ND		2.38	J	ND		8.5	
TMW16	Acetophenone	98-86-2	0.432	J	ND		ND		ND	
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		ND		ND		0.74	J

Table 5-20: April 2010 – October 2011 Semi-Volatile Organic Compounds Detected

ANALYTICAL METHOD 8270										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
TMW16	Cresol, o-	95-48-7	0.368	J	ND		ND		ND	
	Dibutyl Phthalate	84-74-2	ND		ND		ND		0.26	J
	Phenol	108-95-2	1.73	J	ND		ND		ND	
TMW18	Acetophenone	98-86-2	10.8		10.5		ND		5.1	
TMW18	Bis(2-ethylhexyl)phthalate	117-81-7	ND		3.10	J	ND		1.7	J
	Diethyl Phthalate	84-66-2	ND		ND		ND		0.30	J
	Dimethylphenol, 2,4-	105-67-9	13.2	J	ND		ND		ND	
	Nitroso-di-N-propylamine, N-	621-64-7	ND		ND		ND		1.1	J
	Phenol	108-95-2	10.8		ND		ND		ND	
TMW19	2,6-Dinitrotoluene	606-20-2	ND		ND		0.39	J	ND	
	Acetophenone	98-86-2	1.46	J	ND		ND		ND	
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		ND		21	J	1.8	J
	Cresol, o-	95-48-7	0.667	J	ND		ND		ND	
	Dibutyl Phthalate	84-74-2	1.07	J	ND		ND		0.32	J
	Diethyl Phthalate	84-66-2	ND		ND		ND		0.30	J
	M,P-CRESOL	MEPH34	0.720	J	ND		ND		ND	
TMW30	Phenol	108-95-2	7.02		ND		ND		ND	
	Acetophenone	98-86-2	0.180	J	ND		ND		ND	
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		3.96	J	ND		0.32	J
	Dibutyl Phthalate	84-74-2	1.49	J	ND		ND		ND	
TMW31D	Phenol	108-95-2	2.54	J	ND		ND		ND	
TMW32	Dimethyl phthalate	131-11-3	ND		ND		0.23	J	ND	
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		1.58	J	ND		ND	
	Dibutyl Phthalate	84-74-2	1.20	J	3.16	J	ND		ND	
	Dimethyl phthalate	131-11-3	ND		ND		0.25	J	ND	
TMW36	Phenol	108-95-2	ND		2.85	J	ND		ND	
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		1.57	J	ND		0.64	J
	Cresol, o-	95-48-7	ND		1.84	J	0.58	J	1.3	J
TMW36	Dibutyl Phthalate	84-74-2	ND		3.62	J	ND		ND	
	Diethyl Phthalate	84-66-2	ND		ND		ND		0.27	J
	Isophorone	78-59-1	ND		1.20	J	ND		ND	
	M,P-CRESOL	MEPH34	ND		1.69	J	ND		ND	
	Phenol	108-95-2	1.63	J	11.8		ND		ND	
TMW37	2-Methylphenol	95-48-7	ND		ND		5.6		3.7	J
	Bis(2-ethylhexyl)phthalate	117-81-7	ND		ND		ND		3.6	J
	Cresol, o-	95-48-7	ND		ND		5.6		3.7	J
	m,p-Cresol	MEPH34	ND		ND		9.6	J	ND	
	Phenol	108-95-2	ND		1.16	J	0.29	J	ND	
TMW38	Bis(2-ethylhexyl)phthalate	117-81-7	NS		NS		NS		1.3	J
	Cresol, o-	95-48-7	NS		NS		NS		0.52	J
TMW48	Bis(2-ethylhexyl)phthalate	117-81-7	NS		NS		NS		0.32	J

Table 5-20: April 2010 – October 2011 Semi-Volatile Organic Compounds Detected

ANALYTICAL METHOD 8270										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
TMW49	Bis(2-ethylhexyl)phthalate	117-81-7	NS		NS		NS		3.0	J
	Cresol, o-	95-48-7	NS		NS		NS		0.69	J
	Diethyl Phthalate	84-66-2	NS		NS		NS		0.76	J

CASRN: Chemical Abstract Services Registry Number

ug/L: micrograms per Liter

ND: Not Detected

NS: Not Sampled

J: Estimated, but detected value

Table 5-21: April 2010 – October 2011 Diesel and Gasoline Range Organics Detected

ANALYTICAL METHOD 8015 DRO										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
Northern Area Alluvial Monitoring Wells										
MW01	Diesel Range Organics	DRO	276	J	ND		ND		ND	
MW02	Diesel Range Organics	DRO	490	J	ND		ND		ND	
MW18D	Diesel Range Organics	DRO	ND		ND		ND		ND	
MW20	Diesel Range Organics	DRO	ND		ND		ND		ND	
MW22D	Diesel Range Organics	DRO	ND		ND		ND		ND	
MW22S	Diesel Range Organics	DRO	345	J	ND		ND		ND	
Northern Area Bedrock Monitoring Wells										
TMW36	Diesel Range Organics	DRO	ND		117	J	ND		ND	

DRO: Diesel Range Organics

CASRN: Chemical Abstract Services Registry Number

ug/L: micrograms per Liter

ND: Not Detected

J: Estimated, but detected value

Table 5-22: April 2010 – April 2011 Dioxins and Furans Detected

ANALYTICAL METHOD 8290										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (pg/L)	Flag	Result (pg/L)	Flag	Result (pg/L)	Flag	Result (pg/L)	Flag
OB/OD Area Monitoring Wells										
CMW02	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.625	J	ND		ND		NS	
	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	ND		2.22	J	ND		NS	
	Total Pentachlorodibenzofuran	30402-15-4	ND		1.88	J	ND		NS	
CMW10	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.769	J	ND		ND		NS	
	HpCDD, 2,3,7,8-	37871-00-4	1.75	J	ND		ND		NS	
CMW18	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.595	J	ND		ND		NS	
	HpCDD, 2,3,7,8-	37871-00-4	1.66	J	ND		ND		NS	
CMW19	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.673	J	0.611	J	ND		NS	
	HpCDD, 2,3,7,8-	37871-00-4	ND		1.53	J	ND		NS	
CMW24	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.817	J	ND		ND		NS	
	HpCDD, 2,3,7,8-	37871-00-4	0.817	J	ND		ND		NS	
CMW25	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.788	J	0.771	J	ND		NS	
	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	ND		ND		2.34	J	NS	
KMW09	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.751	J	ND		ND		NS	
	HpCDD, 2,3,7,8-	37871-00-4	1.38	J	1.64	J	ND		NS	
Northern Area Alluvial Monitoring Wells										
EMW01	HpCDD, 2,3,7,8-	37871-00-4	ND		1.50	J	ND		NS	
	Total Tetrachlorodibenzofuran	55722-27-5	1.06	J	ND		ND		NS	
EMW03	OCDF	39001-02-0	1.01	J	2.66	J	ND		NS	
EMW03	Total Tetrachlorodibenzofuran	55722-27-5	7.10	J	ND		ND		NS	
FW31	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	2.39	J	ND		ND		NS	
MW22D	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	ND		ND		6.27	J	NS	
	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.966	J	ND		ND		NS	
	HpCDF, 2,3,7,8-	38998-75-3	ND		ND		8.66	J	NS	
	HxCDF, 2,3,7,8-	55684-94-1	ND		ND		7.55	J	NS	
	OCDD	3268-87-9	ND		ND		46.4	J	NS	
	OCDF	39001-02-0	ND		2.29	J	ND		NS	
	Total Tetrachlorodibenzofuran	55722-27-5	ND		ND		0.904	J	NS	
MW22S	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.745	J	1.92	J	ND		NS	
	HpCDD, 2,3,7,8-	37871-00-4	2.08	J	ND		ND		NS	
	OCDD	3268-87-9	ND		26.1	J	ND		NS	
TMW01	OCDF	39001-02-0	0.610	J	ND		ND		NS	
TMW07	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	1.38	J	ND		ND		NS	
	HpCDD, 2,3,7,8-	37871-00-4	2.15	J	ND		ND		NS	
TMW11	OCDF	39001-02-0	ND		0.682	J	ND		NS	
TMW13	HpCDD, 2,3,7,8-	37871-00-4	ND		1.37	J	ND		NS	
TMW15	Hexachlorodibenzo-p-dioxin	34465-46-8	ND		0.300	J	ND		NS	
	OCDF	39001-02-0	ND		0.319	J	ND		NS	
	Total Pentachlorodibenzofuran	30402-15-4	ND		ND		1.29	J	NS	
TMW27	HpCDD, 2,3,7,8-	37871-00-4	1.60	J	ND		ND		NS	

Table 5-22: April 2010 – April 2011 Dioxins and Furans Detected

ANALYTICAL METHOD 8290										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (pg/L)	Flag	Result (pg/L)	Flag	Result (pg/L)	Flag	Result (pg/L)	Flag
Northern Area Bedrock Monitoring Wells										
TMW02	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.761	J	ND		ND		NS	
	HpCDD, 2,3,7,8-	37871-00-4	2.17	J	ND		ND		NS	
	HpCDF, 2,3,7,8-	38998-75-3	ND		1.80	J	ND		NS	
	OCDD	3268-87-9	ND		31.9	J	ND		NS	
	OCDF	39001-02-0	ND		2.90	J	ND		NS	
	Total Pentachlorodibenzofuran	30402-15-4	ND		ND		1.32	J	NS	
TMW30	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	0.808	J	0.587	J	ND		NS	
	HpCDD, 2,3,7,8-	37871-00-4	0.808	J	1.78	J	ND		NS	
	Total Tetrachlorodibenzofuran	55722-27-5	0.777	J	ND		ND		NS	
TMW31S	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	ND		ND		0.963	J	NS	
	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	ND		0.887	J	ND		NS	
TMW32	Total Tetrachlorodibenzofuran	55722-27-5	4.32	J	ND		ND		NS	
TMW36	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	0.872	J	ND		ND		NS	
	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	1.07	J	ND		ND		NS	
	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	0.625	J	ND		ND		NS	
	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	0.542	J	ND		ND		NS	
	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	0.700	J	ND		ND		NS	
	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	0.819	J	ND		ND		NS	
	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	1.24	J	ND		ND		NS	
	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	0.898	J	ND		ND		NS	
	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	0.860	J	ND		ND		NS	
	Hexachlorodibenzo-p-dioxin	34465-46-8	0.819	J	ND		ND		NS	
	HpCDF, 2,3,7,8-	38998-75-3	1.07	J	ND		ND		NS	
	OCDF	39001-02-0	2.71	J	ND		ND		NS	
	Total Tetrachlorodibenzofuran	55722-27-5	7.41	J	ND		ND		NS	
TMW37	HpCDD, 2,3,7,8-	37871-00-4	ND		1.03	J	ND		NS	

CASRN: Chemical Abstract Services Registry Number

pg/L: picograms per Liter

ND: Not Detected

NS: Not Sampled

J: Estimated, but detected value

Table 5-23: April 2010 – October 2011 Pesticides Detected

ANALYTICAL METHOD 8081										
Well ID	Analyte	CASNR	April 2010		October 2010		April 2011		October 2011	
			Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag	Result (ug/L)	Flag
OB/OB Area Monitoring Wells										
CMW02	Heptachlor	76-44-8	ND		ND		0.038		ND	
CMW24	DDD	72-54-8	ND		ND		ND		0.0096	J
	Heptachlor	76-44-8	0.0085	J	ND		ND		ND	
CMW25	Methoxychlor	72-43-5	ND		ND		0.011		ND	
Northern Area Alluvial Monitoring Wells										
MW01	Heptachlor	76-44-8	ND		ND		0.028	J	ND	
MW22D	Heptachlor	76-44-8	0.00682	J	ND		ND		ND	
	Methoxychlor	72-43-5	ND		ND		0.0037	J	ND	
MW22S	Aldrin	309-00-2	ND		ND		0.0064	J	ND	
	gamma-Chlordane	5103-74-2	ND		ND		0.0041	J	ND	
	Methoxychlor	72-43-5	ND		ND		0.040	J	ND	
TMW23	Methoxychlor	72-43-5	ND		ND		0.028	J	ND	
TMW39S	delta-BHC	319-86-8	NS		NS		NS		0.021	
TMW41	delta-BHC	319-86-8	NS		NS		NS		0.010	
Northern Area Bedrock Monitoring Wells										
TMW30	delta-BHC	319-86-8	ND		ND		ND		0.0064	J
TMW36	Heptachlor	76-44-8	ND		ND		0.0038	J	ND	
TMW49	delta-BHC	319-86-8	NS		NS		NS		0.024	

CASRN: Chemical Abstract Services Registry Number

ug/L: micrograms per Liter

ND: Not Detected

NS: Not Sampled

J: Estimated, but detected value

Table 6-1: October 2011 MW23 Analytes Detected

ANALYTICAL METHOD 6010B (Dissolved Metals)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
MW23	Aluminum	7429-90-5	0.1	0.018	0.25	mg/L		NA	NA	1.6	NC	No
MW23	Barium	7440-39-3	0.01	0.00058	0.17	mg/L		NA	NA	1	WQCC	No
MW23	Chromium	7440-47-3	0.01	0.00066	0.00069	mg/L	J Q	NA	NA	0.05	WQCC	No
MW23	Cobalt	7440-48-4	0.01	0.0012	0.0044	mg/L	J	NA	NA	0.047	NC	No
MW23	Iron	7439-89-6	0.1	0.022	0.27	mg/L		NA	NA	1	WQCC	No
MW23	Manganese	7439-96-5	0.01	0.00025	0.12	mg/L	Q	NA	NA	0.2	WQCC	No
MW23	Molybdenum	7439-98-7	0.02	0.0031	0.017	mg/L	J	NA	NA	0.078	NC	No
MW23	Nickel	7440-02-0	0.04	0.0013	0.0023	mg/L	J	NA	NA	NRL	NRL	NRL
MW23	Vanadium	7440-62-2	0.00001	0.0011	0.0049	mg/L	J Q	NA	NA	NRL	NRL	NRL
MW23	Zinc	7440-66-6	0.00002	0.0045	0.013	mg/L	J	NA	NA	10	WQCC	No

ANALYTICAL METHOD 6010B (Total Metals)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
MW23	Aluminum	7429-90-5	0.3	0.018	9.9	mg/L		NA	NA	1.6	NC	NA
MW23	Barium	7440-39-3	0.01	0.00058	0.3	mg/L		NA	NA	1	WQCC	NA
MW23	Chromium	7440-47-3	0.015	0.00066	0.0074	mg/L	J Q	NA	NA	0.5	WQCC	NA
MW23	Cobalt	7440-48-4	0.015	0.0012	0.0029	mg/L	J	NA	NA	0.047	NC	NA
MW23	Copper	7440-50-8	0.015	0.0014	0.0055	mg/L	J Q	NA	NA	1	WQCC	NA
MW23	Iron	7439-89-6	0.1	0.022	4.7	mg/L		NA	NA	1	WQCC	NA
MW23	Lead	7439-92-1	0.015	0.0026	0.0048	mg/L	J	NA	NA	0.015	WQCC	NA
MW23	Manganese	7439-96-5	0.01	0.00025	0.2	mg/L	Q	NA	NA	0.2	WQCC	NA
MW23	Molybdenum	7439-98-7	0.03	0.0031	0.016	mg/L	J	NA	NA	0.078	NC	NA
MW23	Vanadium	7440-62-2	0.015	0.0011	0.016	mg/L	Q	NA	NA	NRL	NRL	NA
MW23	Zinc	7440-66-6	0.15	0.0045	0.024	mg/L	J	NA	NA	10	WQCC	NA

ANALYTICAL METHOD 8260 (Volatile Organic Compounds)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
MW23	Acetone	67-64-1	10	1.9	6.4	ug/L	J	NA	NA	12000	NC	No
MW23	4-Isopropyltoluene	99-87-6	1	0.17	0.6	ug/L	J	NA	NA	NRL	NRL	NRL
MW23	Toluene	108-88-3	1	0.17	0.3	ug/L	J	NA	NA	750	WQCC	No
MW23	Methylene Chloride	75-09-2	5	0.32	0.39	ug/L	J	NA	NA	5	MCL	No
Trip Blanks												
MW23-TB	Acetone	67-64-1	10	1.9	2.5	ug/L	J	NA	NA	NA	NA	NA
MW23-TB	Methylene Chloride	75-09-2	5	0.32	0.89	ug/L	J	NA	NA	NA	NA	NA

Table 6-1: October 2011 MW23 Analytes Detected

ANALYTICAL METHOD 8015B (Diesel Range Organics)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
MW23	Diesel Range Organics	NA	0.24	0.031	0.066	mg/L	J M	NA	NA	NRL	NRL	NRL

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

TB: Trip Blank

mg/L: milligrams per Liter

ug/L: micrograms per Liter

J: Estimated, but detected value

M: Compound has been manually integrated

Q: One or more quality control criteria failed

NA: Not Applicable

NC: U.S. EPA Regional Screening Levels for non-carcinogenic (May 2011 and November 2011)

NRL: No Regulatory Limit

WQCC: New Mexico Water Quality Control Standard

NOTE: Regulatory Limits for Metals Do Not Apply to Total Metals

Table 6-2: October 2011 MW24 Analytes Detected

ANALYTICAL METHOD 6010B (Dissolved)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
MW24	Aluminum	7429-90-5	0.1	0.018	0.03	mg/L	J	NA	NA	1.6	NC	No
MW24	Barium	7440-39-3	0.01	0.00058	0.27	mg/L		NA	NA	1	WQCC	No
MW24	Iron	7439-89-6	0.1	0.022	1.7	mg/L		NA	NA	1	WQCC	Yes
MW24	Manganese	7439-96-5	0.01	0.00025	0.52	mg/L	Q	NA	NA	0.2	WQCC	Yes
MW24	Molybdenum	7439-98-7	0.02	0.0031	0.0032	mg/L	J	NA	NA	0.078	NC	No

ANALYTICAL METHOD 6010B (Total)												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
MW24	Aluminum	7429-90-5	0.3	0.018	0.031	mg/L	J	NA	NA	1.6	NC	NA
MW24	Barium	7440-39-3	0.01	0.00058	0.26	mg/L		NA	NA	1	WQCC	NA
MW24	Iron	7439-89-6	0.1	0.022	1.6	mg/L		NA	NA	1	WQCC	NA
MW24	Manganese	7439-96-5	0.01	0.00025	0.49	mg/L	Q	NA	NA	0.2	WQCC	NA
MW24	Molybdenum	7439-98-7	0.03	0.0031	0.0032	mg/L	J	NA	NA	0.078	NC	NA

ANALYTICAL METHOD 8260												
Well ID	Analyte	CASNR	RL	DL	Result	Units	Lab Flag	V Flag	Final Flag	Value Used	Standard Used	Standard Exceeded
MW24	Methylene Chloride	75-09-2	5	0.32	0.42	ug/L	J	NA	NA	5	MCL	No
Trip Blanks												
MW24-TB	Acetone	67-64-1	10	1.9	2.6	ug/L	J	NA	NA	NA	NA	NA
MW24-TB	Methylene Chloride	75-09-2	5	0.32	1	ug/L	J	NA	NA	NA	NA	NA

CASRN: Chemical Abstract Services Registry Number

RL: Reporting Limit

DL: Detection Limit

Lab Flag: Qualifier assigned by lab

V Flag: Qualifier assigned by validation

Final Flag: Final qualifier

Standard Value: The applicable regulatory standard value

Bolded Values: Standard exceeded

TB: Trip Blank

mg/L: milligrams per Liter

ug/L: micrograms per Liter

J: Estimated, but detected value

NA: Not Applicable

Q: One or more quality control criteria failed

MCL: U.S. EPA Maximum Contaminant Level

NC: U.S. EPA Regional Screening Levels - non-carcinogenic (May 2011 and Nov. 2011)

WQCC: New Mexico Water Quality Control Standard

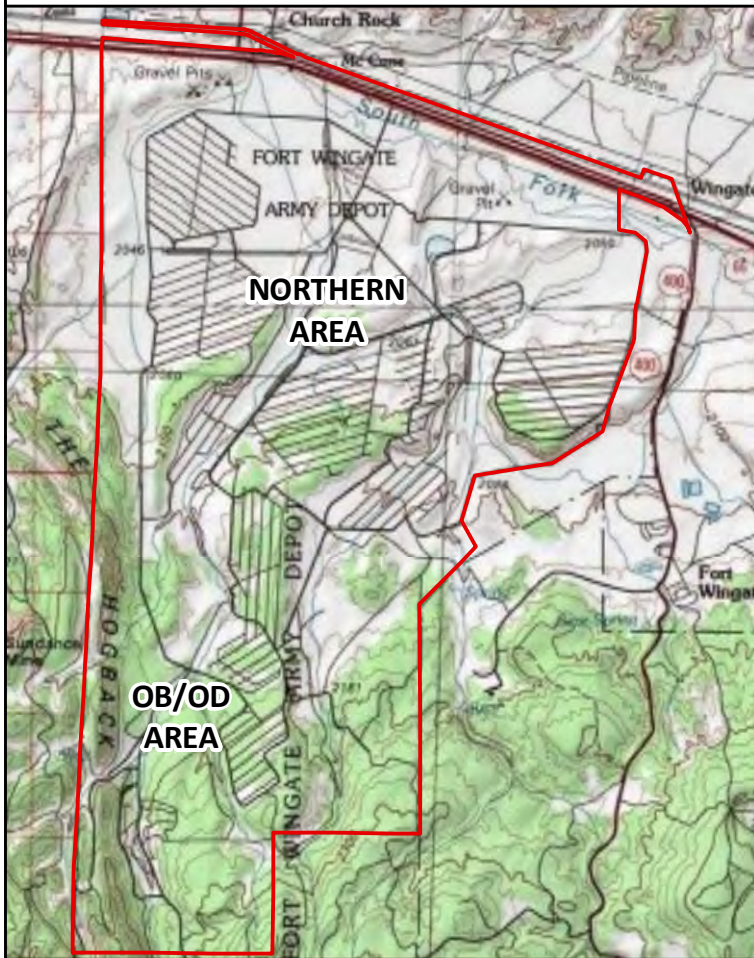
NOTE: Regulatory Limits for Metals Do Not Apply to Total Metals

**April and October 2011
Figures**

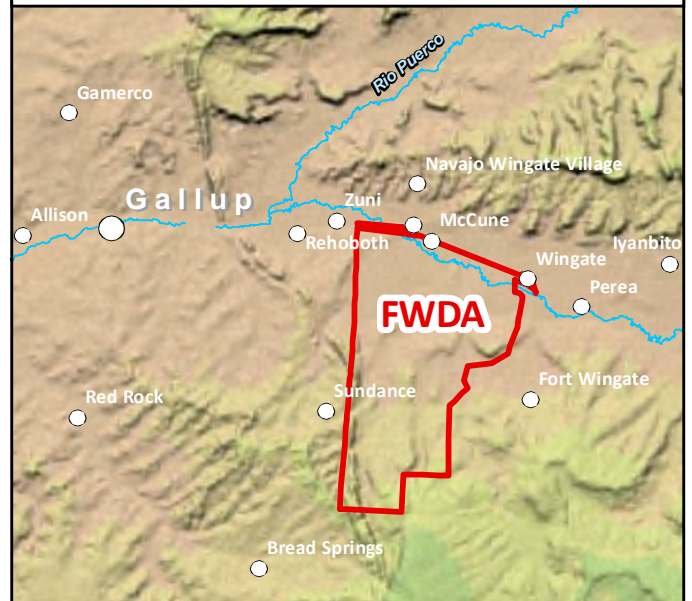
**Ft. Wingate Army Depot
Location within U.S.A.**



**Ft. Wingate Army Depot
1:100,000 Scale**



**Ft. Wingate Army Depot
1:325,000 Scale**



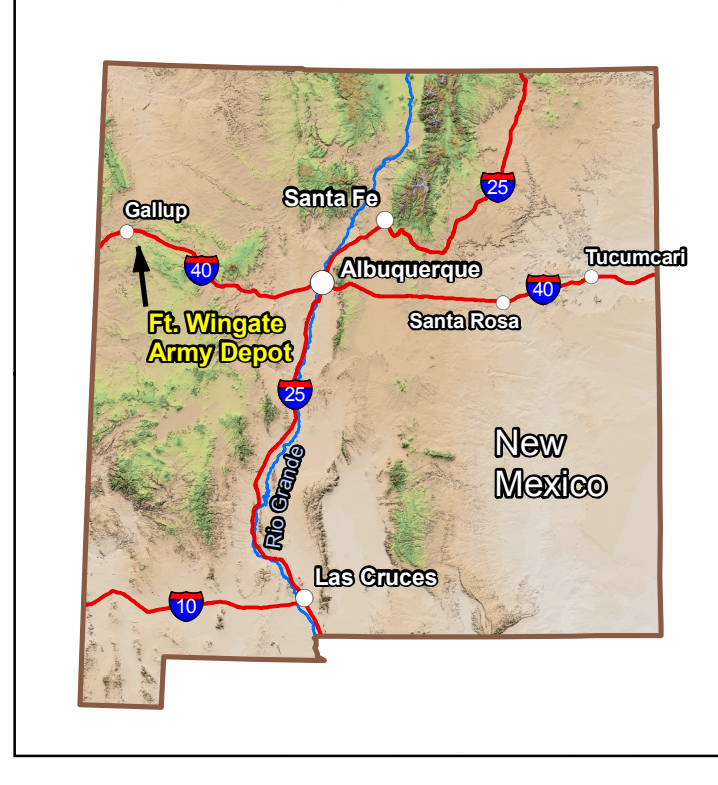
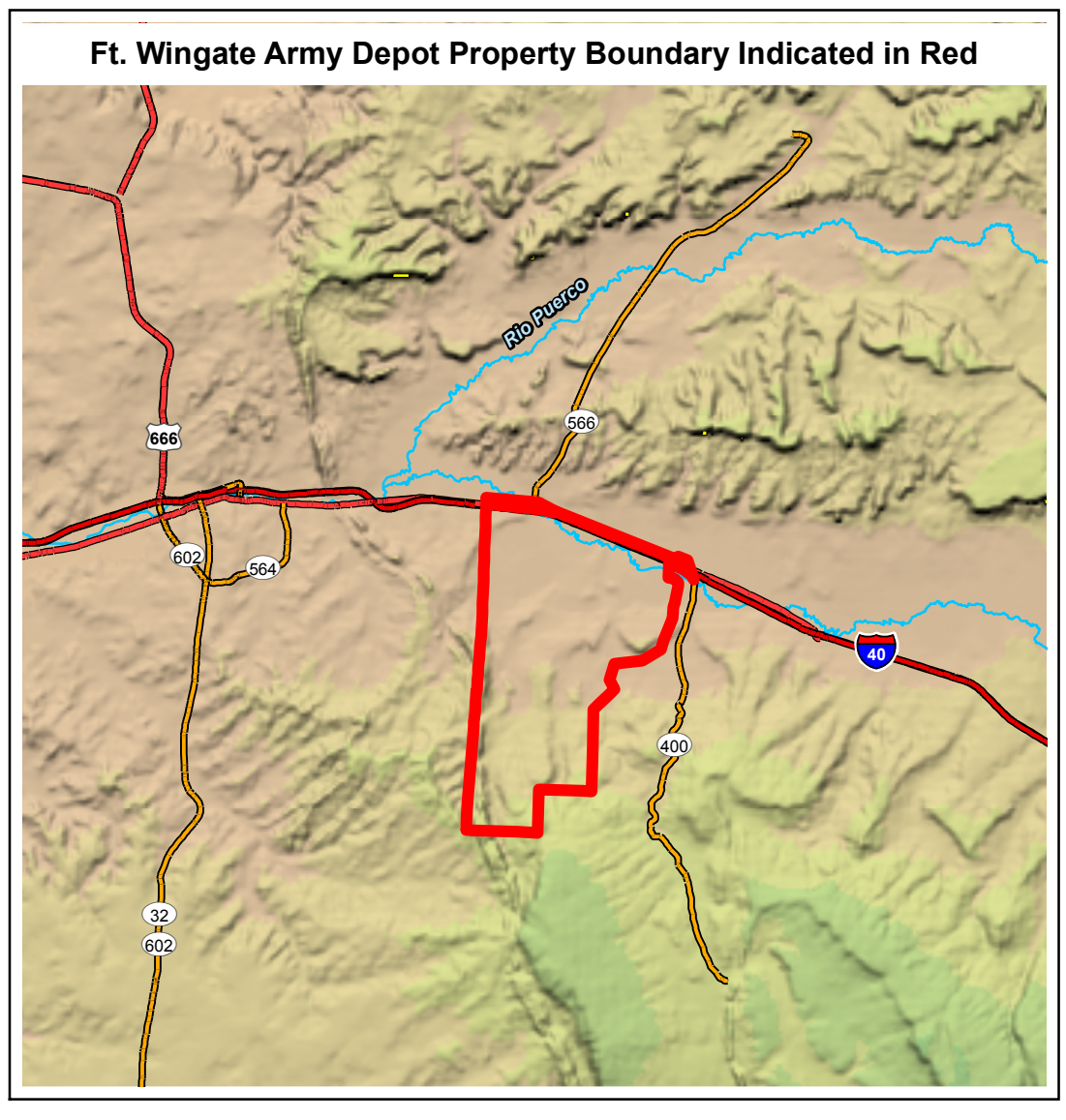
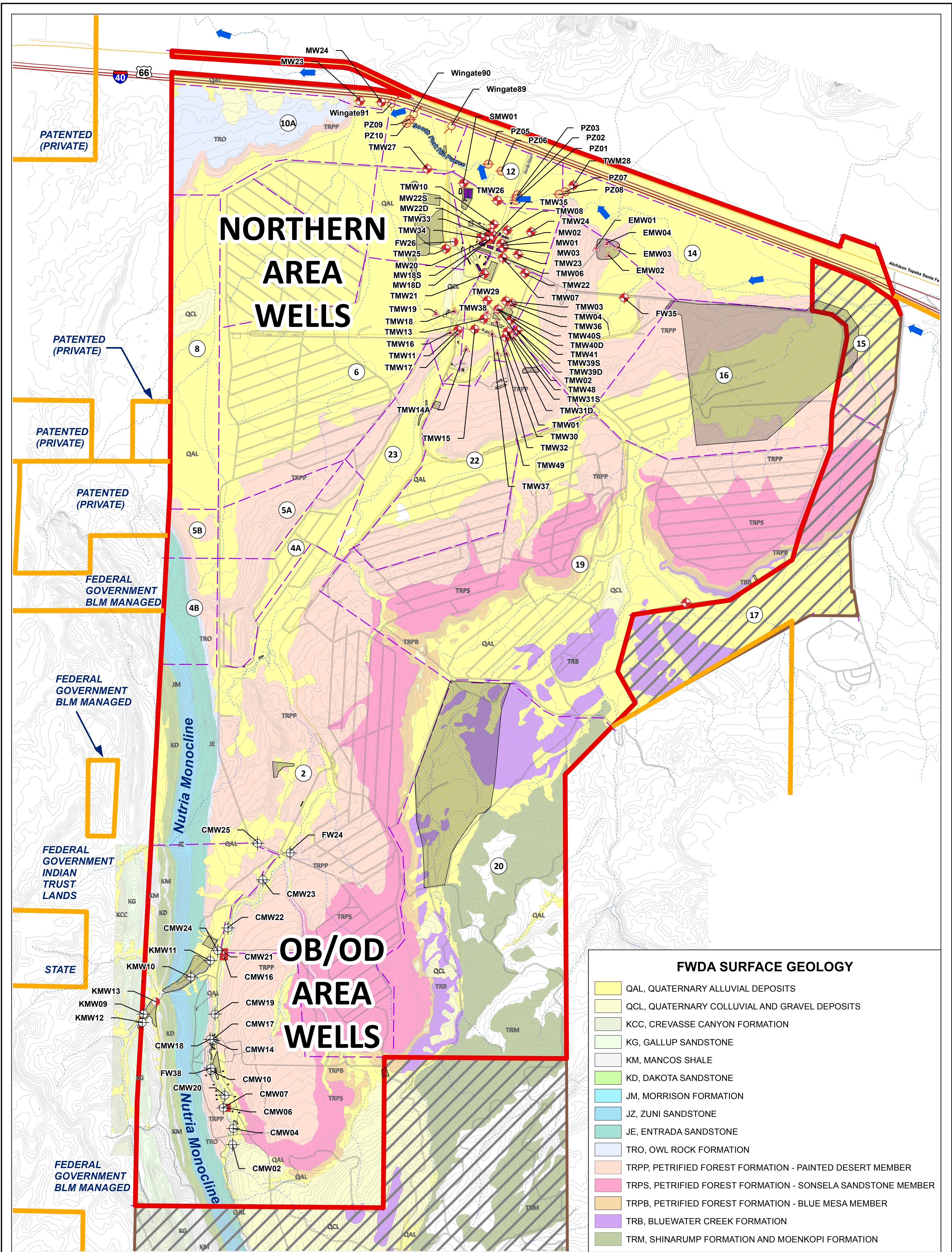
**FIGURE 1-1
Ft. Wingate Depot Activity
Installation Boundary in Red**

Map Date: March 2012

Data sources: drainages, railroad, roads: Tele Atlas
GDT-Dynamap, 2008; populated places: USGS,
ESRI, 2005; orthophotography: USGS, 2005; Ft.
Wingate Environmental Restoration detail: USACE.

Prepared by: Thomas McTigue
Reviewed by: David Brown





- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL DRY MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- BURIED MONITORING WELLS
- OB/OD AREA MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- ADJOINING PROPERTY BOUNDARY
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- TRANSFERRED FWDA PROPERTY
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 2-1
Ft. Wingate Army Depot
Monitoring Well Locations

1 Miles
1 Kilometers

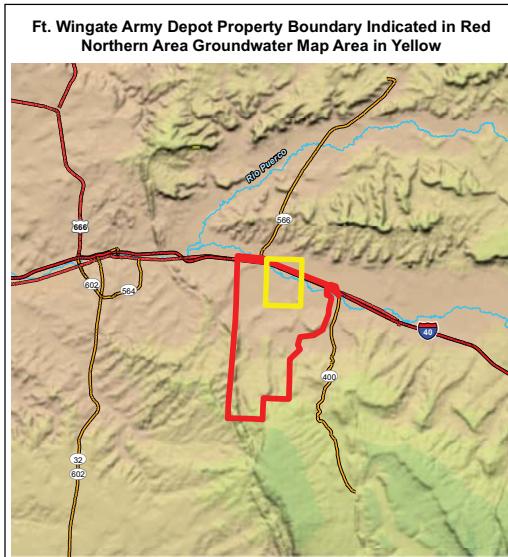
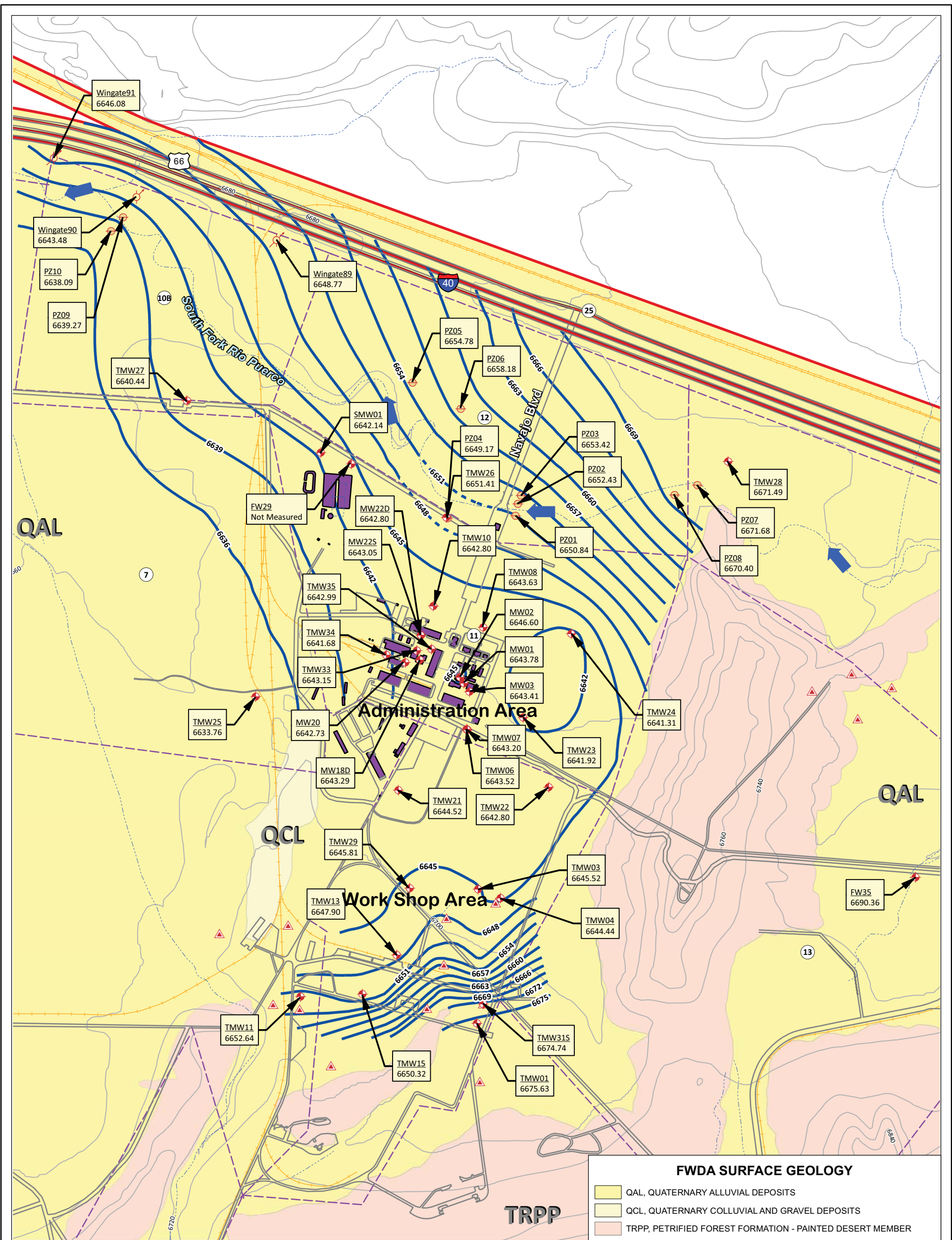
State Plane Coordinate System, New Mexico West, North American Datum 1983. Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:20,000 (1" = 1,667')
Map Date: March 21, 2012

Data sources: drainages, railroad, roads: Tele Atlas
GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown

US Army Corps of Engineers
Albuquerque District



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- GROUNDWATER ELEVATION CONTOUR (3 FT INTERVAL)
- GROUNDWATER ELEVATION CONTOUR ESTIMATE (3 FT INTERVAL)
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 4-1
April 2011 Northern Area Alluvial Groundwater Elevation Contour Map

0.25 Miles
 0.25 Kilometers

State Plane Coordinate System, New Mexico West, North American Datum 1983.
 Units in US Survey Feet above Mean Sea Level.

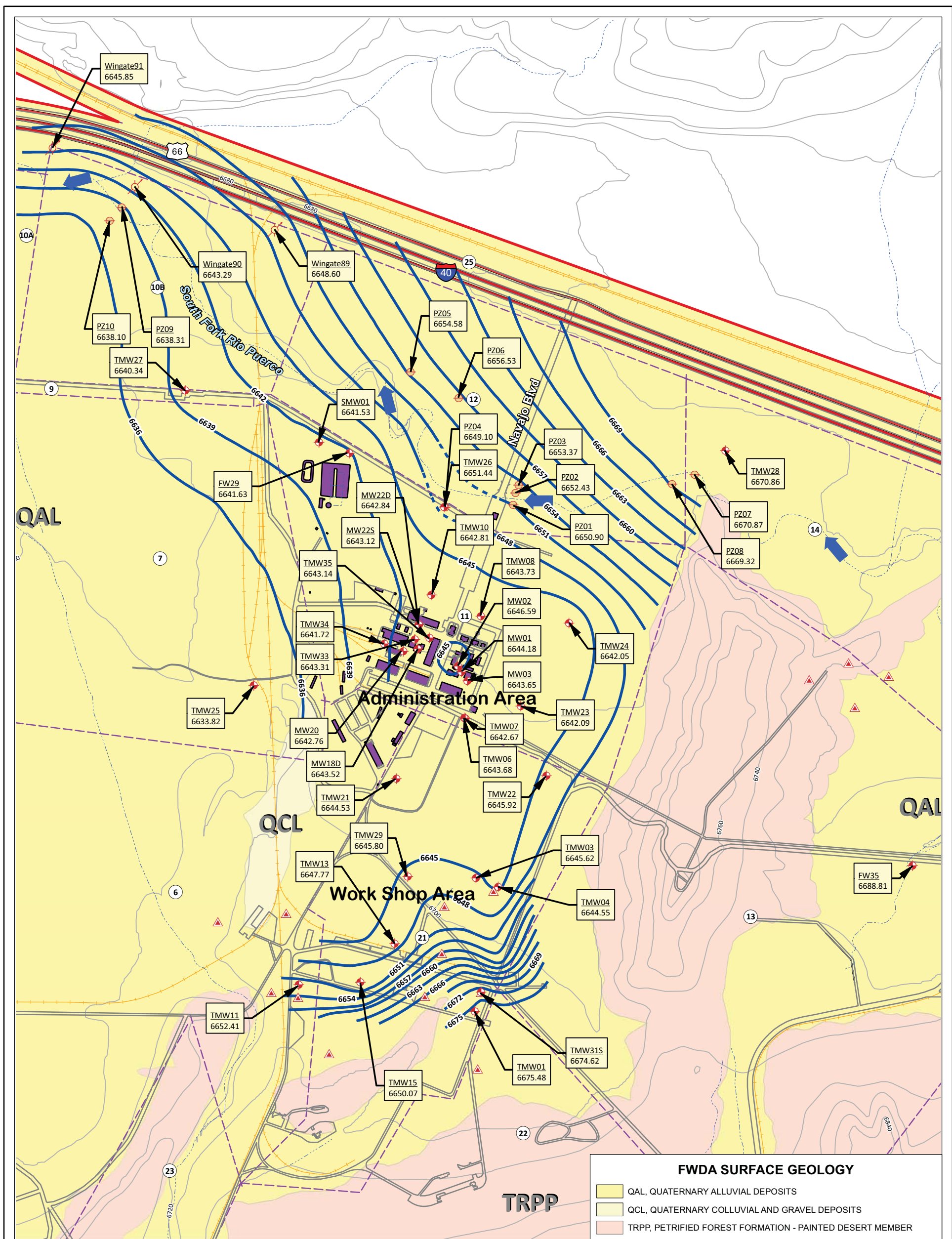
Map Scale: 1:5,400 (1" = 450')
 Map Date: March 21, 2012

Ground water measurements in US feet;
 Dry, no water in wells; N.M., not measured.

Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

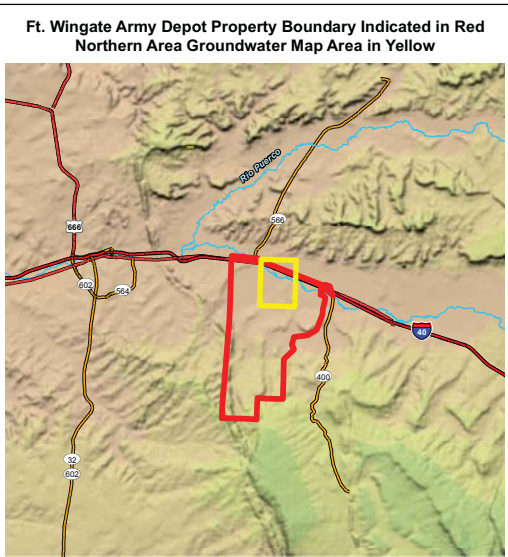
Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown

US Army Corps of Engineers
 Albuquerque District



FWDA SURFACE GEOLOGY

- QAL, QUATERNARY ALLUVIAL DEPOSITS
- QCL, QUATERNARY COLLUVIAL AND GRAVEL DEPOSITS
- TRPP, PETRIFIED FOREST FORMATION - PAINTED DESERT MEMBER



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- ▲ NORTHERN AREA BEDROCK MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- GROUNDWATER ELEVATION CONTOUR (3 FT INTERVAL)
- - - GROUNDWATER ELEVATION CONTOUR ESTIMATE (3 FT INTERVAL)
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- 7 PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 4-2
July 2011 Northern Area Alluvial Groundwater Elevation Contour Map

0.25 Miles
 0.25 Kilometers

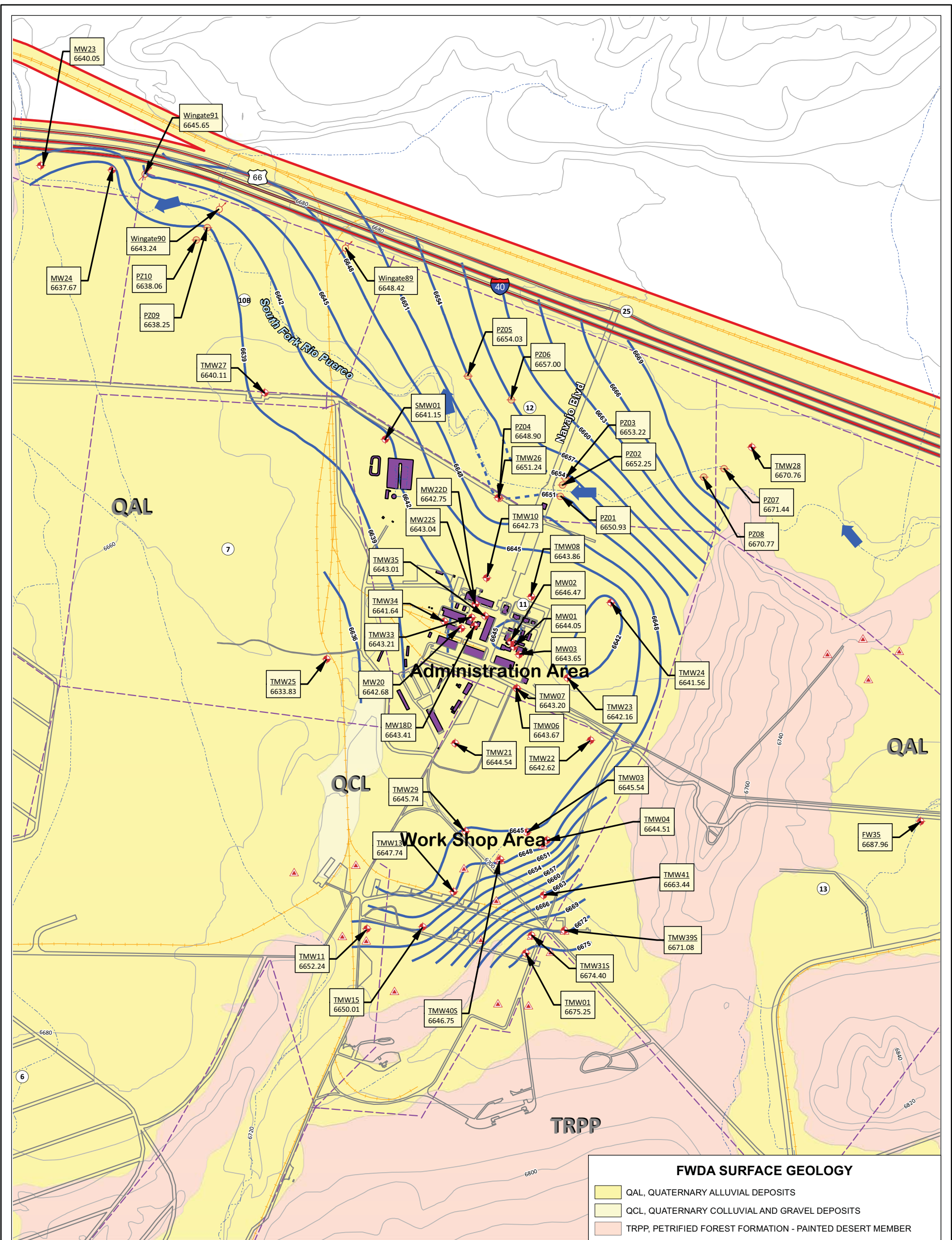
State Plane Coordinate System, New Mexico West, North American Datum 1983.
 Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
 Map Date: March 21, 2012

Ground water measurements in US feet;
 Dry, no water in wells; N.M., not measured.

Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

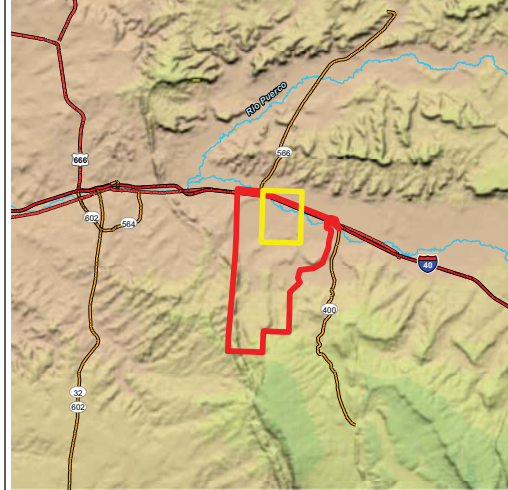
Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown



FWDA SURFACE GEOLOGY

- QAL, QUATERNARY ALLUVIAL DEPOSITS
- QCL, QUATERNARY COLLUVIAL AND GRAVEL DEPOSITS
- TRPP, PETRIFIED FOREST FORMATION - PAINTED DESERT MEMBER

Ft. Wingate Army Depot Property Boundary Indicated in Red Northern Area Groundwater Map Area in Yellow



- + NORTHERN AREA ALLUVIAL MONITORING WELLS
- o NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- o NORTHERN AREA ALLUVIAL PIEZOMETERS
- ▲ NORTHERN AREA BEDROCK MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- GROUNDWATER ELEVATION CONTOUR (3 FT INTERVAL)
- - - GROUNDWATER ELEVATION CONTOUR ESTIMATED (3 FT INTERVAL)
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- 7 PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ~ ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 4-3
October 2011 Northern Area Alluvial Groundwater Elevation Contour Map

0.25 Miles
 0.25 Kilometers

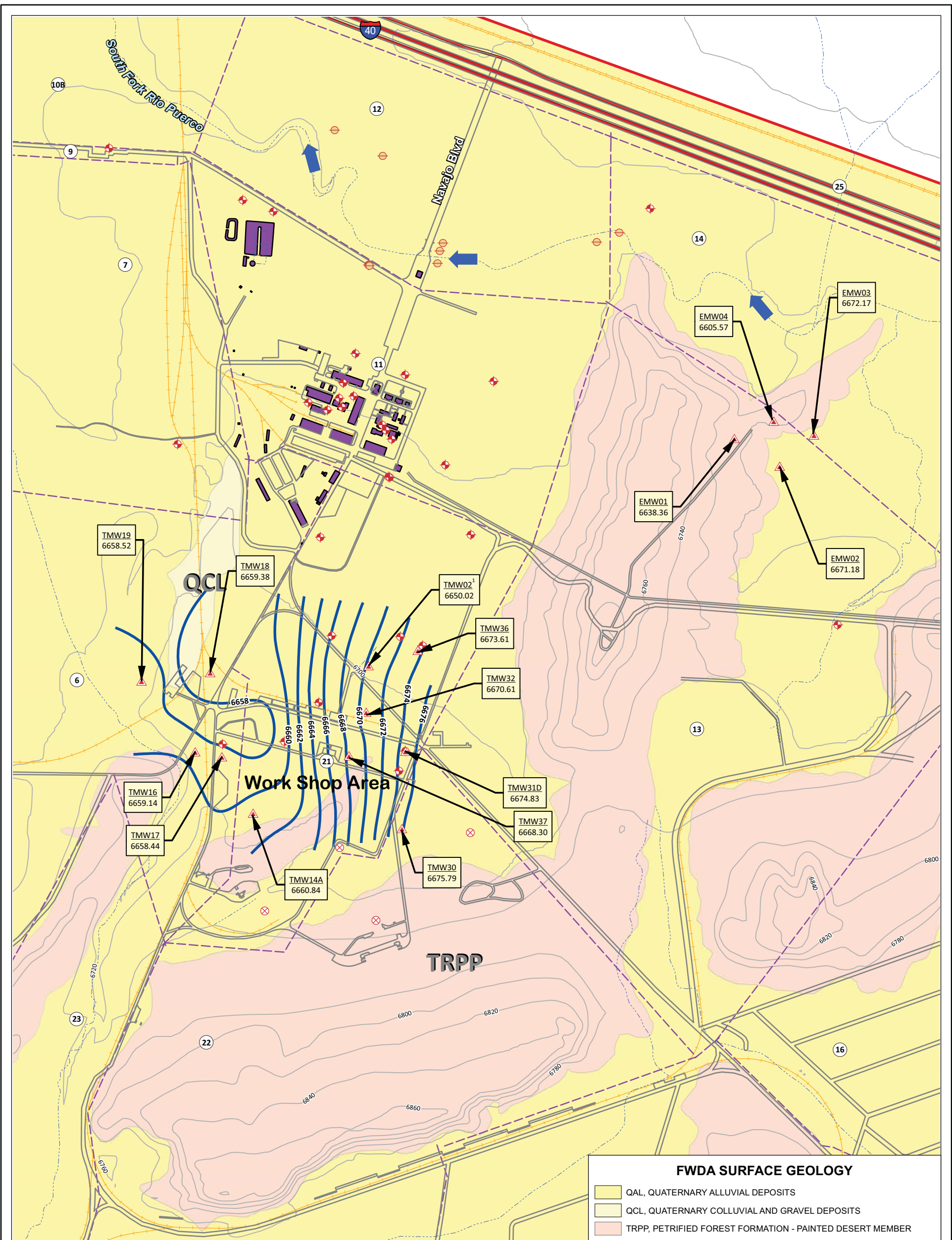
State Plane Coordinate System, New Mexico West, North American Datum 1983.
 Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:6,000 (1" = 500')
 Map Date: March 21, 2012

Ground water measurements in US feet;
 Dry, no water in wells; N.M., not measured.

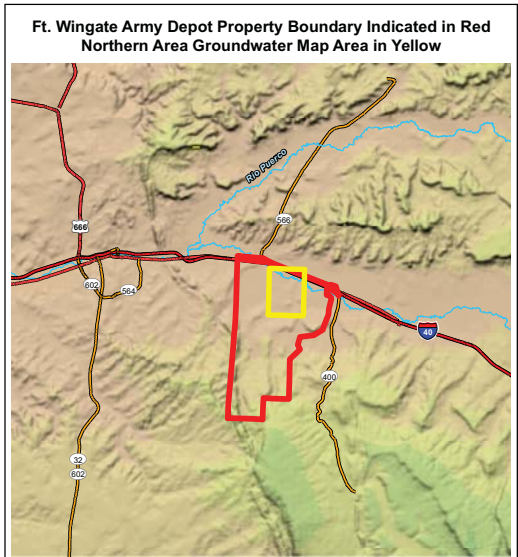
Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown



FWDA SURFACE GEOLOGY

- QAL, QUATERNARY ALLUVIAL DEPOSITS
- QCL, QUATERNARY COLLUVIAL AND GRAVEL DEPOSITS
- TRPP, PETRIFIED FOREST FORMATION - PAINTED DESERT MEMBER



- ◆ NORTHERN AREA ALLUVIAL MONITORING WELLS
- ⊗ NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- ▲ NORTHERN AREA BEDROCK MONITORING WELLS
- ⊗ DRY BOREHOLES
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- GROUNDWATER ELEVATION CONTOUR (2 FT INTERVAL)
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- 7 PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- - - PROPERTY TRANSFER PARCEL BOUNDARY
- + RAILROAD
- ROAD
- ~ ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)
- ¹ MONITOR WELL SCREENED IN POSSIBLE LOCALLY DISCONTINUOUS HYDROGEOLOGICAL UNIT.

FIGURE 4-4
April 2011 Northern Area
Bedrock Groundwater Elevation
Contour Map

0.25 Miles
 0.25 Kilometers

State Plane Coordinate System, New Mexico West, North American Datum 1983.
 Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
 Map Date: March 21, 2012

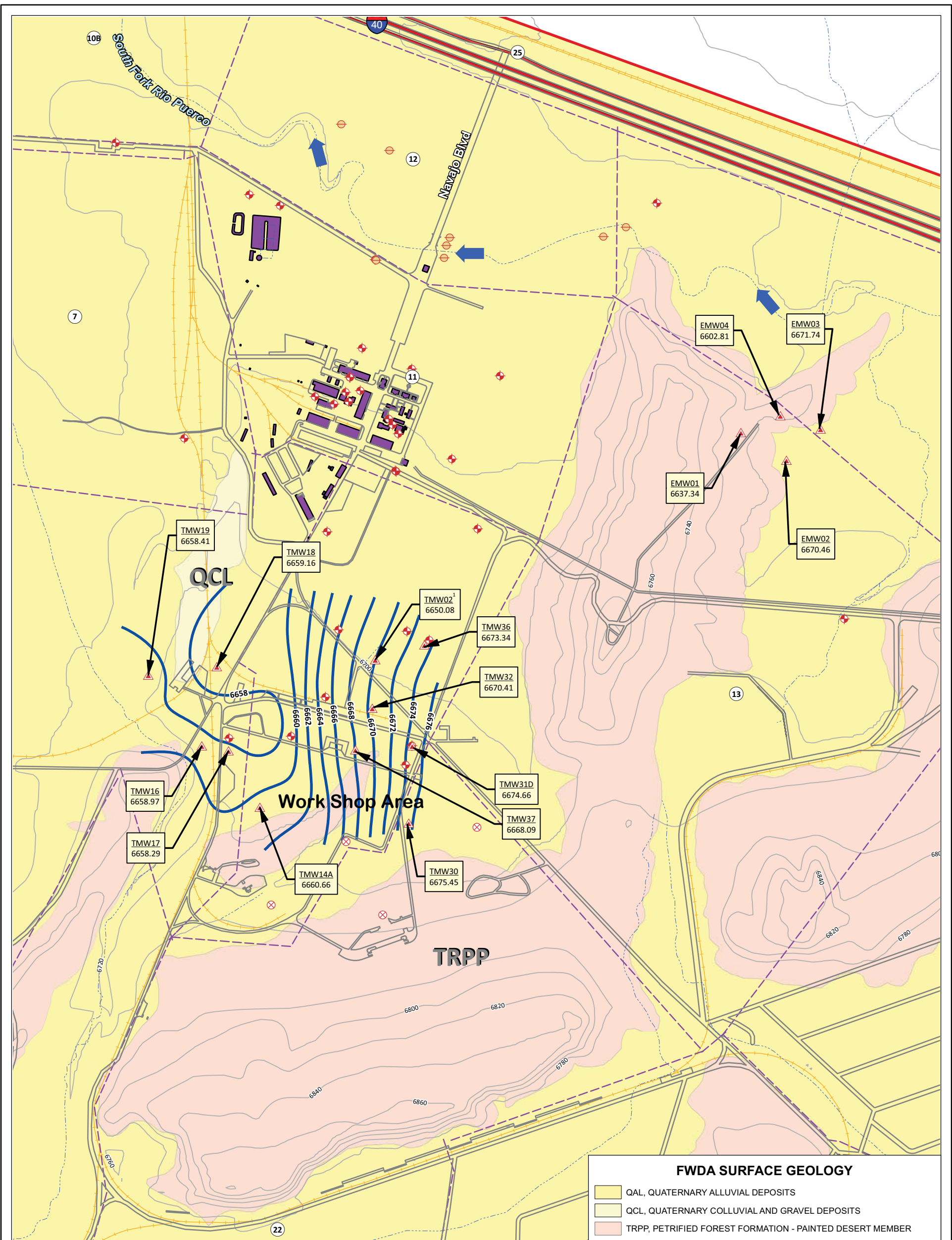
Ground water measurements in US feet;
 Dry, no water in wells; N.M., not measured.

Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown

N

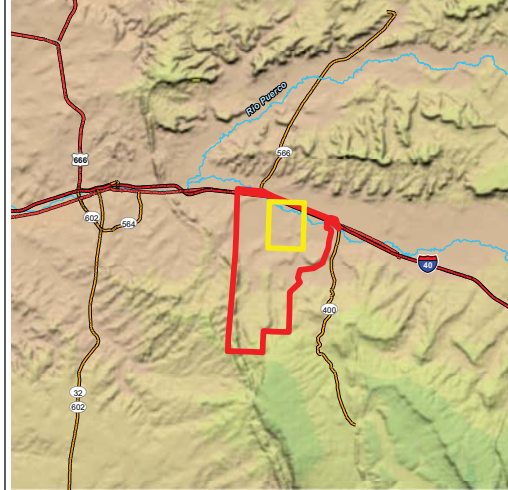
 US Army Corps of Engineers
 Albuquerque District



FWDA SURFACE GEOLOGY

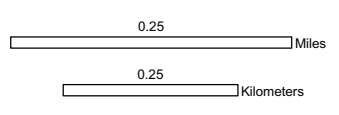
- QAL, QUATERNARY ALLUVIAL DEPOSITS
- QCL, QUATERNARY COLLUVIAL AND GRAVEL DEPOSITS
- TRPP, PETRIFIED FOREST FORMATION - PAINTED DESERT MEMBER

Ft. Wingate Army Depot Property Boundary Indicated in Red Northern Area Bedrock Groundwater Map Area in Yellow



- ◆ NORTHERN AREA ALLUVIAL MONITORING WELLS
- ⊗ NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- ▲ NORTHERN AREA BEDROCK MONITORING WELLS
- ⊗ DRY BOREHOLES
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- GROUNDWATER ELEVATION CONTOUR (2 FT INTERVAL)
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- 7 PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- - - PROPERTY TRANSFER PARCEL BOUNDARY
- + RAILROAD
- ROAD
- ~ ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)
- ¹ MONITOR WELL SCREENED IN POSSIBLE LOCALLY DISCONTINUOUS HYDROLOGICAL UNIT.

FIGURE 4-5
July 2011 Northern Area Bedrock Groundwater Elevation Contour Map



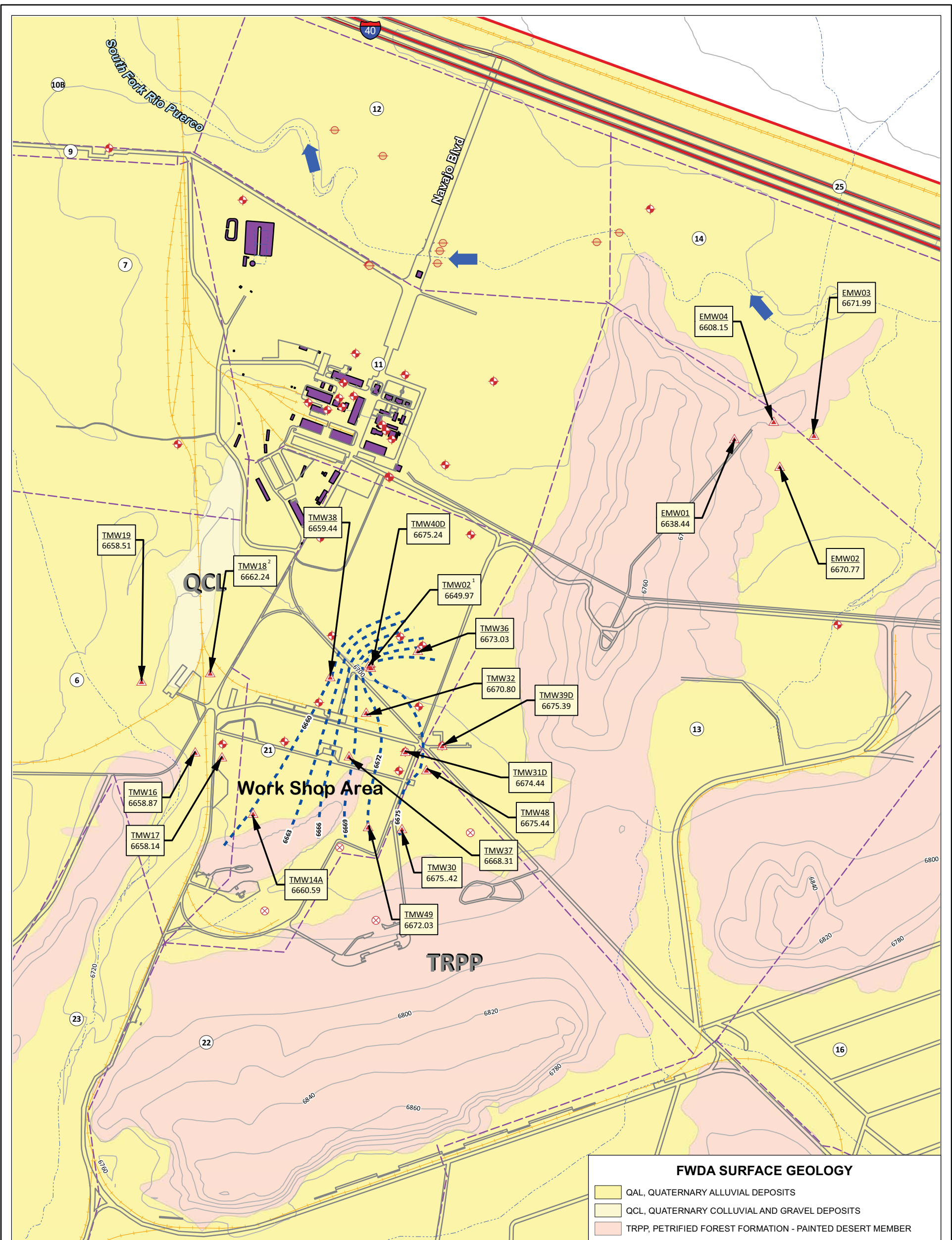
State Plane Coordinate System, New Mexico West, North American Datum 1983.
Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
Map Date: March 21, 2012

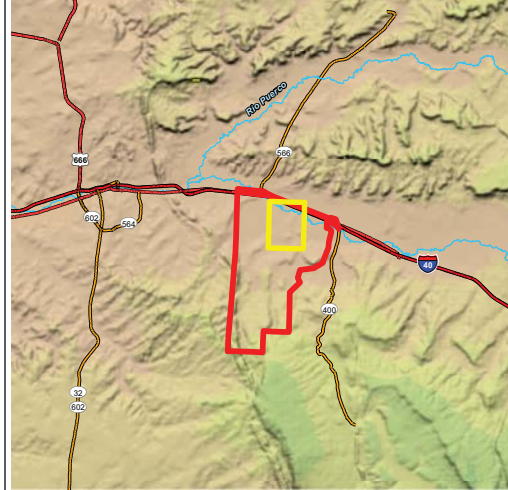
Ground water measurements in US feet;
Dry, no water in wells; N.M., not measured.

Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown

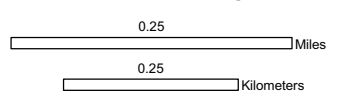


Ft. Wingate Army Depot Property Boundary Indicated in Red Northern Area Groundwater Map Area in Yellow



- ◆ NORTHERN AREA ALLUVIAL MONITORING WELLS
- ⊗ NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- ▲ NORTHERN AREA BEDROCK MONITORING WELLS
- ⊗ DRY BOREHOLES
- ➡ FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- GROUNDWATER ELEVATION CONTOUR (3 FT INTERVAL)
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- ⑦ PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- - - PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ~ ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)
- ¹ MONITOR WELL SCREENED IN POSSIBLE LOCALLY DISCONTINUOUS HYDROGEOLOGICAL UNIT.
- ² PAST DATA INDICATES GROUNDWATER ELEVATION AVERAGE OF 6659.33.

FIGURE 4-6
October 2011 Northern Area
Bedrock Groundwater Elevation
Contour Map



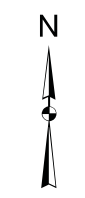
State Plane Coordinate System, New Mexico West, North American Datum 1983.
Units in US Survey Feet above Mean Sea Level.

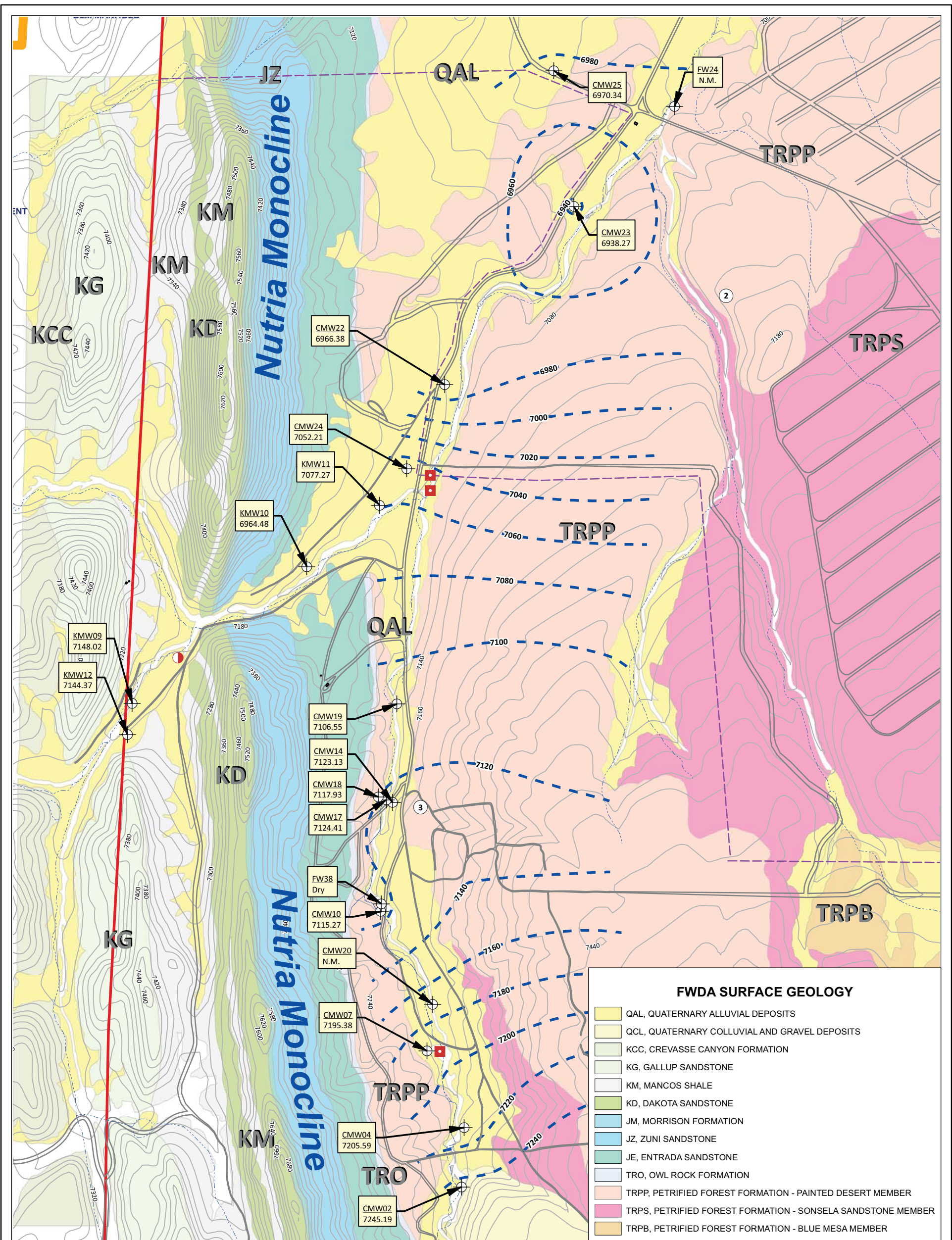
Map Scale: 1:5,400 (1" = 450')
Map Date: March 21, 2012

Ground water measurements in US feet;
Dry, no water in wells; N.M., not measured.

Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown

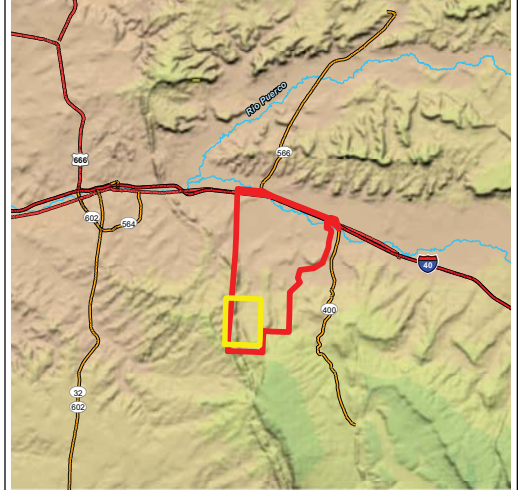




FWDA SURFACE GEOLOGY

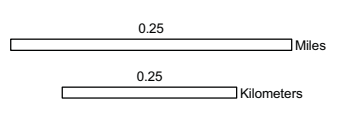
[Yellow]	QAL, QUATERNARY ALLUVIAL DEPOSITS
[Light Yellow]	QCL, QUATERNARY COLLUVIAL AND GRAVEL DEPOSITS
[Light Green]	KCC, CREVASSE CANYON FORMATION
[Light Blue]	KG, GALLUP SANDSTONE
[Light Purple]	KM, MANCOS SHALE
[Light Orange]	KD, DAKOTA SANDSTONE
[Light Red]	JM, MORRISON FORMATION
[Light Blue-Gray]	JZ, ZUNI SANDSTONE
[Light Green-Gray]	JE, ENTRADA SANDSTONE
[Light Purple-Gray]	TRO, OWL ROCK FORMATION
[Light Orange-Gray]	TRPP, PETRIFIED FOREST FORMATION - PAINTED DESERT MEMBER
[Light Red-Gray]	TRPS, PETRIFIED FOREST FORMATION - SONSELA SANDSTONE MEMBER
[Light Blue-Gray]	TRPB, PETRIFIED FOREST FORMATION - BLUE MESA MEMBER

Ft. Wingate Army Depot Property Boundary Indicated in Red
OB/OD Area Groundwater Map Area in Yellow



- DRY MONITORING WELLS
- BURIED MONITORING WELLS
- ⊕ OB/OD AREA MONITORING WELLS
- GROUNDWATER ELEVATION CONTOUR (ESTIMATED) (20 FT INTERVAL)
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- ⑦ PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 4-7
April 2011 OB/OD Area
Groundwater Elevation Contour Map



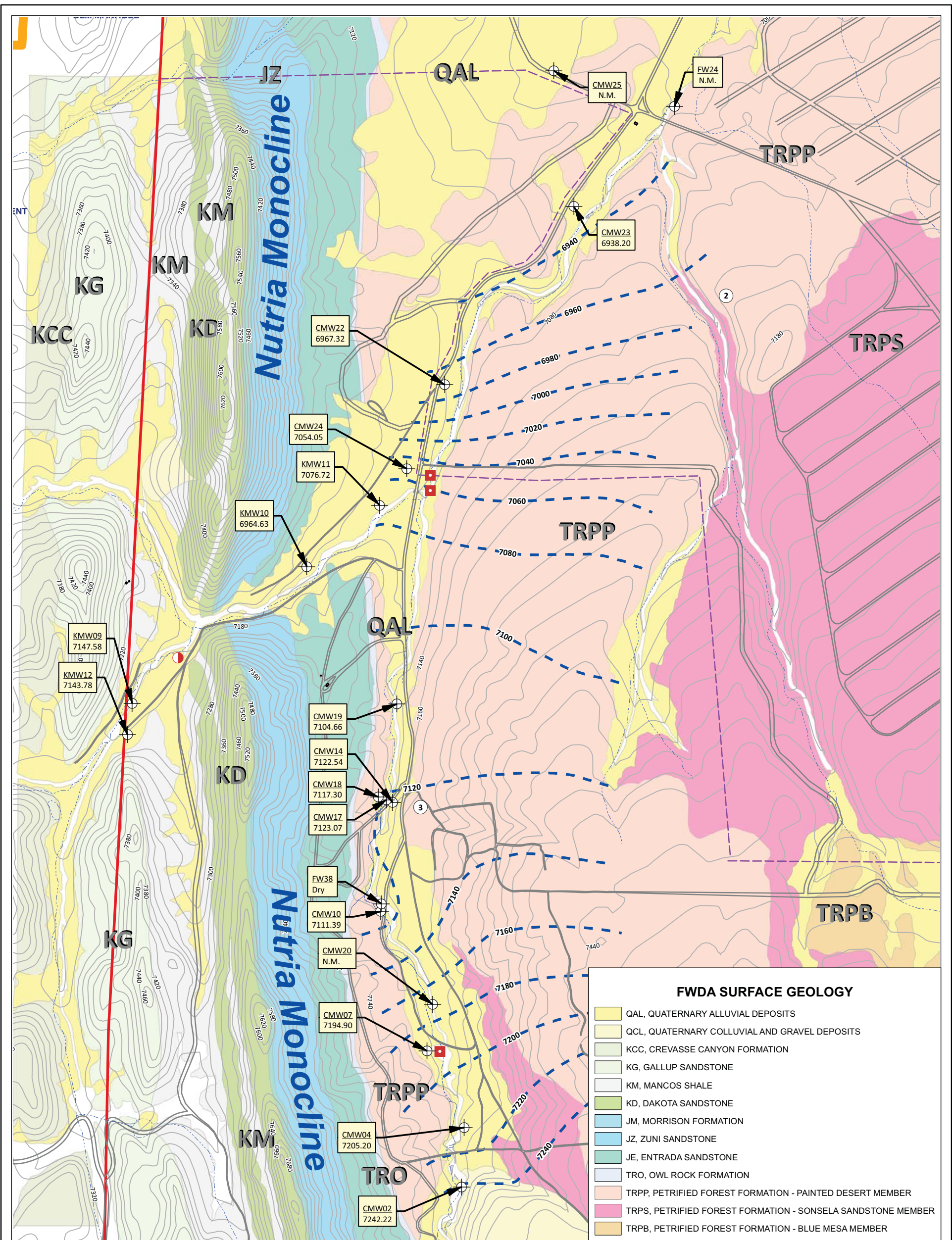
State Plane Coordinate System, New Mexico West, North American Datum 1983.
Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
Map Date: March 21, 2012

Ground water measurements in US feet;
Dry, no water in wells; N.M., not measured.

Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

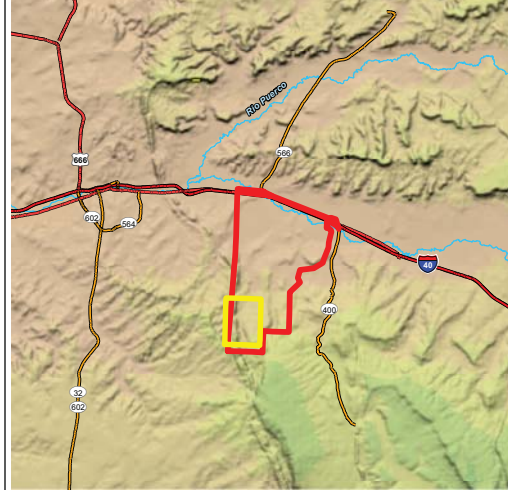
Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown



FWDA SURFACE GEOLOGY

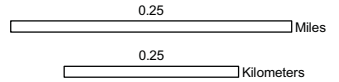
QAL, QUATERNARY ALLUVIAL DEPOSITS
QCL, QUATERNARY COLLUVIAL AND GRAVEL DEPOSITS
KCC, CREVASSE CANYON FORMATION
KG, GALLUP SANDSTONE
KM, MANCOS SHALE
KD, DAKOTA SANDSTONE
JM, MORRISON FORMATION
JZ, ZUNI SANDSTONE
JE, ENTRADA SANDSTONE
TRO, OWL ROCK FORMATION
TRPP, PETRIFIED FOREST FORMATION - PAINTED DESERT MEMBER
TRPS, PETRIFIED FOREST FORMATION - SONSELA SANDSTONE MEMBER
TRPB, PETRIFIED FOREST FORMATION - BLUE MESA MEMBER

Ft. Wingate Army Depot Property Boundary Indicated in Red
OB/OD Area Groundwater Map Area in Yellow



- DRY MONITORING WELLS
- BURIED MONITORING WELLS
- ⊕ OB/OD AREA MONITORING WELLS
- - - GROUNDWATER ELEVATION CONTOUR (ESTIMATED) (20 FT INTERVAL)
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- 7 PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- - - PROPERTY TRANSFER PARCEL BOUNDARY
- ROAD
- ~ ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 4-8
July 2011 OB/OD Area
Groundwater Elevation Contour Map



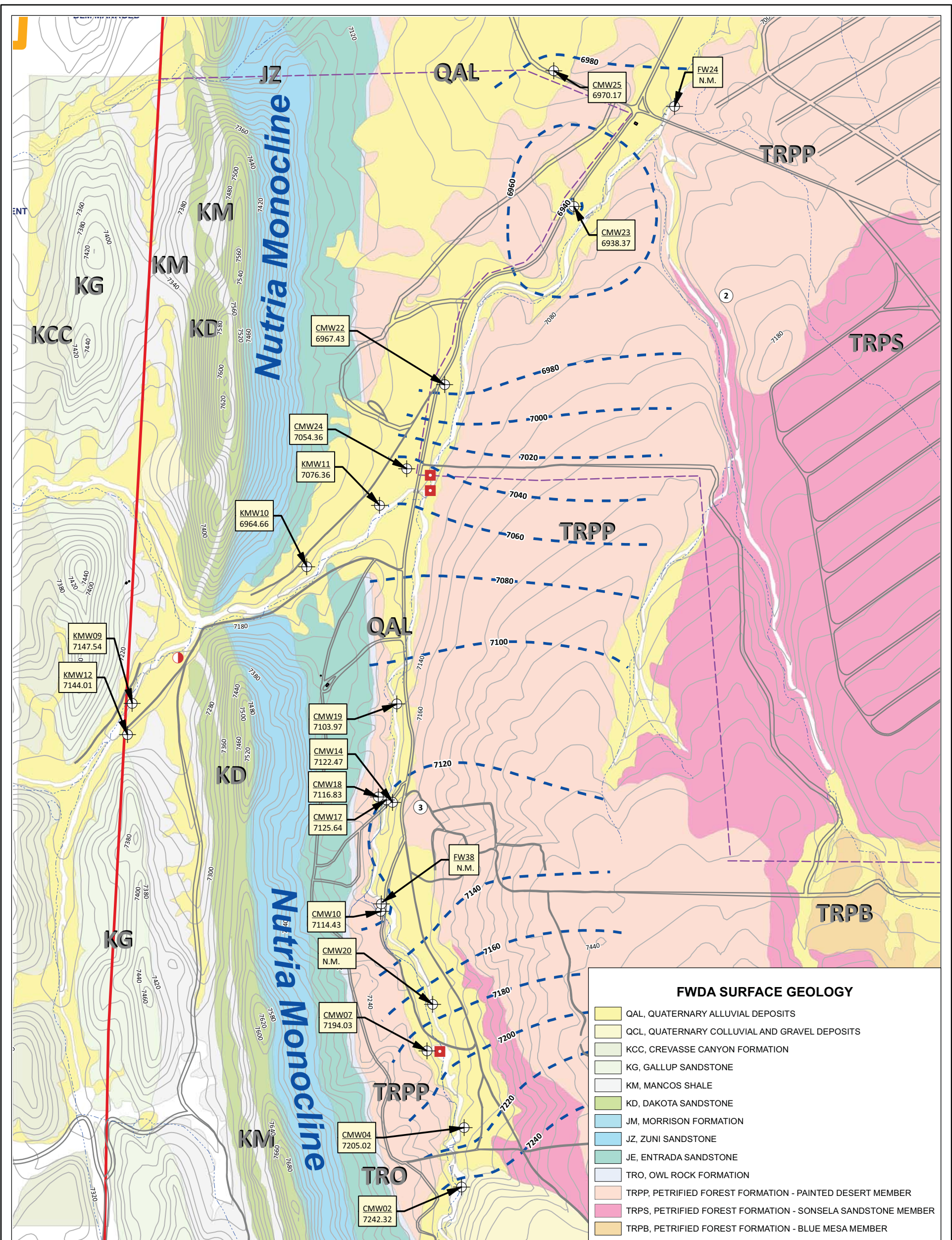
State Plane Coordinate System, New Mexico West, North American Datum 1983.
Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
Map Date: March 21, 2012

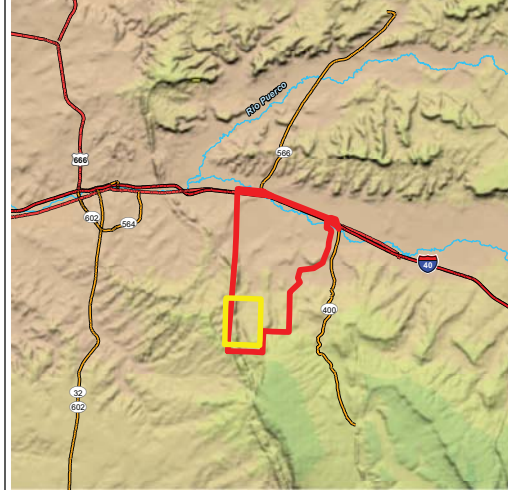
Ground water measurements in US feet;
Dry, no water in wells; N.M., not measured.

Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown

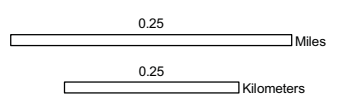


Ft. Wingate Army Depot Property Boundary Indicated in Red
OB/OD Area Groundwater Map Area in Yellow



- DRY MONITORING WELLS
- BURIED MONITORING WELLS
- ⊕ OB/OD AREA MONITORING WELLS
- - - GROUNDWATER ELEVATION CONTOUR (ESTIMATED) (20 FT INTERVAL)
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- ⑦ PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- - - PROPERTY TRANSFER PARCEL BOUNDARY
- ROAD
- ~ ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 4-9
October 2011 OB/OD Area
Groundwater Elevation Contour Map



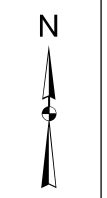
State Plane Coordinate System, New Mexico West,
North American Datum 1983.
Units in US Survey Feet above Mean Sea Level.

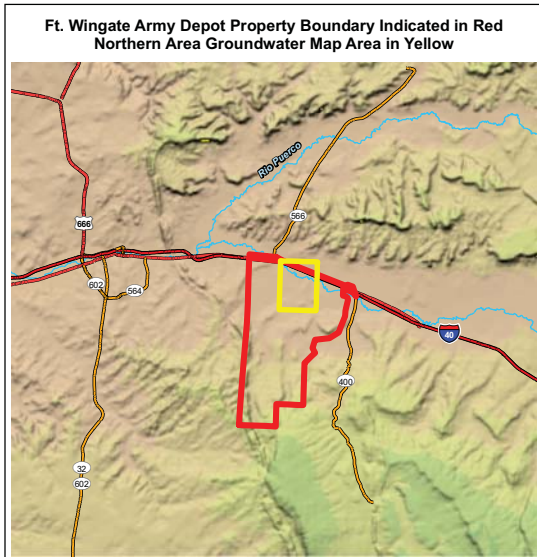
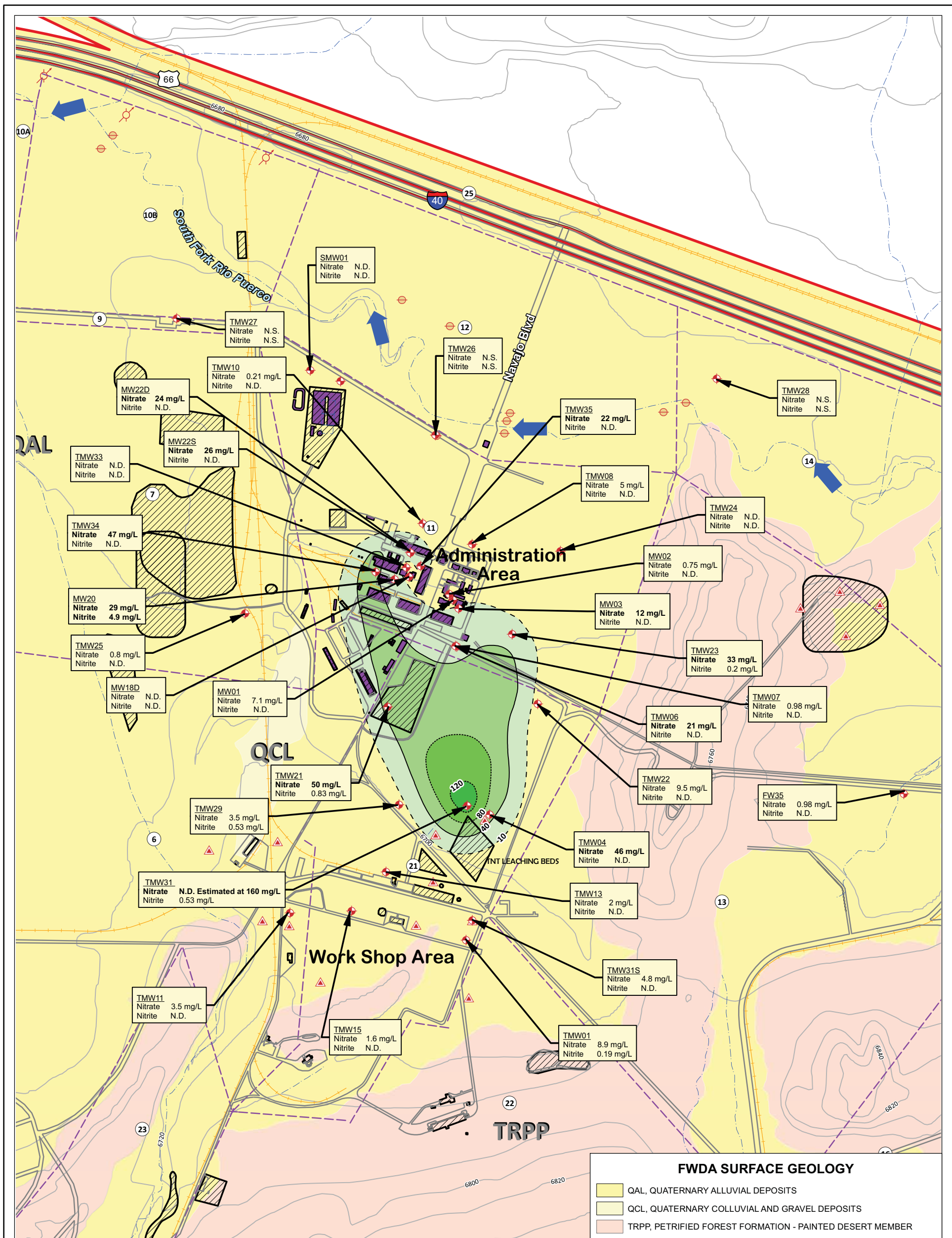
Map Scale: 1:5,400 (1" = 450')
Map Date: March 21, 2012

Ground water measurements in US feet;
Dry, no water in wells; N.M., not measured.

Data sources: drainages, railroad, roads: Tele Atlas
GDT-Dynamap, 2008; populated places: USGS,
ESRI, 2005; orthophotography: USGS, 2005; Ft.
Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown





- NORTHERN AREA ALLUVIAL MONITORING WELLS
 - NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
 - NORTHERN AREA ALLUVIAL PIEZOMETERS
 - NORTHERN AREA BEDROCK MONITORING WELLS
 - FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
 - NITRATE CONCENTRATION (40 mg/L INTERVAL)
 - REGULATORY LIMIT FOR NITRATE (10 mg/L)
 - SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
 - BUILDINGS
 - FWDA PROPERTY BOUNDARY, FEB 2002
 - PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
 - PROPERTY TRANSFER PARCEL BOUNDARY
 - RAILROAD
 - ROAD
 - ARROYO
 - USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)
- ¹ THE REPORTED LAB N.D. IS THOUGHT TO BE AN ERROR, ESTIMATED VALUE BASED ON OCTOBER 2011 DATA.

FIGURE 5-1
April 2011 Northern Area
Nitrite and Nitrate Concentrations
in Alluvial Groundwater

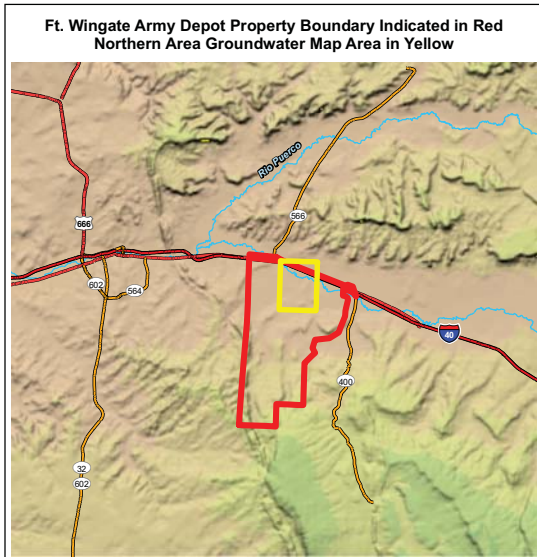
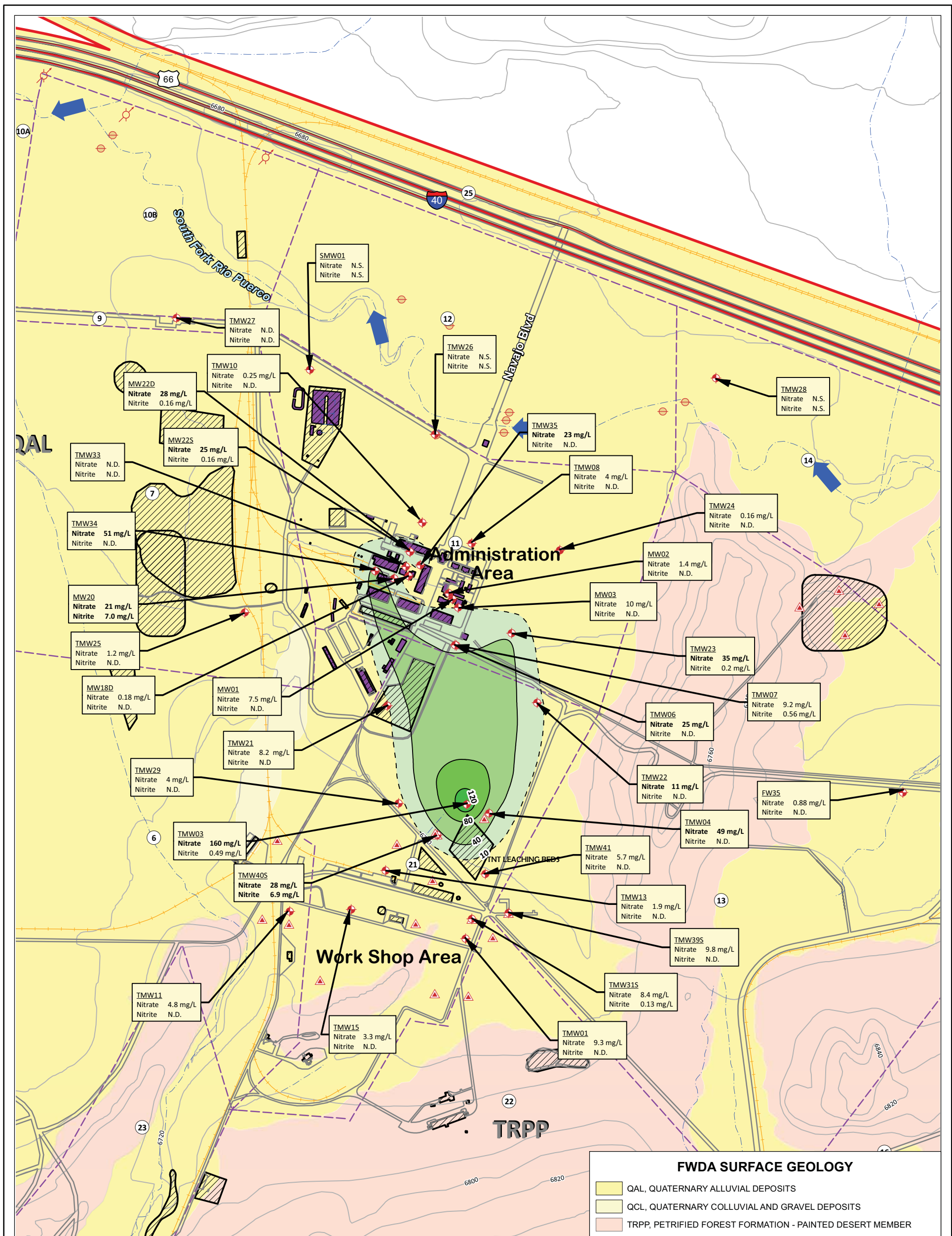
0.25 Miles
0.25 Kilometers

State Plane Coordinate System, New Mexico West, North American Datum 1983.
Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
Map Date: March 21, 2012

Units: mg/L, milligrams per liter.
N.S., Not Sampled.
N.D., Not Detected.
Bold = Above Regulatory Limit
Data sources: drainages, railroad, roads: Tele Atlas
GDT-Dynamap, 2008; populated places: USGS,
ESRI, 2005; orthophotography: USGS, 2005; Ft.
Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- NITRATE CONCENTRATION (40 mg/L INTERVAL)
- REGULATORY LIMIT FOR NITRATE (10 mg/L)
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 5-2
October 2011 Northern Area
Nitrite and Nitrate Concentrations
in Alluvial Groundwater

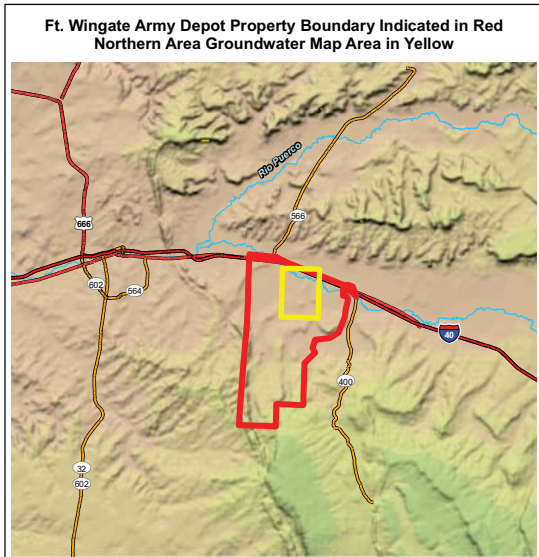
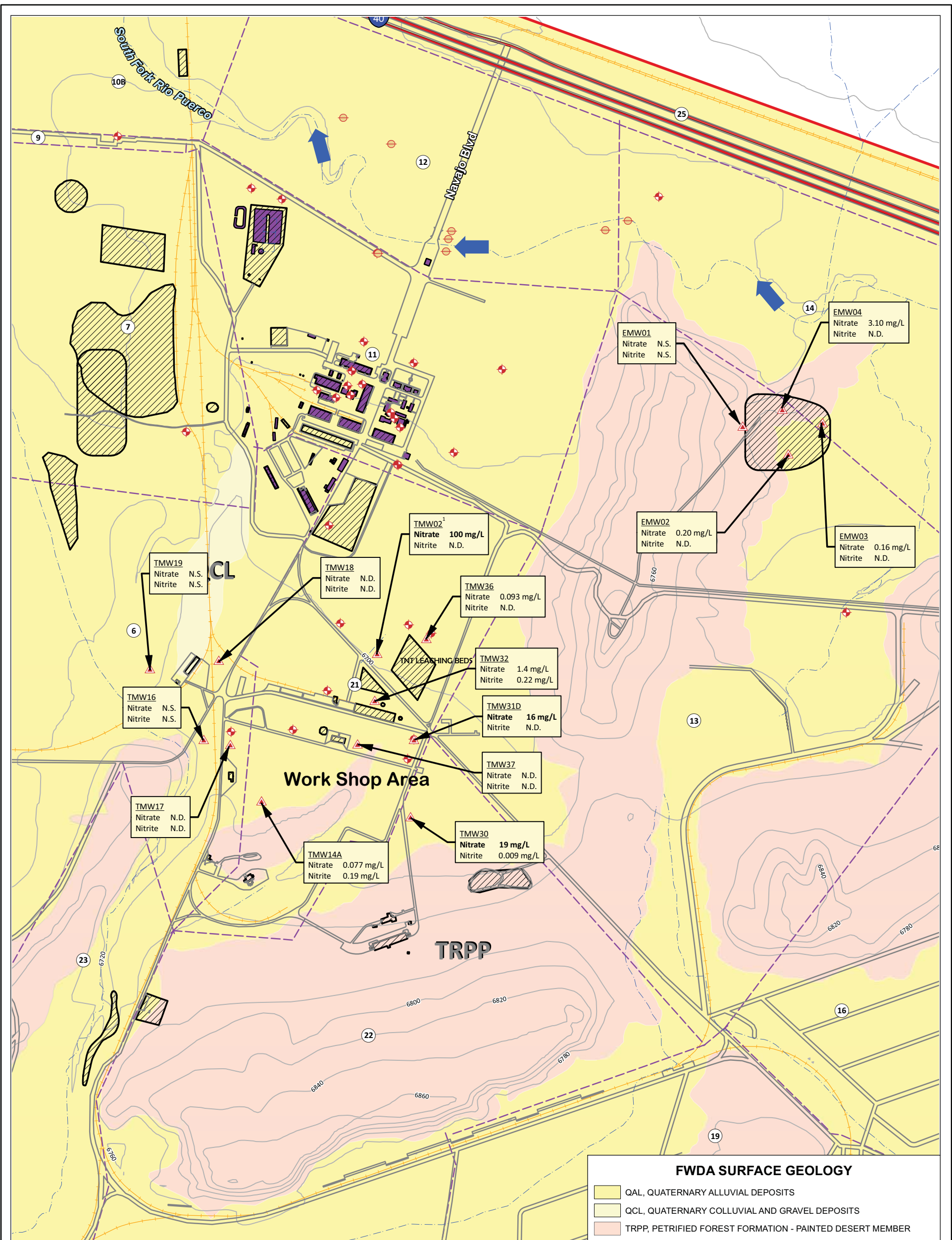
0.25 Miles
 0.25 Kilometers

State Plane Coordinate System, New Mexico West, North American Datum 1983.
 Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
 Map Date: March 21, 2012

Units: mg/L, milligrams per liter.
 N.S., Not Sampled.
 N.D., Not Detected.
 Bold = Above Regulatory Limit
 Data sources: drainages, railroad, roads: Tele Atlas
 GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)
- MONITOR WELL SCREENED POSSIBLE LOCALLY DISCONTINUOUS HYDROLOGICAL UNIT

FIGURE 5-3
April 2011 Northern Area
Nitrite and Nitrate Concentrations
in Bedrock Groundwater

0.25 Miles
0.25 Kilometers

State Plane Coordinate System, New Mexico West, North American Datum 1983. Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
Map Date: March 21, 2012

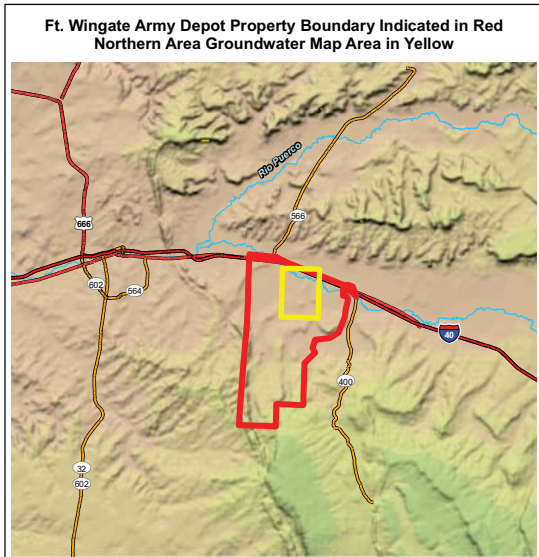
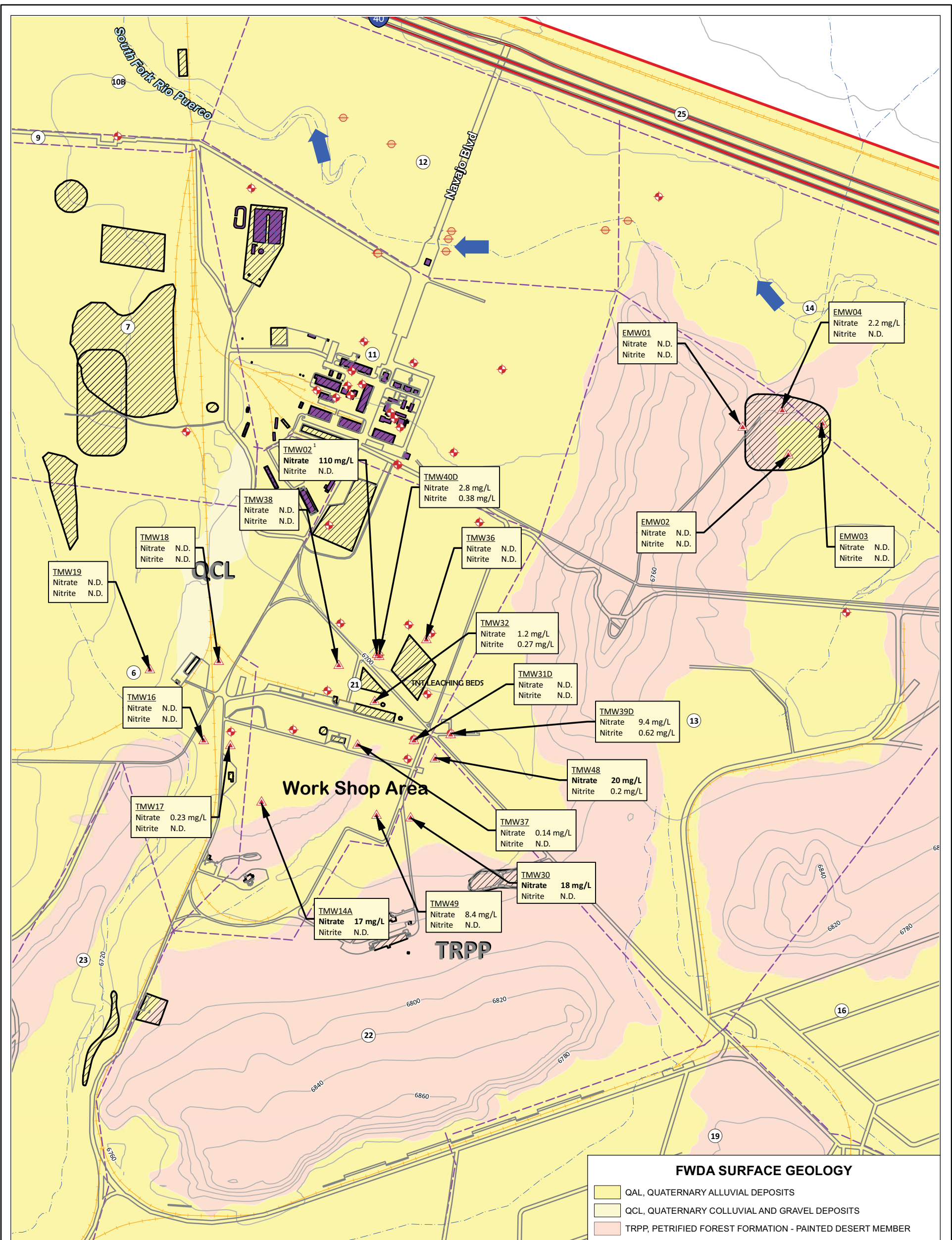
Units: mg/L, milligrams per liter.
N.D., not detected.
N.S., not sampled.
Bold= Above Regulatory Limit

Data sources: drainages, railroad, roads: Tele Atlas
GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown

US Army Corps of Engineers - Albuquerque District

Well ID	Nitrate (mg/L)	Nitrite (mg/L)
EMW01	N.S.	N.S.
EMW02	0.20	N.D.
EMW03	0.16	N.D.
EMW04	3.10	N.D.
TMW02 ¹	100	N.D.
TMW18	N.D.	N.D.
TMW19	N.S.	N.S.
TMW16	N.S.	N.S.
TMW17	N.D.	N.D.
TMW14A	0.077	0.19
TMW30	19	0.009
TMW37	N.D.	N.D.
TMW31D	16	N.D.
TMW32	1.4	0.22
TMW36	0.093	N.D.



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)
- MONITOR WELL SCREENED POSSIBLE LOCALLY DISCONTINUOUS HYDROLOGI UNIT.

FIGURE 5-4
October 2011 Northern Area Nitrite and Nitrate Concentrations in Bedrock Groundwater

0.25 Miles
 0.25 Kilometers

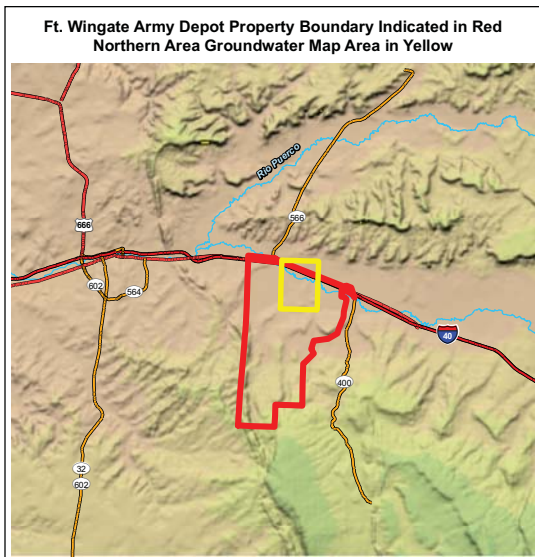
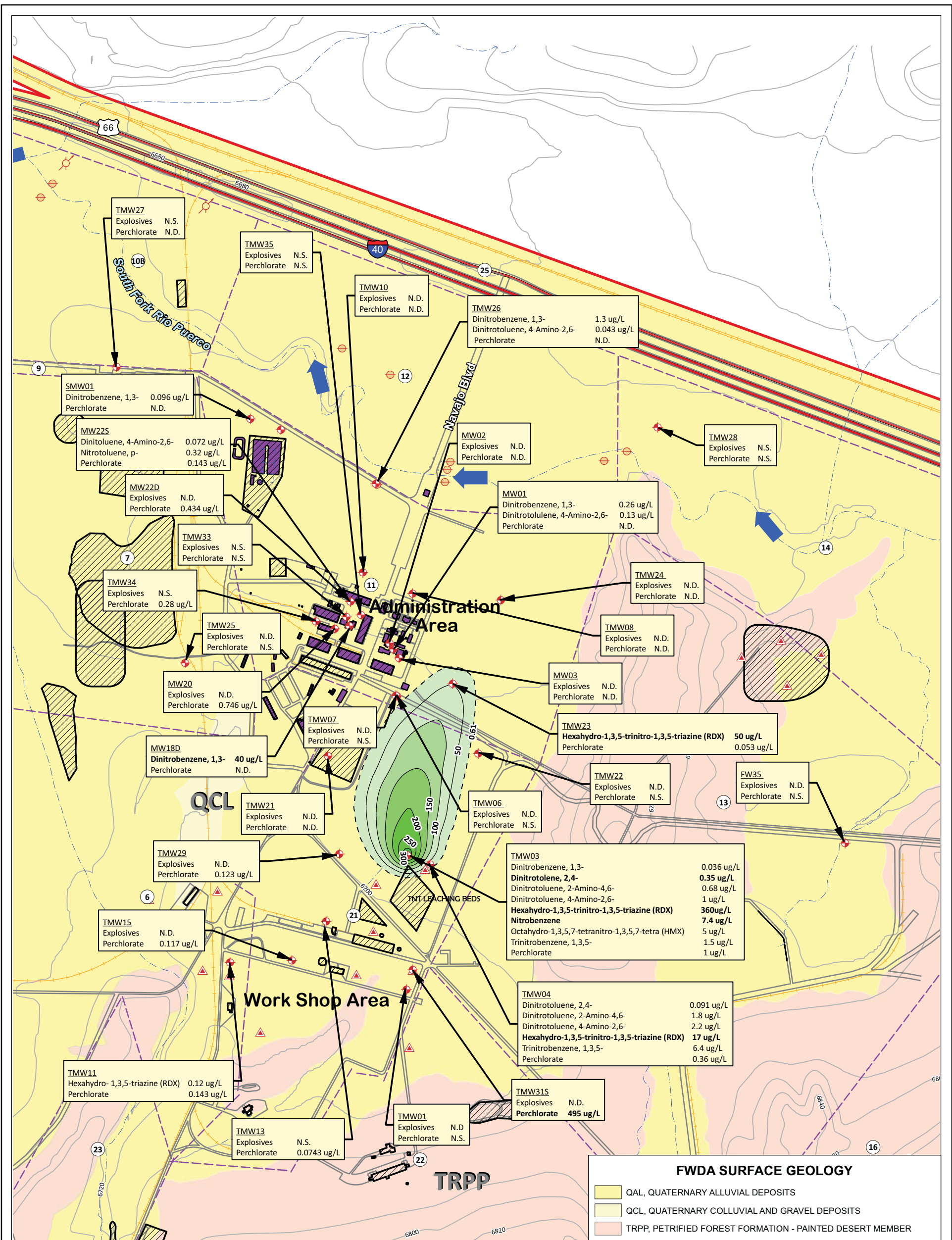
State Plane Coordinate System, New Mexico West, North American Datum 1983. Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
 Map Date: March 21, 2012

Units: mg/L, milligrams per liter.
 N.D., not detected.
 N.S., not sampled.
 Bold= Above Regulatory Limit

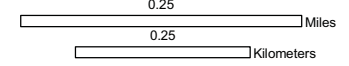
Data sources: drainages, railroad, roads: Tele Atlas
 GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- RDX CONCENTRATION (50 UG/L INTERVAL)
- REGULATORY LIMIT FOR RDX (0.61 UG/L)
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- ADJOINING PROPERTY BOUNDARY
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 5-5
April 2011 Northern Area
Explosives and
Perchlorate Concentrations
in Alluvial Groundwater



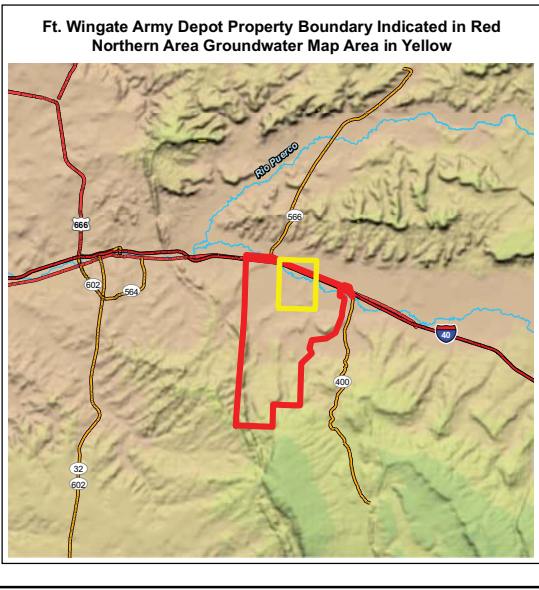
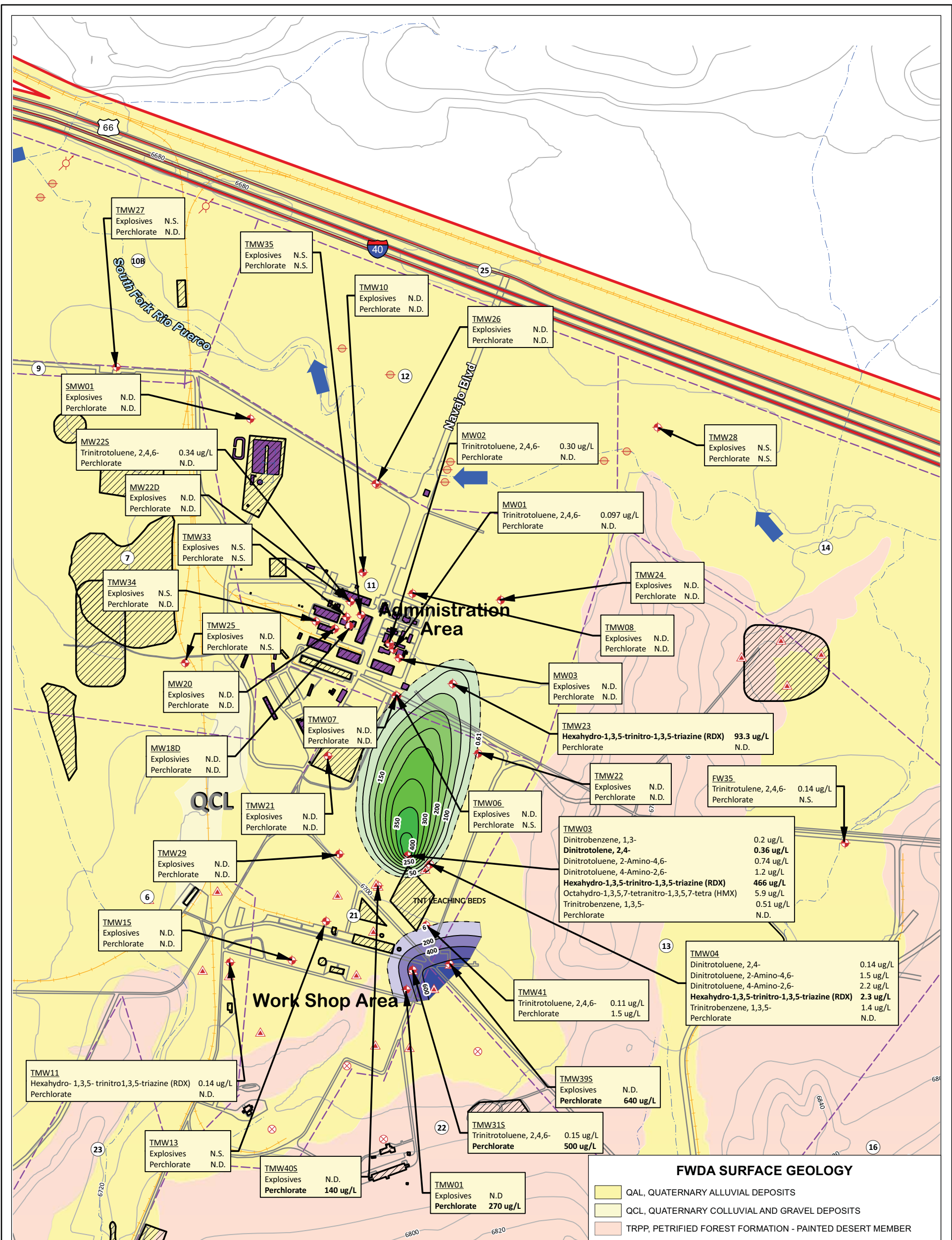
State Plane Coordinate System, New Mexico West, North American Datum 1983. Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
 Map Date: March 21, 2012

Units: ug/L, micrograms per liter.
 Bold= Above Regulatory Limit
 N.D., Not Detected.
 N.S., Not Sampled.

Data sources: drainages, railroad, roads: Tele Atlas
 GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- DRY BOREHOLES
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- RDx CONCENTRATION (50 UG/L INTERVAL)
- REGULATORY LIMIT FOR RDx (0.61 UG/L)
- PERCHLORATE CONCENTRATION (200 UG/L INTERVAL)
- REGULATORY LIMIT FOR PERCHLORATE (6 UG/L)
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- ADJOINING PROPERTY BOUNDARY
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 5-6
October 2011 Northern Area
Explosives and
Perchlorate Concentrations
in Alluvial Groundwater

0.25 Miles
0.25 Kilometers

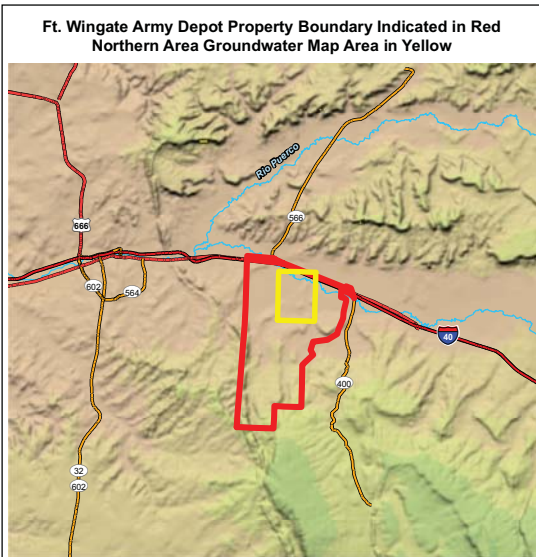
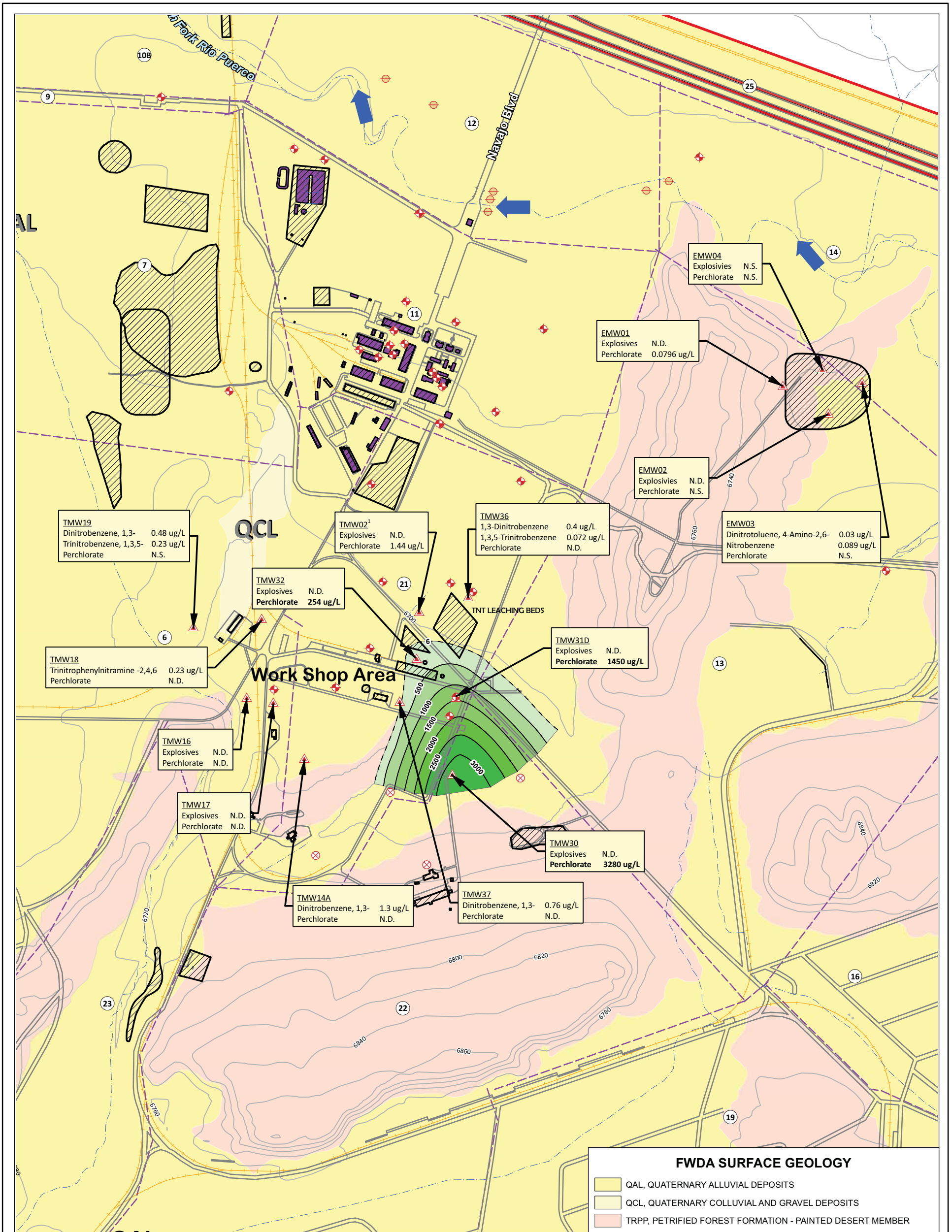
State Plane Coordinate System, New Mexico West, North American Datum 1983.
Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
Map Date: March 21, 2012

Units: ug/L, micrograms per liter.
Bold= Above Regulatory Limit
N.D., Not Detected.
N.S., Not Sampled.

Data sources: drainages, railroad, roads: Tele Atlas
GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- DRY BOREHOLES
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- PERCHLORATE CONTOUR (500 ug/L INTERVAL)
- REGULATORY LIMIT FOR PERCHLORATE (6 ug/L)
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- ADJOINING PROPERTY BOUNDARY
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)
- MONITOR WELL SCREEN IN POSSIBLE LOCALLY DISCONTINUOUS HYDROEOLOGICAL UNIT

FIGURE 5-7
April 2011 Northern Area Perchlorate Concentrations in Bedrock Groundwater

0.25 Miles
 0.25 Kilometers

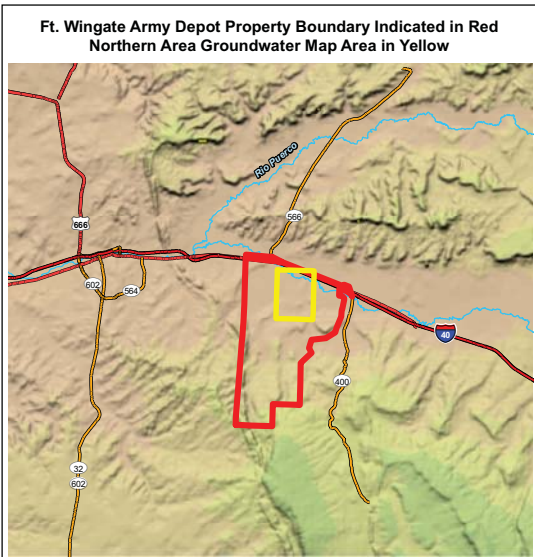
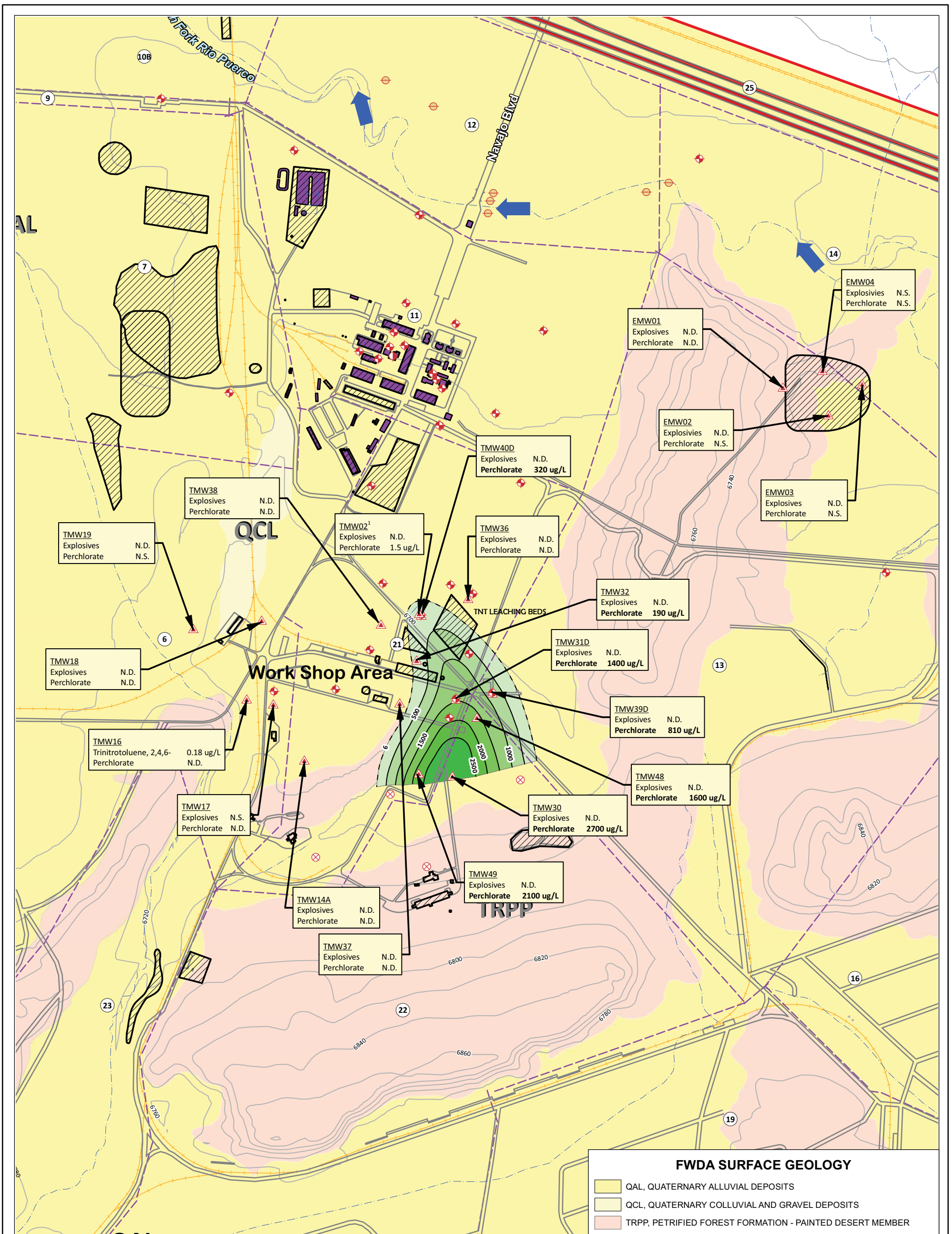
State Plane Coordinate System, New Mexico West, North American Datum 1983. Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
 Map Date: March 21, 2012

Units: ug/L, micrograms per liter.
 N.D., not detected
 N.S., not sampled
 Bold = Above Regulatory Limit

Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- DRY BOREHOLES
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- PERCHLORATE CONTOUR (500 ug/L INTERVAL)
- REGULATORY LIMIT FOR PERCHLORATE (6 ug/L)
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- ADJOINING PROPERTY BOUNDARY
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)
- MONITOR WELL SCREEN IN POSSIBLE LOCALLY DISCONTINUOUS HYDROELOGICAL UNIT

FIGURE 5-8
October 2011 Northern Area
Perchlorate Concentrations
in Bedrock Groundwater

0.25 Miles
 0.25 Kilometers

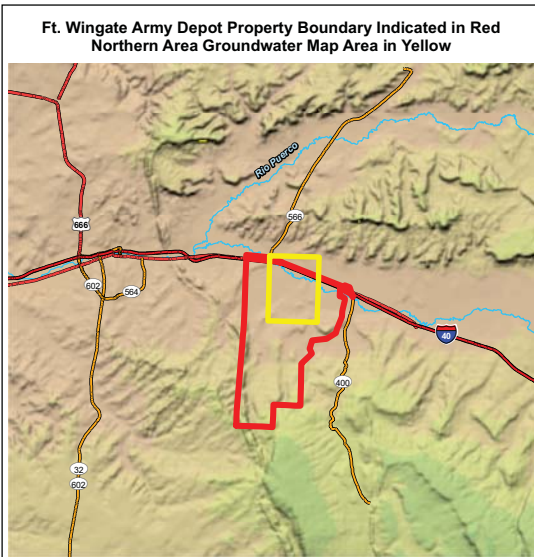
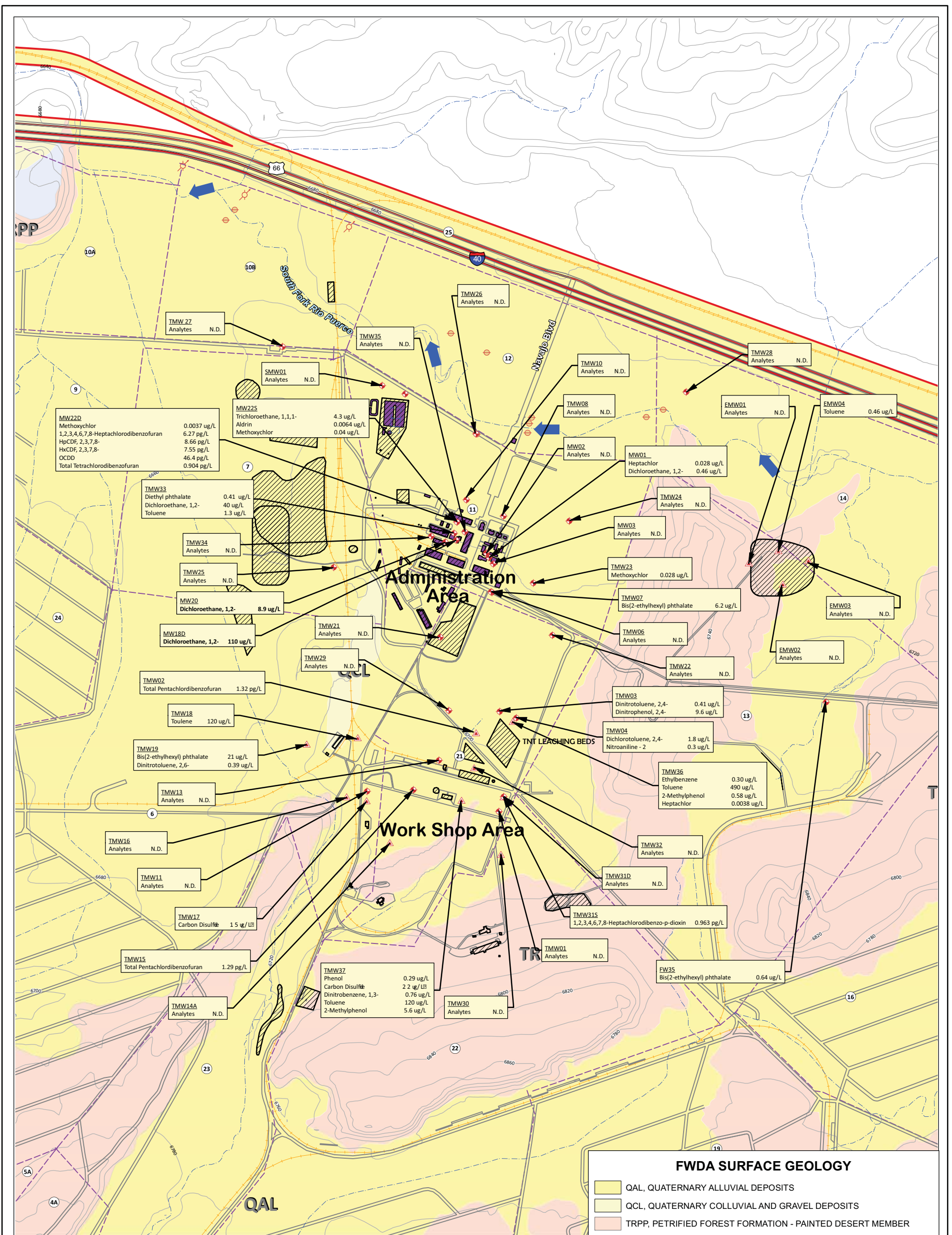
State Plane Coordinate System, New Mexico West,
 North American Datum 1983.
 Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:5,400 (1" = 450')
 Map Date: March 21, 2012

Units: ug/L, micrograms per liter.
 N.D., not detected
 N.S., not sampled
 Bold = Above Regulatory Limit

Data sources: drainages, railroad, roads: Tele Atlas
 GDT-Dynamap, 2008; populated places: USGS,
 ESRI, 2005; orthophotography: USGS, 2005; Ft.
 Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- ADJOINING PROPERTY BOUNDARY
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 5-9
April 2011 Northern Area
VOCs, SVOCs, Pesticides,
and Dioxins/Furans Concentrations
in Alluvial and Bedrock Groundwater

0.25 Miles
 0.25 Kilometers

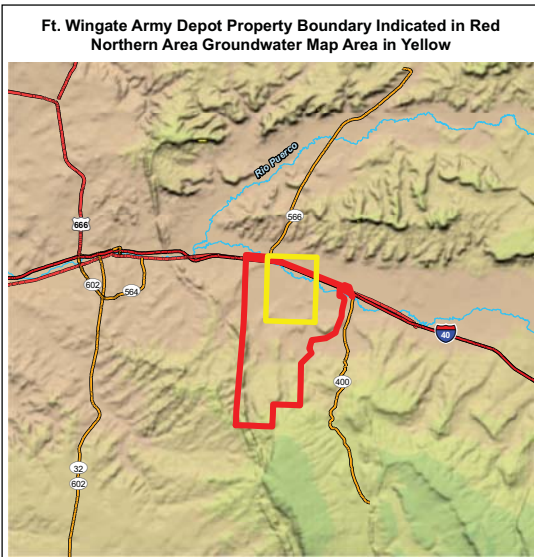
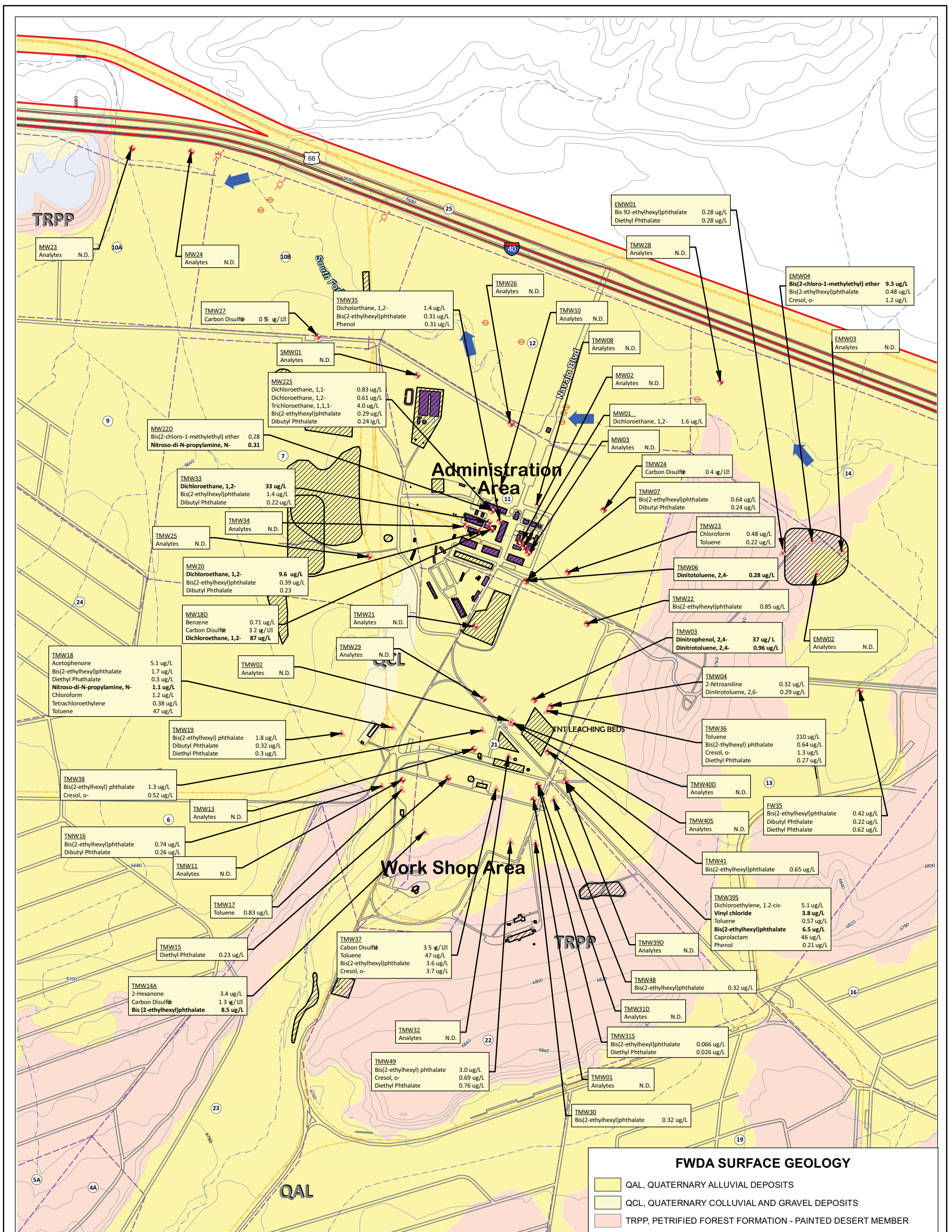
State Plane Coordinate System, New Mexico West, North American Datum 1983. Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:7,200 (1" = 600')
 Map Date: March 21, 2012

N.D., not detected
 N.S., not sampled
 Bold = Above Regulatory Limit
 Units: pg/L, picograms per liter;
 ug/L, micrograms per liter; mg/L, milligrams per liter.

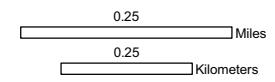
Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown



- NORTHERN AREA ALLUVIAL MONITORING WELLS
- NORTHERN AREA ALLUVIAL NON-MONITORING WELLS
- NORTHERN AREA ALLUVIAL PIEZOMETERS
- NORTHERN AREA BEDROCK MONITORING WELLS
- FLOW DIRECTION OF THE SOUTH FORK RIO PUERCO
- ADJOINING PROPERTY BOUNDARY
- SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- BUILDINGS
- FWDA PROPERTY BOUNDARY, FEB 2002
- PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- PROPERTY TRANSFER PARCEL BOUNDARY
- RAILROAD
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

FIGURE 5-10
October 2011 Northern Area
VOCs, SVOCs, and
Pesticides Concentrations in
Alluvial and Bedrock Groundwater



State Plane Coordinate System, New Mexico West, North American Datum 1983.
 Units in US Survey Feet above Mean Sea Level.

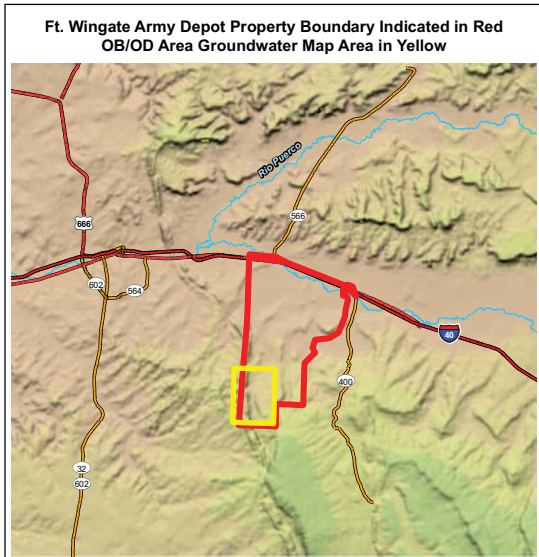
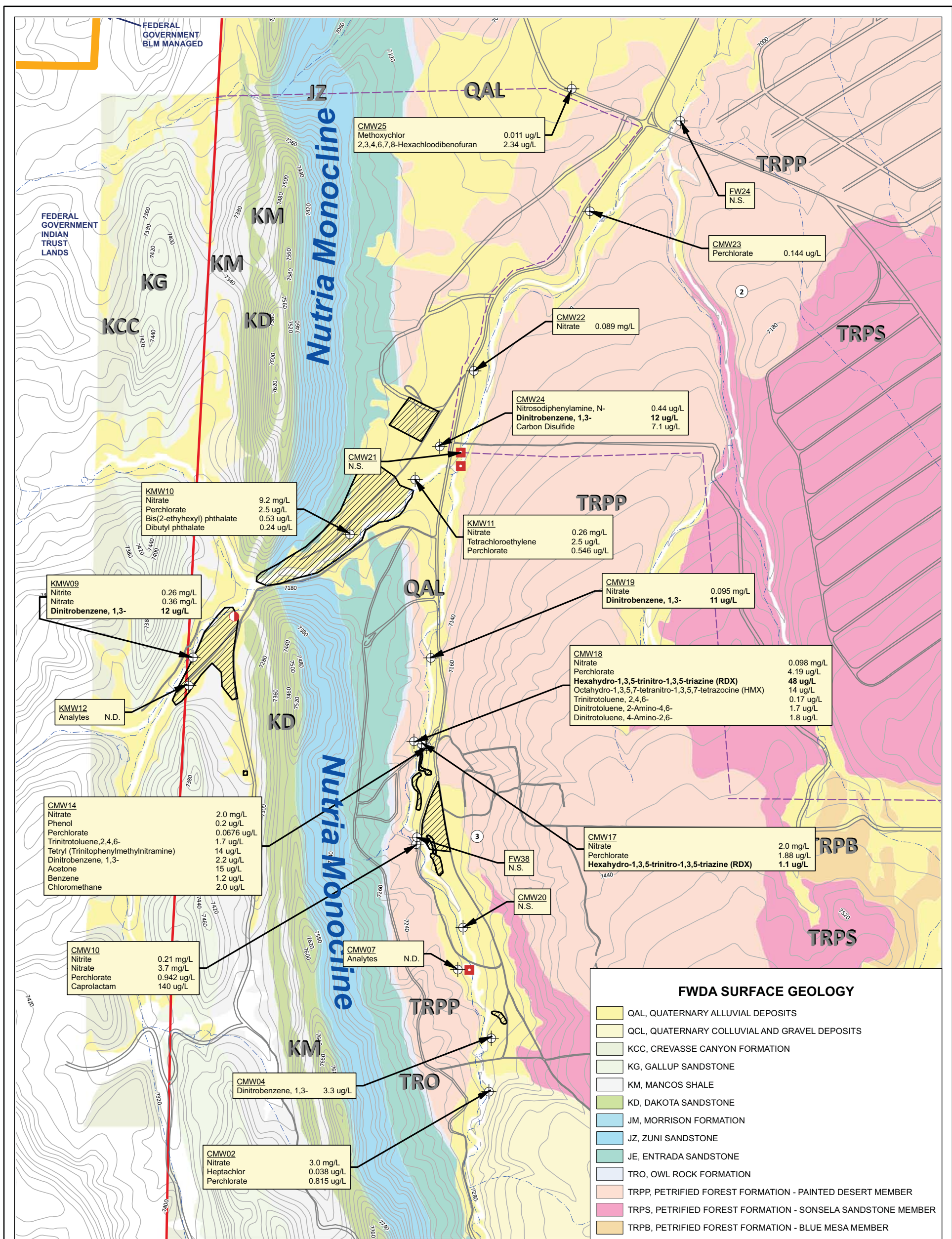
Map Scale: 1:7,200 (1" = 600')
 Map Date: March 21, 2012

N.D., not detected
 N.S., not sampled
 Bold = Above Regulatory Limit
 Units: pg/L, picograms per liter;
 ug/L, micrograms per liter; mg/L, milligrams per liter.

Data sources: drainages, railroad, roads: Tele Atlas GDT-Dynamap, 2008; populated places: USGS, ESRI, 2005; orthophotography: USGS, 2005; Ft. Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
 Reviewed by: David Brown





- ⊕ OB/OD AREA MONITORING WELLS
- DRY MONITORING WELLS
- BURIED MONITORING WELLS
- ▨ SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- ADJOINING PROPERTY BOUNDARY
- ▭ FWDA PROPERTY BOUNDARY, FEB 2002
- ⑦ PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- - - PROPERTY TRANSFER PARCEL BOUNDARY
- ROAD
- ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

**Figure 5-11
April 2011 OB/OD Area
Groundwater Constituent Concentrations
(All Detected Chemicals,
Metals Not Included)**

0.25 Miles
0.25 Kilometers

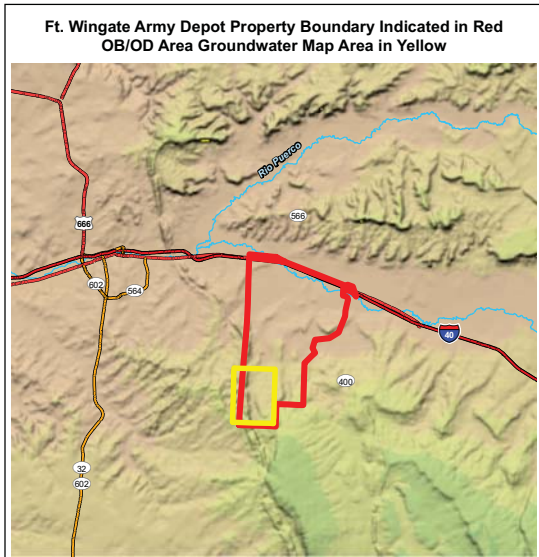
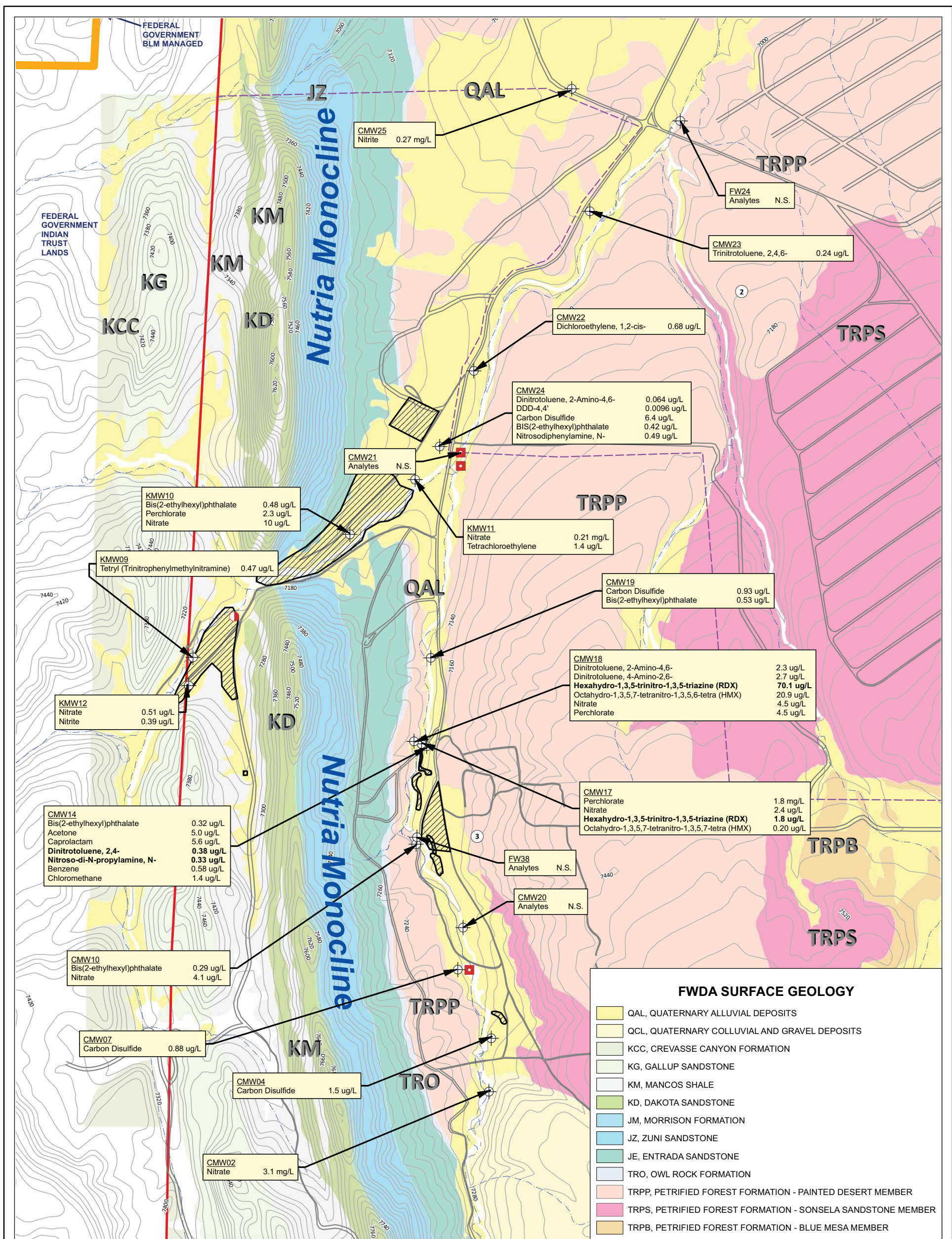
State Plane Coordinate System, New Mexico West,
North American Datum 1983.
Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:6,000 (1" = 500')
Map Date: March 21, 2012

Units: pg/L, picograms per liter;
ug/L, micrograms per liter; mg/L, milligrams per liter.
N.S., Not Sampled.
N.D., Not Detected.
Bold= Above Regulatory Limit.

Data sources: drainages, railroad, roads: Tele Atlas
GDT-Dynamap, 2008; populated places: USGS,
ESRI, 2005; orthophotography: USGS, 2005; Ft.
Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown



- ⊕ OB/OD AREA MONITORING WELLS
- DRY MONITORING WELLS
- BURIED MONITORING WELLS
- ▨ SOLID AND HAZARDOUS WASTE MANAGEMENT UNITS
- ADJOINING PROPERTY BOUNDARY
- ▭ FWDA PROPERTY BOUNDARY, FEB 2002
- ⑦ PROPERTY TRANSFER PARCEL IDENTIFICATION NUMBER
- - - PROPERTY TRANSFER PARCEL BOUNDARY
- ROAD
- ~ ARROYO
- USGS TOPOGRAPHIC CONTOUR (20 FT INTERVAL)

**Figure 5-12
October 2011 OB/OD Area
Groundwater Constituents Concentrations
(All Detected Chemicals,
Metals Not Included)**

0.25 Miles
0.25 Kilometers

State Plane Coordinate System, New Mexico West,
North American Datum 1983.
Units in US Survey Feet above Mean Sea Level.

Map Scale: 1:6,000 (1" = 500')
Map Date: March 21, 2012

Units: pg/L, picograms per liter;
ug/L, micrograms per liter; mg/L, milligrams per liter.
N.S., Not Sampled.
N.D., Not Detected.
Bold= Above Regulatory Limit.

Data sources: drainages, railroad, roads: Tele Atlas
GDT-Dynamap, 2008; populated places: USGS,
ESRI, 2005; orthophotography: USGS, 2005; Ft.
Wingate Environmental Restoration detail: USACE.

Prepared by: Jonathan Hall - LRL
Reviewed by: David Brown