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2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
(GROUNDWATER)
FORMER NEBRASKA
ORDNANCE PLANT
MEAD, NEBRASKA
CONTRACT NO. DACW41-03-D-0001
TASK ORDER NO. 002

Prepared for
Department of the Army
U.S. Army Engineer District
Kansas City District
Corps of Engineers
Kansas City, Missouri

D R A F T

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List of Abbreviations, Acronyms, and Terms

The following abbreviations, acronyms, and terms are commonly used in environmental reports, work plans, and guidance documents. They are listed here as an aid to the reader because they are in common use in the industry or are specific to the subject of this document.

Term	Definition
AMA	Atlas Missile Area
AOP	Advanced Oxidation Processes
ARAR	Applicable, Relevant and Appropriate Regulation
ARPR	Annual Remedy Performance Report
CE	Containment Evaluation
CENWK	U.S. Army Corps of Engineers Northwestern Division Kansas City District
CEWP	Containment Evaluation Work Plan
COC	Contaminant of Concern
2,4-DNT	2,4-Dinitrotoluene
ECC	Environmental Chemical Corporation
EW	Extraction Well
FNOP	Former Nebraska Ordnance Plant
ft/day	Feet per day
GAC	Granular Activated Carbon
GCW	Groundwater Circulation Well
gpd/ft	Gallons per day per foot
gpm	Gallons Per Minute
GWM	Groundwater Model
HA	Lifetime Health Advisory
K	Hydraulic Conductivity
LL	Load Line
LPNNRD	Lower Platte North Natural Resource District
LWS	Lincoln Water System
MCL	Maximum Contaminant Level
MODAC	Parameter estimation package for groundwater flow model calibration by Guo and Zhang (1994, 2000)
MODFLOW	Groundwater Flow Model by McDonald and Harbaugh (1988)
MODPATH	Groundwater Particle Tracking Model by Pollock (1989)
MT3DMS	Containment Transport Model by Zheng (1999)
MW	Monitoring Well
MUD	(Omaha) Metropolitan Utilities District
NDNR	Nebraska Department of Natural Resources
OU1	Operable Unit 1
OU2	Operable Unit 2 (Groundwater)

List of Abbreviations, Acronyms, and Terms

Term	Definition
OW	Observation Well
RA	Remedial Action
RAO	Remedial Action Objective
RDGM	Remedial Design Groundwater Model
RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine
ROD	Record of Decision
TCE	Trichloroethene (trichloroethylene)
TNB	1,3,5-Trinitrobenzene
TNT	2,4,6-Trinitrotoluene
USGS	United States Geological Survey
URS	URS Group, Inc.
USACE	U.S. Army Corps of Engineers
VOC	Volatile Organic Compound
µg/L	Micrograms per liter (ppb)

This document is the evaluation of the hydraulic containment component of the Remedial Action (RA) for Operable Unit No. 2 (OU2) activities at the former Nebraska Ordnance Plant (FNOP) near Mead, Nebraska (Site) (**Figure 1-1**). This document is based on the Final Containment Evaluation Work Plan (CEWP) (URS, 2006b), and is divided into the following sections:

- **Section 1.0** presents the objectives and scope of the evaluation; a brief history of the remedy; a summary of model development; and a summary of previous containment evaluations.
- **Section 2.0** presents the evaluation of the hydraulic data, including a discussion of the specific capacities of the extraction wells; a discussion of the potentiometric surface and gradients; comparison of the aquifer test results and model assumptions; and the capture zone analysis derived from particle tracking simulations.
- **Section 3.0** presents the result of chemical analyses from the fall 2005/spring 2006 direct-push characterization of the eastern plumes, and the 2006 installation of the eastern and southern monitoring wells; and a discussion of concentration trends.
- **Section 4.0** presents the conclusions of the containment evaluation.

References are presented in **Section 5.0**.

1.1 BACKGROUND

1.1.1 Site History

The FNOP was a load, assemble, and pack facility that produced bombs, boosters, and shells. Section 5.0 contains a more thorough list of project related reports that document the site history and investigation and remedial efforts to date.

A general site location map is presented on **Figure 1-1**.

1.1.2 Description of Remedial Action

The remedial action objectives (RAOs) outlined in the OU2 Record of Decision (ROD) address the contaminated groundwater and explosives-contaminated soil which could act as a source of explosives contamination of groundwater. They also consider the long-term goals of protecting human health and the environment and meeting Applicable, Relevant and Appropriate Regulations (ARARs).

The RAOs as defined in the OU2 ROD are:

- Minimize the potential for ingestion of contaminated groundwater, or reduce concentrations to acceptable health-based levels.
- Minimize the potential for dermal exposure to contaminated groundwater, or reduce concentrations to acceptable health-based levels.
- Minimize the potential for inhalation of chemicals released during the use of contaminated groundwater, or reduce concentrations to acceptable health-based levels.

The major components of the selected remedy include:

- Hydraulically contain contaminated groundwater exceeding the Final Target Groundwater Cleanup Goals.
- Focused extraction of groundwater in areas with relatively high concentrations of volatile organic compounds (VOCs) and explosives.
- Treat all extracted groundwater using granular activated carbon (GAC) adsorption, advanced oxidation processes (AOP), and air stripping. GAC adsorption and AOP may be applied individually or in combination, while air stripping must be applied in combination with one of the other technologies to effectively treat explosives.
- Dispose of the treated groundwater by beneficially reusing it or through surface discharge.
- Provide a potable water supply to local groundwater users whose water supply contains hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) exceeding the Lifetime Health Advisory (HA) and/or Trichloroethene (TCE) exceeding the Maximum Contaminant Level (MCL).
- Monitor the groundwater elevations and water quality.
- Excavate and treat explosives-contaminated soil which could act as a source of explosives contamination of groundwater and which does not meet the Operable Unit 1 (OU1) excavation criteria.

The remediation of explosives-contaminated soils, which could act as a source of explosives contamination of groundwater (as defined by OU2 ROD), was completed during the fall of 1997.

The groundwater portion of the remedial action for OU2 addressed the principal threat at the site, contaminated groundwater, by containing, extracting, and treating the contaminated groundwater on-site.

1.1.3 Chemicals of Concern

The Chemicals of Concern and associated cleanup goals defined in the OU2 ROD are summarized below.

Final Target Groundwater Cleanup Goals	
Chemical of Concern	**Concentration (µg/L)**
Methylene Chloride	5
1,2-Dichloropropane	5
TCE	5
TNB	0.778
TNT	2
2,4-DNT	1.24
RDX	2

1.1.4 Extent of Groundwater Contamination

For the purposes of performing the containment evaluation, the extent of contamination is defined as the known extent of contamination – in both the horizontal and vertical directions - that exceeds the Final Target Groundwater Cleanup Goals.

The current extent of contamination developed from an analysis of direct-push investigations, monitoring wells, extraction wells, domestic wells, and surface water sampling performed through 2006 is depicted on **Figures 1-2** through **1-5**.

1.1.5 Hydraulic Containment System History

This document addresses the performance evaluation of the OU2 selected remedy, as it relates to the hydraulic containment system meant to capture the site groundwater that is contaminated at levels above the Final Target Cleanup Goals defined in the ROD. Containment is being accomplished through the operation of groundwater extraction wells. Extracted groundwater from EW-1 through EW-11 is treated at a main groundwater treatment facility, and extracted groundwater from EW-12 is treated at a smaller groundwater treatment facility south of Load Line 1.

The remedy that has been implemented to date includes the installation and operation of twelve extraction wells to contain contaminated groundwater. EW-8, which is located midway along the Load Line 1 plume length, will cease operation when nearby extraction well EW-11 becomes operational. Following the installation of EW-12 and EW-13, testing of EW-12 revealed a much larger capture zone due to a lower hydraulic conductivity (20 ft/day) than expected (130 ft/day), rendering the operation of EW-13 unnecessary at this time. Extraction well EW-12 contains the TCE plume associated with Load Line 1.

The following table summarizes the designed pumping rate for each extraction well. The rates summarized below are documented in the Remedial Design Groundwater Model (RDGM) III modeling report (URS, 2002a). Pumping rates for EW-12 and EW-13 are from the Load Line 1 Remedial Design (URS, 2005).

Extraction Well	RDGMIII Pumping Rate (gpm)
EW-1	200
EW-2	150
EW-3	200
EW-4	150
EW-5	175
EW-6	275
EW-7	300
EW-8	250
EW-9	275
EW-10	400
EW-11	350
EW-12	250
EW-13	250

1.2 DEVELOPMENT OF THE SITE GROUNDWATER MODEL

The design of the OU2 containment system was accomplished by developing a site-specific groundwater model. The current model is the culmination of groundwater modeling efforts that started with the Removal Action Groundwater Modeling (Woodward-Clyde, 1994), subsequently followed by:

- Conceptual Groundwater Model (Woodward-Clyde, 1996b and 1996c)
- Remedial Design Groundwater Model (RDGM) (Woodward-Clyde, 1998)
- Remedial Design Groundwater Model Part II (RDGMII) (Woodward-Clyde, 1999a)
- Remedial Design Groundwater Model III (RDGMIII) (URS, 2002a)
- Remedial Design Groundwater Model IV (RDGMIV) (URS, 2004a)
- Updates to RDGMIV described in the Load Line 1 Remedial Design (GWM05) (URS, 2005)
- Draft Final 2006 Groundwater Modeling Report (GWM06) (URS, 2007)

The Draft Final GWM06 Report (URS, 2007) details the updates that have occurred over time that have taken the model to its current state.

1.3 PROJECT OBJECTIVES

The primary goal of the containment evaluation is to evaluate whether the hydraulic containment system is containing the TCE and RDX contamination above the Final Target Groundwater Cleanup Goals of 5 µg/L and 2 µg/L, respectively. The intent of the annual containment evaluation is to evaluate whether the known extent of contamination (in both the horizontal and vertical directions) is within the hydraulic capture zone generated by the extraction wells.

1.4 PROJECT SCOPE

Several lines of converging evidence were used to evaluate the performance of the containment system. The following activities were performed in order to evaluate the performance:

- Evaluation of water level measurements collected throughout each year and development of potentiometric surface maps and groundwater flow-line maps to demonstrate that the containment system is maintaining an inward gradient.
- Comparison of most recent specific capacities to previous measurements to evaluate the need for well maintenance.
- Particle tracking simulation to estimate the width and continuity of capture zones.
- Evaluation of concentration trends at all screened intervals for the groundwater monitoring well clusters identified in the CEWP.

2.1 WELL PERFORMANCE

2.1.1 Specific Capacity Estimates

Step tests were performed on extraction wells EW-1 through EW-10, most recently in either December 2005 or February 2006, and the results are compared to specific capacities estimated from 2002 operational data in **Table 2-1**. Specific capacities are dependent on saturated thickness. Therefore, the operational data from 2002 are used for comparison rather than the 2001 pre-startup step tests because, the April 2002 data were collected after the initial rapid dewatering phase from the pump and treat system operation. The largest decreases in specific capacities were observed in EW-1 and EW-9 (ECC, 2006b). As a result of the February 2006 step tests, EW-1, EW-4, EW-6, EW-10, and EW-11 underwent bacterial testing, down-hole video examination, cleaning of down-hole equipment, scrubbing of the well casing and screen, bailing, and chlorination in June 2006. In addition, EW-1, EW-9, and EW-10 are scheduled for more aggressive rehabilitation in 2007.

Although the decrease in specific capacities at EW-9 and EW-10 may be partly due to increases in well losses that could be reversed through rehabilitation, a portion of these decreases may also be attributable to the decrease in saturated thickness of the Todd Valley aquifer, which has declined 5 to 10 feet during the 2000-2006 drought (UNCSD, 2006).

2.1.2 Pumping Rates

The average monthly pumping rates for the extraction wells through December 2006 are presented in **Table 2-2**. The total pumping rate for EW-1 through EW-10 decreased from 2,261 gpm in January 2006 to 2,177 gpm in December 2006, a decline of 84 gpm, or 4 percent. Most of the decrease occurred at EW-5, EW-9 and EW-10. The pumping rate at EW-5 was decreased by the treatment plant operators to keep the pumping water level above the screen after a video survey of the well performed in 2006 revealed that the top of the screen was approximately 5 feet higher than previously assumed. The amount of decline in pumping rates of EW-9 and EW-10 is related to a decline in well performance which will be re-evaluated after the scheduled 2007 rehabilitation.

2.2 EVALUATION OF WATER LEVEL DATA

2.2.1 Potentiometric Surface

Figure 2-1 shows the March 29, 2006 and October 30, 2006 interpreted potentiometric surfaces. The comparison suggests that the groundwater levels at both times are very similar within the groundwater plume area. The groundwater elevations within 1 mile of the extraction wells were measured again in December 2006 before, during and after a system-wide shutdown (**Table 2-3**). These surfaces were based on water levels from the following sources:

- USACE monitoring wells, observation wells, and piezometers
- LPNNRD piezometers and irrigation wells (LPNNRD, 2007)
- MUD piezometers (LPNNRD, 2007)
- LWS piezometers (LPNNRD, 2007)

- USGS piezometers and irrigation wells (USGS, 2006a)
- USACE surface water staff gauges
- USGS surface water-gauging stations (USGS, 2006b)

Some of the measurements from the United States Geological Survey (USGS) data base were not measured on the same day, but these measurements are largely confined to the margins of the model away from the area of interest. The March and October 2006 potentiometric surfaces are the product of an effort by the USACE to coordinate water level measurements with the semiannual Lower Platte North Natural Resource District (LPNNRD) Wann Basin measurements. The coordination yielded two detailed potentiometric surfaces generated on the same day.

2.2.2 Gradient Pairs

In 2006, pairs of observation wells ("gradient pairs") were installed in the areas between extraction wells EW-10, EW-9, EW-7, EW-6, and EW-5. A pair was also installed sidegradient to EW-4, and also sidegradient to EW-11.

All extraction wells either already had observation wells arrayed directly downgradient of the extraction wells (EW-1, EW-3, EW-5, and EW-7 through EW-10), or else new observation wells were installed in 2006 downgradient of the extraction wells (EW-4, EW-6, EW-9, and EW-11). The one exception is EW-2, which only has one downgradient observation well because additional observation wells could not be installed due to landowner access issues. The alignment of observation wells directly downgradient of the extraction wells all demonstrate an inward gradient toward the extraction wells. However, data was not previously available on the gradient in the areas between the extraction wells (e.g., between EW-9 and EW-10, or between EW-9 and EW-7, etc.), because only one sidegradient observation well was present between the extraction wells (i.e., two observation wells are necessary to measure the gradient in the area between the extraction wells). Therefore, observation wells were installed downgradient of the existing sidegradient observation wells in between the extraction wells. If the water levels in these "gradient pairs" were to indicate a gradient opposite that of the natural gradient (i.e., a reverse gradient), then this would be strong evidence of overlapping capture independent of particle tracking simulations or capture zone analysis. However, in order to achieve capture it is not necessary that there be a reverse gradient in between extraction wells EW-5 through EW-10, as evidenced by the particle tracking simulation presented in Section 2.5.

The December 2006 water levels in the gradient pairs are presented on **Figure 2-2**. The gradient pairs directly downgradient of the extraction wells show a reverse gradient. The gradient pairs in between the extraction wells show a gradient in the same direction of natural groundwater flow, but relatively flatter than the natural gradient. Closed contours around many of the wells show the extent of the area of reverse gradients. The cone of depression at EW-12 is notable for its depth and extent, and is a product of the low hydraulic conductivity of the Wahoo Valley sediments. The cone of depression around EW-2 cannot be contoured, since only one observation well could be installed due to landowner access issues, and water levels from the extraction wells themselves are not valid for contouring piezometric surfaces because of excess drawdowns from well head losses.

2.2.3 Hydrographs

Groundwater elevations for selected USACE monitoring wells, USGS-measured wells, and LPNNRD-measured wells are graphed and are presented as **Figures 2-3a** through **2-3i**. The locations of these wells are shown on **Figure 2-4**. The hydrographs can be divided into five groups:

1. Todd Valley wells within two miles of the containment system EWs (MW03A, MW-25A, MW-32B, 14N8E24ACD2, 14N9E20DD1, 14N9E32DD1 and T13NR09E16BAAA, also known as TV-17A)
2. Todd Valley wells near Mead (TV-10, TV-11, and TV-12)
3. Uplands wells near Yutan (UP-39 and UP-40)
4. Platte Valley USACE wells (MW-44A, MW-45A, and MW-46A)
5. Platte Valley wells near Ashland (13N9E24CCCC1 and 13N9E13ADBA1, also known as M90-5R)

The Todd Valley wells near the extraction wells show declines since 2001 ranging from 4 feet (MW-3A) to 9 feet (14N9E32DD1). Although the declines were greater closer to the containment system, some of the decline is attributable to below-normal growing season precipitation during 5 of the last 6 years, which is typically accompanied by above-normal irrigation usage. Declines were also observed in the Todd Valley wells near Mead ranging from 3 to 4 feet, despite the fact that these wells are located 5 miles or more from the extraction wells. Wells located in the loess-mantled till uplands near Yutan also showed declines of approximately 4 feet.

The USACE monitoring wells in the Platte Valley, which are located approximately 1 mile north of EW-1, showed declines of roughly 1 to 2 feet. The two hydrograph wells located north of Ashland in the Platte Valley, however, showed no change or an increase since 2002.

These changes are consistent with a map prepared by the University of Nebraska Conservation and Survey Division showing water level declines due to the 2000-2006 drought (http://csd.unl.edu/generalnewpub-gwmaps.asp) (UNCSD, 2006). The map indicates a decline of 5 to 10 feet in the Todd Valley between Colon and Memphis, a decline of 1 to 5 feet in the uplands and most of the Platte Valley, and an area of little change near the Platte River between Venice and Ashland.

2.3 AQUIFER PARAMETERS

Hydraulic conductivities were estimated during construction of the 2006 groundwater model (GWM06) using the parameter estimation process MODAC. The March 2006 piezometric surface was used for the quasi-steady state calibration, and the December 2006 shutdown test data and the 2002-2006 water levels were used for the transient calibrations. The results of distance-drawdown analyses were compared to the model parameter estimates and extensively discussed in the draft final GWM06 Report (URS, 2007). The model parameter estimates near the other extraction wells were compared to distance-drawdown analyses from the One Year Containment Evaluation (URS, 2004b), and are summarized in the following table:

Extraction Well	Distance-Drawdown Hydraulic Conductivity (ft/day)	GWM06 Calibrated Hydraulic Conductivity (ft/day)
EW-1	390	400
EW-2	NA	400
EW-3	360	350
EW-5	190	200
EW-7	160	140
EW-8	93	100
EW-10	120	160

A shutdown test was performed in December 2006 to collect data in the newly installed observation wells near the extraction wells that did not previously have observation wells. These extraction wells included EW-2, EW-4, EW-6, EW-9, and EW-11. Only one of the planned observation wells near EW-2 was installed due to landowner access issues. The test was performed by measuring water levels during pumping, shutting down the containment system for 72 hours (hence the term "shutdown test"), collecting near-static water levels, and then measuring drawdowns as the containment system resumed operation. EW-11 was not operational at the time of the shutdown test.

Transmissivities were estimated using distance drawdown analysis, and are presented in **Table 2-4** and **Figures 2-5a** through **2-5d**. The following table summarizes the shutdown test analyses and the model parameters:

Extraction Well	Distance-Drawdown Hydraulic Conductivity (ft/day)	GWM06 Calibrated Hydraulic Conductivity (ft/day)
EW-4	150	200
EW-6	280	200
EW-9	190	160
EW-12	22	20

The distance-drawdown analyses from the shutdown test are useful as an independent verification of the model assumptions, but they are steady state analyses of only two or three piezometric measurements in one direction from the extraction well. The model quasi-steady state parameter estimation process and calibration are similar to a pumping test analysis, but with tens or hundreds of observations in all directions. The model parameters were further adjusted using transient data not only from the shutdown test but also from the first 4 years of system operation. Therefore, the model-calibrated parameters are considered to be more applicable than the shutdown test analyses.

2.4 IRRIGATION AND PUBLIC WATER SUPPLY WELLS

Public water supply wells and irrigation wells were updated for the GWM06 groundwater model in 2006 using the Nebraska Department of Natural Resources on line registration database.

Particle tracking demonstrates the influence of irrigation wells on plume migration. There does not appear to be a seasonal change in the direction of individual particles, except when particles pass near irrigation wells. Seasonal changes in particle direction are evident within roughly 1,000 feet of the irrigation wells. An area in which these effects are seen is in the southern portion of the LL1 TCE plume in Section 36 near irrigation well (G-054654): The agronomy area (Township 14N, Range 9E, Sections 21 and 28) has several irrigation wells within the AMA TCE plume that either capture or alter migration of the plume, but do not significantly affect the capture zones of the extraction wells.

In the particle tracking and transport simulations, public water supply wells were included in the transient simulations. Pumping from the Lincoln Water System (LWS) Ashland Well Field was simulated as a transient stress with a higher summer flow rate, and an annual increase in overall flow rate in accordance with the LWS master plan. Pumping at the Omaha Metropolitan Utility District (MUD) Platte West Well Field was simulated beginning in 2008 with higher summer flow rates and lower rates the rest of the year that result in an average flow rate equivalent to the maximum permitted annual average flow rate of 52 million gallons per day. After the MUD Platte West Well Field begins operation, the actual pumping rates will be used in future evaluations.

2.5 CAPTURE ZONE ANALYSIS

Capture zone analysis was performed using the GWM06 groundwater model (URS, 2007) under transient conditions. Particles were placed at the edges of the RDX and TCE plumes at the top and bottom of Model Layer 2, and the top and bottom of Model Layer 3, vertically spanning the entire saturated thickness of the aquifer. The capture zones of each well in Model Layer 2 and Model Layer 3 are depicted on **Figures 2-6** and **2-7**. The capture zones are nearly identical in each layer.

2.5.1 EW-2 through EW-7, EW-9, and EW-10

The capture zone of EW-4 does not overlap with the capture zones of adjacent extraction wells EW-3 and EW-5, creating gaps through which the simulated particles may pass in the future. It is important to note, however, that particle tracking cannot predict whether or not the RDX will migrate beyond the capture zone at concentrations above the Final Target Groundwater Cleanup Goal of 2 µg/L. Particle tracking simulates purely advective flow and does not take into account transport processes such as dispersion, nor does it take into account biodegradation or abiotic degradation. The 2 µg/L isoconcentration contour will not migrate at the same rate as a particle released from a location along the 2 µg/L isoconcentration contour because of the effects of dispersion and potential degradation.

Transport simulations of TCE are presented on **Figures 2-8** and **2-9**, and transport simulations of RDX are presented on **Figures 2-10** and **2-11**. These simulations show that the LL3 RDX plume, as it is currently characterized, remains in the vicinity of EW-4 and EW-5 during the next 5 years. Currently available data suggests that the concentrations of RDX in the LL3 plume are 14 µg/L or less, and transport simulations show that the portion of the LL3 RDX plume that migrates past EW-4 will be low, possibly 12 µg/L or less.

Stagnation zones are areas of very low hydraulic gradient downgradient of extraction wells where groundwater velocities are very low. Plumes may disperse to concentrations below action

levels without leaving the stagnation zone. The stagnation zone downgradient of EW-2 through EW-7, and EW-9 and EW-10 was discussed in the RDGMIV report (URS, 2004a). The transport simulations on **Figures 2-10** and **2-11** show that plume migration downgradient of EW-1 and EW-12 is also very slow, suggesting that these areas are stagnation zones, too.

Currently, data from monitoring well cluster MW-118 do not indicate that RDX is passing between EW-4 and EW-5 above 2 µg/L. The RDX plumes were interpreted based on data from existing monitoring wells, and upon completion of the further characterization of the LL2 and LL3 RDX plumes in 2007, the predicted migration of the plumes near EW-4 can be re-assessed.

2.5.2 EW-1

Another area of concern is in the AMA TCE plume between MW-45 and MW-46. Particle tracking indicates particles originating at the plume edge between MW-45 and MW-46 migrate to the southeast and eventually to an area south of EW-1. Trends in the MW-45 cluster (Section 3.2) suggest that concentrations in this portion of the plume have been trending downward. Monitoring of concentrations in clusters MW-45, MW-46, MW-114 and MW-116 are expected to give an indication if concentrations in this portion of the plume migrate to the south at current concentrations or if they disperse to concentrations below 5 µg/L.

Transport simulations (**Figures 2-8** and **2-9**), however, indicate that TCE will not migrate to the south side of EW-1 in the next 5 years.

2.5.3 EW-12 and EW-13

Another area where particle tracking indicates the capture zone is narrower than the plume includes a small area of the LL1 TCE plume approximately 1 mile north of EW-12 and a quarter mile southeast of EW-11. The capture zone is narrower than the plume in Model Layer 3, but not Model Layer 2. Particles originating at this location may pass eastward of EW-12. It should be noted that the particles originate at the 5 µg/L edge of the plume. The plume disperses and diminishes in size as it migrates and the portion of the plume that is currently at 5 µg/L will be below 5 µg/L after migrating more than 1 mile.

Although particle tracking shows particles migrating outside the EW-12 capture zone to an area in the Silver Creek valley east of EW-12, transport simulations presented on **Figures 2-8** and **2-9** show that TCE does not migrate past EW-12 in the next 5 years. The capture zone of EW-12 extends to Silver Creek, reducing the discharge of groundwater, and therefore contaminants to Silver Creek.

The original design for capturing the LL1 plume south of EW-11 was based on an assumed hydraulic conductivity of 130 ft/day, the value used for Todd Valley in RDGMIV. Simulations showed that EW-13 would be necessary in the future due to a projected shift to the east. EW-13 was installed at the same time as EW-12. Following installation of EW-12 and EW-13, pumping tests at EW-12 in January 2006 yielded a hydraulic conductivity of approximately 20 ft/day, which was confirmed by the shutdown test analyses in December 2006. At the end of development, EW-13 yielded less than 50 gpm.

EW-12 began operation on February 13, 2006 at a pumping rate of 325 gpm. Particle tracking simulations (**Figures 2-6** and **2-7**) show that the EW-12 capture zone extends beyond EW-13. The EW-12 capture zone narrows downgradient of EW-11, leaving a small portion of the plume edge outside of the capture zone.

Transport simulations (**Figures 2-8** through **2-11**), however, indicate that TCE from this portion of the plume does not migrate beyond EW-12 in the next 5 years. Concentration trends in monitoring well cluster MW-80 (see Section 3.2), which is downgradient of EW-12 near Silver Creek, are stabilized or declining. TCE concentrations at cluster MW-101, which is across Silver Creek from MW-80 and downgradient of the farthest downgradient direct-push sample with TCE, was non-detect. These analytical results suggest that EW-12 has cut off the plume, and particle tracking simulations suggest that the capture zone of EW-12 may extend to Silver Creek and MW-80, illustrating that contamination can pass downgradient of the extraction wells and still be within the capture zone. For these reasons, it was deemed that operation of EW-13 is not necessary at this time.

2.6 UNCERTAINTY OF PARTICLE TRACKING AND TRANSPORT RESULTS

As part of the CE process, the available system data is assembled and analyzed to evaluate the performance of the hydraulic containment system. The analysis includes the best currently available analytical and numerical techniques, which allow for a quantitative evaluation of system performance.

While evaluation the hydraulic capture of a one-well pumping system is relatively straight forward, evaluating the combined capture zone created by an 11-well pumping system is complicated. Therefore, the GWM06 numerical model predictions have been relied on to evaluate the capture zones of the containment system. Groundwater modeling is a state of the practice tool that is used to evaluate the theoretical aquifer response to a series of prescribed future stresses. It isn't reasonable to expect absolute accuracy from this or any other groundwater model given the uncertainty and variability of the model input parameters. However, a well-constructed groundwater model applied by an experienced groundwater practitioner provides a reasonable approximation of future aquifer behavior.

The foundation of the containment evaluation is a comprehensive monitoring program. This section discusses the collection, evaluation, and reporting of chemical groundwater data for use during the containment evaluation as a line of evidence the containment system is functioning as designed. **Figure 3-1** shows the locations of the extraction wells as well as the groundwater monitoring wells that were evaluated in the 2006 Containment Evaluation.

3.1 EXTRACTION WELLS

Four extraction well sampling events (February, May, August, and November) were conducted during 2006. Chemical data was collected from the operating extraction wells at the Site. No data was collected from EW-11 and EW-13, as they are not in operation.

TCE and RDX were the only COCs detected in extraction wells in 2006. The results of the extraction well sampling are presented in **Tables 3-1** and **3-2**.

3.2 COC EVALUATION

The CEWP (URS, 2006a) identified a series of specific monitoring well clusters both upgradient and downgradient of the extraction well system that would be evaluated for VOCs and/or explosives and presented as part of this 2006 Containment Evaluation. The list of monitoring well clusters also included twenty-eight proposed monitoring well clusters. Those proposed monitoring wells were installed in the fall of 2006 and the initial sampling was performed in January-February 2007. Monitoring well clusters MW-104, MW-105, MW-109, and MW-111 were not installed due to landowner access issues. The monitoring well clusters evaluated during the 2006 Containment Evaluation are listed in **Table 3-3**. The chemical monitoring data for the southern and eastern perimeter monitoring wells are summarized in **Table 3-4**. The chemical monitoring data for the containment evaluation monitoring wells located within the extraction well capture zones are summarized in **Table 3-5**. A more detailed presentation of the data summarized in **Tables 3-4** and **3-5** can be found in the 2006 Annual GMP Report.

The chemical data presented in **Table 3-4** indicates that the there are no COCs above the Final Target Groundwater Cleanup Goals in the southern or eastern perimeter monitoring wells and no response actions, as detailed in Section 4 of the CEWP, are necessary. TCE and RDX concentration trend charts of selected monitoring well clusters are presented on **Figures 3-2** and **3-3,** respectively.

3.2.1 TCE

Of the monitoring well clusters evaluated during this containment evaluation that have been sampled more than once, only four monitoring well clusters (MW-36, MW-45, MW-80, and MW-90) have exhibited concentrations of TCE above the Final Target Groundwater Cleanup Goal. All four clusters are located upgradient or within the downgradient capture zone of extraction wells.

TCE has been declining in MW-36A and MW-36B, which are located upgradient of EW-1, since 1998. MW-36D has remained stable at or near non-detect. TCE in cluster MW-45, which is also located upgradient of EW-1, has been declining since 1995. TCE was not detected in the 13 perimeter monitoring well clusters east of the AMA TCE plume (MW-38, MW-46, MW-102, MW-103, MW-106 through MW-108, MW-110, and MW-112 through MW-116), or in the 5 perimeter monitoring wells clusters south of the AMA TCE plume (MW-62, MW-86 through

MW-88, and MW-117). In the monitoring well clusters downgradient of EW-12 (i.e., MW-79, MW-80) TCE concentrations are either stable or decreasing and are expected to continue decreasing since these monitoring wells are within the capture zone of EW-12. TCE has been declining in MW-80B and MW-80A since March 2006. MW-80D has remained stable at or near non-detect. TCE has been increasing in cluster MW-90 clusters, which is located upgradient of EW-12, since March 2006. Concentrations in the MW-90 cluster would be expected to increase as it is located upgradient of EW-12 and contaminants are being pulled towards the extraction well. TCE was not detected in the MW-101 cluster, which is south of the EW-12 capture zone and the LL1 TCE plume.

3.2.2 RDX

Of the monitoring well clusters evaluated during this containment evaluation that have been sampled more than once, only four monitoring well clusters (MW-29, MW-32, MW-45 and MW-99) have concentrations of RDX above the Final Target Groundwater Cleanup Goal. All four of these clusters are located within the capture zones of the extraction wells. Since 1993, RDX had been declining in MW-29A, however, it has shown a slight increase since September 2004. MW-29B has remained stable at or near detection limits. The MW-29 cluster is located upgradient of EW-10 within the EW-10 capture zone (**Figures 2-6** and **2-7**).

RDX in MW-32A has remained relatively stable between 6 µg/L and 11 µg/L since 1993. RDX has been increasing slightly in MW-32B and MW-32D since 1993. The MW-32 cluster is located upgradient of EW-7 within the EW-7 capture zone.

RDX had been increasing in cluster MW-45 from 2000 to 2005; however, it has been decreasing since 2005. The MW-45 cluster is located approximately one mile north of and within the EW-1 capture zone.

RDX was detected above 2 µg/L in monitoring well cluster MW-99, which was recently installed upgradient of EW-4 in the LL3 RDX plume.

RDX was not detected above the Final Target Groundwater Cleanup Goal of 2 µg/L in any of the 21 southern and 13 eastern perimeter monitoring well clusters (**Table 3-4**).

3.2.3 Other COCs

No other COCs were detected, in the monitoring well cluster evaluated, above the Final Target Groundwater Cleanup Goals in 2006.

4.1 SATISFACTION OF CONTAINMENT EVALUATION OBJECTIVES

This section follows the format of Section 5 of the CEWP, and compares the objectives outlined in the CEWP with the contents of this 2006 Containment Evaluation.

This containment evaluation uses the available hydraulic, chemical, and operational data from 2006 in conjunction with the current site groundwater model (GWM06) to illustrate the relation of the known extent of contamination with the hydraulic capture zone generated by the extraction well system. The general approach of this evaluation is as follows:

1. The known extent of contamination is illustrated on **Figures 1-2** through **1-5** in both the shallow and intermediate layers.

2. The hydraulic capture zone generated by the containment system based on 2006 operational data was estimated using particle tracking released from the bottom, middle, and top of the aquifer and presented on **Figure 2-6** (Model Layer 2) and **Figure 2-7** (Model Layer 3), and further assessed using transport simulations (**Figures 2-8** through **2-11**).

3. GWM06 was constructed and calibrated using data collected in 2006, as discussed in the GWM06 report (URS, 2007). In addition, the model hydraulic conductivity distribution is compared to distance-drawdown results in Section 2.3 of this report.

The following supporting information is included in this report and/or the Annual Remedy Performance Report (ARPR):

- Extraction well pumping rates are presented in CE **Table 2-2**, and extraction well water levels are tabulated and plotted in the Operations and Maintenance portion of the ARPR
- Tables of water level data for March, October, and December 2006 are included in CE **Table 2-3**.
- Analytical results from the southern and eastern perimeter monitoring wells are presented in **Table 3-4**.
- Water levels in gradients pairs are plotted and contoured on **Figure 2-2**.
- Hydrographs of MW-3, MW-25, MW-32, MW-44, MW-45, MW-46, and selected USGS and LPNNRD wells are presented on **Figures 2-3a** through **2-3i**.
- Potentiometric surface maps are presented on **Figures 2-1** and **2-2**.
- The “stagnation zone” or the area of relatively flat gradients and very slow groundwater migration downgradient of the extraction wells is discussed along with the transport simulations in Section 2.5.
- The external influence of irrigation and public water supply wells is discussed in Section 2.4. The influence of the MUD Platte West Well Field is incorporated into the particle tracking and future transport simulations.
- The most recent specific capacities of the extraction wells are compared to previous estimates in Section 2.1.

4.2 CONCLUSIONS

The containment evaluation is an annual process updated with new hydraulic and chemical data collected as part of the yearly GMP and O&M activities. Based on the evaluation of all operational, hydraulic, and chemical data collected in 2006, the capture zones of the extraction wells contain the known extent of contamination with the exception of three areas requiring further evaluation and attention:

1. The middle of the LL3 RDX plume north of EW-4 and EW-5.
2. A small portion of the east side of the LL1 TCE plume approximately 1 mile north of EW-12.
3. A small portion of the east side of the AMA TCE plume near MW-45 approximately 1 mile north of EW-1.

Transport simulations suggest that RDX above 2 µg/L will not reach MW-118, which is south of the EW-5 and EW-4 capture zones, within the next 5 years. Further characterization of the LL2 and LL3 RDX plumes is being performed in 2007 to evaluate this situation. The LL3 RDX plume will be monitored and potential response actions (as outlined in Section 4 of the CEWP) will be taken if RDX above 2 µg/L reaches MW-118 or any other perimeter monitoring well.

Transport simulations also indicate that the portion of the LL1 TCE plume currently between EW-12 and MW-80 is within the EW-12 capture zone, and will be below 5 µg/L within 5 years. Although particle tracking indicates that the EW-12 capture zone is narrower than the LL1 TCE plume at a location 1-mile north of EW-12, transport simulations suggest that TCE will not migrate beyond the immediate vicinity of EW-12 in the next 5 years. Therefore, operation of EW-13 is not necessary at this time.

Likewise, although the capture zone of EW-1 is narrower than the TCE plume at a point approximately 1 mile north of EW-1 near MW-45, transport simulations suggest that TCE will not migrate south of EW-1 above 5 µg/L during the next 5 years.

Perimeter monitoring wells, as well as residential wells within a 1-mile radius of the plume boundary, are regularly sampled as part of the yearly GMP. Groundwater chemical analyses from eastern and southern perimeter groundwater monitoring wells installed in 2006 demonstrate that there is no RDX above 2 µg/L or TCE above 5 µg/L downgradient of the extraction wells, and that the overall extent of contamination has not increased significantly. Furthermore, there was no evidence of unacceptable risk to human health, resulting from exposure to contaminated groundwater. Aside from the residences that already receive alternate water supply or in-home carbon treatment units, there have been no unacceptable detections of site-related contaminants in any of the residential water supply wells located within a 1-mile radius of the contaminant plume boundaries.

In 2006, the extraction system treated a combined total of 1,172,344,000 gallons of groundwater. Of this amount, tens of thousands of gallons were provided to local users for beneficial re-use. It is worth noting that the extraction system operated with better than 99% uptime. Aside from disruptions caused by power outages, and regularly schedule maintenance, there were no significant interruptions of service. The extraction well system is also being evaluated in 2007 as part of an optimization process to improve the effectiveness and reliability of the system.

Based on all of the evidence available from the year 2006, it appears that the remedy is functioning effectively. Additional attention will be applied to the areas of concern identified by the capture zone analysis. This may consist of additional monitoring, additional investigations regarding the extent of contamination in the areas of concern, or additional modeling simulations to better predict plume behavior. Modification to the existing remedy may also be considered.

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Table 2-1
Specific Capacity Estimates
Former Nebraska Ordnance Plant, Mead, Nebraska

EW-1

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Startup to Most Recent Step Test
2001	pre-develop.	8.5	202	23.7	
2001	post-develop.	6.9	202	29.2	
2006	Feb. step test	8.3	202	24.3	-20%

EW-2

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Most Recent Step Test
2001	pre-startup test	6.6	152	23.0	
2006	Feb. step test	9.5	152	16.0	
2006	Dec. oper. data	10.2	152	14.9	
2001	pre-startup	7.7	175	22.6	
2002	Apr. oper. data	20.0	175	8.8	
2006	Feb. step test	11.0	174	15.8	45%

EW-3

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Most Recent Step Test
2001	pre-startup test	4.7	230	48.8	
2002	Apr. oper. data	5.6	228	40.7	
2006	Feb. step test	3.9	226	57.9	30%
2006	Feb. step test	3.7	271	56.0	
2006	Dec. oper. data	5.5	271	49.3	

EW-4

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Most Recent Step Test
2001	pre-startup test	31.5	109	3.5	
2005	Dec. step test	19.9	109	5.5	
2006	Dec. oper. data	21.5	109	5.1	
2001	pre-startup test	36.4	124	3.4	
2002	Apr. oper. data	25.0	124	5.0	
2005	Dec. step test	22.9	124	5.4	8%

Table 2-1
Specific Capacity Estimates
Former Nebraska Ordnance Plant, Mead, Nebraska

EW-5

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Most Recent Step Test
2006	Feb. step test	13.1	170	13.0	
2006	Dec. oper. data	18.4	170	9.2	
2002	Apr. oper. data	18.1	250	13.8	
2006	Feb. step test	20.1	250	12.4	-11%

EW-6

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Most Recent Step Test
2001	pre-startup test	22.9	307	13.4	
2002	Apr. oper. data	17.5	307	17.5	
2005	Dec. step test	15.6	307	19.6	11%
2005	Dec. step test	13.1	266	20.3	
2006	Dec. oper. data	16.4	266	16.2	

EW-7

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Most Recent Step Test
2001	pre-startup test	15.0	309	20.7	
2006	Feb. step test	12.7	309	24.3	
2006	Dec. oper. data	15.3	309	20.2	
2001	pre-startup test	16.1	328	20.4	
2002	Apr. oper. data	19.8	328	16.6	
2006	Feb. step test	13.9	328	23.7	30%

EW-8

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Most Recent Step Test
2006	Feb. step test	9.8	296	30.3	
2006	Dec. oper. data	11.0	296	26.9	
2002	Apr. oper. data	20.3	324	16.0	
2006	Feb. step test	11.4	324	28.3	43%

Table 2-1
Specific Capacity Estimates
Former Nebraska Ordnance Plant, Mead, Nebraska

EW-9

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Dec '05 or Feb-06 Step Test
2001	pre-startup test	10.4	138	13.2	
2003	step test	13.2	138	10.4	
2006	Feb. step test	13.5	138	10.3	
2006	Dec. oper. data	16.6	138	8.3	
2001	pre-startup test	22.1	261	11.8	
2002	Apr. oper. data	24.2	261	10.8	
2003	step test	27.7	261	9.4	
2006	Feb. step test	29.1	261	9.0	-20%

EW-10

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Most Recent Step Test
2001	pre-startup test	14.1	279	19.8	
2005	Dec. step test	15.2	279	18.3	
2006	Dec. oper. data	22.1	279	12.6	
2002	Apr. oper. data	24.3	419	17.2	
2005	Dec. step test	24.2	419	17.3	1%

EW-12

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Change in SC From Apr '02 to Most Recent Step Test
2006	pre-startup test	52.4	325	6.2	
2006	Dec. oper. data	48.6	325	6.7	N/A

Note:

(1) "oper. data" = collected during normal operations, rather than step test.

(2) The change in specific capacity is calculated by comparing the most recent estimate to the estimate from the 2002 operational data. If a specific capacity estimate at an applicable pumping rate is not avaialble from the 2002 operational data, the most recent estimate is compared to the startup estimate.

Table 2-2
Extraction Well Pumping Rates (gpm)
Former Nebraska Ordnance Plant, Mead, Nebraska

Date	EW-1	EW-2	EW-3	EW-4	EW-5	EW-6	EW-7	EW-8	EW-9	EW-10	EW-11	EW-12	EW-13	Total
Feb-02	185	175	236	132	252	306	331	316	268	428	0	NI	NI	2,629
Mar-02	181	175	227	132	251	305	329	322	263	420	0	NI	NI	2,605
Apr-02	180	175	228	124	250	307	328	324	261	419	0	NI	NI	2,596
May-02	179	175	220	119	251	310	328	319	250	418	0	NI	NI	2,569
Jun-02	177	174	220	120	249	309	328	320	250	414	0	NI	NI	2,561
Jul-02	175	176	220	123	250	311	330	321	231	410	0	NI	NI	2,547
Aug-02	174	175	221	120	250	309	330	322	231	409	0	NI	NI	2,541
Nov-02	171	175	220	115	250	314	320	323	226	376	0	NI	NI	2,490
Feb-03	168	175	220	110	249	294	315	319	221	379	0	NI	NI	2,450
May-03	164	174	219	109	250	290	314	312	216	380	0	NI	NI	2,428
Aug-03	160	173	218	105	251	292	299	310	215	392	0	NI	NI	2,415
Nov-03	154	169	221	107	249	280	300	312	215	396	0	NI	NI	2,403
Mar-04	148	168	220	117	245	264	299	310	210	375	0	NI	NI	2,356
Apr-04	148	168	219	116	244	253	280	310	185	374	0	NI	NI	2,297
Aug-04	198	150	220	122	250	276	298	335	194	401	0	NI	NI	2,444
Oct-04	200	150	220	119	248	260	302	336	185	400	0	NI	NI	2,420
Jan-05	197	151	220	115	249	240	274	338	180	406	0	NI	NI	2,370
May-05	200	151	219	110	252	233	264	333	180	409	0	NI	NI	2,351
Aug-05	197	150	219	105	251	276	305	305	178	401	0	NI	NI	2,387
Oct-05	187	150	220	104	249	276	304	304	171	396	0	NI	NI	2,361
Jan-06	176	149	218	104	235	255	306	304	164	350	0	NI	NI	2,261
Feb-06	171	149	218	104	226	255	301	304	158	343	0	NI	NI	2,229
Mar-06	167	149	217	104	225	261	306	305	151	306	0	NI	NI	2,191
Apr-06	163	148	216	103	243	257	311	307	151	291	0	325	0	2,515
May-06	158	148	216	102	243	258	308	305	150	323	0	325	0	2,536
Jun-06	191	148	216	112	229	276	303	298	149	358	0	325	0	2,604
Jul-06	231	147	215	115	218	280	303	295	148	357	0	325	0	2,634
Aug-06	231	147	217	116	213	274	305	296	145	341	0	325	0	2,611
Sep-06	232	148	216	115	205	270	307	296	142	305	0	325	0	2,561
Oct-06	232	147	215	114	205	270	307	297	141	304	0	325	0	2,557
Nov-06	215	150	232	112	195	258	291	296	139	289	0	325	0	2,502
Dec-06	204	151	266	108	168	267	302	296	138	276	0	325	0	2,502

Table 2-3
March, October, and December 2006 Water Level Measurements
Former Nebraska Ordnance Plant, Mead, Nebraska

Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
EW-1	NA	1088.01	NM	NM	22.41	1065.60	NM	NM	NM	NM	NM	NM
EW-2	NA	1104.73	NM	NM	35.83	1068.90	NM	NM	NM	NM	NM	NM
EW-3	NA	1150.39	NM	NM	70.69	1079.70	NM	NM	NM	NM	NM	NM
EW-4	NA	1149.08	NM	NM	83.58	1065.50	NM	NM	NM	NM	NM	NM
EW-5	NA	1154.37	NM	NM	81.37	1073.00	NM	NM	NM	NM	NM	NM
EW-6	NA	1148.38	NM	NM	73.88	1074.50	NM	NM	NM	NM	NM	NM
EW-7	NA	1148.77	NM	NM	74.77	1074.00	NM	NM	NM	NM	NM	NM
EW-8	NA	1165.30	NM	NM	64.50	1100.80	NM	NM	NM	NM	NM	NM
EW-9	NA	1155.03	NM	NM	80.63	1074.40	NM	NM	NM	NM	NM	NM
EW-10	NA	1151.03	NM	NM	82.53	1068.50	NM	NM	NM	NM	NM	NM
EW-11	NA	1163.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
EW-12	NA	1113.72	NM	NM	63.61	1050.11	NM	NM	NM	NM	NM	NM
MW-01A	Intermed.	1176.88	45.62	1131.26	45.86	1131.02	NM	NM	45.87	1131.01	45.98	1130.90
MW-01B	Shallow	1176.73	45.41	1131.32	45.72	1131.01	NM	NM	45.70	1131.03	45.76	1130.97
MW-02A	Intermed.	1174.77	44.36	1130.41	45.23	1129.54	NM	NM	NM	NM	NM	NM
MW-02B	Shallow	1175.18	NM	NM	45.68	1129.50	NM	NM	NM	NM	NM	NM
MW-03A	Intermed.	1179.56	49.72	1129.84	50.74	1128.82	NM	NM	NM	NM	NM	NM
MW-03B	Shallow	1179.83	49.93	1129.90	50.94	1128.89	NM	NM	NM	NM	NM	NM
MW-04A	Intermed.	1168.73	40.58	1128.15	41.26	1127.47	NM	NM	NM	NM	NM	NM
MW-04B	Shallow	1168.85	40.70	1128.15	41.39	1127.46	NM	NM	NM	NM	NM	NM
MW-05A	Intermed.	1168.12	39.03	1129.09	39.59	1128.53	NM	NM	NM	NM	NM	NM
MW-05B	Shallow	1168.18	39.18	1129.00	39.73	1128.45	NM	NM	NM	NM	NM	NM
MW-06A	Intermed.	1165.46	43.37	1122.09	44.01	1121.45	NM	NM	NM	NM	NM	NM
MW-06B	Shallow	1165.61	43.54	1122.07	44.17	1121.44	NM	NM	NM	NM	NM	NM
MW-07A	Intermed.	1164.85	42.49	1122.36	43.20	1121.65	NM	NM	NM	NM	NM	NM
MW-07B	Shallow	1164.64	42.27	1122.37	42.97	1121.67	NM	NM	NM	NM	NM	NM
MW-08A	Intermed.	1165.92	NM	NM	51.51	1114.41	NM	NM	NM	NM	NM	NM
MW-08B	Shallow	1165.92	NM	NM	51.50	1114.42	NM	NM	NM	NM	NM	NM
MW-09A	Intermed.	1171.46	NM	NM	56.60	1114.86	NM	NM	NM	NM	NM	NM
MW-09B	Shallow	1171.60	NM	NM	56.38	1115.22	NM	NM	NM	NM	NM	NM

Table 2-3
March, October, and December 2006 Water Level Measurements
Former Nebraska Ordnance Plant, Mead, Nebraska

Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
MW-09D	Deep	1171.28	NM	NM	56.35	1114.93	NM	NM	NM	NM	NM	NM
MW-10A	Intermed.	1150.35	42.73	1107.62	42.95	1107.40	43.10	1107.25	43.14	1107.21	43.15	1107.20
MW-10B	Shallow	1150.31	42.67	1107.64	42.88	1107.43	43.05	1107.26	43.08	1107.23	43.10	1107.21
MW-11	Intermed.	1153.22	34.05	1119.17	32.58	1120.64	NM	NM	NM	NM	NM	NM
MW-12	Shallow	1178.55	40.07	1138.48	40.01	1138.54	NM	NM	NM	NM	NM	NM
MW-13	Shallow	1175.20	40.46	1134.74	41.19	1134.01	NM	NM	NM	NM	NM	NM
MW-14	Shallow	1178.94	50.37	1128.57	50.47	1128.47	NM	NM	NM	NM	NM	NM
MW-15	Shallow	1170.06	NM	NM	49.03	1121.03	NM	NM	NM	NM	NM	NM
MW-16B	Intermed.	1188.68	39.31	1149.37	40.38	1148.30	NM	NM	NM	NM	NM	NM
MW-16C	Shallow	1189.40	40.06	1149.34	41.14	1148.26	NM	NM	NM	NM	NM	NM
MW-17A	Deep	1128.60	NM	NM	11.14	1117.46	11.23	1117.37	11.22	1117.38	11.14	1117.46
MW-17B	Intermed.	1128.50	NM	NM	11.21	1117.29	11.30	1117.20	11.33	1117.17	11.37	1117.13
MW-17C	Shallow	1128.40	11.17	1117.23	11.39	1117.01	11.38	1117.02	11.38	1117.02	11.50	1116.90
MW-18A	Deep	1145.43	45.58	1099.85	46.28	1099.15	NM	NM	NM	NM	NM	NM
MW-18B	Intermed.	1145.57	46.11	1099.46	46.79	1098.78	NM	NM	NM	NM	NM	NM
MW-18C	Shallow	1146.05	43.97	1102.08	44.38	1101.67	NM	NM	NM	NM	NM	NM
MW-19A	Deep	1158.65	16.98	1141.67	17.64	1141.01	16.58	1142.07	17.52	1141.13	17.59	1141.06
MW-19B	Intermed.	1158.59	NM	NM	17.79	1140.80	17.70	1140.89	17.71	1140.88	17.73	1140.86
MW-19C	Shallow	1159.26	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked	Blocked
MW-20A	Deep	1160.42	NM	NM	64.56	1095.86	64.65	1095.77	64.62	1095.80	64.60	1095.82
MW-20B	Intermed.	1160.29	NM	NM	64.42	1095.87	65.50	1094.79	64.45	1095.84	64.44	1095.85
MW-20C	Shallow	1160.29	61.87	1098.42	62.36	1097.93	62.39	1097.90	63.25	1097.04	63.24	1097.05
MW-21A	Intermed.	1165.63	40.21	1125.42	41.04	1124.59	41.15	1124.48	41.12	1124.51	41.04	1124.59
MW-21B	Shallow	1165.59	40.19	1125.40	41.03	1124.56	41.15	1124.44	41.10	1124.49	41.04	1124.55
MW-21D	Deep	1165.57	40.20	1125.37	41.02	1124.55	41.15	1124.42	41.10	1124.47	41.03	1124.54
MW-22A	Intermed.	1176.78	36.07	1140.71	36.70	1140.08	36.71	1140.07	36.67	1140.11	36.73	1140.05
MW-22B	Shallow	1176.67	36.02	1140.65	36.72	1139.95	36.70	1139.97	NM	NM	NM	NM
MW-23A	Intermed.	1173.56	35.73	1137.83	36.40	1137.16	NM	NM	NM	NM	NM	NM
MW-23B	Shallow	1173.93	36.11	1137.82	36.76	1137.17	NM	NM	NM	NM	NM	NM
MW-24A	Intermed.	1163.41	43.95	1119.46	44.67	1118.74	44.69	1118.72	44.72	1118.69	44.55	1118.86

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Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
MW-24B	Deep	1163.46	43.72	1119.74	44.47	1118.99	44.49	1118.97	44.55	1118.91	55.22	1108.24
MW-25A	Intermed.	1175.25	48.44	1126.81	49.48	1125.77	49.32	1125.93	49.35	1125.90	49.37	1125.88
MW-25B	Shallow	1174.71	NM	NM	48.91	1125.80	48.74	1125.97	48.80	1125.91	48.83	1125.88
MW-25D	Deep	1175.46	NM	NM	49.77	1125.69	49.64	1125.82	49.70	1125.76	44.75	1130.71
MW-26A	Intermed.	1174.15	NM	NM	38.61	1135.54	NM	NM	NM	NM	NM	NM
MW-26B	Shallow	1174.16	37.69	1136.47	38.65	1135.51	NM	NM	NM	NM	NM	NM
MW-27A	Intermed.	1176.05	42.62	1133.43	43.39	1132.66	NM	NM	NM	NM	NM	NM
MW-27B	Shallow	1176.06	42.61	1133.45	43.39	1132.67	NM	NM	NM	NM	NM	NM
MW-28A	Intermed.	1172.22	54.41	1117.81	55.17	1117.05	55.69	1116.53	55.19	1117.03	55.74	1116.48
MW-28B	Shallow	1172.52	54.93	1117.59	55.70	1116.82	55.18	1117.34	55.71	1116.81	55.00	1117.52
MW-28D	Deep	1171.99	54.21	1117.78	54.96	1117.03	54.97	1117.02	55.00	1116.99	53.93	1118.06
MW-29A	Intermed.	1160.06	53.21	1106.85	53.85	1106.21	54.80	1105.26	53.91	1106.15	54.83	1105.23
MW-29B	Shallow	1161.03	54.12	1106.91	54.74	1106.29	53.49	1107.54	54.82	1106.21	53.65	1107.38
MW-30A	Intermed.	1168.55	NM	NM	44.63	1123.92	NM	NM	NM	NM	NM	NM
MW-30B	Shallow	1168.38	NM	NM	44.48	1123.90	NM	NM	NM	NM	NM	NM
MW-31A	Intermed.	1167.38	52.98	1114.40	53.62	1113.76	53.59	1113.79	53.60	1113.78	53.80	1113.58
MW-31B	Shallow	1166.95	53.13	1113.82	53.78	1113.17	53.14	1113.81	53.75	1113.20	NM	NM
MW-32A	Intermed.	1154.17	53.40	1100.77	53.94	1100.23	53.93	1100.24	54.02	1100.15	54.01	1100.16
MW-32B	Shallow	1154.10	53.34	1100.76	53.88	1100.22	53.94	1100.16	NM	NM	NM	NM
MW-32D	Deep	1154.02	53.26	1100.76	53.81	1100.21	53.87	1100.15	NM	NM	NM	NM
MW-33A	Intermed.	1160.32	55.82	1104.50	56.49	1103.83	56.51	1103.81	56.50	1103.82	56.50	1103.82
MW-33B	Shallow	1160.37	55.61	1104.76	56.50	1103.87	56.51	1103.86	NM	NM	NM	NM
MW-33D	Deep	1160.24	55.86	1104.38	56.25	1103.99	56.23	1104.01	NM	NM	NM	NM
MW-34A	Intermed.	1156.79	63.75	1093.04	64.14	1092.65	64.23	1092.56	64.15	1092.64	64.16	1092.63
MW-34B	Shallow	1157.00	63.94	1093.06	64.33	1092.67	64.41	1092.59	NM	NM	NM	NM
MW-34D	Deep	1156.73	63.80	1092.93	64.16	1092.57	64.26	1092.47	NM	NM	NM	NM
MW-35A	Intermed.	1139.81	56.70	1083.11	57.02	1082.79	57.00	1082.81	56.81	1083.00	56.77	1083.04
MW-35B	Shallow	1139.57	56.55	1083.02	57.18	1082.39	56.83	1082.74	56.67	1082.90	NM	NM
MW-35D	Deep	1139.67	56.53	1083.14	57.00	1082.67	56.83	1082.84	56.64	1083.03	NM	NM
MW-36A	Intermed.	1076.62	1.12	1075.50	1.39	1075.23	1.38	1075.24	0.87	1075.75	1.38	1075.24

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Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
MW-36B	Shallow	1076.65	1.13	1075.52	1.40	1075.25	1.40	1075.25	NM	NM	NM	NM
MW-36D	Deep	1076.79	1.27	1075.52	1.51	1075.28	1.50	1075.29	NM	NM	NM	NM
MW-37A	Intermed.	1085.20	8.74	1076.46	9.04	1076.16	9.01	1076.19	8.96	1076.24	9.03	1076.17
MW-37B	Shallow	1085.19	8.70	1076.49	9.00	1076.19	8.95	1076.24	NM	NM	NM	NM
MW-37D	Deep	1085.06	8.62	1076.44	8.94	1076.12	8.89	1076.17	NM	NM	NM	NM
MW-38A	Intermed.	1082.32	7.06	1075.26	7.11	1075.21	7.14	1075.18	6.96	1075.36	7.19	1075.13
MW-38D	Deep	1081.92	NM	NM	6.68	1075.24	6.69	1075.23	NM	NM	NM	NM
MW-39A	Intermed.	1082.82	6.62	1076.20	4.49	1078.33	4.50	1078.32	4.38	1078.44	4.49	1078.33
MW-39D	Deep	1082.95	NM	NM	4.50	1078.45	4.59	1078.36	NM	NM	NM	NM
MW-40A	Intermed.	1172.09	45.50	1126.59	45.82	1126.27	NM	NM	NM	NM	NM	NM
MW-40B	Shallow	1172.34	45.65	1126.69	45.99	1126.35	NM	NM	NM	NM	NM	NM
MW-41A	Intermed.	1168.63	43.24	1125.39	43.19	1125.44	NM	NM	NM	NM	NM	NM
MW-41B	Shallow	1168.68	43.26	1125.42	43.18	1125.50	NM	NM	NM	NM	NM	NM
MW-41D	Deep	1168.61	43.20	1125.41	43.15	1125.46	NM	NM	NM	NM	NM	NM
MW-42A	Intermed.	1146.53	55.05	1091.48	55.80	1090.73	55.69	1090.84	55.69	1090.84	55.71	1090.82
MW-42B	Shallow	1146.64	55.18	1091.46	55.89	1090.75	55.81	1090.83	NM	NM	NM	NM
MW-42D	Deep	1146.20	54.88	1091.32	55.59	1090.61	55.48	1090.72	NM	NM	NM	NM
MW-43A	Intermed.	1142.90	47.92	1094.98	48.71	1094.19	48.53	1094.37	48.59	1094.31	48.60	1094.30
MW-43B	Shallow	1142.74	47.86	1094.88	48.62	1094.12	48.60	1094.14	NM	NM	NM	NM
MW-43D	Deep	1142.95	47.97	1094.98	48.79	1094.16	48.75	1094.20	NM	NM	NM	NM
MW-44A	Intermed.	1093.68	10.47	1083.21	10.80	1082.88	10.80	1082.88	10.77	1082.91	10.79	1082.89
MW-44B	Shallow	1092.46	11.48	1080.98	12.06	1080.40	11.95	1080.51	NM	NM	NM	NM

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Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
MW-44D	Deep	1094.20	9.25	1084.95	9.58	1084.62	9.43	1084.77	NM	NM	NM	NM
MW-45A	Intermed.	1081.53	3.62	1077.91	3.76	1077.77	3.80	1077.73	3.69	1077.84	3.87	1077.66
MW-45B	Shallow	1081.54	3.57	1077.97	3.71	1077.83	3.79	1077.75	NM	NM	NM	NM
MW-45D	Deep	1081.44	3.52	1077.92	3.68	1077.76	3.74	1077.70	NM	NM	NM	NM
MW-46A	Intermed.	1082.70	4.28	1078.42	4.43	1078.27	4.51	1078.19	4.38	1078.32	4.53	1078.17
MW-46B	Shallow	1082.81	4.40	1078.41	4.53	1078.28	4.60	1078.21	NM	NM	NM	NM
MW-46D	Deep	1082.65	4.24	1078.41	4.91	1077.74	4.48	1078.17	NM	NM	NM	NM
MW-47A	Intermed.	1201.73	NM	NM	32.89	1168.84	NM	NM	NM	NM	NM	NM
MW-47B	Shallow	1201.67	NM	NM	32.79	1168.88	NM	NM	NM	NM	NM	NM
MW-48A	Intermed.	1193.44	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-48B	Shallow	1193.35	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB
MW-48D	Deep	1193.65	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB
MW-52A	Intermed.	1155.22	41.53	1113.69	41.08	1114.14	NM	NM	NM	NM	NM	NM
MW-52B	Shallow	1155.65	42.09	1113.56	41.63	1114.02	NM	NM	NM	NM	NM	NM
MW-53A	Intermed.	1136.36	30.48	1105.88	30.90	1105.46	NM	NM	NM	NM	NM	NM
MW-53B	Shallow	1136.91	29.20	1107.71	29.81	1107.10	NM	NM	NM	NM	NM	NM
MW-54A	Intermed.	1121.58	13.94	1107.64	14.19	1107.39	NM	NM	NM	NM	NM	NM
MW-54B	Shallow	1121.59	11.38	1110.21	11.39	1110.20	NM	NM	NM	NM	NM	NM
MW-55A	Intermed.	1126.49	20.57	1105.92	20.90	1105.59	NM	NM	NM	NM	NM	NM
MW-55B	Shallow	1127.27	21.09	1106.18	21.45	1105.82	NM	NM	NM	NM	NM	NM
MW-56A	Intermed.	1125.96	20.60	1105.36	21.03	1104.93	NM	NM	NM	NM	NM	NM
MW-56B	Shallow	1126.24	19.06	1107.18	19.60	1106.64	NM	NM	NM	NM	NM	NM
MW-57B	Shallow	1196.27	44.05	1152.22	45.32	1150.95	NM	NM	NM	NM	NM	NM
MW-58A	Intermed.	1175.37	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB
MW-58B	Shallow	1175.39	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB
MW-59A	Intermed.	1162.95	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB
MW-59B	Shallow	1163.04	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB
MW-59D	Deep	1162.57	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB

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Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
MW-60A	Intermed.	1145.83	58.68	1087.15	59.40	1086.43	59.69	1086.14	59.37	1086.46	59.40	1086.43
MW-60B	Shallow	1146.15	58.96	1087.19	59.70	1086.45	59.38	1086.77	NM	NM	NM	NM
MW-61A	Intermed.	1108.96	8.34	1100.62	8.34	1100.62	8.64	1100.32	8.37	1100.59	8.63	1100.33
MW-61B	Shallow	1108.96	8.39	1100.57	8.36	1100.60	8.66	1100.30	8.40	1100.56	8.66	1100.30
MW-61D	Deep	1108.96	8.16	1100.80	8.17	1100.79	8.44	1100.52	8.22	1100.74	8.45	1100.51
MW-62A	Intermed.	1078.66	5.01	1073.65	5.27	1073.39	5.23	1073.43	4.67	1073.99	5.28	1073.38
MW-62B	Shallow	1078.57	5.27	1073.30	5.18	1073.39	5.13	1073.44	NM	NM	NM	NM
MW-62D	Deep	1078.89	4.91	1073.98	5.52	1073.37	5.43	1073.46	NM	NM	NM	NM
MW-63B	Shallow	1177.45	24.62	1152.83	25.72	1151.73	NM	NM	NM	NM	NM	NM
MW-64B	Shallow	1144.20	31.12	1113.08	30.24	1113.96	NM	NM	NM	NM	NM	NM
MW-78A	Intermed.	1165.27	NM	NM	11.28	1153.99	NM	NM	NM	NM	NM	NM
MW-78B	Shallow	1165.35	NM	NM	11.32	1154.03	NM	NM	NM	NM	NM	NM
MW-79A	Intermed.	1109.34	11.18	1098.16	9.55	1099.79	11.52	1097.82	10.70	1098.64	11.50	1097.84
MW-79B	Shallow	1109.39	11.22	1098.17	9.81	1099.58	11.62	1097.77	10.77	1098.62	11.56	1097.83
MW-80A	Intermed.	1107.43	9.46	1097.97	9.52	1097.91	9.82	1097.61	9.20	1098.23	9.80	1097.63
MW-80B	Shallow	1107.65	9.70	1097.95	10.56	1097.09	10.09	1097.56	9.47	1098.18	10.05	1097.60
MW-80D	Deep	1107.40	9.41	1097.99	10.63	1096.77	9.80	1097.60	9.20	1098.20	9.77	1097.63
MW-81A	Intermed.	1108.48	10.40	1098.08	10.49	1097.99	10.81	1097.67	10.36	1098.12	10.80	1097.68
MW-81B	Shallow	1108.47	10.46	1098.01	56.58	1051.89	10.87	1097.60	10.41	1098.06	10.82	1097.65
MW-81D	Deep	1108.53	10.31	1098.22	56.56	1051.97	10.75	1097.78	10.37	1098.16	10.73	1097.80
MW-82A	Intermed.	1149.14	55.95	1093.19	56.40	1092.74	56.55	1092.59	56.52	1092.62	56.43	1092.71
MW-82B	Shallow	1149.12	55.92	1093.20	62.55	1086.57	56.54	1092.58	NM	NM	NM	NM
MW-82D	Deep	1149.22	55.89	1093.33	62.47	1086.75	56.45	1092.77	NM	NM	NM	NM
MW-83A	Intermed.	1152.41	62.06	1090.35	62.53	1089.88	62.52	1089.89	62.45	1089.96	62.37	1090.04
MW-83B	Shallow	1152.28	62.02	1090.26	56.49	1095.79	62.57	1089.71	NM	NM	NM	NM
MW-83D	Deep	1152.32	62.05	1090.27	56.42	1095.90	62.55	1089.77	NM	NM	NM	NM
MW-84A	Intermed.	1145.34	56.06	1089.28	56.28	1089.06	56.60	1088.74	56.55	1088.79	56.54	1088.80
MW-84AR	Intermed.	1145.26	55.98	1089.28	56.71	1088.55	56.39	1088.87	56.49	1088.77	56.49	1088.77
MW-84B	Shallow	1145.62	55.89	1089.73	48.30	1097.32	56.51	1089.11	NM	NM	NM	NM
MW-84D	Deep	1145.37	64.25	1081.12	48.13	1097.24	56.79	1088.58	NM	NM	NM	NM

Table 2-3
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Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
MW-85A	Intermed.	1132.58	47.82	1084.76	48.35	1084.23	48.40	1084.18	48.38	1084.20	48.41	1084.17
MW-85B	Shallow	1132.39	47.61	1084.78	NM	NM	48.45	1083.94	NM	NM	NM	NM
MW-85D	Deep	1132.59	47.85	1084.74	NM	NM	48.40	1084.19	NM	NM	NM	NM
MW-86A	Intermed.	1114.15	NM	NM	NM	NM	35.20	1078.95	35.16	1078.99	35.18	1078.97
MW-86B	Shallow	1114.58	NM	NM	NM	NM	35.61	1078.97	NM	NM	NM	NM
MW-86D	Deep	1113.90	NM	NM	NM	NM	34.95	1078.95	NM	NM	NM	NM
MW-87A	Intermed.	1078.38	NM	NM	NM	NM	5.09	1073.29	4.94	1073.44	5.08	1073.30
MW-87B	Shallow	1078.38	NM	NM	NM	NM	50.40	1027.98	4.98	1073.40	NM	NM
MW-87D	Deep	1078.39	NM	NM	NM	NM	5.10	1073.29	5.01	1073.38	NM	NM
MW-88A	Intermed.	1081.22	NM	NM	NM	NM	7.30	1073.92	7.09	1074.13	7.38	1073.84
MW-88B	Shallow	1081.27	NM	NM	NM	NM	7.33	1073.94	NM	NM	NM	NM
MW-88D	Deep	1081.30	NM	NM	NM	NM	7.36	1073.94	7.15	1074.15	NM	NM
MW-89A	Intermed.	1160.99	58.56	1102.43	58.98	1102.01	59.16	1101.83	58.94	1102.05	58.99	1102.00
MW-89B	Shallow	1161.37	59.07	1102.30	59.51	1101.86	59.67	1101.70	59.55	1101.82	59.55	1101.82
MW-89D	Deep	1160.65	58.17	1102.48	58.60	1102.05	58.75	1101.90	58.60	1102.05	58.67	1101.98
MW-90A	Intermed.	1151.11	48.07	1103.04	48.61	1102.50	48.75	1102.36	48.71	1102.40	48.73	1102.38
MW-90B	Shallow	1150.77	48.08	1102.69	48.67	1102.10	48.78	1101.99	48.77	1102.00	48.72	1102.05
MW-90D	Deep	1151.44	48.56	1102.88	49.09	1102.35	49.20	1102.24	49.14	1102.30	49.21	1102.23
MW-91A	Intermed.	1152.04	49.23	1102.81	49.90	1102.14	50.00	1102.04	50.03	1102.01	49.99	1102.05
MW-91B	Shallow	1151.87	49.25	1102.62	49.91	1101.96	50.01	1101.86	50.05	1101.82	50.00	1101.87
MW-91D	Deep	1151.95	49.24	1102.71	49.82	1102.13	49.93	1102.02	49.90	1102.05	49.92	1102.03
MW-92A	Intermed.	1108.78	10.14	1098.64	10.22	1098.56	10.51	1098.27	9.67	1099.11	10.46	1098.32
MW-92B	Shallow	1108.65	9.91	1098.74	10.02	1098.63	10.31	1098.34	9.44	1099.21	10.26	1098.39
MW-93A	Intermed.	1124.26	22.65	1101.61	23.31	1100.95	23.42	1100.84	23.45	1100.81	23.40	1100.86
MW-93B	Shallow	1123.90	23.36	1100.54	22.99	1100.91	23.12	1100.78	23.15	1100.75	23.10	1100.80
MW-94A	Intermed.	1153.06	NM	NM	NM	NM	53.85	1099.21	53.92	1099.14	53.91	1099.15
MW-94B	Shallow	1153.09	NM	NM	NM	NM	53.88	1099.21	53.90	1099.19	53.87	1099.22
MW-94D	Deep	1153.25	NM	NM	NM	NM	54.49	1098.76	54.50	1098.75	54.49	1098.76
MW-95A	Intermed.	1156.81	NM	NM	NM	NM	60.06	1096.75	60.10	1096.71	60.08	1096.73
MW-95B	Shallow	1156.46	NM	NM	NM	NM	69.70	1086.76	61.05	1095.41	61.03	1095.43

Table 2-3
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Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
MW-95D	Deep	1156.82	NM	NM	NM	NM	61.12	1095.70	59.73	1097.09	59.70	1097.12
MW-96A	Intermed.	1148.56	NM	NM	NM	NM	58.23	1090.33	NM	NM	NM	NM
MW-96B	Shallow	1148.56	NM	NM	NM	NM	58.21	1090.35	58.16	1090.40	58.10	1090.46
MW-96D	Deep	1148.58	NM	NM	NM	NM	58.21	1090.37	NM	NM	NM	NM
MW-97A	Intermed.	1143.08	NM	NM	NM	NM	54.75	1088.33	54.68	1088.40	54.65	1088.43
MW-97B	Shallow	1143.18	NM	NM	NM	NM	54.63	1088.55	55.16	1088.02	NM	NM
MW-97D	Deep	1143.18	NM	NM	NM	NM	54.73	1088.45	55.06	1088.12	NM	NM
MW-98A	Intermed.	1141.52	NM	NM	NM	NM	55.09	1086.43	55.15	1086.37	NM	NM
MW-98B	Shallow	1141.58	NM	NM	NM	NM	55.02	1086.56	55.16	1086.42	55.05	1086.53
MW-98D	Deep	1141.58	NM	NM	NM	NM	55.05	1086.53	55.06	1086.52	NM	NM
MW-99A	Intermed.	1163.04	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
MW-99B	Shallow	1163.19	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
MW-99D	Deep	1162.76	NM	NM	NM	NM	74.10	1088.66	74.06	1088.70	74.07	1088.69
MW-100A	Intermed.	1141.18	NI	NI	NI	NI	58.84	1082.34	58.85	1082.33	58.85	1082.33
MW-100B	Shallow	1141.12	NI	NI	NI	NI	58.89	1082.23	58.89	1082.23	58.89	1082.23
MW-100D	Deep	NS	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
MW-101A	Intermed.	1107.43	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-101B	Shallow	1107.44	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-101D	Deep	1107.45	NI	NI	NI	NI	NM	NM	9.80	1097.65	10.17	1097.28
MW-102A	Intermed.	1170.90	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-102B	Shallow	1171.13	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-102D	Deep	1171.08	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-103A	Intermed.	1173.58	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-103B	Shallow	1173.80	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-103D	Deep	1173.22	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-106A	Intermed.	1118.06	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-106B	Shallow	1117.98	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-106D	Deep	1118.18	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-107A	Intermed.	1135.79	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-107B	Shallow	1136.72	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM

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Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
MW-107D	Deep	1136.35	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-108A	Intermed.	1126.74	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-108B	Shallow	1126.98	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-108D	Deep	1126.87	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-110A	Intermed.	1094.10	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-110B	Shallow	1094.49	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-110D	Deep	1094.36	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-112A	Intermed.	1082.03	NI	NI	NI	NI	NM	NM	3.52	1078.51	3.73	1078.30
MW-112B	Shallow	1082.02	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-113A	Intermed.	1080.47	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-113B	Shallow	1080.42	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-113D	Deep	1080.49	NI	NI	NI	NI	NM	NM	2.02	1078.47	NM	NM
MW-114A	Intermed.	1080.32	NI	NI	NI	NI	4.25	1076.07	4.02	1076.30	4.26	1076.06
MW-114B	Shallow	1080.43	NI	NI	NI	NI	4.37	1076.06	4.14	1076.29	NM	NM
MW-114D	Deep	1080.23	NI	NI	NI	NI	4.14	1076.09	3.92	1076.31	NM	NM
MW-115A	Intermed.	1081.67	NI	NI	NI	NI	6.98	1074.69	6.73	1074.94	7.03	1074.64
MW-115B	Shallow	1081.77	NI	NI	NI	NI	7.04	1074.73	6.82	1074.95	NM	NM
MW-115D	Deep	1081.66	NI	NI	NI	NI	6.96	1074.70	6.75	1074.91	NM	NM
MW-116A	Intermed.	1080.53	NI	NI	NI	NI	6.11	1074.42	5.64	1074.89	6.19	1074.34
MW-116B	Shallow	1080.49	NI	NI	NI	NI	6.16	1074.33	5.60	1074.89	NM	NM
MW-116D	Deep	1080.46	NI	NI	NI	NI	6.11	1074.35	5.64	1074.82	NM	NM
MW-117A	Intermed.	1122.26	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-117B	Shallow	1122.06	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-117D	Deep	1122.41	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-118A	Intermed.	1138.80	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
MW-118B	Shallow	1138.84	NI	NI	NI	NI	NM	NM	NM	NM	NM	NM
OW-01	NA	1162.06	NM	NM	53.86	1108.20	NM	NM	50.37	1111.69	53.40	1108.66
OW-02	NA	1161.66	NM	NM	52.70	1108.96	NM	NM	50.32	1111.34	52.32	1109.34
OW-03	NA	1161.71	NM	NM	53.26	1108.45	NM	NM	50.51	1111.20	52.85	1108.86
OW-04	NA	1161.81	NM	NM	54.36	1107.45	NM	NM	50.65	1111.16	53.95	1107.86

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OW-05	NA	1081.34	NM	NM	11.20	1070.14	10.65	1070.69	6.44	1074.90	10.63	1070.71
OW-06	NA	1079.41	NM	NM	8.20	1071.21	7.73	1071.68	4.48	1074.93	7.75	1071.66
OW-07	NA	1079.22	NM	NM	7.40	1071.82	6.99	1072.23	4.31	1074.91	7.03	1072.19
OW-08	NA	1078.56	NM	NM	6.25	1072.31	5.89	1072.67	3.61	1074.95	5.92	1072.64
OW-09	NA	1081.19	NM	NM	9.77	1071.42	9.38	1071.81	6.30	1074.89	9.39	1071.80
OW-10	NA	1079.87	NM	NM	NM	NM	7.21	1072.66	5.14	1074.73	7.25	1072.62
OW-11	NA	1078.42	NM	NM	7.51	1070.91	5.50	1072.92	3.93	1074.49	5.50	1072.92
OW-12	NA	1079.79	NM	NM	6.06	1073.73	5.93	1073.86	5.40	1074.39	5.99	1073.80
OW-13	NA	1081.25	8.92	1072.33	9.94	1071.31	9.53	1071.72	6.61	1074.64	9.57	1071.68
OW-14	NA	1080.39	7.31	1073.08	8.05	1072.34	7.78	1072.61	5.76	1074.63	7.79	1072.60
OW-15	NA	1080.42	7.18	1073.24	7.74	1072.68	7.53	1072.89	6.08	1074.34	7.56	1072.86
OW-16	NA	1077.59	NM	NM	3.00	1074.59	2.93	1074.66	NM	NM	2.92	1074.67
OW-17	NA	1161.58	51.11	1110.47	51.62	1109.96	51.60	1109.98	50.09	1111.49	51.19	1110.39
OW-18	NA	1162.21	51.01	1111.20	51.52	1110.69	51.53	1110.68	50.50	1111.71	51.12	1111.09
OW-19	NA	1172.28	58.81	1113.47	59.40	1112.88	59.37	1112.91	59.27	1113.01	59.30	1112.98
OW-20	NA	1162.79	53.47	1109.32	53.95	1108.84	53.89	1108.90	51.43	1111.36	53.60	1109.19
OW-21	NA	1159.81	49.75	1110.06	50.23	1109.58	50.23	1109.58	49.07	1110.74	49.88	1109.93
OW-22	NA	1161.24	50.42	1110.82	50.29	1110.95	50.89	1110.35	50.23	1111.01	50.62	1110.62
OW-23	NA	1162.08	49.82	1112.26	50.29	1111.79	52.70	1109.38	50.05	1112.03	50.07	1112.01
OW-24	NA	1153.07	70.28	1082.79	70.76	1082.31	70.81	1082.26	69.44	1083.63	70.37	1082.70
OW-25	NA	1155.71	72.57	1083.14	73.06	1082.65	73.07	1082.64	72.09	1083.62	72.60	1083.11
OW-26	NA	1148.64	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
OW-27	NA	1153.30	70.45	1082.85	70.93	1082.37	70.93	1082.37	69.78	1083.52	70.04	1083.26
OW-28	NA	1153.81	70.92	1082.89	71.40	1082.41	71.38	1082.43	70.46	1083.35	70.91	1082.90
OW-30	NA	1131.58	48.10	1083.48	48.63	1082.95	48.48	1083.10	NM	NM	48.09	1083.49
OW-31	NA	1155.78	66.12	1089.66	66.35	1089.43	66.25	1089.53	64.77	1091.01	66.03	1089.75
OW-32	NA	1153.87	63.42	1090.45	63.74	1090.13	63.70	1090.17	62.46	1091.41	63.45	1090.42
OW-33	NA	1154.67	63.76	1090.91	64.17	1090.50	64.18	1090.49	64.01	1090.66	64.01	1090.66
OW-34	NA	1154.70	65.68	1089.02	65.94	1088.76	65.91	1088.79	64.19	1090.51	65.60	1089.10
OW-35	NA	1154.10	63.67	1090.43	64.02	1090.08	64.00	1090.10	63.46	1090.64	63.76	1090.34

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March, October, and December 2006 Water Level Measurements
Former Nebraska Ordnance Plant, Mead, Nebraska

Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
OW-36	NA	1157.23	66.81	1090.42	67.20	1090.03	67.23	1090.00	67.11	1090.12	67.10	1090.13
OW-37	NA	1157.74	65.77	1091.97	66.14	1091.60	66.18	1091.56	66.08	1091.66	66.09	1091.65
OW-38	NA	1151.19	65.00	1086.19	65.46	1085.73	65.34	1085.85	61.76	1089.43	64.84	1086.35
OW-39	NA	1151.39	62.68	1088.71	63.13	1088.26	63.08	1088.31	61.62	1089.77	62.35	1089.04
OW-40	NA	1157.66	67.15	1090.51	67.59	1090.07	67.61	1090.05	67.20	1090.46	67.19	1090.47
OW-41	NA	1150.22	65.06	1085.16	65.57	1084.65	65.52	1084.70	61.02	1089.20	64.87	1085.35
OW-42	NA	1151.21	63.49	1087.72	63.93	1087.28	63.87	1087.34	62.18	1089.03	63.26	1087.95
OW-43	NA	1156.74	67.02	1089.72	67.49	1089.25	67.45	1089.29	67.24	1089.50	67.18	1089.56
OW-44	NA	1147.84	57.85	1089.99	58.36	1089.48	NM	NM	58.22	1089.62	58.10	1089.74
OW-45	NA	1152.47	62.86	1089.61	63.65	1088.82	63.25	1089.22	60.01	1092.46	62.93	1089.54
OW-46	NA	1151.55	59.26	1092.29	59.95	1091.60	59.80	1091.75	58.63	1092.92	59.49	1092.06
OW-47	NA	1153.44	59.33	1094.11	59.97	1093.47	59.82	1093.62	59.55	1093.89	59.60	1093.84
OW-48	NA	1153.38	63.13	1090.25	63.91	1089.47	63.58	1089.80	60.94	1092.44	63.23	1090.15
OW-49	NA	1154.09	62.45	1091.64	63.12	1090.97	62.47	1091.62	61.82	1092.27	62.60	1091.49
OW-50	NA	1151.16	58.65	1092.51	59.20	1091.96	59.20	1091.96	58.85	1092.31	58.92	1092.24
OW-51	NA	1149.86	57.62	1092.24	NM	NM	58.14	1091.72	57.70	1092.16	57.80	1092.06
OW-52	NA	1107.14	15.88	1091.26	16.12	1091.02	16.39	1090.75	7.40	1099.74	16.23	1090.91
OW-53	NA	1107.13	14.14	1092.99	14.36	1092.77	14.62	1092.51	7.32	1099.81	14.47	1092.66
OW-54	NA	1115.39	14.60	1100.79	15.09	1100.30	15.28	1100.11	14.91	1100.48	15.10	1100.29
OW-55	NA	1107.05	16.79	1090.26	17.30	1089.75	17.28	1089.77	7.57	1099.48	17.15	1089.90
OW-56	NA	1112.15	11.61	1100.54	12.13	1100.02	12.31	1099.84	12.02	1100.13	12.19	1099.96
OW-57	NA	1114.84	14.01	1100.83	14.56	1100.28	14.73	1100.11	14.60	1100.24	14.63	1100.21
OW-58	NA	1109.00	10.38	1098.62	10.71	1098.29	10.95	1098.05	9.58	1099.42	10.82	1098.18
OW-59	NA	1110.50	10.90	1099.60	11.30	1099.20	11.52	1098.98	10.94	1099.56	11.41	1099.09
OW-60	NA	1149.15	NI	NI	NI	NI	63.42	1085.73	62.19	1086.96	63.23	1085.92
OW-61	NA	1148.81	NI	NI	NI	NI	62.33	1086.48	61.72	1087.09	62.16	1086.65
OW-62	NA	1151.40	NI	NI	NI	NI	63.91	1087.49	63.79	1087.61	63.78	1087.62
OW-63	NA	1152.90	NI	NI	NI	NI	65.80	1087.10	65.70	1087.20	65.70	1087.20
OW-64	NA	1148.12	NI	NI	NI	NI	62.10	1086.02	61.58	1086.54	61.95	1086.17
OW-65	NA	1147.36	NI	NI	NI	NI	61.48	1085.88	61.36	1086.00	61.33	1086.03

Table 2-3
March, October, and December 2006 Water Level Measurements
Former Nebraska Ordnance Plant, Mead, Nebraska

Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
OW-66	NA	1147.09	NI	NI	NI	NI	59.49	1087.60	57.47	1089.62	59.16	1087.93
OW-67	NA	1149.64	NI	NI	NI	NI	61.20	1088.44	60.20	1089.44	60.82	1088.82
OW-68	NA	1146.89	NI	NI	NI	NI	58.43	1088.46	57.79	1089.10	57.63	1089.26
OW-69	NA	1147.02	NI	NI	NI	NI	58.65	1088.37	57.60	1089.42	58.29	1088.73
OW-70	NA	1146.14	NI	NI	NI	NI	57.18	1088.96	56.75	1089.39	56.92	1089.22
OW-71	NA	1158.23	NI	NI	NI	NI	NM	NM	68.23	1090.00	68.20	1090.03
OW-72	NA	1156.05	NI	NI	NI	NI	66.27	1089.78	64.79	1091.26	65.94	1090.11
OW-73	NA	1157.61	NI	NI	NI	NI	67.10	1090.51	66.24	1091.37	66.78	1090.83
OW-74	NA	1148.38	NI	NI	NI	NI	57.21	1091.17	56.82	1091.56	56.92	1091.46
OW-75	NA	1154.51	NI	NI	NI	NI	64.11	1090.40	63.43	1091.08	63.81	1090.70
OW-76	NA	1148.68	NI	NI	NI	NI	57.96	1090.72	57.72	1090.96	57.72	1090.96
OW-77	NA	1157.82	NI	NI	NI	NI	68.15	1089.67	67.84	1089.98	67.80	1090.02
OW-78	NA	1163.94	NI	NI	NI	NI	NM	NM	50.55	1113.39	50.50	1113.44
OW-79	NA	1167.29	NI	NI	NI	NI	NM	NM	54.12	1113.17	54.10	1113.19
OW-80	NA	1169.30	NI	NI	NI	NI	NM	NM	57.02	1112.28	57.00	1112.30
OW-81	NA	1164.13	NI	NI	NI	NI	NM	NM	51.61	1112.52	51.60	1112.53

Table 2-3
March, October, and December 2006 Water Level Measurements
Former Nebraska Ordnance Plant, Mead, Nebraska

Sample ID	Depth Designation	Top of Casing (TOC) Elevation (ft)	March 29, 2006 Depth to Water from TOC (ft)	March 29, 2006 Ground-water Elevation (ft)	October 30, 2006 Depth to Water from TOC (ft)	October 30, 2006 Ground-water Elevation (ft)	December 11-12, 2006 Depth to Water from TOC (ft)	December 11-12, 2006 Ground-water Elevation (ft)	December 14, 2006 Depth to Water from TOC (ft)	December 14, 2006 Ground-water Elevation (ft)	December 18, 2006 Depth to Water from TOC (ft)	December 18, 2006 Ground-water Elevation (ft)
OW-82	NA	1169.05	NI	NI	NI	NI	NM	NM	57.78	1111.27	57.77	1111.28
OW-83	NA	1173.20	NI	NI	NI	NI	NM	NM	59.59	1113.61	59.57	1113.63
OW-89	NA	1092.56	NI	NI	NI	NI	15.04	1077.52	14.59	1077.97	15.39	1077.17
TH-EW-12	NA	1107.37	28.46	1078.91	28.72	1078.65	28.92	1078.45	7.72	1099.65	28.77	1078.60
TH-EW-13	NA	1111.04	11.58	1099.46	11.99	1099.05	NM	NM	NM	NM	NM	NM
PZ-01	NA	1116.38	NM	NM	NM	NM	34.40	1081.98	34.42	1081.96	34.44	1081.94
PZ-02	NA	1130.80	NM	NM	NM	NM	47.22	1083.58	47.24	1083.56	47.24	1083.56
PZ-03	NA	1087.47	NM	NM	NM	NM	2.60	1084.87	2.59	1084.88	2.67	1084.80
PZ-04	NA	1086.65	NM	NM	NM	NM	4.99	1081.66	4.90	1081.75	5.02	1081.63
PZ-05	NA	1085.66	NM	NM	NM	NM	4.37	1081.29	4.28	1081.38	4.36	1081.30
PZ-06	NA	1088.42	NM	NM	NM	NM	3.67	1084.75	3.59	1084.83	3.74	1084.68

Notes:

(1) NM = Not Measured
(2) NI = Not Installed
(3) NS = Not Surveyed
(4) NA = Not applicable

Table 2-4
December 2006 Shutdown Test Distance-Drawdown Analyses
Former Nebraska Ordnance Plant, Mead, Nebraska

EW-4

Drawdowns (ft)

Monitoring Well	**OW-60**	**OW-61**	**OW-62**
Distance from EW-4(ft):	**60**	**201**	**616**
12/12/06	1.42	0.77	0.18
12/18/06	1.23	0.60	0.05

Analyses
OW-60, OW-61, & OW-62

Date:	s_{10} (ft)	s_{100} (ft)	Δs (ft)	Q (gpm)	Q(ft3/d)	KD (ft2/d)	D (ft)	K (ft/d)
12/12/06	2.37	1.15	1.22	108	20,789	6,238	42.9	146
12/18/06	2.14	0.97	1.17	108	20,789	6,504	42.9	152
average						6,370		149

EW-6

Drawdowns (ft)

Monitoring Well	**OW-66**	**OW-67**
Distance from EW-6(ft):	**63**	**202**
12/12/06	2.22	1.19
12/18/06	1.89	0.81

Analyses
OW-66 & OW-67

Date:	s_{10} (ft)	s_{100} (ft)	Δs (ft)	Q (gpm)	Q(ft3/d)	KD (ft2/d)	D (ft)	K (ft/d)
12/12/06	3.86	1.82	2.04	265	51,009	9,153	32.4	283
12/18/06	3.61	1.47	2.14	265	51,009	8,725	32.4	269
average						8,940		276

Table 2-4
December 2006 Shutdown Test Distance-Drawdown Analyses
Former Nebraska Ordnance Plant, Mead, Nebraska

EW-9

Drawdowns (ft)

Monitoring Well	**OW-72**	**OW-73**
Distance from EW-4(ft):	**62**	**201**
12/12/06	1.62	0.99
12/18/06	1.29	0.67

Analyses
OW-72 & OW-73

Date:	s_{10} (ft)	s_{100} (ft)	Δs (ft)	Q (gpm)	Q(ft3/d)	KD (ft2/d)	D (ft)	K (ft/d)
12/12/06	2.60	1.36	1.24	137	26,371	7,785	42.6	183
12/18/06	2.25	1.03	1.22	137	26,371	7,912	42.6	186
average						7,850		185

EW-12

Drawdowns (ft)

Monitoring Well	**MW-92A**	**OW-53**	**OW-52**	**TH-EW-12**
Distance from EW-12 (ft):	**772**	**183**	**150**	**20.3**
2/3/06	0.80	7.20	8.86	21.16
3/29/06	0.91	7.53	9.19	21.49
10/30/06	0.99	7.75	9.43	21.75
12/12/06	0.92	7.42	9.12	21.32
12/18/06	0.87	7.27	8.96	21.17

Analyses
TH-EW-12, OW-52, OW-53, & MW-92A

Date:	s_{10} (ft)	s_{100} (ft)	Δs (ft)	Q (gpm)	Q(ft3/d)	KD (ft2/d)	D (ft)	K (ft/d)
2/3/06	24.6	11.6	13.00	327	62,943	1,772	79.7	22
3/29/06	25.0	11.8	13.20	325	62,558	1,735	79.7	22
10/30/06	25.4	12.1	13.30	325	62,558	1,722	79.7	22
12/12/06	24.8	11.8	13.00	325	62,558	1,762	79.7	22
12/18/06	24.6	11.6	13.00	325	62,558	1,762	79.7	22
average						1,740		22

Table 3-1
Main Groundwater Treatment Plant Extraction
Well Sampling - TCE and RDX Results
Former Nebraska Ordnance Plant, Mead, Nebraska

Date Sampled	February		May		August		November	
	TCE	RDX	TCE	RDX	TCE	RDX	TCE	RDX
EW-1	6.36	ND	6.97	0.127J	7.68	ND	7.84	ND
EW-2	ND	1.03	ND	1.11	ND	0.709	ND	1.04
EW-3	ND	3.39	ND	3.62	ND	2.87	ND	3.42
EW-4	ND	2.37	ND	3.04	ND	2.5	ND	2.99
EW-5	ND	0.625	ND	0.827	ND	0.666	ND	0.843
EW-6	ND	1.22	ND	1.55	ND	ND	ND	1.44
EW-7	ND	2.62	ND	3.35	ND	2.05	ND	3.64
EW-8	77	ND	95.7	0.254J	92.1	ND	95.7	ND
EW-9	ND	6.47	ND	8.46	ND	7.02	ND	9.69
EW-10	ND	0.896	ND	1.02	ND	1.05	ND	1.3
EW-11	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

1. ND = Non-Detect, NS = Not Sampled, J = Estimated Value, and EW = Extraction Well.
2. Data presented is from the Monthly Operation, Maintenance and Monitoring Report (#61), Main and Load Line 1 (LL1) Treatment Plant, February 2007.

Table 3-2
LL1 Groundwater Treatment Plant Extraction Well Sampling - TCE and RDX Results
Former Nebraska Ordnance Plant, Mead, Nebraska

Date	EW-12	
	TCE	RDX
13-Feb-06	11.4	ND
20-Feb-06	11.7	ND
27-Feb-06	13.6	ND
6-Mar-06	14.6	ND
13-Mar-06	15	ND
3-Apr-06	15.5	ND
1-May-06	16.5	ND
5-Jun-06	17.4	ND
5-Jul-06	17.9	ND
1-Aug-06	17.8	ND
6-Sep-06	15.7	ND
2-Oct-06	18.9	ND
1-Nov-06	15.9	ND
4-Dec-06	15.3	ND

1. ND = Non-Detect, NS = Not Sampled, J = Estimated Value, and EW = Extraction Well.
2. Data presented is from the Monthly Operation, Maintenance and Monitoring Report (#61), Main and Load Line 1 (LL1) Treatment Plant, February 2007.
3. Data for EW-12 is from the influent sampling of the LL1 Groundwater Treatment Plant.

Table 3-3
Monitoring Well Clusters Evaluated During the 2006 Containment Evaluation
Former Nebraska Ordnance Plant, Mead, Nebraska

Well Cluster	Location of Well(s)	Rationale for Sampling/Location
MW-20	Outside RDX Plume, Downgradient of EW-10	Provide downgradient data: Long-term Containment Confirmation
MW-29	Within RDX Plume, Cross-gradient and Upgradient of EW-10	Provide cross-gradient data: Long-term Containment Confirmation
MW-32	Within RDX Plume, Upgradient of EW-6 and EW-7.	Monitor concentration within plume and evaluate the migration of RDX toward the capture zone
MW-34	Outside RDX Plume, Upgradient of EW-4 & EW-5	Monitor concentration of plume as it moves towards the Extraction Wells
MW-35	Outside RDX Plume, Downgradient of EW-3	Provide downgradient data: Long-term Containment Confirmation
MW-36	Within TCE Plume, Upgradient of EW-1	Monitor concentrations within plume and evaluate the migration of TCE toward the capture zone
MW-38	Outside TCE Plume, Cross-gradient of EW-1	Provide cross-gradient data: Long-term Containment Confirmation
MW-45	Within TCE Plume, Upgradient of EW-2 and EW-1	Monitor concentration within plume and evaluate the migration of TCE toward the capture zone
MW-46	Outside TCE Plume, Cross-gradient of EW-1	Provide cross-gradient data: Long-term Containment Confirmation
MW-62	Outside TCE Plume, Downgradient of EW-12	Monitor immediately downgradient of EW-1, Long-term Containment Confirmation
MW-79	Outside TCE Plume, Cross-gradient of EW-12	Provide cross-gradient data: Long-term Containment Confirmation
MW-80	Within TCE Plume, Downgradient of EW-12	Monitor concentration within the plume and evaluate the migration of TCE
MW-81	Outside TCE Plume, Downgradient EW-12	Provide downgradient data: Long-term Containment Confirmation
MW-82	Outside of RDX Plume, Downgradient of EW-10	Provide downgradient data: Long-term Containment Confirmation
MW-83	Outside of RDX Plume, Downgradient of EW-7 and EW-9	Provide downgradient data: Long-term Containment Confirmation

Table 3-3
Monitoring Well Clusters Evaluated During the 2006 Containment Evaluation
Former Nebraska Ordnance Plant, Mead, Nebraska

Well Cluster	Location of Well(s)	Rationale for Sampling/Location
MW-84	Outside of RDX Plume, Downgradient of EW-6 and EW-7	Provide downgradient data: Long-term Containment Confirmation
MW-85	Outside of RDX Plume, Downgradient of EW-5 and EW-6	Provide downgradient data: Long-term Containment Confirmation
MW-86	Outside of RDX Plume, Downgradient of EW-2	Provide downgradient data: Long-term Containment Confirmation
MW-87	Outside of TCE Plume, Downgradient of EW-1	Provide downgradient data: Long-term Containment Confirmation
MW-88	Outside of TCE Plume, Downgradient of EW-1	Provide downgradient data: Long-term Containment Confirmation
MW-89	Outside of Load Line 1 TCE Plume, Upgradient of EW-12	Provide upgradient data: Long Term Containment Confirmation
MW-90	Within Load Line 1 TCE Plume, Upgradient of EW-12	Monitor Concentration within the Plume and Evaluate the Migration of TCE toward the Capture Zone
MW-91	Outside of Load Line 1 TCE Plume, upgradient of EW-13	Provide upgradient data: Long Term Containment Confirmation
MW-92	Outside of Load Line 1 TCE Plume, cross-gradient of EW-12	Provide downgradient data: Long-term Containment Confirmation
MW-93	Outside of Load Line 1 TCE Plume, cross-gradient of EW-12	Provide cross-gradient data: Long-term Containment Confirmation
MW-94	Outside of RDX Plume, Cross-gradient of EW-10	Provide cross-gradient data: Long-term Containment Confirmation
MW-95	Outside of RDX Plume, Cross-gradient of EW-10	Provide downgradient data: Long-term Containment Confirmation
MW-96	Outside of RDX Plume, Downgradient of EW-9 and EW-10	Provide downgradient data: Long-term Containment Confirmation
MW-97	Outside of RDX Plume, Downgradient of EW-7 and EW-9	Provide downgradient data: Long-term Containment Confirmation
MW-98	Outside of RDX Plume, Downgradient of EW-4 and EW-5	Provide downgradient data: Long-term Containment Confirmation
MW-99	Within RDX Plume, Upgradient of EW-3 and EW-4	Monitor concentration within Plume and Evaluate Migration of RDX toward the Capture Zone
MW-100	Outside of RDX Plume, Downgradient of EW-3 and EW-4	Provide downgradient data: Long-term Containment Confirmation

Table 3-3
Monitoring Well Clusters Evaluated During the 2006 Containment Evaluation
Former Nebraska Ordnance Plant, Mead, Nebraska

Well Cluster	Location of Well(s)	Rationale for Sampling/Location
MW-101	Outside of Load Line 1 TCE Plume, Downgradient of EW-12	Provide downgradient data: Long-term Containment Confirmation
MW-102	Outside of TCE Plume, Eastern Boundary Monitoring	Monitor eastern boundary: Long-term Containment Evaluation
MW-103	Outside of TCE Plume, Eastern Boundary Monitoring	Monitor eastern boundary: Long-term Containment Evaluation
MW-106	Outside of TCE Plume, Eastern Boundary Monitoring	Provide cross-gradient data: Long-term Containment Evaluation
MW-107	Outside of TCE Plume, Eastern Boundary Monitoring	Provide cross-gradient data: Long-term Containment Evaluation
MW-108	Outside of TCE Plume, Eastern Boundary Monitoring	Provide cross-gradient data: Long-term Containment Evaluation
MW-110	Outside of TCE Plume, Eastern Boundary Monitoring	Provide cross-gradient data: Long-term Containment Evaluation
MW-112	Outside of TCE Plume, Eastern Boundary Monitoring	Provide cross-gradient data: Long-term Containment Evaluation
MW-113	Outside of TCE Plume, Cross-gradient of EW-1	Provide cross-gradient data: Long-term Containment Evaluation
MW-114	Outside of TCE Plume, Cross-gradient of EW-1	Provide cross-gradient data: Long-term Containment Evaluation
MW-115	Outside of TCE Plume, Cross-gradient of EW-1	Provide cross-gradient data: Long-term Containment Evaluation
MW-116	Outside of TCE Plume, Cross-gradient of EW-1	Provide cross-gradient data: Long-term Containment Evaluation
MW-117	Outside of TCE Plume, Downgradient of EW-3 and EW-4	Provide downgradient data: Long-term Containment Evaluation
MW-118	Outside of TCE Plume, Downgradient of EW-6	Provide downgradient data: Long-term Containment Evaluation

Note: Monitoring well clusters MW-104, MW-105, MW-109, and MW-111 were not installed due to landowner access issues.

Table 3-4
TCE and RDX in Southern and Eastern Perimeter Monitoring Wells
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Type	TCE Result	RDX Result	Date VOCs Last Collected	Date Explosives Last Collected
MW-20A	Deep	ND	ND	Sep-06	Sep-06
MW-20B	Intermediate	ND	ND	Sep-06	Sep-06
MW-20C	Shallow	0.7J	ND	Sep-03	Sep-03
MW-35A	Intermediate	ND	ND	May-06	Sep-06
MW-35B	Shallow	ND	0.416	May-06	Sep-06
MW-35D	Deep	ND	ND	May-06	Sep-06
MW-38A	Intermediate	ND	ND	Mar-06	Mar-06
MW-38D	Deep	ND	ND	Mar-06	Mar-06
MW-46A	Intermediate	ND	ND	Sep-06	Sep-06
MW-46B	Shallow	ND	ND	Sep-06	Sep-06
MW-46D	Deep	ND	ND	Sep-06	Sep-06
MW-62A	Intermediate	ND	ND	Sep-06	Sep-06
MW-62B	Shallow	ND	ND	Sep-06	Sep-06
MW-62D	Deep	ND	ND	Sep-06	Sep-06
MW-79A	Intermediate	ND	ND	Dec-06	Dec-06
MW-79B	Shallow	ND	ND	Dec-06	Dec-06
MW-79B*	Shallow	ND	ND	Dec-06	Dec-06
MW-80A	Intermediate	0.930J	ND	Dec-06	Dec-06
MW-80B	Shallow	7.54	ND	Dec-06	Dec-06
MW-80B*	Shallow	8.13	ND	Dec-06	Dec-06
MW-80D	Deep	ND	ND	Dec-06	Dec-06
MW-81A	Intermediate	ND	ND	Dec-06	Dec-06
MW-81B	Shallow	ND	ND	Dec-06	Dec-06
MW-81D	Deep	ND	ND	Dec-06	Dec-06
MW-82A	Intermediate	ND	ND	Sep-06	Sep-06
MW-82B	Shallow	ND	ND	Sep-06	Sep-06
MW-82D	Deep	ND	ND	Sep-06	Sep-06
MW-83A	Intermediate	ND	1.08	Sep-06	Sep-06
MW-83B	Shallow	ND	0.915	Sep-06	Sep-06
MW-83D	Deep	ND	ND	Sep-06	Sep-06
MW-84A	Intermediate	ND	0.547	Sep-06	Sep-06
MW-84B	Shallow	ND	ND	Sep-06	Sep-06
MW-84D	Deep	ND	ND	Sep-06	Sep-06
MW-85A	Intermediate	ND	1.05	Sep-06	Sep-06
MW-85B	Shallow	ND	1.34	Sep-06	Sep-06
MW-85D	Deep	ND	ND	Sep-06	Sep-06
MW-86A	Intermediate	ND	1.07	Jan-07	Jan-07
MW-86B	Shallow	ND	ND	Jan-07	Jan-07
MW-86D	Deep	ND	1.71	Jan-07	Jan-07
MW-87A	Intermediate	ND	ND	Jan-07	Jan-07
MW-87B	Shallow	ND	0.384	Jan-07	Jan-07
MW-87D	Deep	ND	ND	Jan-07	Jan-07
MW-88A	Intermediate	ND	ND	Jan-07	Jan-07
MW-88B	Shallow	ND	ND	Jan-07	Jan-07
MW-88D	Deep	ND	ND	Jan-07	Jan-07
MW-92A	Intermediate	ND	ND	Dec-06	Dec-06
MW-92B	Shallow	ND	ND	Dec-06	Dec-06
MW-96A	Intermediate	NA	ND	NA	Jan-07
MW-96B	Shallow	NA	ND	NA	Jan-07

Table 3-4
TCE and RDX in Southern and Eastern Perimeter Monitoring Wells
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Type	TCE Result	RDX Result	Date VOCs Last Collected	Date Explosives Last Collected
MW-96D	Deep	NA	ND	NA	Jan-07
MW-97A	Intermediate	NA	ND	NA	Jan-07
MW-97B	Shallow	NA	ND	NA	Jan-07
MW-97D	Deep	NA	ND	NA	Jan-07
MW-98A	Intermediate	NA	ND	NA	Feb-07
MW-98B	Shallow	NA	ND	NA	Feb-07
MW-98D	Deep	NA	ND	NA	Feb-07
MW-100A	Intermediate	NA	0.849	NA	Feb-07
MW-100B	Shallow	NA	0.992	NA	Feb-07
MW-100D	Deep	NA	ND	NA	Feb-07
MW-101A	Intermediate	ND	ND	Jan-07	Jan-07
MW-101A*	Intermediate	ND	NA	Jan-07	NA
MW-101B	Shallow	ND	ND	Jan-07	Jan-07
MW-101D	Deep	ND	ND	Jan-07	Jan-07
MW-102A	Intermediate	ND	NA	Jan-07	NA
MW-102B	Shallow	ND	NA	Jan-07	NA
MW-102D	Deep	ND	NA	Jan-07	NA
MW-103A	Intermediate	ND	NA	Jan-07	NA
MW-103A*	Intermediate	ND	NA	Jan-07	NA
MW-103B	Shallow	ND	NA	Jan-07	NA
MW-103D	Deep	ND	NA	Jan-07	NA
MW-106A	Intermediate	ND	ND	Jan-07	Jan-07
MW-106B	Shallow	ND	ND	Jan-07	Jan-07
MW-106D	Deep	ND	ND	Jan-07	Jan-07
MW-107A	Intermediate	ND	ND	Jan-07	Jan-07
MW-107B	Shallow	ND	ND	Jan-07	Jan-07
MW-107D	Deep	ND	ND	Jan-07	Jan-07
MW-108A	Intermediate	ND	ND	Jan-07	Jan-07
MW-108B	Shallow	ND	ND	Jan-07	Jan-07
MW-108D	Deep	ND	ND	Jan-07	Jan-07
MW-110A	Intermediate	ND	ND	Jan-07	Jan-07
MW-110B	Shallow	ND	ND	Jan-07	Jan-07
MW-110D	Deep	ND	ND	Jan-07	Jan-07
MW-112A	Intermediate	ND	ND	Jan-07	Jan-07
MW-112B	Shallow	ND	ND	Jan-07	Jan-07
MW-113A	Intermediate	ND	ND	Jan-07	Jan-07
MW-113B	Shallow	ND	ND	Jan-07	Jan-07
MW-113D	Deep	ND	ND	Jan-07	Jan-07
MW-114A	Intermediate	ND	ND	Jan-07	Jan-07
MW-114B	Shallow	ND	ND	Jan-07	Jan-07
MW-114D	Deep	ND	ND	Jan-07	Jan-07
MW-115A	Intermediate	ND	ND	Jan-07	Jan-07
MW-115B	Shallow	ND	ND	Jan-07	Jan-07
MW-115D	Deep	ND	ND	Jan-07	Jan-07
MW-116A	Intermediate	ND	ND	Jan-07	Jan-07
MW-116A*	Intermediate	ND	ND	Jan-07	Jan-07
MW-116B	Shallow	ND	ND	Jan-07	Jan-07
MW-116D	Deep	ND	ND	Jan-07	Jan-07
MW-117A	Intermediate	ND	ND	Feb-07	Feb-07

Table 3-4
TCE and RDX in Southern and Eastern Perimeter Monitoring Wells
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Type	TCE Result	RDX Result	Date VOCs Last Collected	Date Explosives Last Collected
MW-117A*	Intermediate	ND	ND	Feb-07	Feb-07
MW-117B	Shallow	ND	ND	Feb-07	Feb-07
MW-117D	Deep	ND	ND	Feb-07	Feb-07
MW-118A	Intermediate	NA	ND	NA	Jan-07
MW-118A*	Intermediate	NA	ND	NA	Jan-07
MW-118B	Shallow	NA	0.553	NA	Jan-07

Notes:

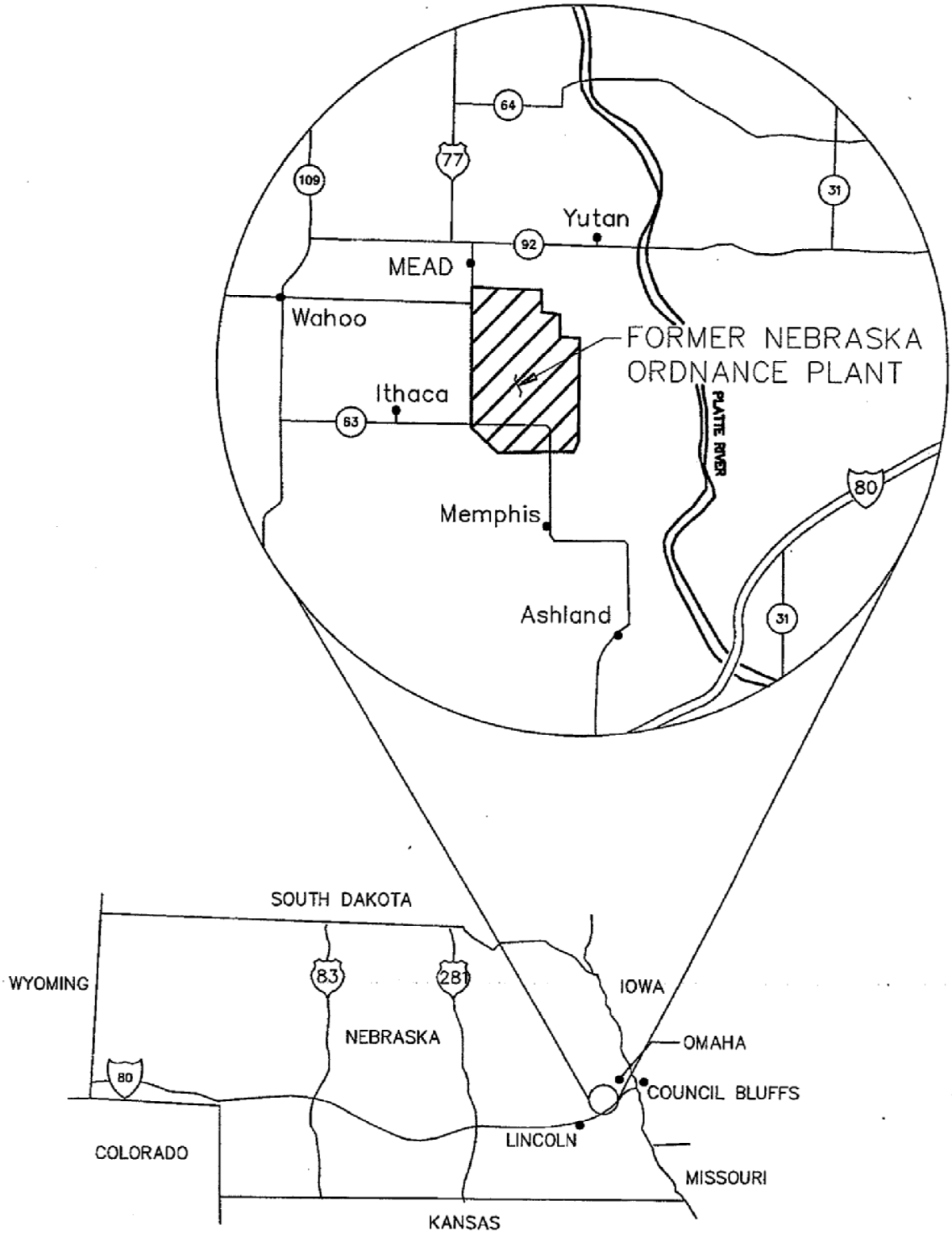
1. NA = Not Analyzed or Applicable, ND = Non-Detect, J = Estimated * = Field Duplicate Sample.
2. Monitoring well clusters MW-104, MW-105, MW-109, and MW-111 were not installed due to property access issues.
3. TCE and RDX were the only COCs detected above Final Target Groundwater Cleanup Goals in 2006 or 2007.

Table 3-5
TCE and RDX in Monitoring Wells within Capture Zone
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Type	TCE Result	RDX Result	Date VOCs Last Collected	Date Explosives Last Collected
MW-29A	Intermediate	ND	2.07	Sep-06	Sep-06
MW-29B	Shallow	ND	ND	Sep-06	Sep-06
MW-32A	Intermediate	ND	6.39	Mar-06	Mar-06
MW-32B	Shallow	ND	3.04	Mar-06	Mar-06
MW-32D	Deep	ND	6.36	Mar-06	Mar-06
MW-34A	Intermediate	ND	ND	Mar-06	Mar-06
MW-34B	Shallow	ND	0.63	Mar-06	Mar-06
MW-34D	Deep	ND	ND	Mar-06	Mar-06
MW-36A	Intermediate	27.5	ND	Sep-06	Sep-06
MW-36B	Shallow	26.0	ND	Sep-06	Sep-06
MW-36B*	Shallow	25.4	ND	Sep-06	Sep-06
MW-36D	Deep	0.35J	ND	Sep-06	Sep-06
MW-45A	Intermediate	17.8	4.00	Sep-06	Sep-06
MW-45A*	Intermediate	18.1	4.02	Sep-06	Sep-06
MW-45B	Shallow	21.5	4.88	Sep-06	Sep-06
MW-45B*	Shallow	21.5	1.79	Sep-06	Sep-06
MW-45D	Deep	18.7	3.26	Sep-06	Sep-06
MW-89A	Intermediate	ND	ND	Dec-06	Dec-06
MW-89B	Shallow	1.04J	ND	Dec-06	Dec-06
MW-89D	Deep	ND	ND	Dec-06	Dec-06
MW-90A	Intermediate	34.2	ND	Dec-06	Dec-06
MW-90B	Shallow	101	ND	Dec-06	Dec-06
MW-90B*	Shallow	32.8	ND	Dec-06	Dec-06
MW-90D	Deep	27.1	ND	Dec-06	Dec-06
MW-91A	Intermediate	ND	ND	Dec-06	Dec-06
MW-91B	Shallow	ND	ND	Dec-06	Dec-06
MW-91D	Deep	ND	ND	Dec-06	Dec-06
MW-93A	Intermediate	ND	ND	Dec-06	Dec-06
MW-93B	Shallow	ND	ND	Dec-06	Dec-06
MW-94A	Intermediate	NA	ND	NA	Jan-07
MW-94B	Shallow	NA	ND	NA	Jan-07
MW-94D	Deep	NA	ND	NA	Jan-07
MW-95A	Intermediate	NA	ND	NA	Jan-07
MW-95B	Shallow	NA	ND	NA	Jan-07
MW-95D	Deep	NA	ND	NA	Jan-07
MW-99A	Intermediate	NA	3.16	NA	Feb-07
MW-99A*	Intermediate	NA	2.72	NA	Feb-07
MW-99B	Shallow	NA	3.78	NA	Feb-07
MW-99D	Deep	NA	4.08	NA	Feb-07

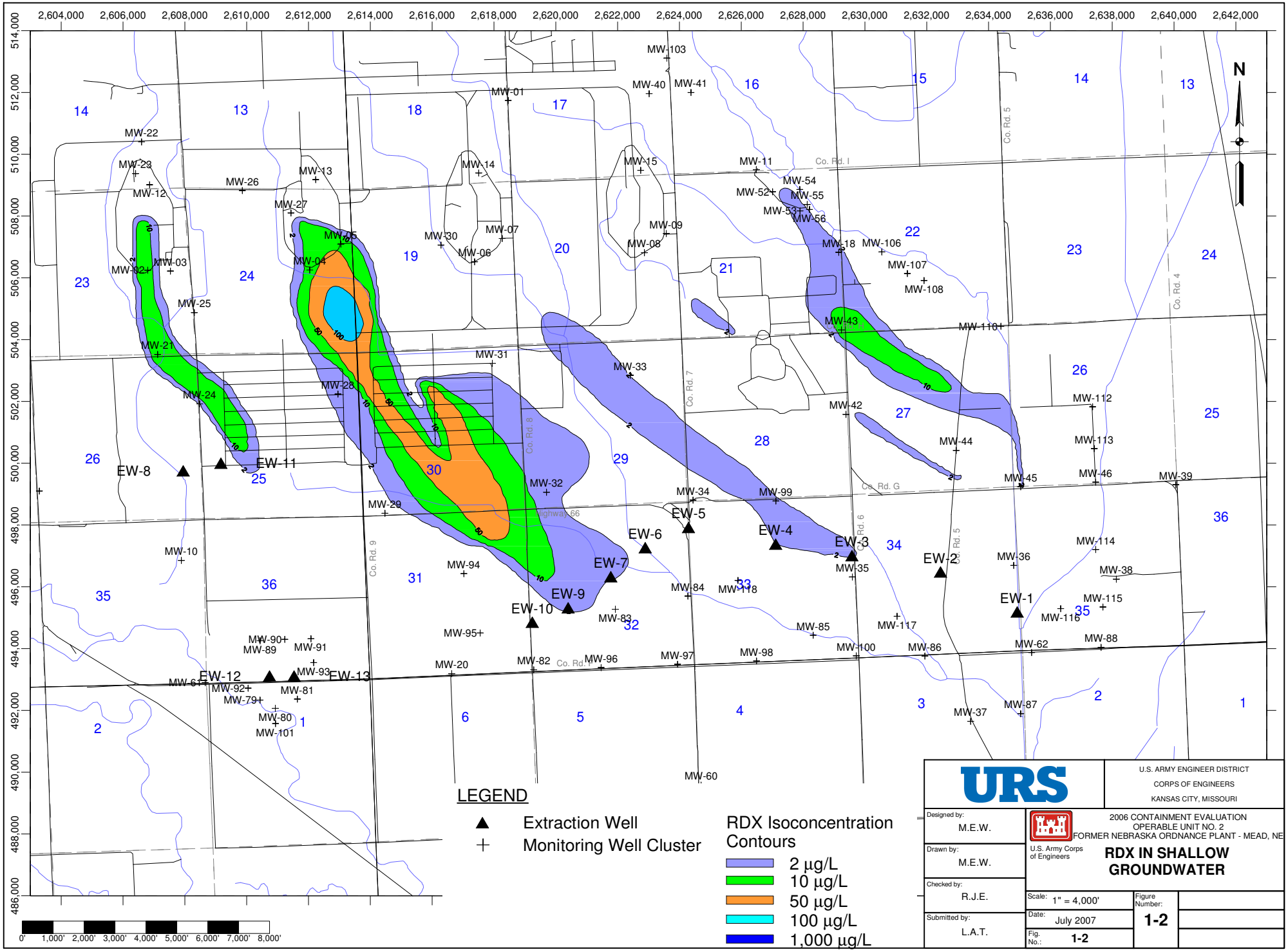
Notes:

1. NA = Not Analyzed or Applicable, ND = Non-Detect, J = Estimated * = Field Duplicate Sample.
2. TCE and RDX were the only COCs detected above Final Target Groundwater Cleanup Goals in 2006 or 2007.



N

URS	U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI	
Designed by: M.E.W.	2006 CONTAINMENT EVALUATION OPERABLE UNIT NO. 2 FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE	
Drawn by: M.E.W.	U.S. Army Corps of Engineers	**GENERAL SITE LOCATION MAP**
Checked by: L.A.T.	Scale: As Indicated	Figure Number:
Submitted by: L.A.T.	Date: JULY 2007 Fig. No.: 1-1	1-1



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2006 CONTAINMENT EVALUATION
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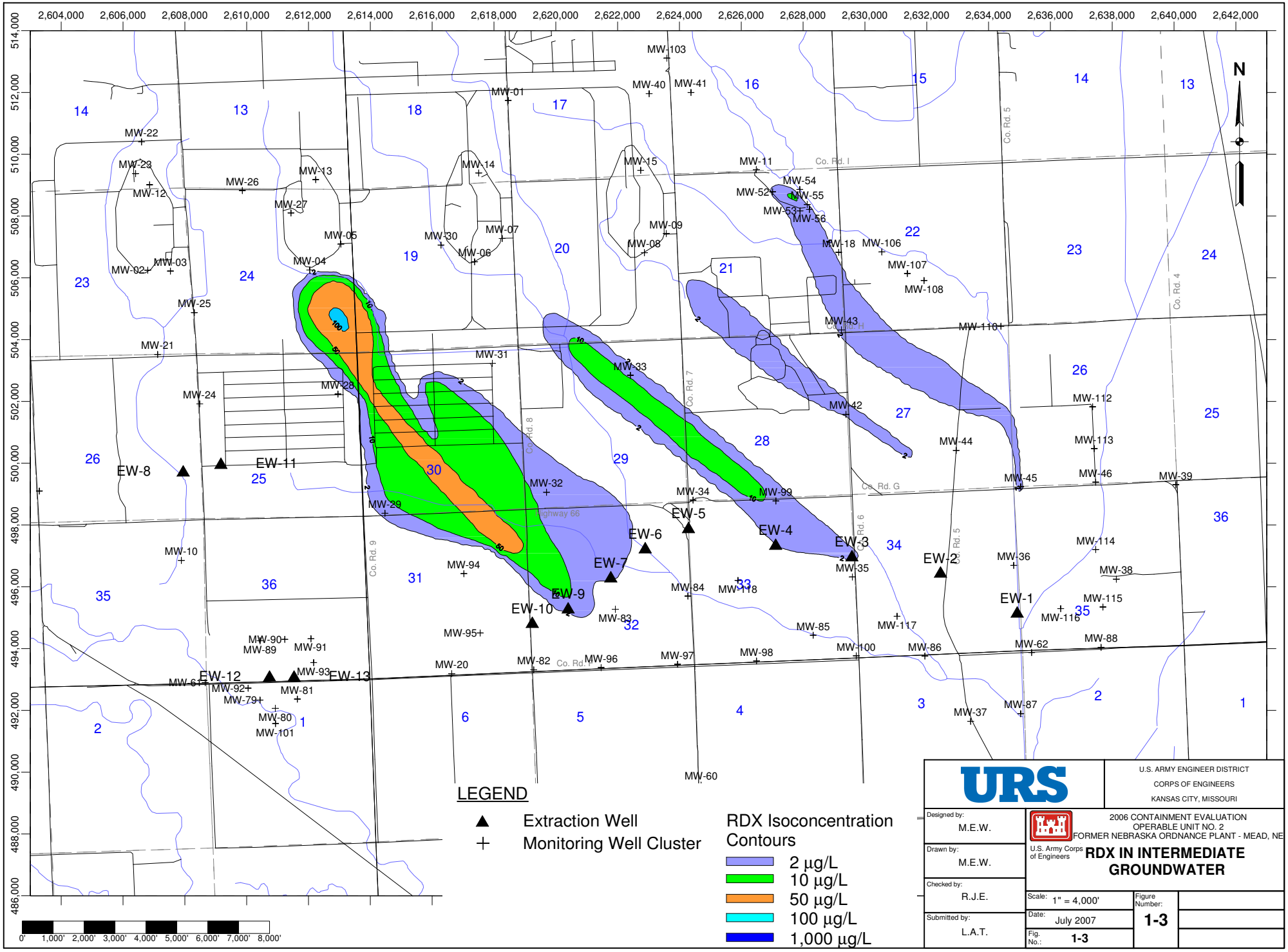
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

U.S. Army Corps of Engineers

RDX IN SHALLOW GROUNDWATER

Designed by:	M.E.W.
Drawn by:	M.E.W.
Checked by:	R.J.E.
Submitted by:	L.A.T.
Scale:	1" = 4,000'
Date:	July 2007
Fig. No.:	1-2
Figure Number:	1-2



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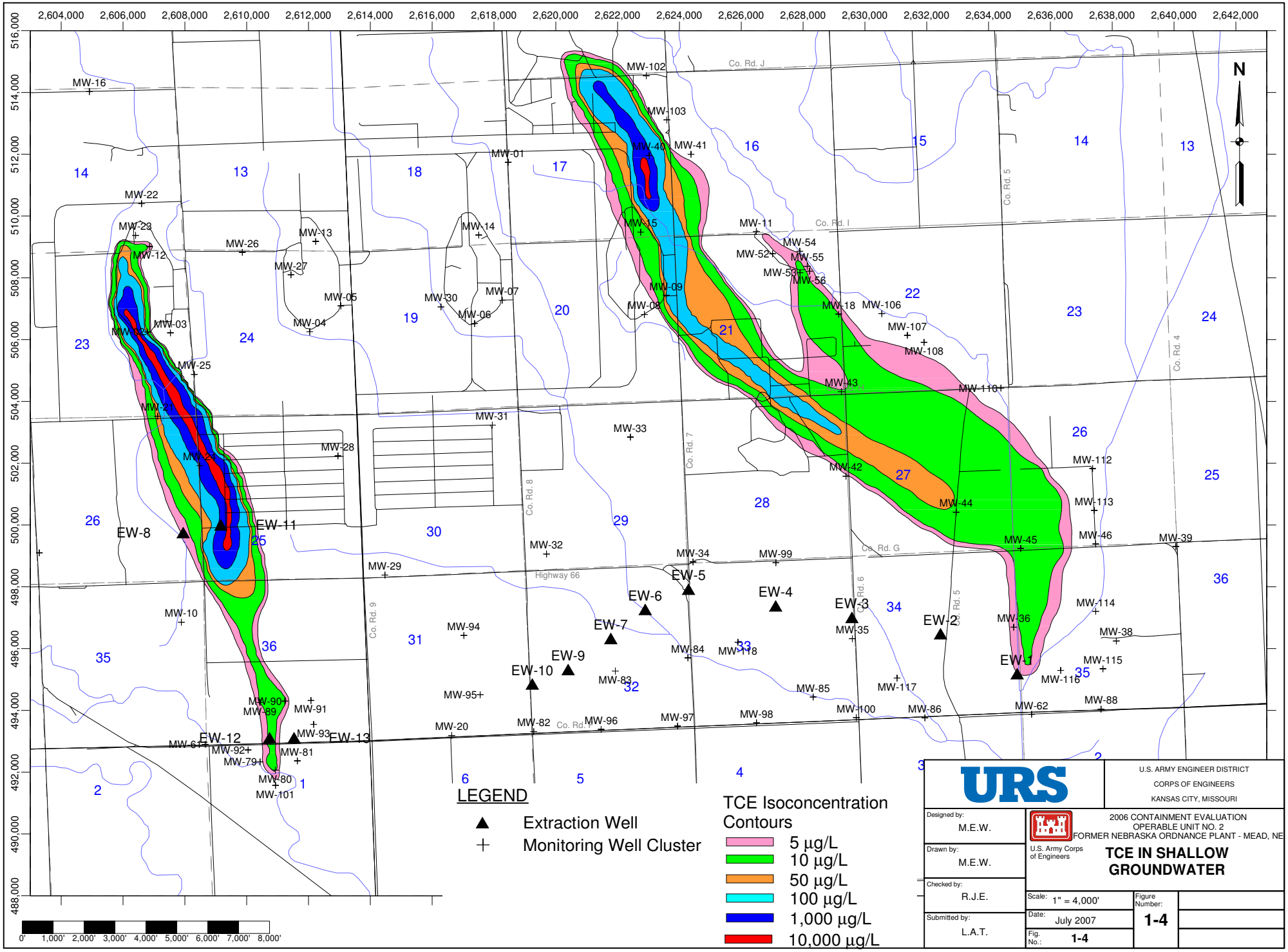
Designed by: M.E.W.
Drawn by: M.E.W.
Checked by: R.J.E.
Submitted by: L.A.T.

2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

U.S. Army Corps of Engineers

RDX IN INTERMEDIATE GROUNDWATER

Scale: 1" = 4,000'
Date: July 2007
Fig. No.: 1-3
Figure Number: 1-3


N
Co. Rd. J
Co. Rd. I
Co. Rd. G
Highway 66
Co. Rd. 9
Co. Rd. 8
Co. Rd. 7
Co. Rd. 6
Co. Rd. 5
Co. Rd. 4
EW-1
EW-2
EW-3
EW-4
EW-5
EW-6
EW-7
EW-8
EW-9
EW-10
EW-11
EW-12
EW-13
LEGEND
Extraction Well
Monitoring Well Cluster
TCE Isoconcentration Contours
5 µg/L
10 µg/L
50 µg/L
100 µg/L
1,000 µg/L
10,000 µg/L
0' 1,000' 2,000' 3,000' 4,000' 5,000' 6,000' 7,000' 8,000'
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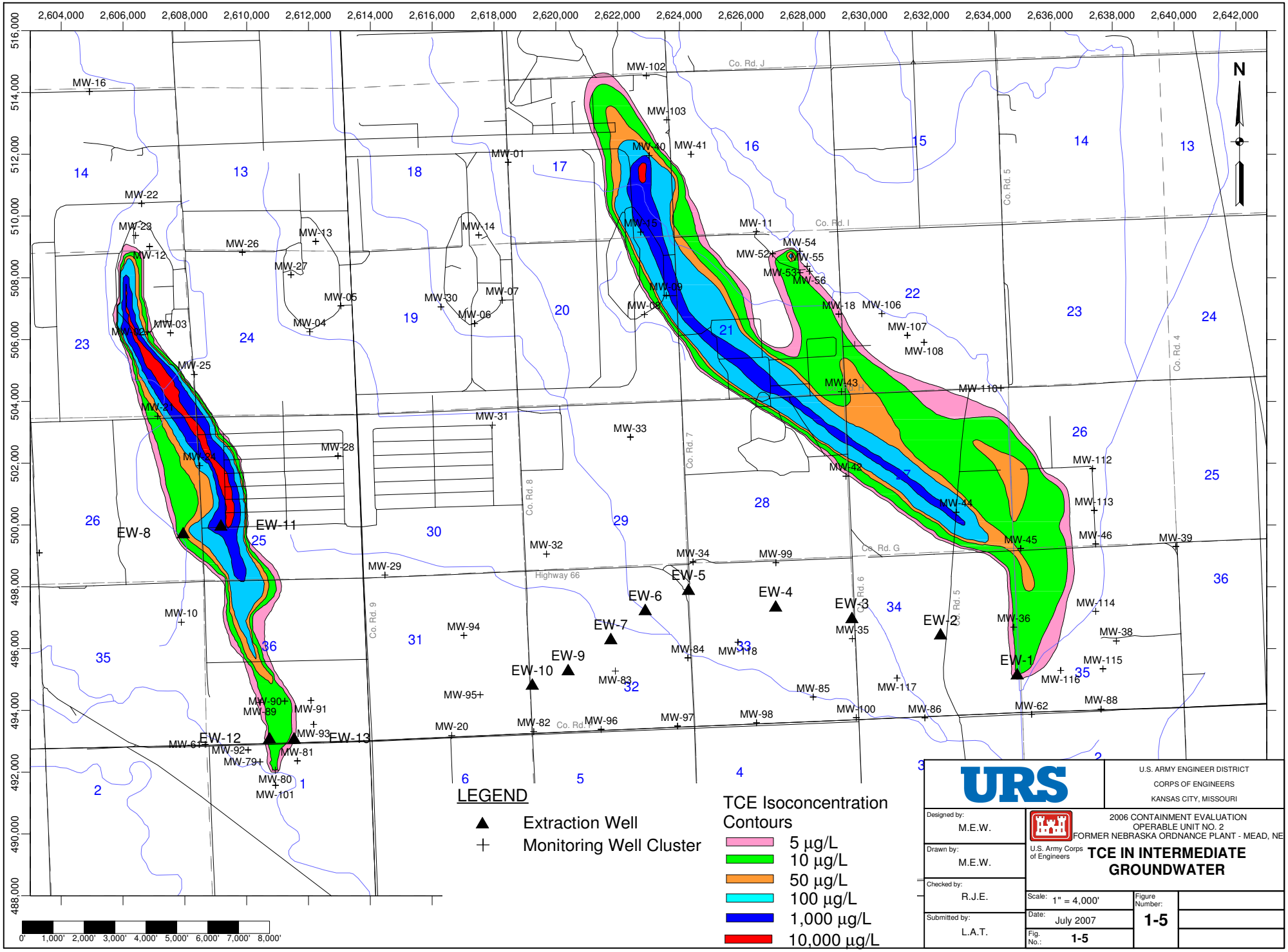
KANSAS CITY, MISSOURI
Designed by: M.E.W.
Drawn by: M.E.W.
Checked by: R.J.E.
Submitted by: L.A.T.
U.S. Army Corps of Engineers
2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE
TCE IN SHALLOW GROUNDWATER
Scale: 1" = 4,000'
Date: July 2007
Fig. No.: 1-4
Figure Number: 1-4


N
Co. Rd. J
Co. Rd. I
Co. Rd. G
Highway 66
Co. Rd. 9
Co. Rd. 8
Co. Rd. 7
Co. Rd. 6
Co. Rd. 5
Co. Rd. 4
EW-1
EW-2
EW-3
EW-4
EW-5
EW-6
EW-7
EW-8
EW-9
EW-10
EW-11
EW-12
EW-13
LEGEND
Extraction Well
Monitoring Well Cluster
TCE Isoconcentration Contours
5 µg/L
10 µg/L
50 µg/L
100 µg/L
1,000 µg/L
10,000 µg/L
0' 1,000' 2,000' 3,000' 4,000' 5,000' 6,000' 7,000' 8,000'
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KANSAS CITY, MISSOURI
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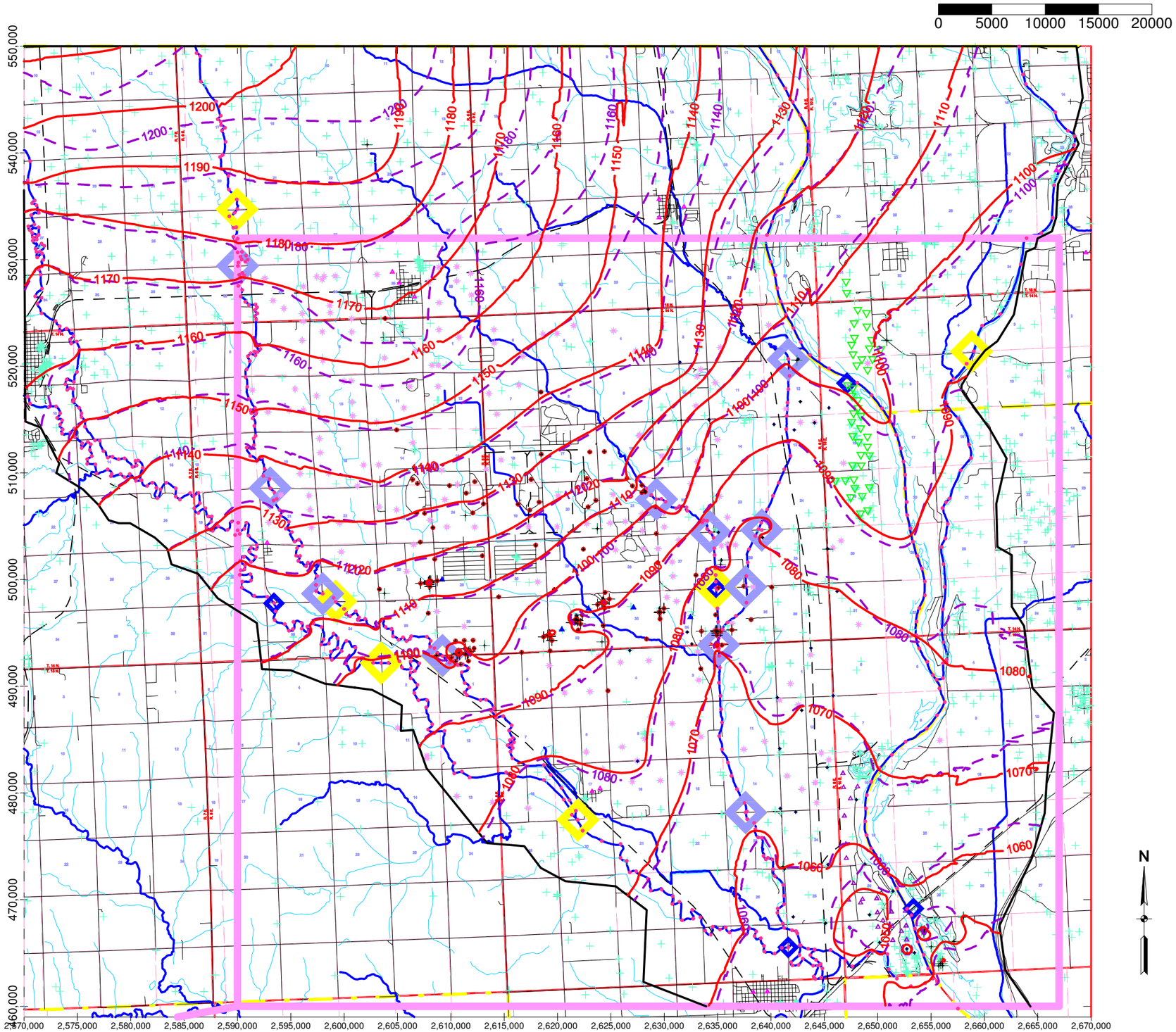
Drawn by: M.E.W.
Checked by: R.J.E.
Submitted by: L.A.T.
2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE
U.S. Army Corps of Engineers
TCE IN INTERMEDIATE GROUNDWATER
Scale: 1" = 4,000'
Date: July 2007
Fig. No.: 1-5
Figure Number: 1-5



October 30, 2006 Interpreted Groundwater Contour (ft AMSL, NAVD88)

March 29, 2006 Interpreted Groundwater Contour (ft AMSL, NAVD88)

MUD March 2005 Manual Surface Water Measurement Locations

Manual Surface Water Measurement Locations

USGS Stream Guage Locations

USACE Monitoring Well Locations

USACE Observation Wells (associated with Extraction Wells)

USACE Extraction Wells

Lower Platte North Natural Resource District Observation Wells

USGS Observation Wells

Lincoln Water Supply Well

Misc. Public Water Supply Well

Omaha Met. Utility Dist. (MUD) Water Supply Well

Registered Wells (as of Feb 2006)

Irrigation Well (Area of Interest Only)

GWM06 Model Extent

River/Creek Segments Used in Interpolating River Stage Between Guages

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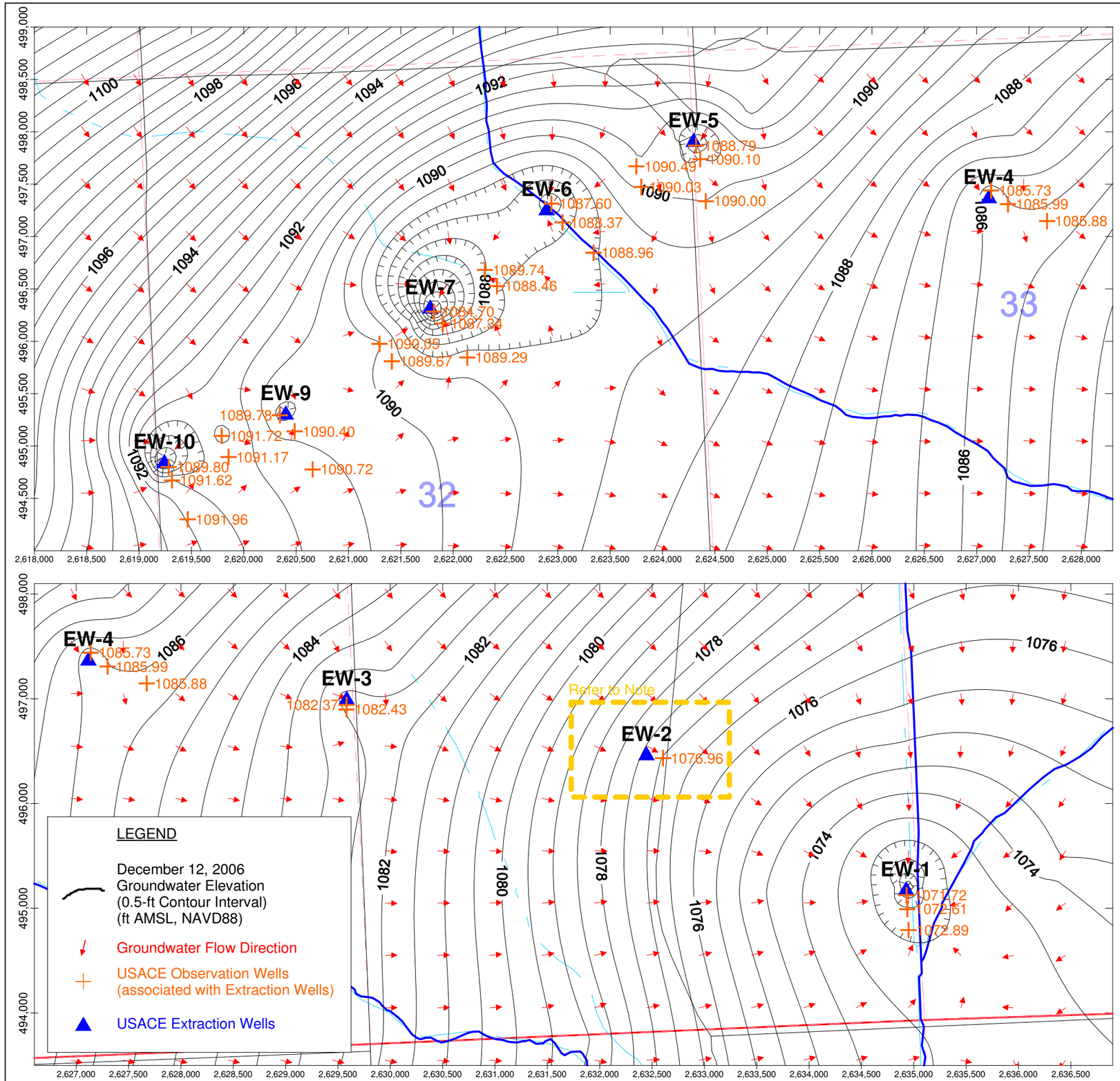
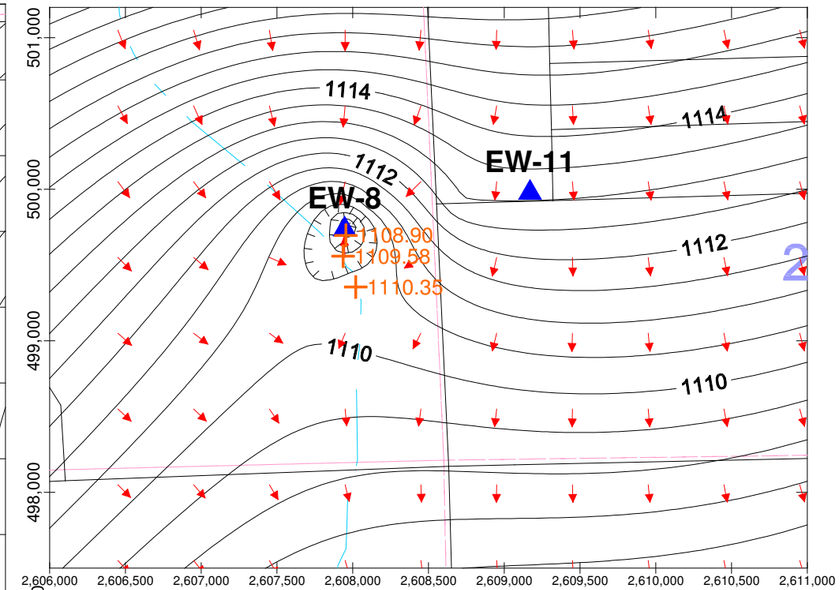
2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

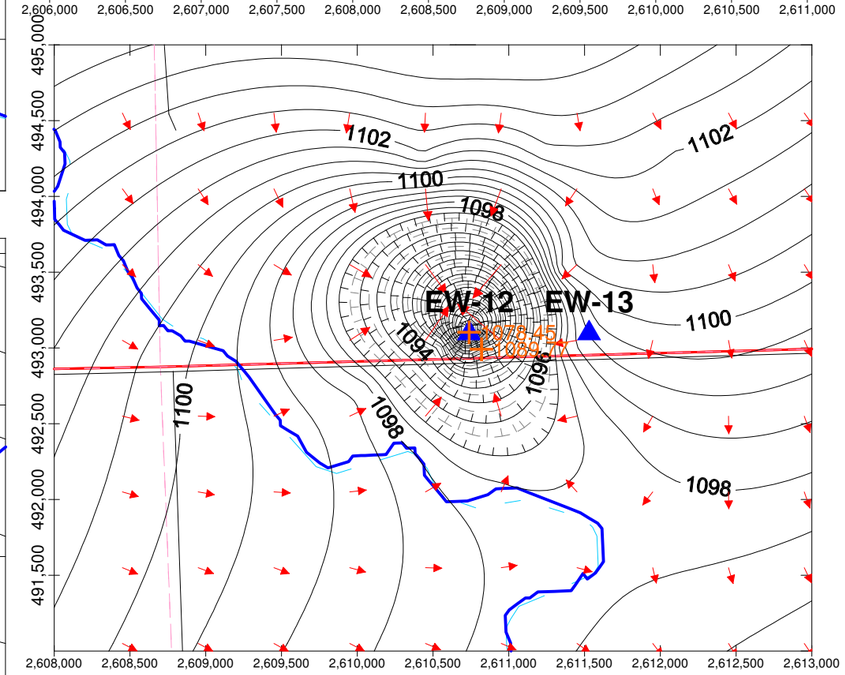
U.S. Army Corps of Engineers

March 29 and October 30, 2006 Interpreted Potentiometric Surfaces

Designed by:	M.E.W.
Drawn by:	M.E.W.
Checked by:	C.M.Z.
Submitted by:	L.A.T.
Scale:	As Indicated
Date:	July 2007
Fig. No.:	2-1
Figure Number:	2-1







Notes:
1) Gradients at EW-2 cannot be depicted because only one of the proposed observation wells could be installed due to access issues.
2) Water levels from the EWs cannot be used in the contour because excess drawdowns from pumping well losses are not reflective of the piezometric surface.

N

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Drawn by: M.E.W.	U.S. Army Corps of Engineers
Checked by: L.A.T.	**GRADIENT PAIRS DECEMBER 12, 2006**
Submitted by: L.A.T.	Scale: As Indicated; Date: JULY 2007; Fig. No.: 2-2; Figure Number: 2-2

Figure 2-3a
MW-3A and MW-25A
Groundwater Elevation

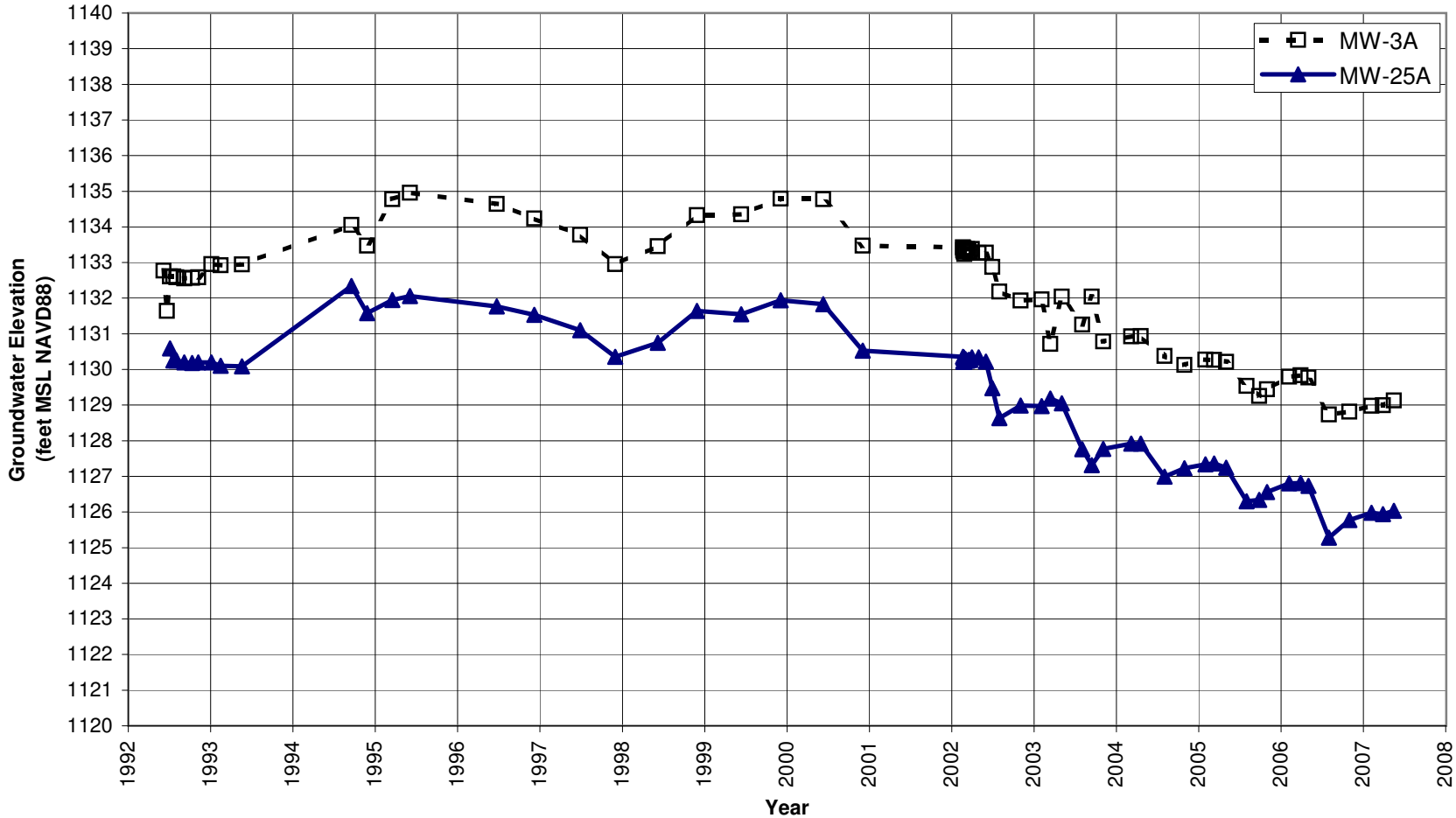


Figure 2-3b
MW-32B
Groundwater Elevation

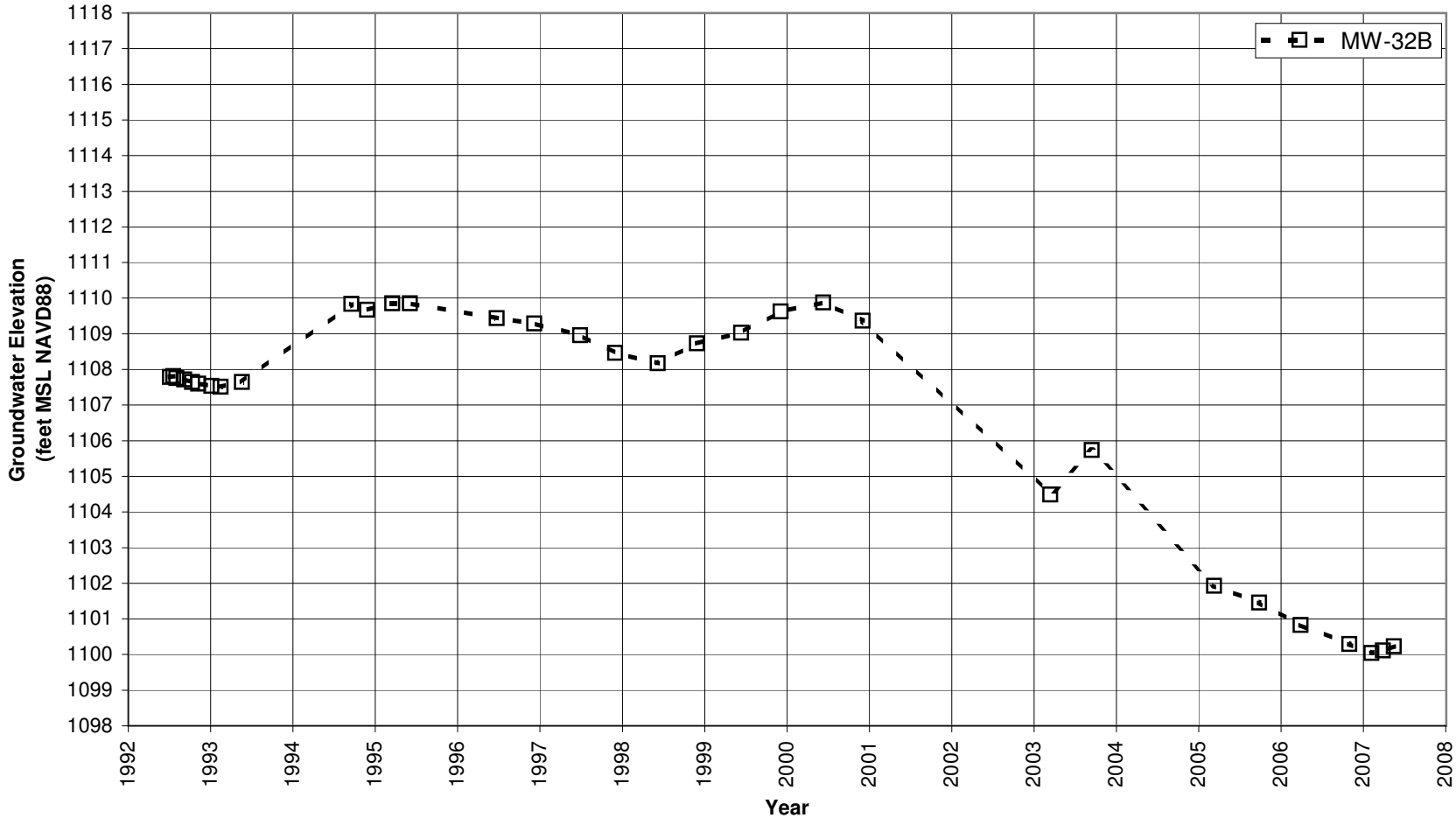


Figure 2-3c
MW-44A, MW-45A, and MW-46A
Groundwater Elevation

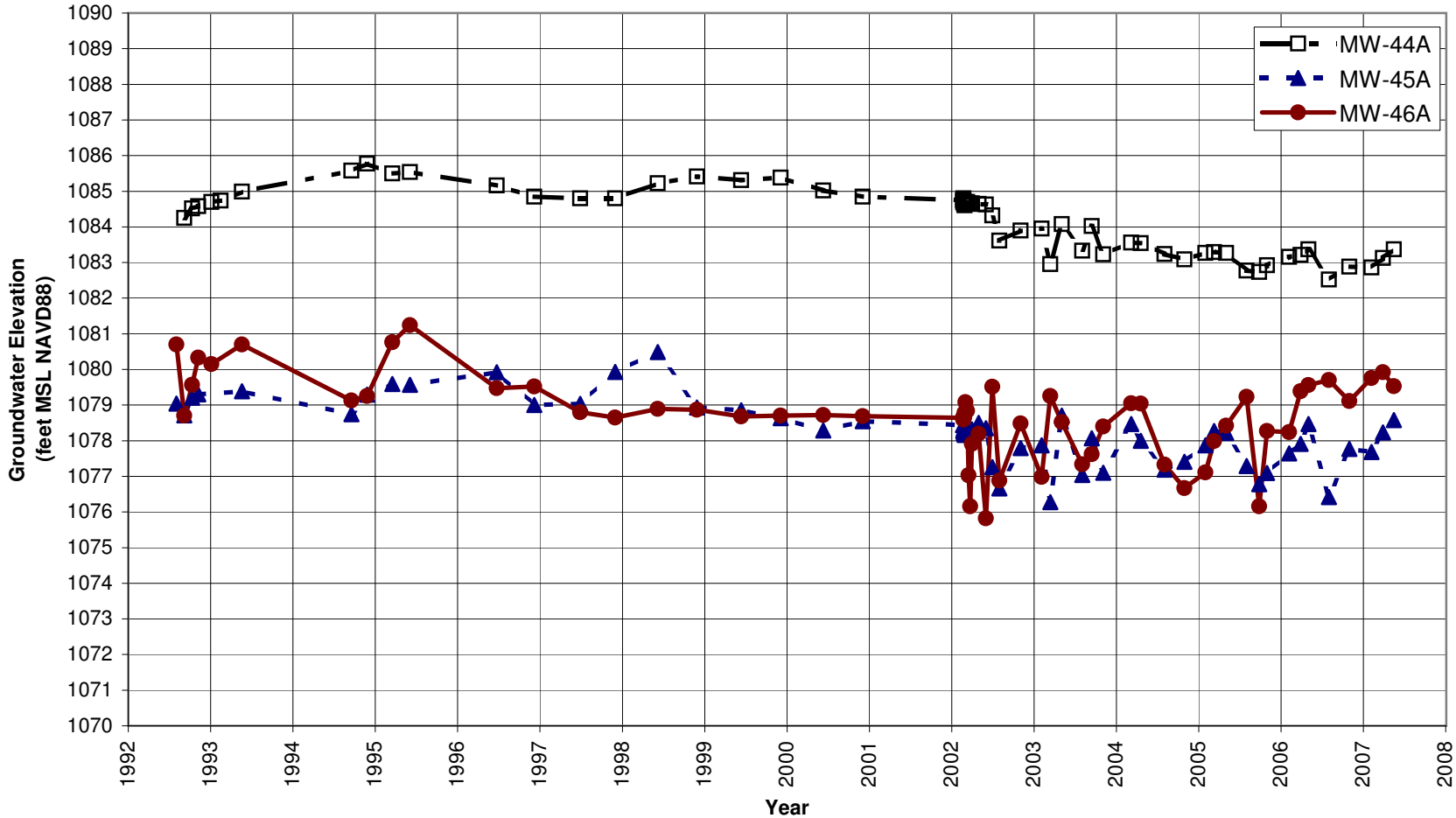


Figure 2-3d
T13N-R09E-16BAAA (LPNNRD TV-17A)
(South of FNOP)
Groundwater Elevation

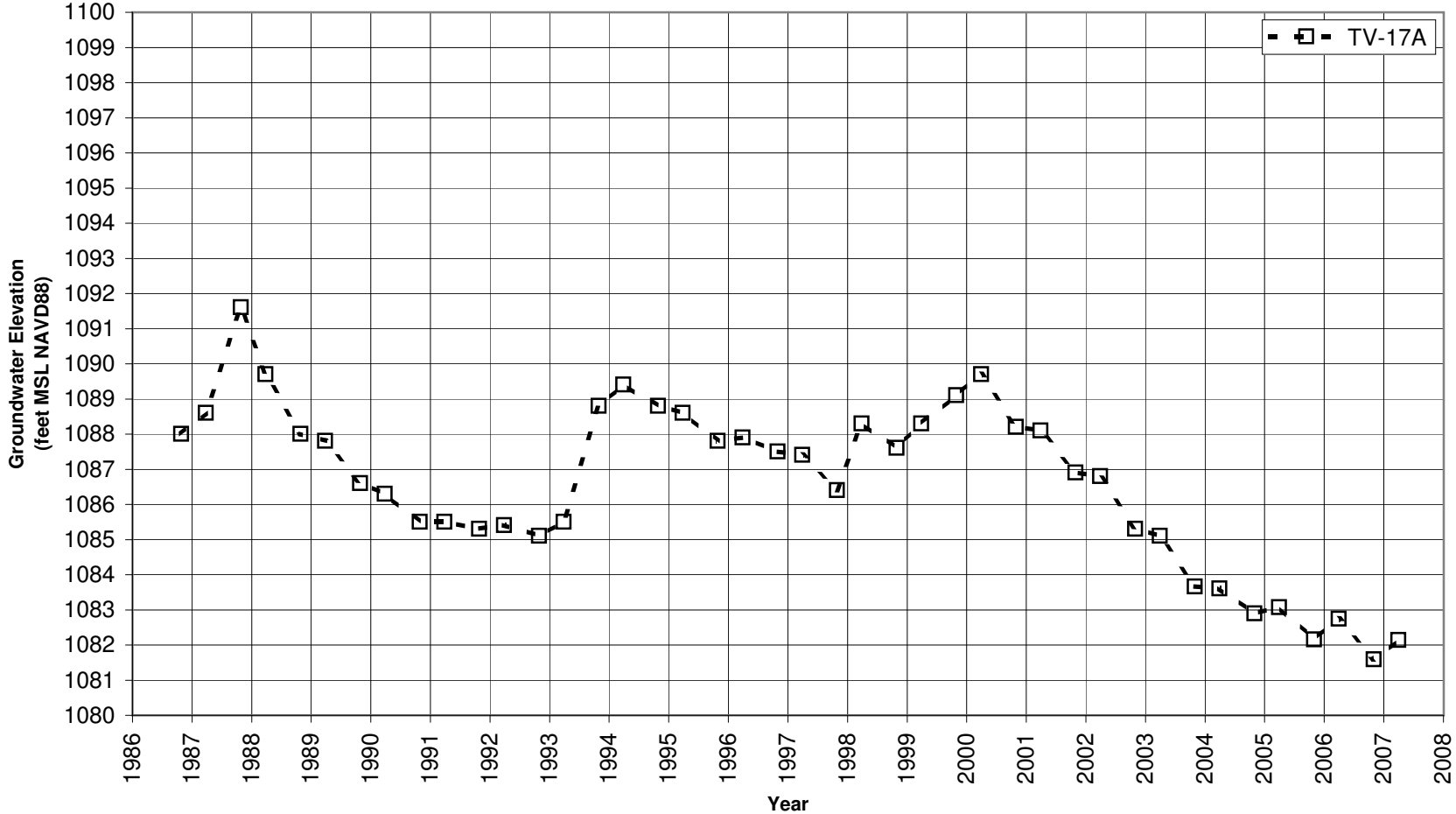


Figure 2-3e
15N-9E-30CCCD (TV-10), 15N-7E-36DDBB (TV-11), and 14N-8E-03ACAA (TV-12)
(Near Mead)
Groundwater Elevation

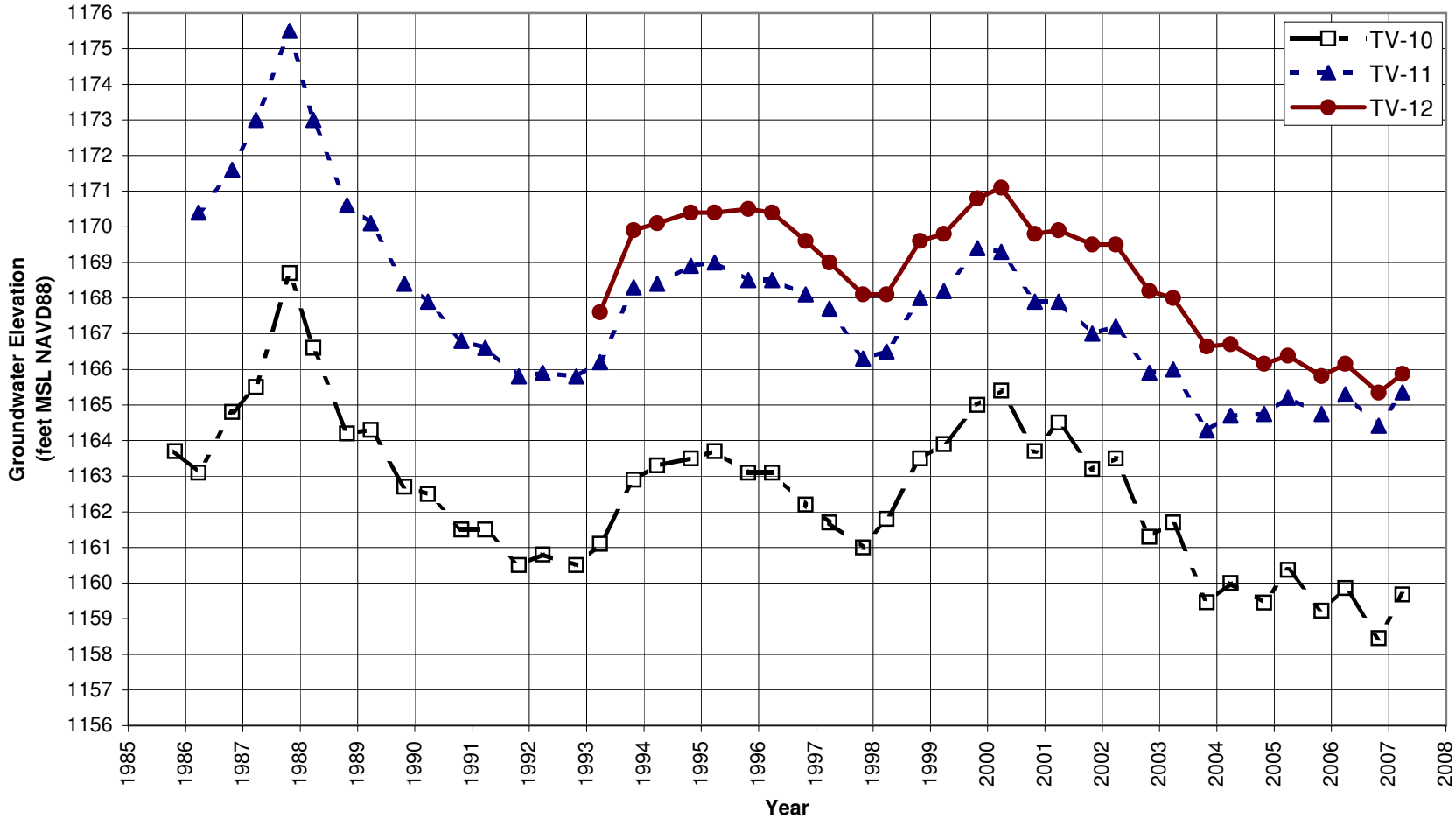


Figure 2-3f
15N-9E-22CO (UP-39) and 14N-9E-04BDBB (UP-40)
(Near Yutan)
Groundwater Elevation

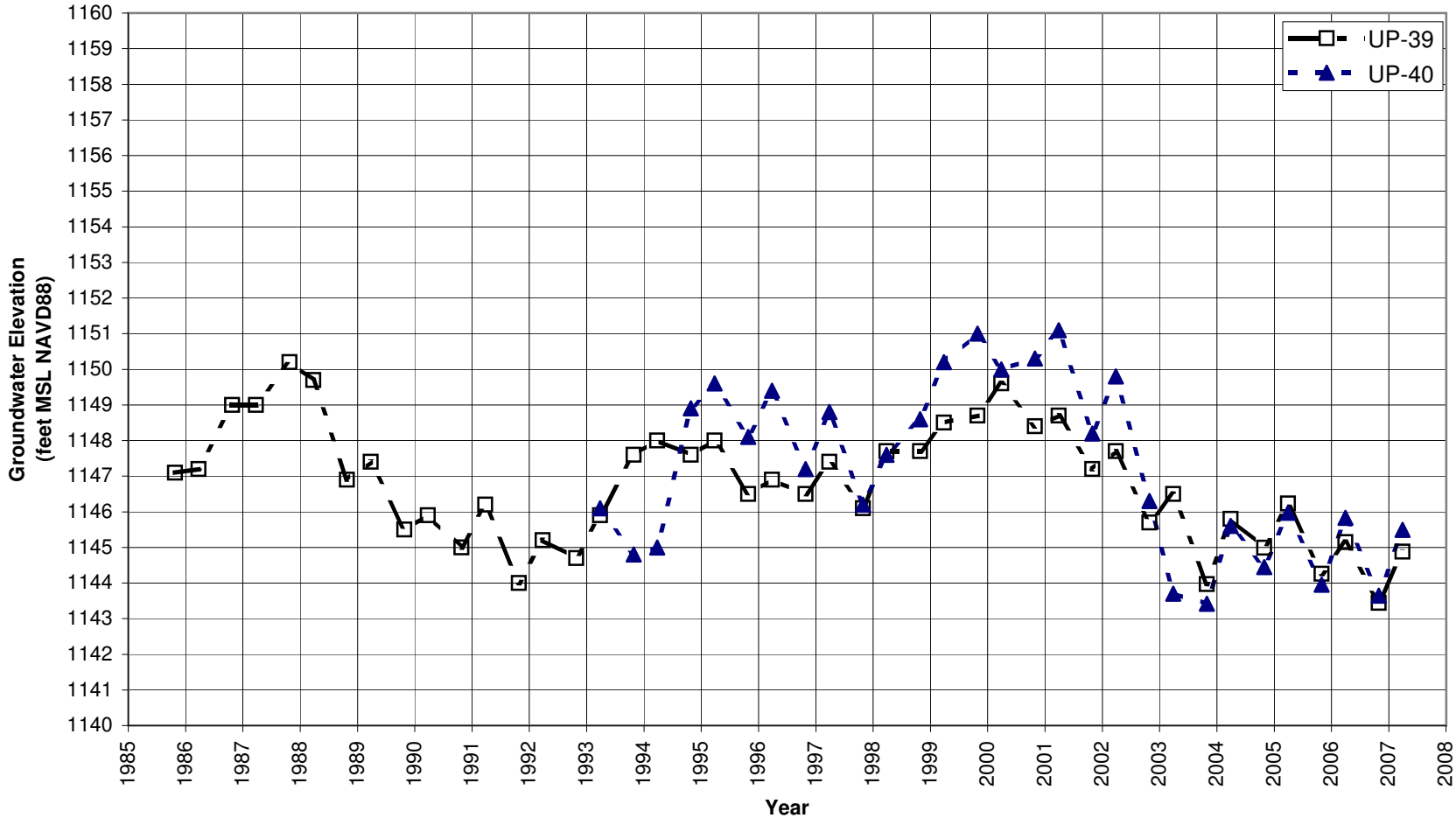


Figure 2-3g
14N8E24ACD2
(Near LL2)
Groundwater Elevation

Figure 2-3h
14N9E20DD1 (near LL4) and
14N9E32DD1 (near EWs 5-10)
Groundwater Elevation

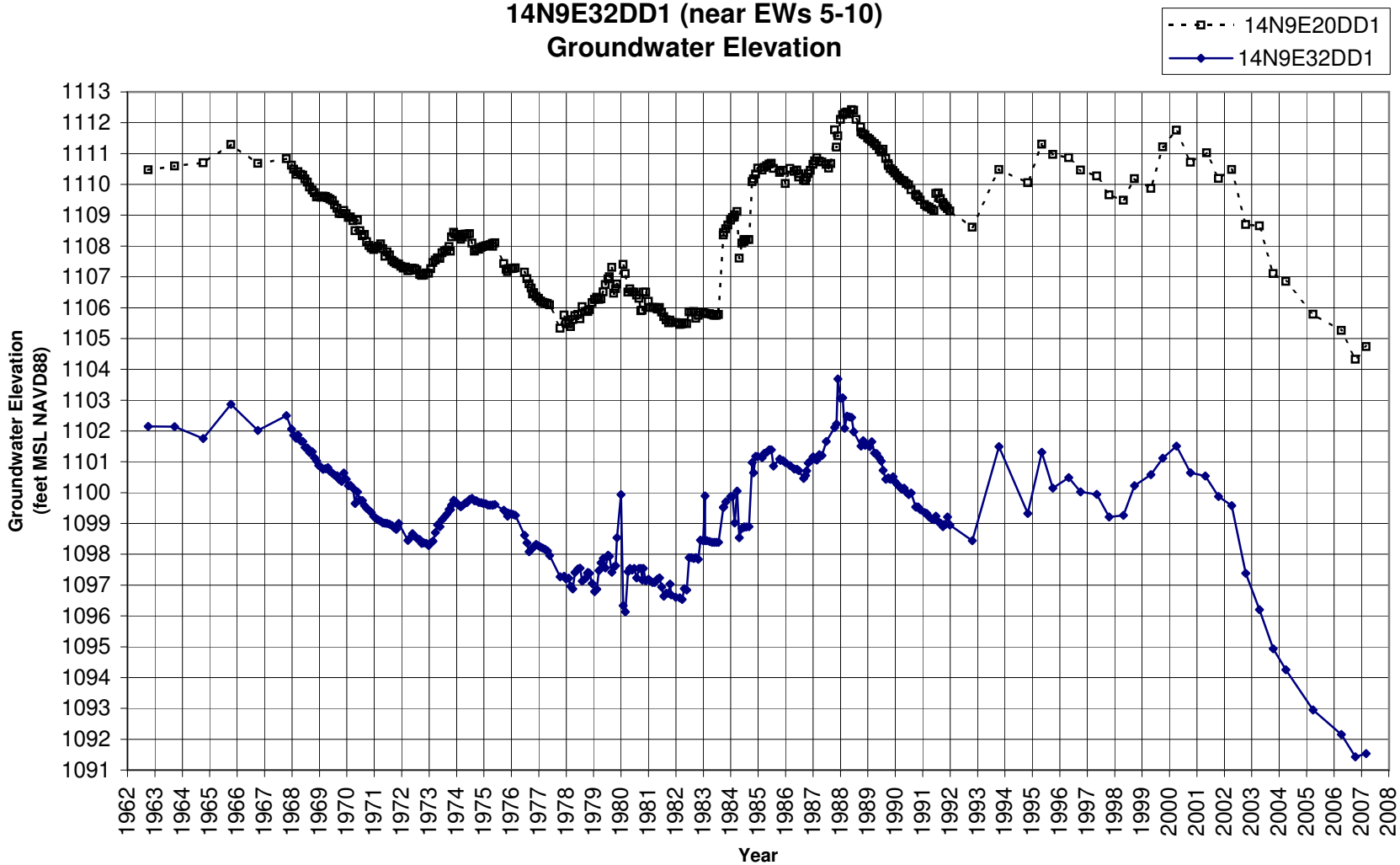
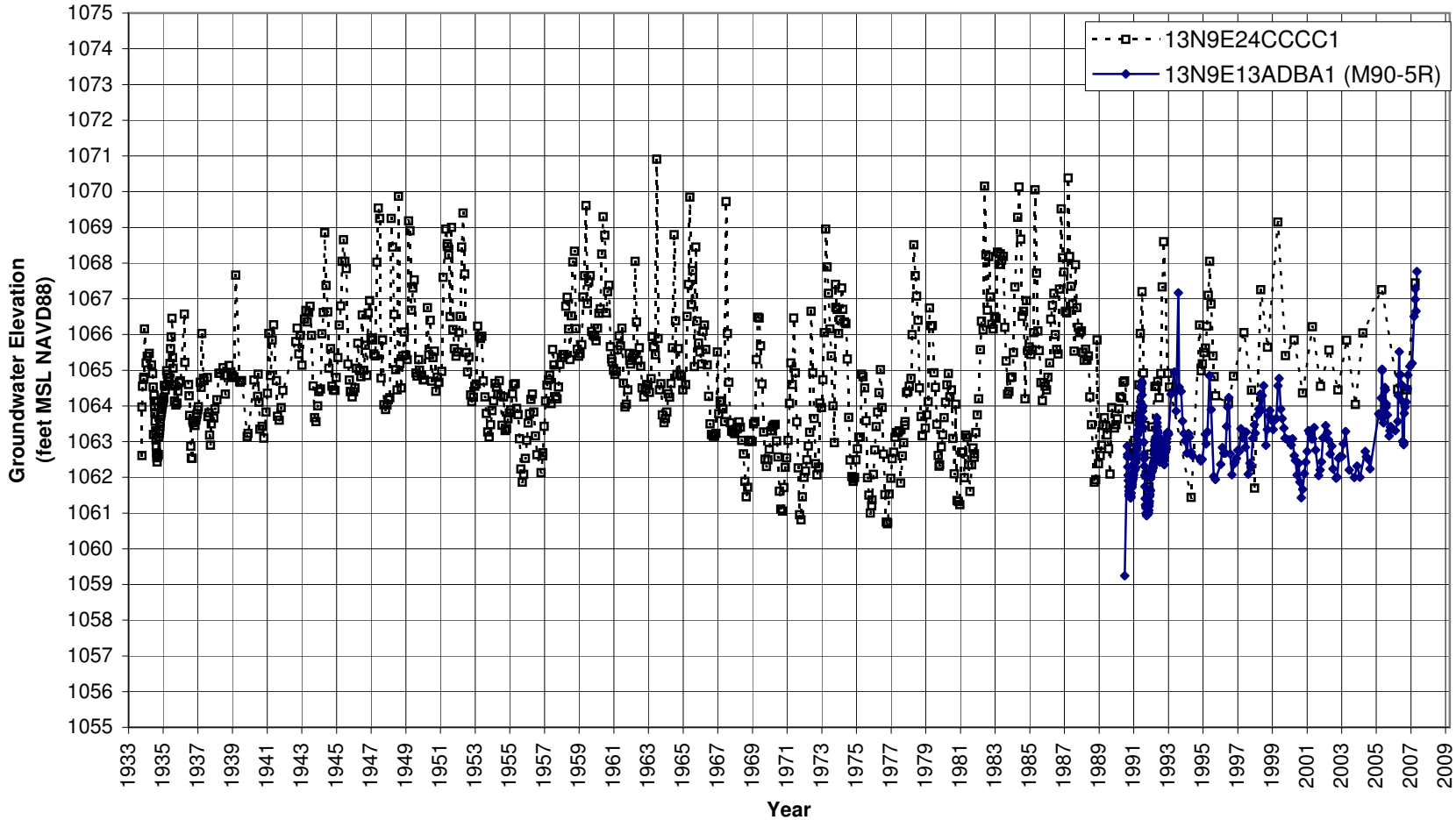
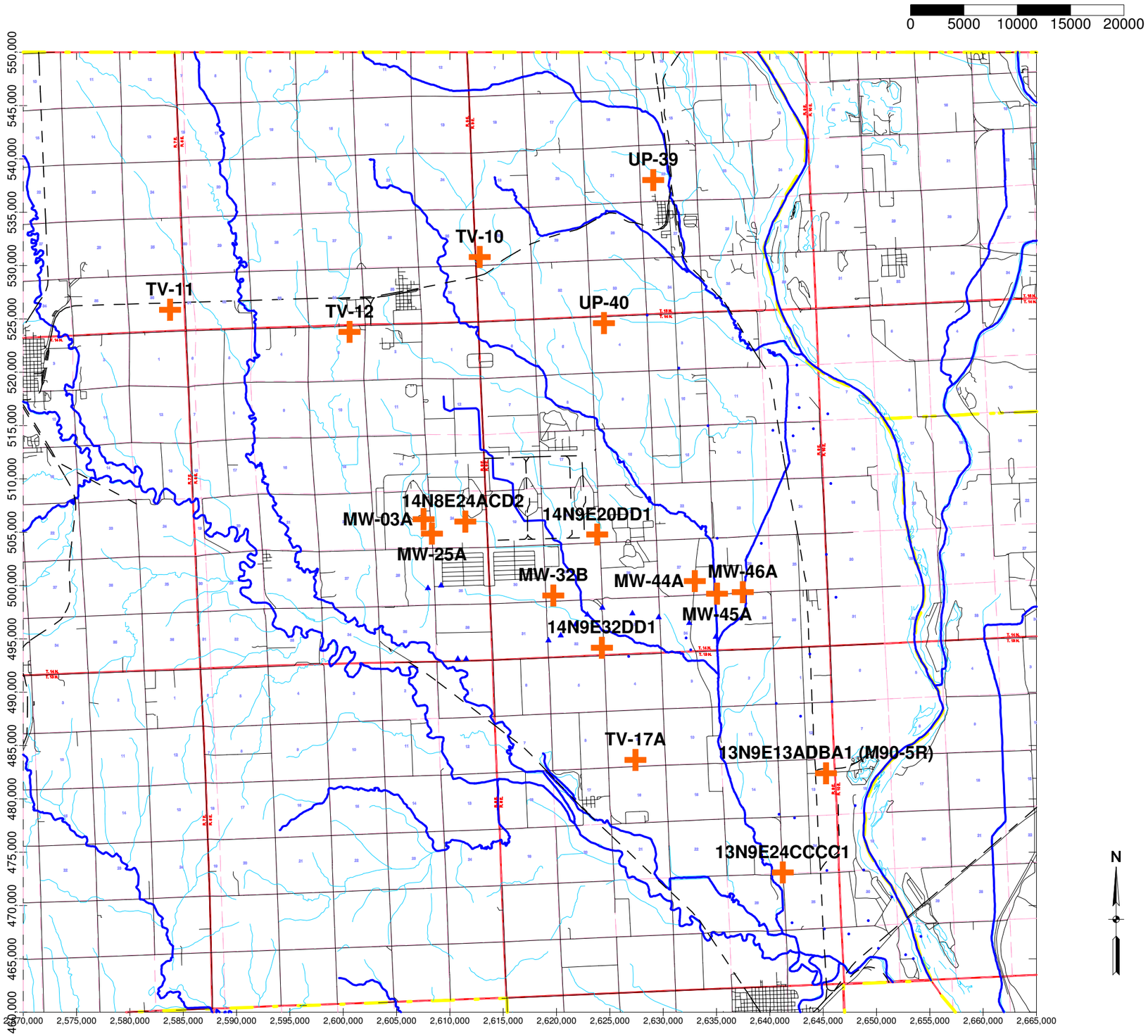


Figure 2-3i
13N9E24CCCC1 and 13N9E13ADBA1 (M90-5R)
(North of Ashland)
Groundwater Elevation





LEGEND

USACE Extraction Wells

Hydrograph Locations

N

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2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

U.S. Army Corps of Engineers

HYDROGRAPH LOCATIONS

Designed by:	M.E.W.
Drawn by:	M.E.W.
Checked by:	C.M.Z.
Submitted by:	L.A.T.
Scale:	As Indicated
Date:	July 2007
Fig. No.:	2-4
Figure Number:	2-4

Figure 2-5a
EW-4 Hantush-Jacob's Distance-Drawdown Analysis
OW-60, OW-61, and OW-62

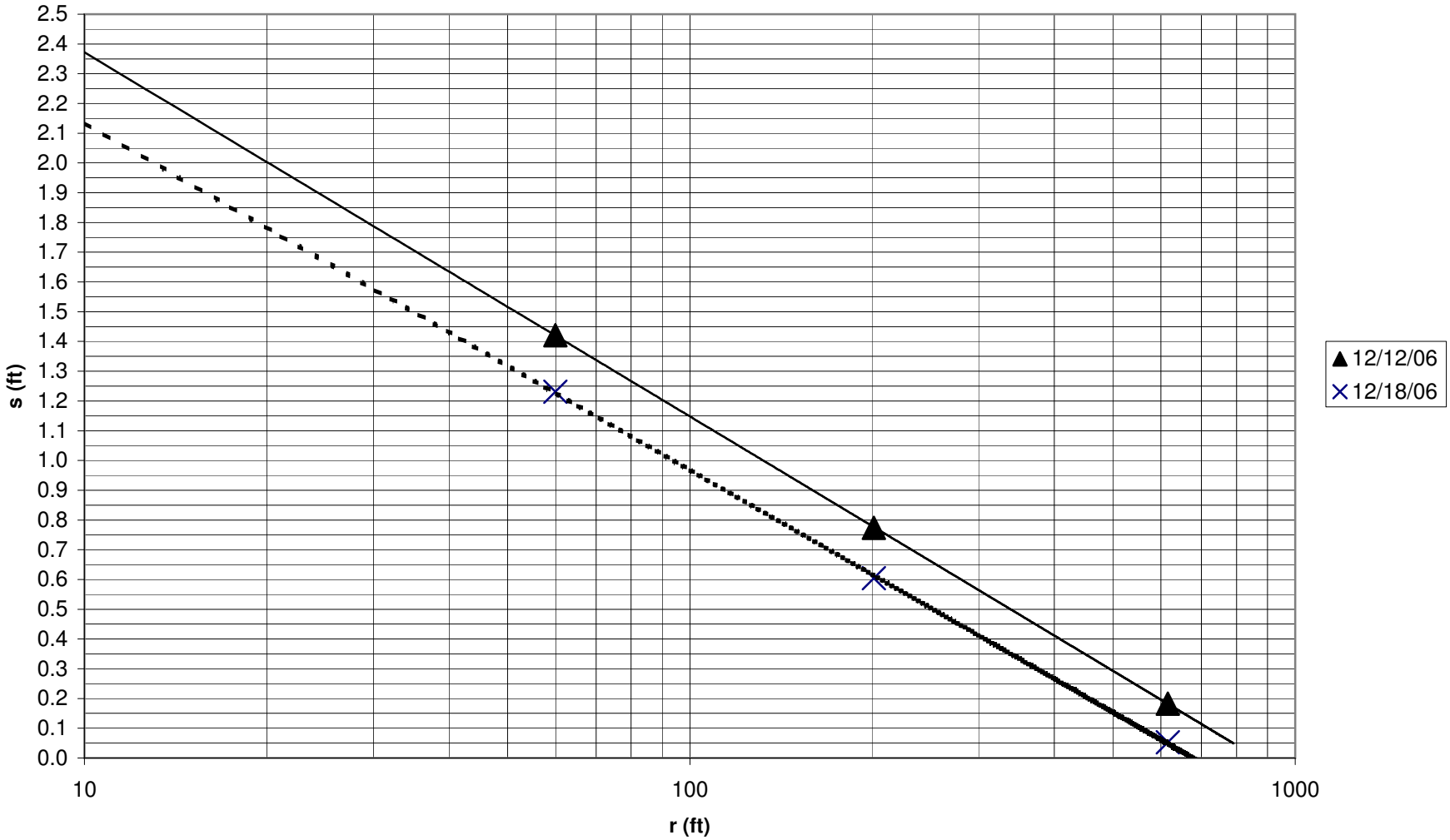


Figure 2-5b
EW-6 Hantush-Jacob's Distance-Drawdown Analysis
OW-66 and OW-67

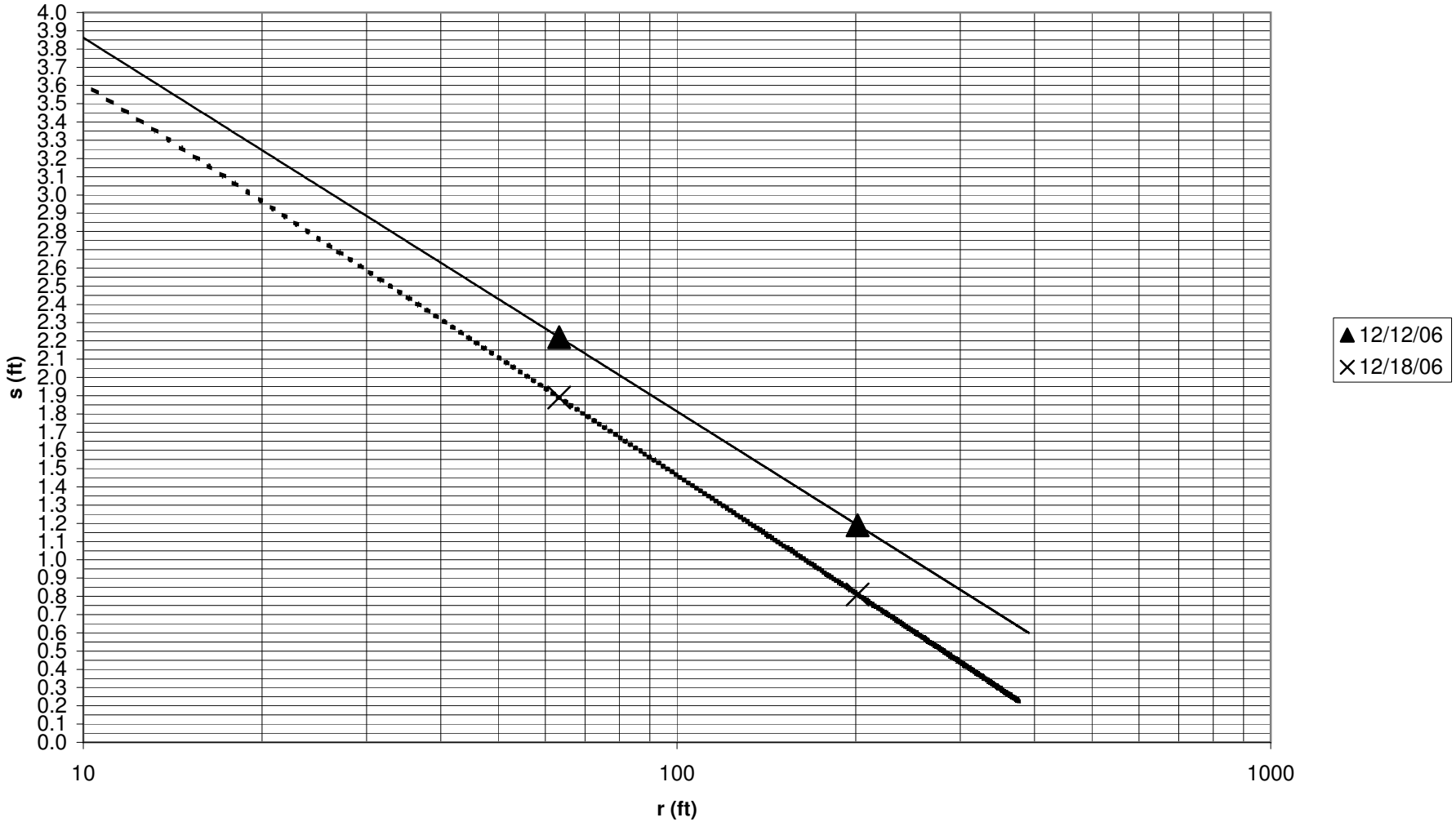


Figure 2-5c
EW-9 Hantush-Jacob's Distance-Drawdown Analysis
OW-72 and OW-73

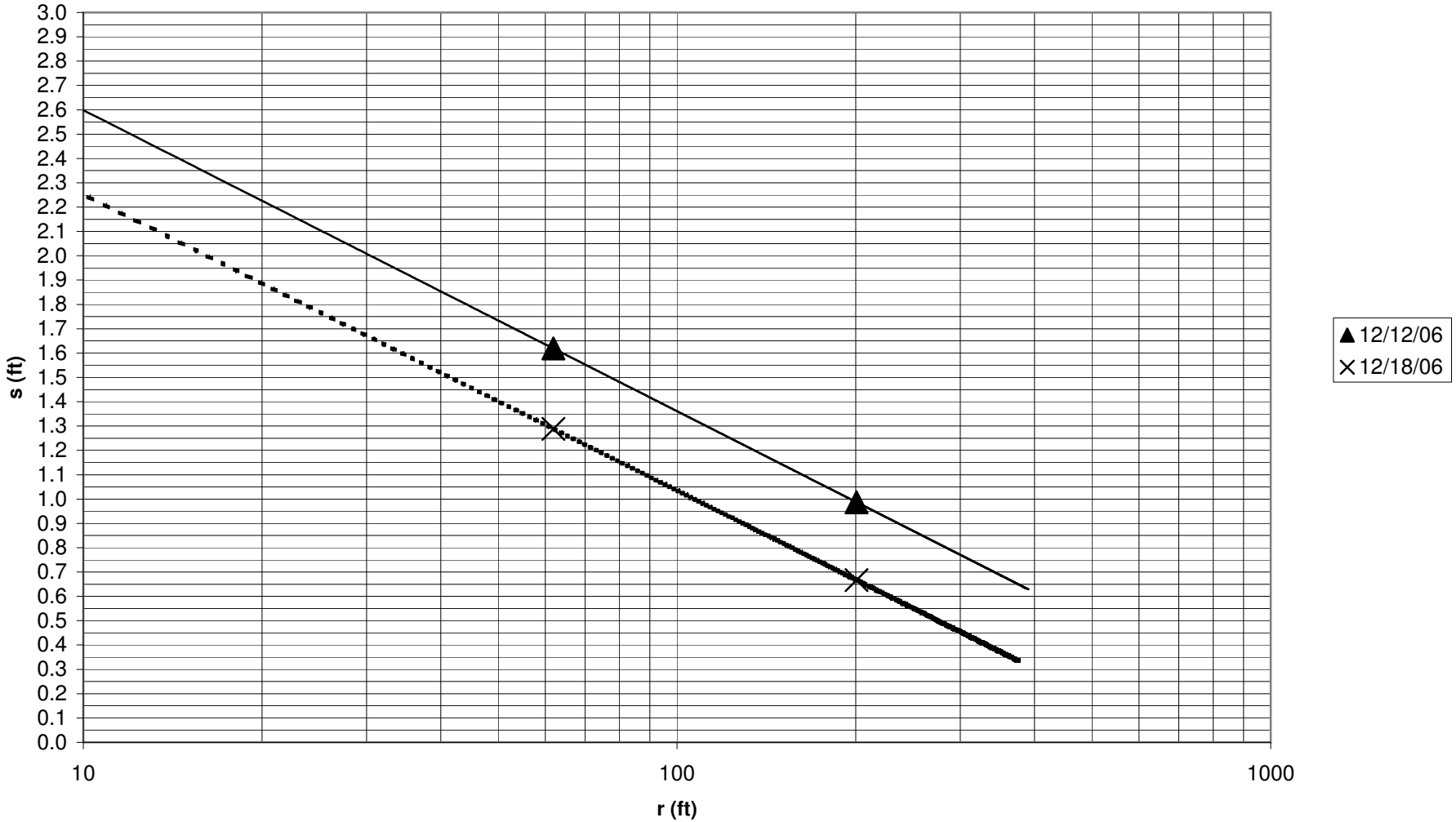
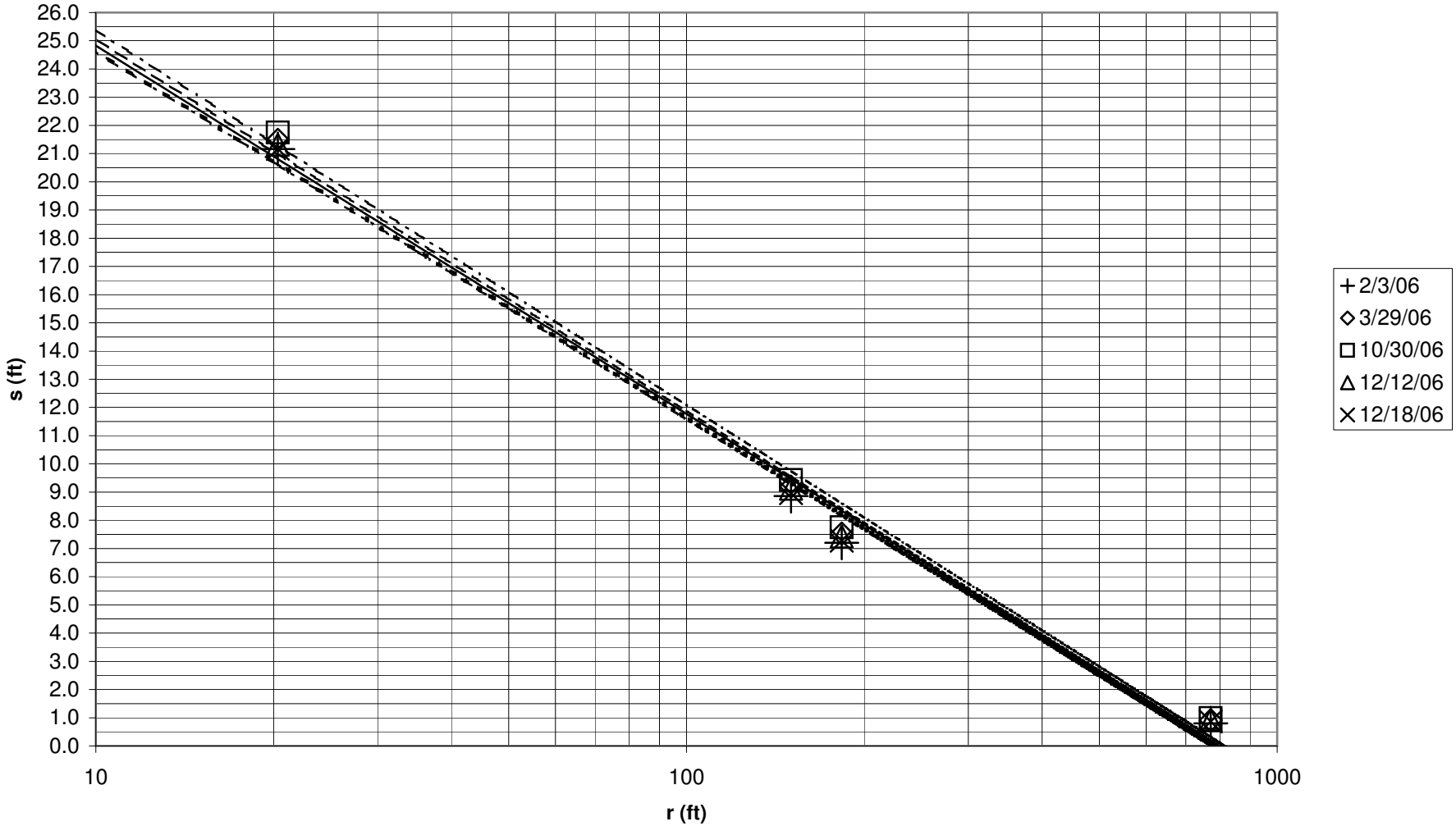
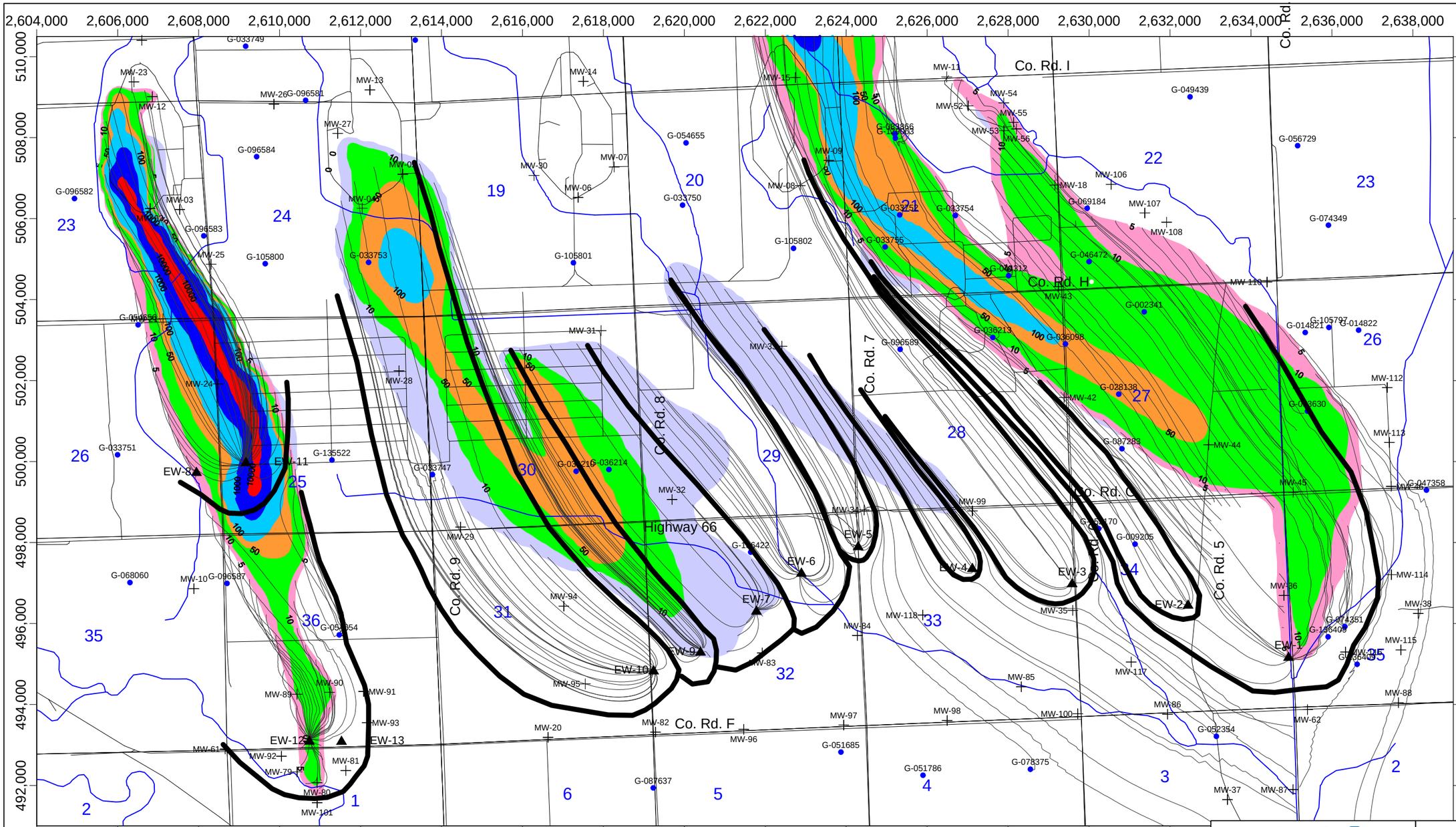


Figure 2-5d
EW-12 Hantush-Jacob's Distance-Drawdown Analysis
TH-EW-12, OW-52, OW-53, and MW-92A





LEGEND

- Extraction Well (EW-1)
- Irrigation Well
- Monitoring Well (MW-01)
- Predicted Particle Trace
- Predicted Capture Zone at December 2006 Pumping Rates (Except EW-11, Proposed Fall 2007 Pumping Rate = 600gpm)

TCE Isoconcentration Contours
- 5 µg/L
- 10 µg/L
- 50 µg/L
- 100 µg/L
- 1,000 µg/L
- 10,000 µg/L

RDX Isoconcentration Contours
- 2 µg/L
- 10 µg/L
- 50 µg/L
- 100 µg/L
- 1,000 µg/L

0' 500' 1,000' 1,500' 2,000' 2,500'

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KANSAS CITY, MISSOURI

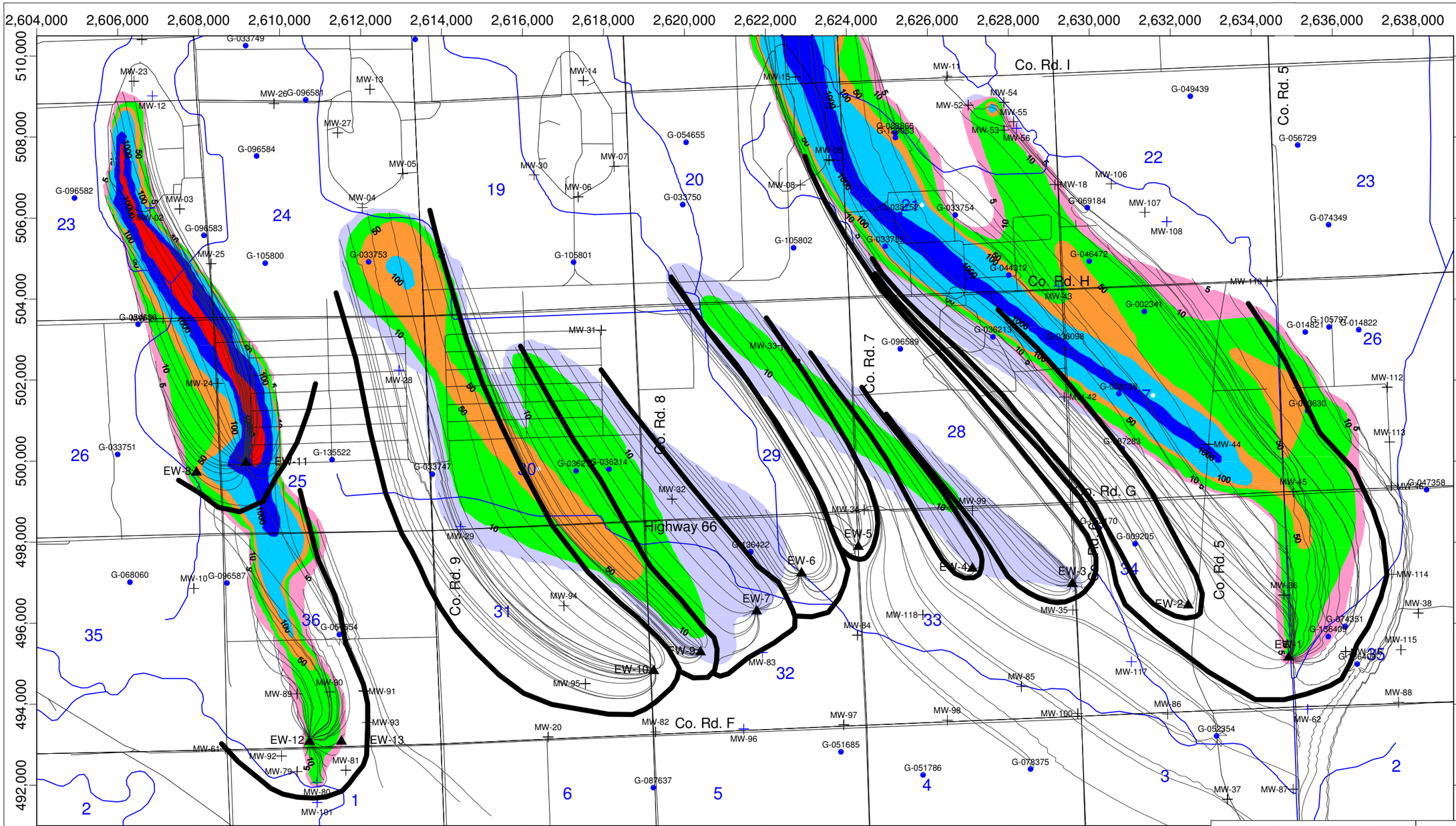
Designed by: M.E.W.
Drawn by: M.E.W.
Checked by: R.J.E.
Submitted by: L.A.T.

U.S. Army Corps of Engineers

2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

EW-1 THROUGH EW-12
LAYER 2 CAPTURE ZONES WITH SHALLOW TCE AND RDX

Scale: As Indicated
Date: JULY 2007
Fig. No.: 2-6
Figure Number: 2-6



LEGEND

- EW-1 Extraction Well
- Irrigation Well
- MW-01 Monitoring Well
- Predicted Particle Trace
- Predicted Capture Zone at December 2006 Pumping Rates (Except EW-11, Proposed Fall 2007 Pumping Rate = 600gpm)

TCE Isoconcentration Contours
- 5 µg/L
- 10 µg/L
- 50 µg/L
- 100 µg/L
- 1,000 µg/L
- 10,000 µg/L

RDX Isoconcentration Contours
- 2 µg/L
- 10 µg/L
- 50 µg/L
- 100 µg/L
- 1,000 µg/L

0' 500' 1,000' 1,500' 2,000' 2,500'

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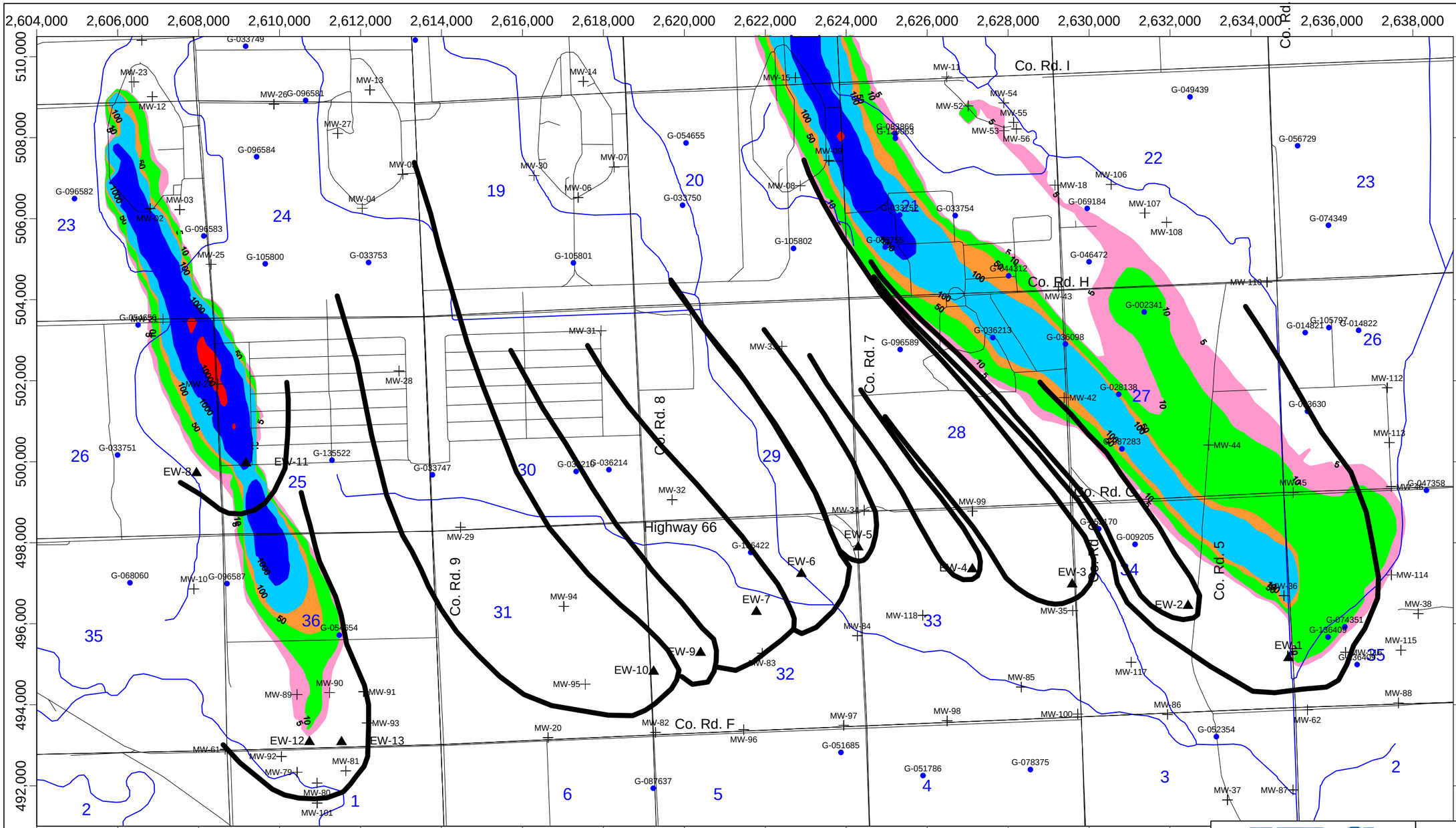
2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

U.S. Army Corps of Engineers

EW-1 THROUGH EW-12
LAYER 3 CAPTURE ZONES WITH INTERMEDIATE TCE AND RDX

Designed by:	M.E.W.
Drawn by:	M.E.W.
Checked by:	R.J.E.
Submitted by:	L.A.T.
Scale:	As Indicated
Date:	JULY 2007
Fig. No.:	2-7
Figure Number:	2-7



LEGEND

- Extraction Well (EW-1)
- Irrigation Well
- Monitoring Well (MW-01)
- Predicted Capture Zone at December 2006 Pumping Rates (Except EW-11, Proposed Fall 2007 Pumping Rate = 600gpm)

TCE Isoconcentration Contours

- 5 µg/L
- 10 µg/L
- 50 µg/L
- 100 µg/L
- 1,000 µg/L
- 10,000 µg/L

0' 500' 1,000' 1,500' 2,000' 2,500'

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CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

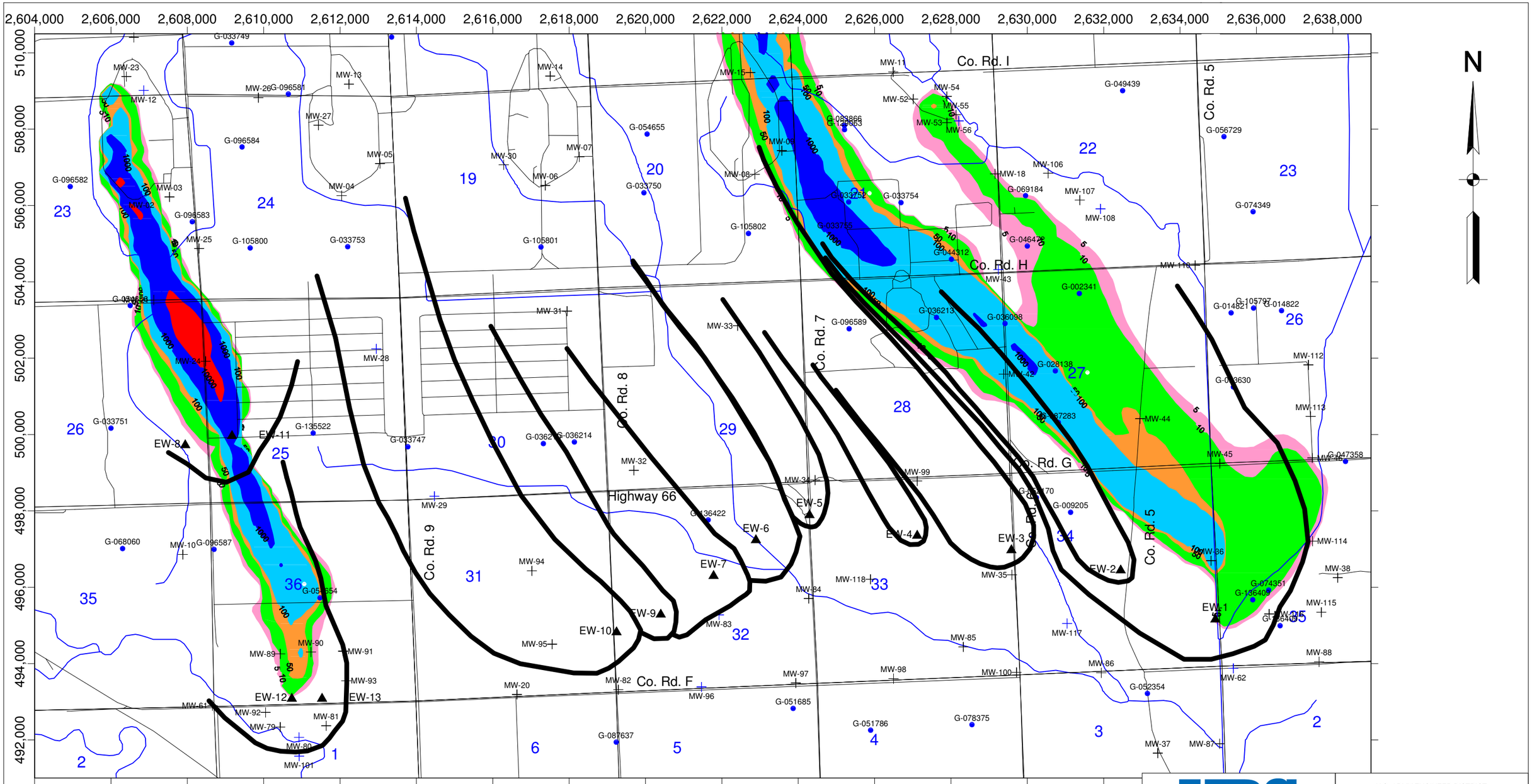
Designed by: M.E.W.
Drawn by: M.E.W.
Checked by: R.J.E.
Submitted by: L.A.T.

2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

U.S. Army Corps of Engineers

TRANSPORT SIMULATION SHALLOW TCE IN 2012

Scale: As Indicated
Date: JULY 2007
Fig. No.: 2-8
Figure Number: 2-8



LEGEND

- EW-1 Extraction Well
- Irrigation Well
- MW-01 Monitoring Well
- Predicted Capture Zone at December 2006 Pumping Rates (Except EW-11, Proposed Fall 2007 Pumping Rate = 600gpm)

TCE Isoconcentration Contours

- 5 µg/L
- 10 µg/L
- 50 µg/L
- 100 µg/L
- 1,000 µg/L
- 10,000 µg/L

0' 500' 1,000' 1,500' 2,000' 2,500'

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CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

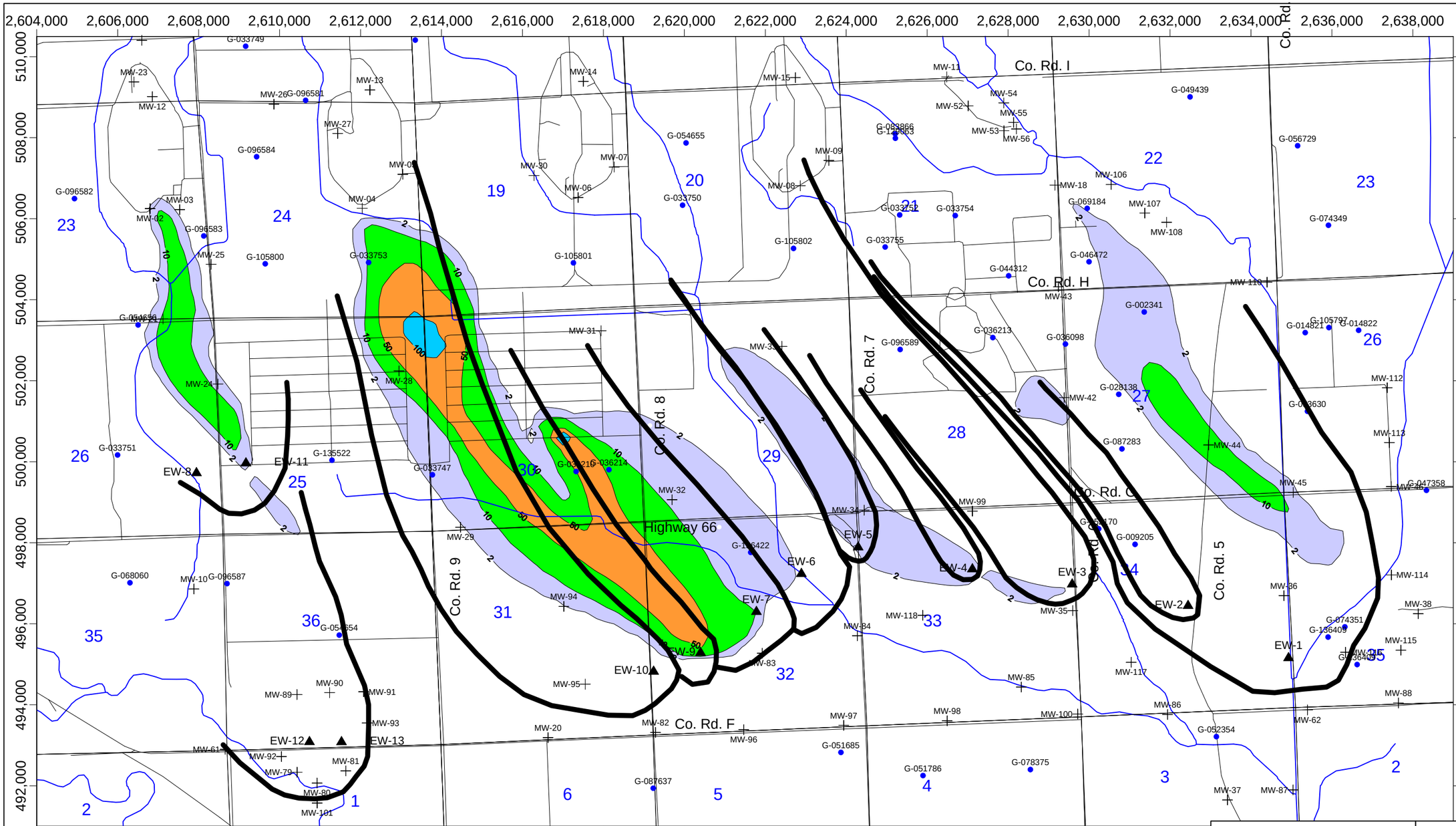
Designed by: M.E.W.
Drawn by: M.E.W.
Checked by: R.J.E.
Submitted by: L.A.T.

U.S. Army Corps of Engineers

2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

TRANSPORT SIMULATION INTERMEDIATE TCE IN 2012

Scale: As Indicated
Date: JULY 2007
Fig. No.: 2-9
Figure Number: 2-9



LEGEND

- EW-1 Extraction Well
- Irrigation Well
- MW-01 Monitoring Well
- Predicted Capture Zone at December 2006 Pumping Rates (Except EW-11, Proposed Fall 2007 Pumping Rate = 600gpm)

RDX Isoconcentration Contours

- 2 µg/L
- 10 µg/L
- 50 µg/L
- 100 µg/L
- 1,000 µg/L

0' 500' 1,000' 1,500' 2,000' 2,500'

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KANSAS CITY, MISSOURI

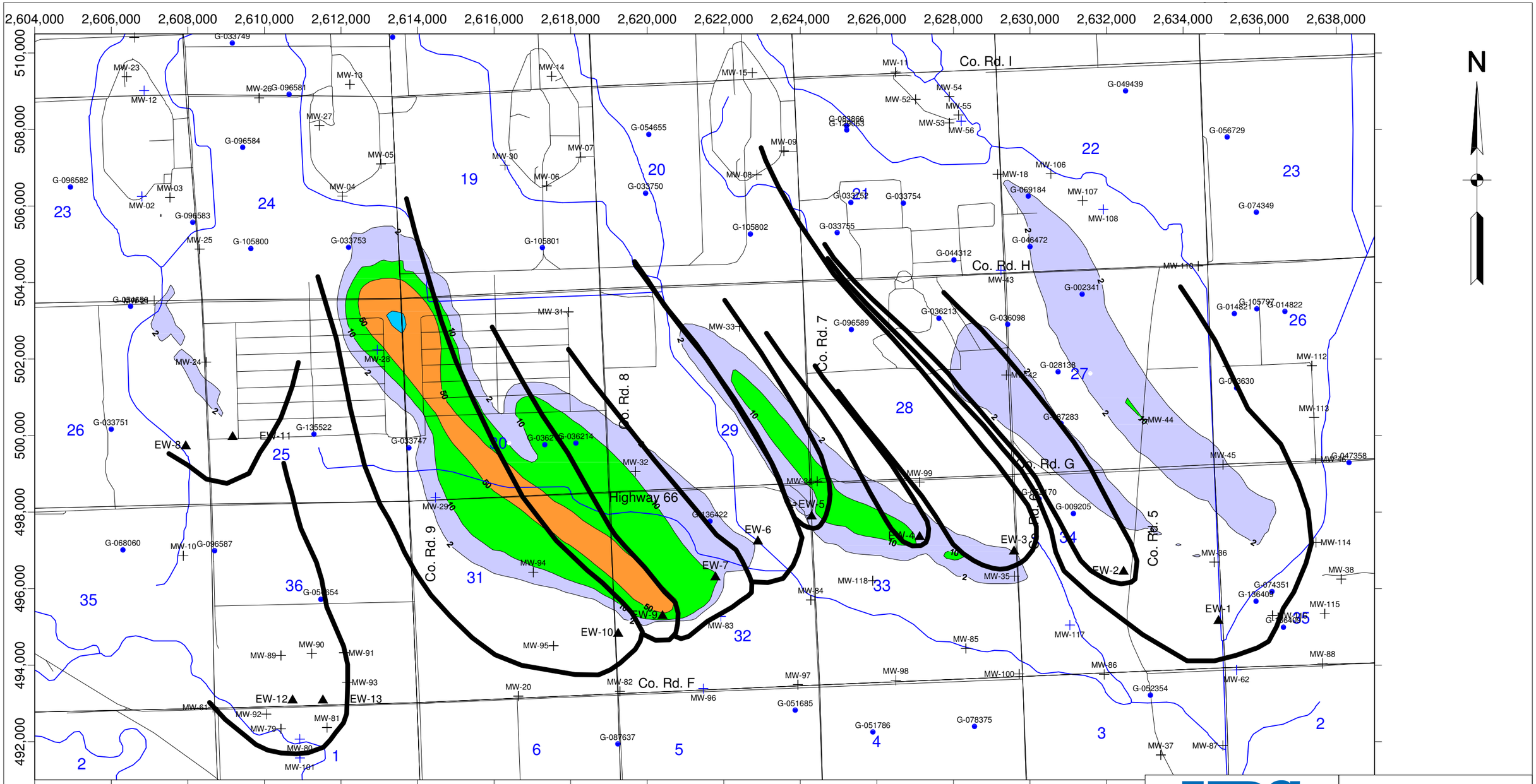
Designed by: M.E.W.
Drawn by: M.E.W.
Checked by: R.J.E.
Submitted by: L.A.T.

U.S. Army Corps of Engineers

2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

TRANSPORT SIMULATION SHALLOW RDX IN 2012

Scale: As Indicated
Date: JULY 2007
Fig. No.: 2-10
Figure Number: 2-10



LEGEND

- Extraction Well (EW-1)
- Irrigation Well
- Monitoring Well (MW-01)
- Predicted Capture Zone at December 2006 Pumping Rates (Except EW-11, Proposed Fall 2007 Pumping Rate = 600gpm)

RDX Isoconcentration Contours

- 2 µg/L
- 10 µg/L
- 50 µg/L
- 100 µg/L
- 1,000 µg/L

0' 500' 1,000' 1,500' 2,000' 2,500'

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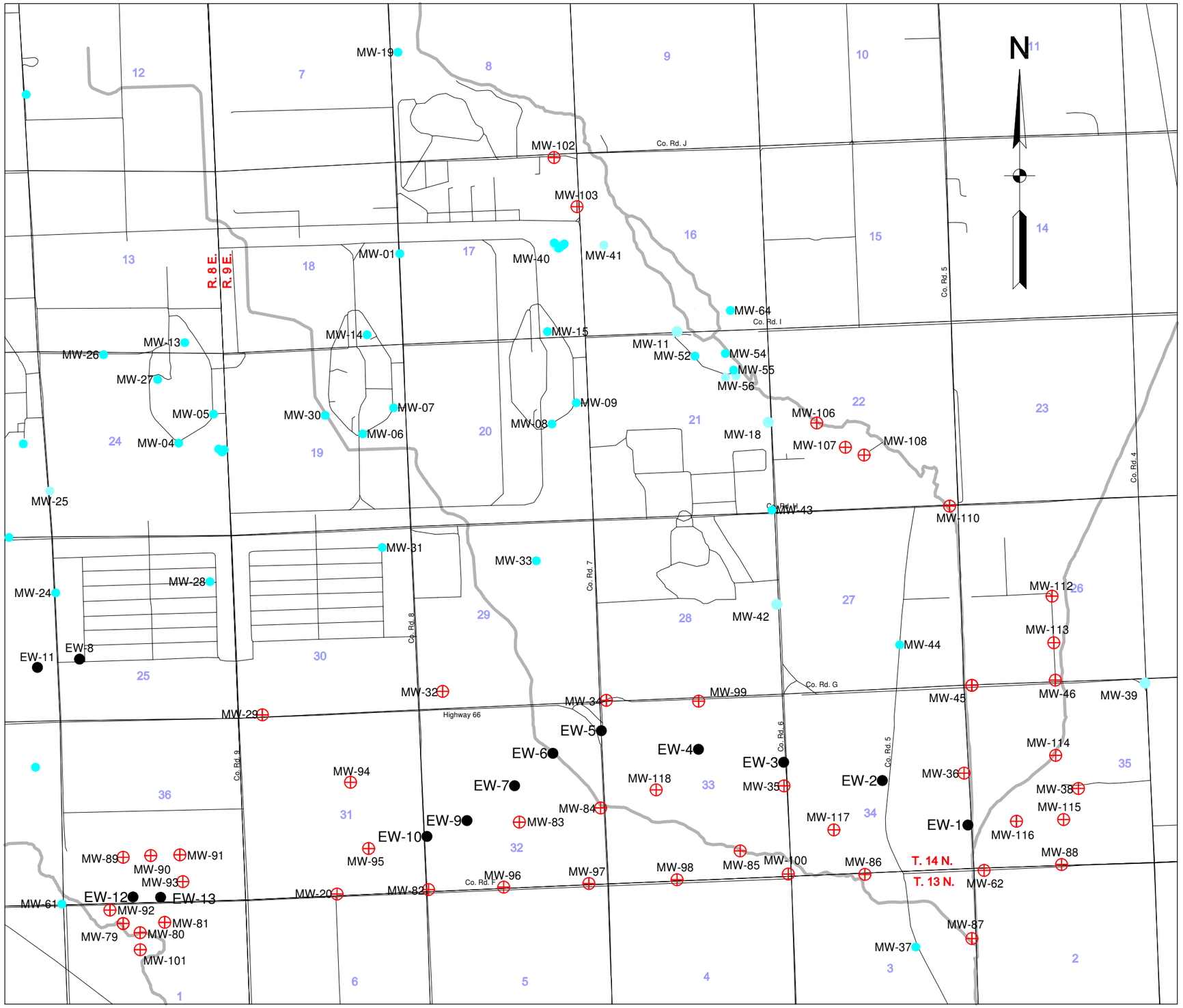
Designed by: M.E.W.	2006 CONTAINMENT EVALUATION OPERABLE UNIT NO. 2 FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE
Drawn by: M.E.W.	U.S. Army Corps of Engineers — **TRANSPORT SIMULATION INTERMEDIATE RDX IN 2012**
Checked by: R.J.E.	Scale: As Indicated — Figure Number: **2-11**
Submitted by: L.A.T.	Date: JULY 2007 — Fig. No.: **2-11**



LEGEND

- MONITORING WELL CLUSTER (INCLUDED IN EVALUATION)
- EXTRACTION WELL
- MONITORING WELL CLUSTER

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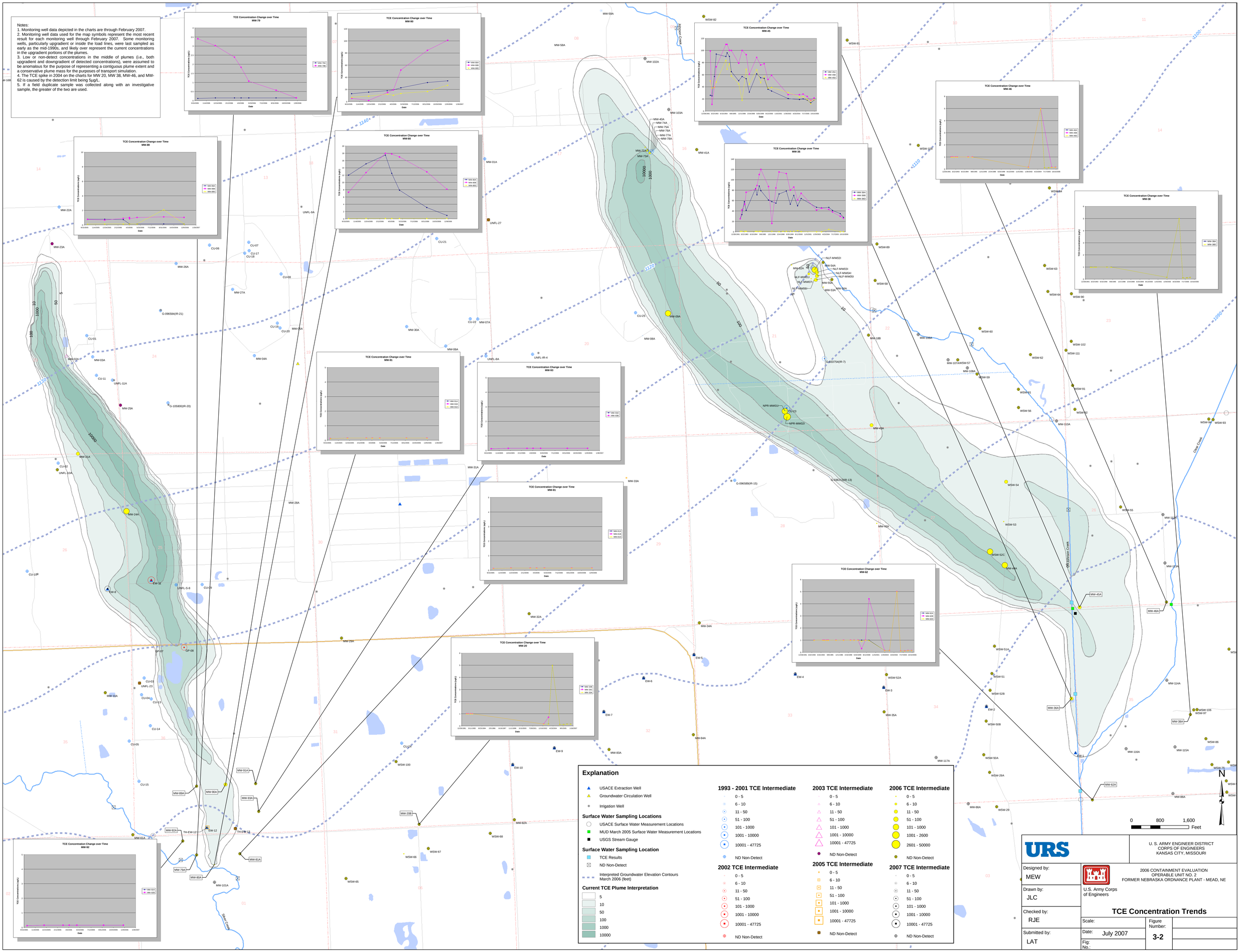
2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FMR. NEBRASKA ORDNANCE PLANT - MEAD, NE

U.S. Army Corps of Engineers

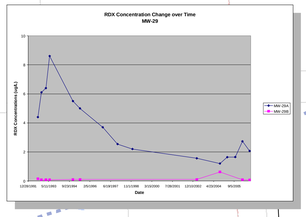
GROUNDWATER MONITORING WELL CLUSTERS EVALUATED

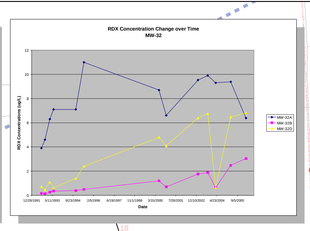
Designed by:	M.E.W.
Drawn by:	M.E.W.
Checked by:	L.A.T.
Submitted by:	L.A.T.
Scale:	As Indicated
Date:	JULY 2007
Fig. No.:	3-1
Figure Number:	3-1

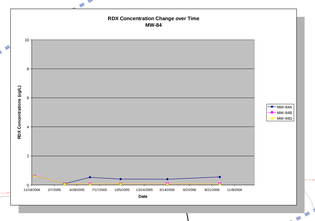
Notes:
1. Monitoring well data depicted in the charts are through February 2007.
2. Monitoring well data used for the map symbols represent the most recent result for each monitoring well through February 2007. Some monitoring wells, particularly upgradient or inside the load lines, were last sampled as early as the mid-1990s, and likely over represent the current concentrations in the upgradient portions of the plumes.
3. Low or non-detect concentrations in the middle of plumes (i.e., both upgradient and downgradient of detected concentrations), were assumed to be anomalous for the purpose of representing a contiguous plume extent and a conservative plume mass for the purposes of transport simulation.
4. The TCE spike in 2004 on the charts for MW 20, MW 38, MW-46, and MW-62 is caused by the detection limit being 5µg/L.
5. If a field duplicate sample was collected along with an investigative sample, the greater of the two are used.

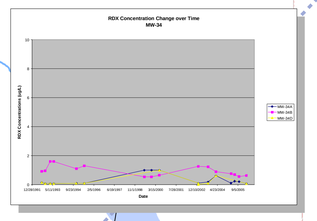


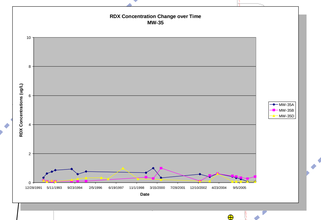
Notes:
1. Monitoring well data depicted in the charts are through February 2007.
2. Monitoring well data used for the map symbols represent the most recent result for each monitoring well through February 2007. Some monitoring wells, particularly upgradient or inside the load lines, were last sampled as early as the mid-1990s, and likely over represent the current concentrations in the upgradient portions of the plumes.
3. Low or non-detect concentrations in the middle of plumes (i.e., both upgradient and downgradient of detected concentrations), were assumed to be anomalous for the purpose of representing a contiguous plume extent and a conservative plume mass for the purposes of transport simulation.
4. If a field duplicate sample was collected along with an investigative sample, the greater of the two are used.

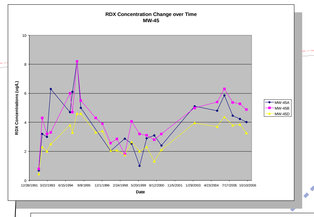


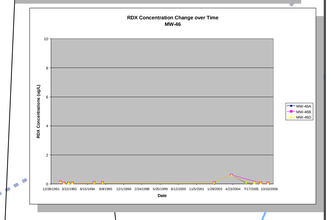


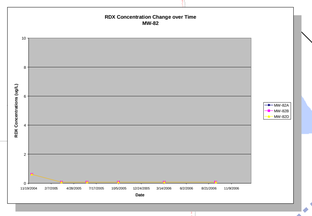


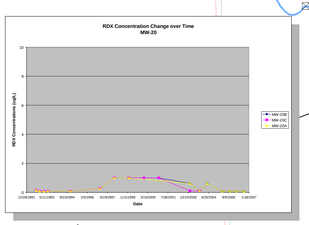


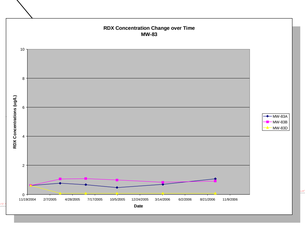


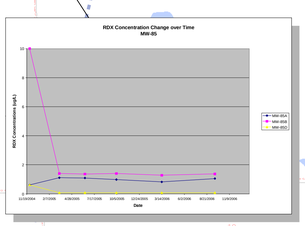












Explanation

- USACE Extraction Well
- Groundwater Circulation Well
- Irrigation Well
- Interpreted Groundwater Elevation Contours March 2006 (feet)

Current RDX Plume Interpretation

- 2
- 10
- 50
- 100

1995-2002 RDX Intermediate	2003 RDX Intermediate	2006 RDX Intermediate	2007 RDX Intermediate
0 - 1	0 - 1	0 - 1	0 - 1
1 - 2	1 - 2	1 - 2	1 - 2
2 - 10	2 - 10	2 - 10	2 - 10
10 - 50	10 - 50	10 - 50	11 - 50
50 - 100	50 - 100	50 - 100	51 - 100
100 - 1000	100 - 1000	100 - 1000	101 - 1000
ND Non-Detect	ND Non-Detect	ND Non-Detect	ND Non-Detect

N

0 800 1,600 Feet

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KANSAS CITY, MISSOURI

Designed by: MEW
Drawn by: JLC
Checked by: RJE
Submitted by: LAT

U.S. Army Corps of Engineers

2006 CONTAINMENT EVALUATION
OPERABLE UNIT NO. 2
FORMER NEBRASKA ORDNANCE PLANT - MEAD, NE

RDX Concentration Trends

Scale:
Date: July 2007
Fig: No.:
Figure Number: 3-3