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DOE/RL-95-101, Rev. 1

An Analysis of Potential Impacts to the Groundwater Monitoring Networks in the Central Plateau

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EXECUTIVE SUMMARY

This report presents the results of an evaluation of potential impacts to the four groundwater monitoring projects operating in the Central Plateau of the Hanford Site. It specifically fulfills Milestone M-15-81A of the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1994a). Milestone M-15-81A specifies the evaluation of the potential impacts to the groundwater monitoring well systems in the Central Plateau caused by the following activities: reduction of liquids discharged to soil, proposed and operational liquid treatment facilities, and proposed pump-and-treat systems. For this report, an "impact" is defined as a restriction of the ability to draw samples from a well and/or a reduction of the ability of a monitoring well to meet its intended purpose (such as the detection of contaminant seepage from a facility).

Approximately 20 percent (74 wells) of the groundwater monitoring wells potentially will experience sampling problems by the year 2005 due to the declining water table in the Central Plateau. Reduction of discharges to the B Pond complex and operation of the Treated Effluent Disposal Facility will cause four additional wells to potentially experience sampling problems. Approximately 90 monitoring wells (35 of which are *Resource Conservation and Recovery Act of 1976* [RCRA] wells) will be potentially affected by the operation of pump-and-treat systems in the 200 West Area. Most of the impacts will be caused by local changes to groundwater flow directions that will potentially reduce the ability of the RCRA well network to monitor a limited number of RCRA facilities.

As groundwater remediation activities have been continued and expanded in the 200 Areas, limited problem areas have been identified where the future ability of each monitoring program to fulfill its mission may be impaired. It is recommended that a compliance evaluation be made of the regulatory impacts of the technical evaluations contained in this report. This evaluation should specifically determine whether any of the impacts identified in this report affect the compliance status of each existing RCRA monitoring unit. Appropriate actions, if any, should also be developed. Finally, it is recommended that a coordinated evaluation of the scope and magnitude of each monitoring program be conducted against its implementing regulation, the changing Hanford Site mission, and potential overlap with other programs.

ACRONYMS

CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	*Code of Federal Regulations*
DOE	U.S. Department of Energy
ERA	expedited response action
ETF	effluent treatment facility
FS	feasibility study
FY	fiscal year
PFP	Plutonium Finishing Plant
PUREX	Plutonium/Uranium Extraction
RCRA	*Resource Conservation and Recovery Act of 1976*
RI	remedial investigation
ROD	record of decision
SALDS	State Approved Land Disposal Site
TEDF	Treated Effluent Disposal Facility
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
WAC	*Washington Administrative Code*

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1.0 INTRODUCTION

This report fulfills Milestone M-15-81A of the *Tentative Agreement on Environmental Restoration Refocusing Tri-Party Agreement Negotiations* (Ecology et al. 1994b). That agreement is a follow-on to Amendment 4 of the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1994a) and is intended to bring the Tri-Party Agreement in line with public values. Milestone M-15-81A is to provide information on the impacts of various groundwater-related projects to the monitoring networks within the Central Plateau. The milestone specifically requests recommendations for actions to coordinate regulatory compliance decisions across *Resource Conservation and Recovery Act of 1976* (RCRA) and *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) groundwater monitoring projects. The date for submittal is scheduled as no later than December 31, 1995.

1.1 BACKGROUND

Four separate groundwater monitoring projects operate on the Central Plateau. Table 1-1 provides the number of monitoring wells sampled and shared by each program. Each program traces its origin to either federal law and/or U.S. Department of Energy (DOE) orders. Each has both unique features associated with its purpose, as defined by its implementing regulations/order, and overlapping features with the other projects. Purpose, scope, and monitoring details are found in other documents (DOE-RL 1994a). The four monitoring projects are as follows:

- RCRA Groundwater Monitoring Program
- Operational Groundwater Program (Operational)
- CERCLA
- Groundwater Surveillance Project (Sitewide).

The RCRA Groundwater Monitoring Program at Hanford implements the groundwater protection provisions of Title 40, *Code of Federal Regulations* (CFR) Part 264 Subpart F for final status requirements; 40 CFR 265 Subpart F for interim status requirements, *Washington Administrative Code* (WAC) Chapter 173-303; and other applicable state laws. The intent of these requirements is to determine whether groundwater quality has been impacted by operations of a RCRA facility and to determine the nature and extent of that contamination, if any. CERCLA groundwater actions are conducted in accordance with the CERCLA process established in 40 CFR 300, the "National Oil and Hazardous Substances Contingency Plan." Groundwater monitoring and related site characterization for operable units are treated separately to allow for the differences between the more localized contaminants in the soil column at the sources and the more widespread distribution of groundwater contaminant plumes that have resulted from one or more individual source. CERCLA monitoring wells are located and sampled in accordance with CERCLA decision documents (e.g., remedial investigation [RI]/feasibility studies [FS], expedited response actions [ERA], and records of decision [ROD])

to define the nature and extent of the contaminant plumes or to monitor the performance of remedial measures.

The Operational Groundwater Program implements the "near-field" or facility monitoring requirements of DOE Orders 5820.2A, 5400.1, and 5400.5, as well as monitoring requirements specified in Consent Order No. DE 91NM-177 (Ecology 1991). The current purposes of the Operational Groundwater Program are to (1) document compliance with state and federal groundwater quality standards and monitoring requirements for facilities not yet covered by state permit, RCRA, or CERCLA monitoring; (2) provide an early warning of unusual occurrences and trends that may be associated with those facilities; and (3) coordinate groundwater activities conducted by the Hanford Site maintenance and operations contractor.

The Groundwater Surveillance Project provides an integrated, sitewide assessment of groundwater quality of the Hanford Site and an assessment of potential offsite impacts by DOE operations. The Groundwater Surveillance Project helps meet objectives stated in DOE Order 5400.1 for an environmental surveillance program, but its focus is on the "far-field" evaluation as opposed to the "near-field" evaluations of the RCRA and Operational Groundwater Projects.

Figures 1-1 through 1-4 show the locations of wells sampled by each program in the Central Plateau for 1994. Appendix A presents a listing of each well sampled and the program using the sampling results.

The change of the Hanford Site mission from production of nuclear materials to cleanup, waste management, and environmental technology development has caused significant changes to the Hanford groundwater system. Potentially significant changes in the rate of movement of groundwater (and contaminants) have resulted from commitments to cease the discharge of contaminated liquids to the soil column and to implement treatment prior to discharge for those that cannot be presently eliminated. Milestone M-17-00 and Consent Order No. DE 91NM-177 identify each effluent stream and provide specific schedules and commitments. Many of these past and current liquid effluent disposal facilities are found in the 200 Areas of the Central Plateau.

The groundwater table in the 200 Areas has been significantly declining since the mid- to late 1980s, when quantities of liquids disposed to the soil column began to decrease. Figure 1-5 summarizes the quantities of liquids discharged to various cribs, ditches, and ponds within the 200 East and 200 West Areas, respectively. Liquid discharges for 1993 are seen to be only a fraction of historical levels. Reduction in the rate of liquid discharges has caused the groundwater table to begin the decline toward pre-Hanford elevations. Figure 1-6 provides an example of the magnitude of this decline for wells 699-45-42 and 699-39-79 found in the 200 East and 200 West Areas, respectively. Should the water table decline sufficiently, well screens will be entirely in the unsaturated zone, groundwater flow directions and groundwater contaminant concentrations potentially will be changed, and the affected wells will not be usable to collect groundwater samples.

Also potentially impacting the monitoring system is the collection and rerouting of liquids to new State-permitted disposal facilities. Two such facilities in the 200 Areas have been constructed under Projects C-018H and W-049H. Under C-018H, treated effluent (570 L/min [150 gal/min] maximum) from the Effluent Treatment Facility (ETF) will be disposed of to a crib-like facility located north of the 200 West Area (State-Approved Land Disposal Site [SALDS]). The second project, W-049H (Treated Effluent Disposal Facility [TEDF]), will provide a system of piping in both of the 200 Areas that will collect and transport liquids to a new pond located east of the 200 East Area (Figure 1-7). Both projects began operations in October 1995.

In selected areas, the Tri-Party Agreement addresses remediation of existing groundwater contamination through the construction and operation of groundwater pump-and-treat systems. Each system is composed of several groundwater extraction, injection, and monitoring wells. Contaminated groundwater is withdrawn through the extraction wells, treated above ground, and reintroduced into the groundwater through the injection wells. Two such systems will be operated. The first system at the 200-ZP-1 Operable Unit is designed to contain the carbon tetrachloride plume surrounding the Plutonium Finishing Plant (PFP). The 200-ZP-1 pump-and-treat system, which will be installed in two phases, is designed to operate at extraction rates up to 1,900 L/min (500 gal/min) using multiple withdrawal and injection wells (Swanson et al. 1994).

The second system is currently operating at the 200-UP-1 Operable Unit to contain the combined uranium and technetium-99 plume found near the UO_3 Plant. The 200-UP-1 pump-and-treat system is currently designed to operate at approximately 190 L/min (50 gal/min), and consists of one injection and one withdrawal well (BHI 1996). Both projects have the potential to produce hydraulic and/or chemical impacts to nearby monitoring wells.

No systems currently identified within the 200 East Area are planned to continue beyond feasibility testing at the present time. These groundwater pump-and-treat facilities (i.e., groundwater treatment systems) will locally modify the direction of flow and groundwater contaminant concentrations.

1.2 SCOPE

The scope of this report includes an estimation of potential impacts from major projects affecting groundwater on the groundwater monitoring systems currently operating in the Central Plateau of the Hanford Site. The Central Plateau is defined as the area within easting coordinates 562000 and 582000 and northing coordinates 130000 and 142000. Specifically, this report presents the results of an evaluation of the potential impacts to the existing monitoring well network consisting of the following:

- pump-and-treat systems (200-ZP-1 and 200-UP-1)
- ceasing discharge to the soil column (Milestone M-17-00)
- rerouting of liquid discharges to the soil column (Projects C-018H and W-049H).

The scope of the analysis is confined to impacts on the monitoring systems caused by the cessation of discharges to the soil column, pump-and-treat activities, and the rerouting of liquid discharges. Impacts of these activities are essentially confined to the wells monitoring the water table. These activities are not foreseen to have significant impacts to wells monitoring the confined system or lower portions of the unconfined system.

Two types of impacts are defined as follows.

- Hydraulic Impact--Water within the well declines or rises. A significant hydraulic impact is further defined as reducing the level of water in a monitoring well to below 1.5 m (5 ft) above the bottom of the sampling interval. Wells with less than 1.5 m (5 ft) of water can have problems producing enough water for purging and sampling. Raising the water level is not defined as a significant hydraulic impact to the monitoring network.

- Chemical Impact--Concentrations of contaminants in the groundwater change in response to the operation of the pump-and-treat systems. These changes are caused by changes to the direction of flow or are due to the introduction of treated water near a monitoring well. These impacts make the use of the well for its originally intended purpose uncertain.

When possible, a time horizon of 10 years is used to further refine predicted "impact." Impacts to the groundwater monitoring networks have been investigated by others (Webber and McDonald 1994, Wurstner and Freshley 1994). Where practicable, the investigative results reported here used this earlier work as an initial basis.

Figure 1-1. Fiscal Year 1994--200 East Area Groundwater Monitoring Networks

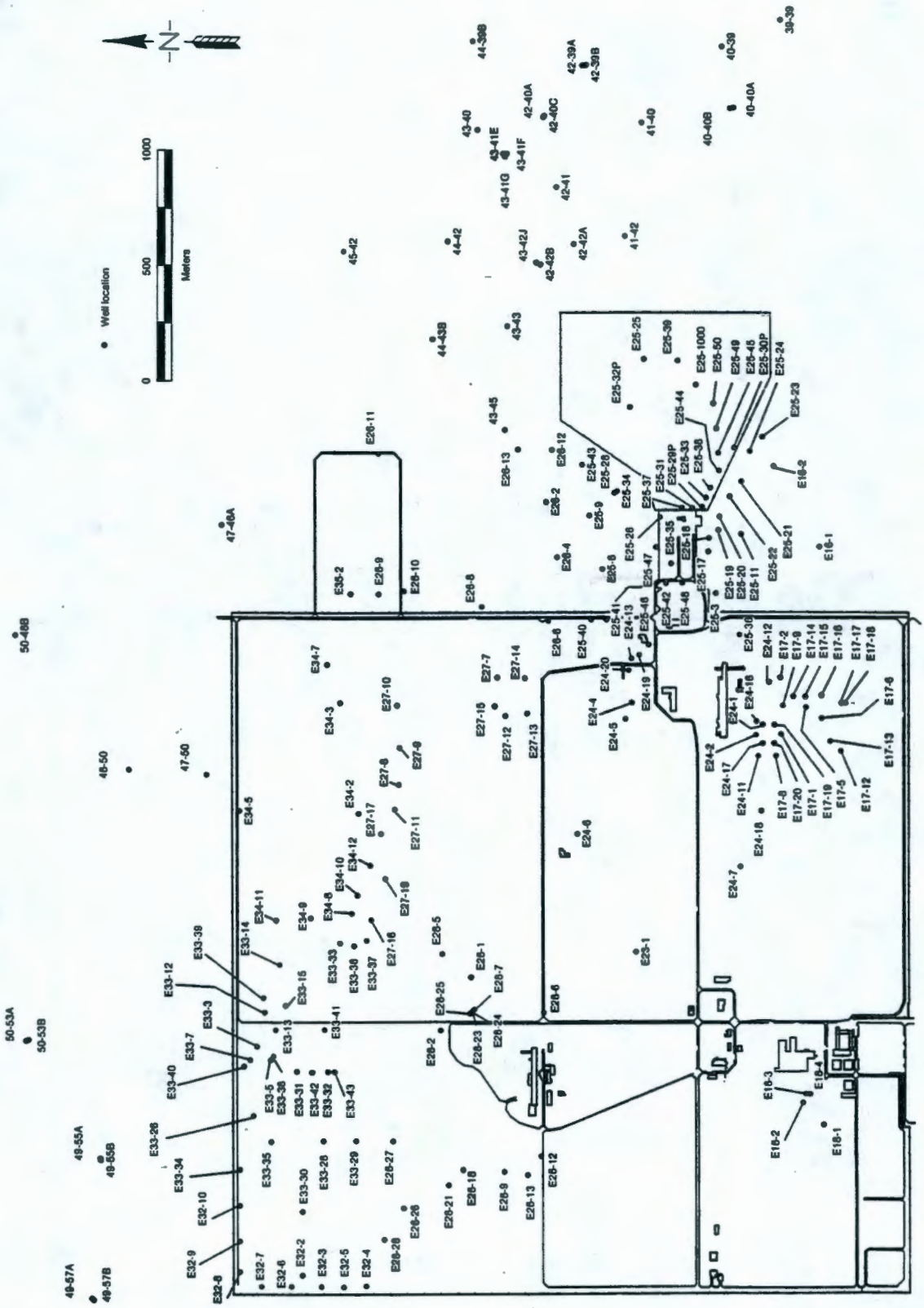


Figure 1-2. Fiscal Year 1994--200 East Area Groundwater Monitoring Networks by Program

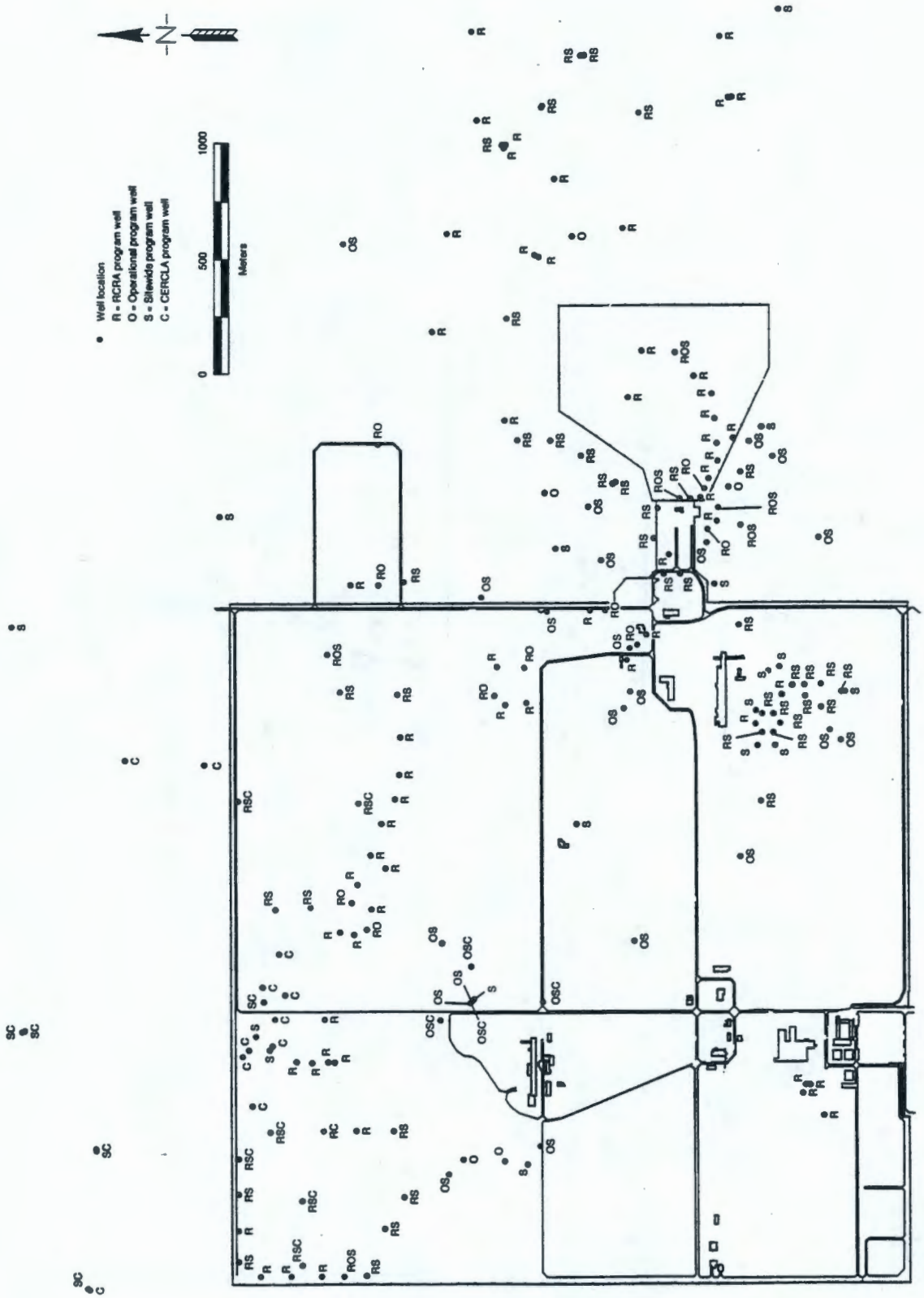


Figure 1-3. Fiscal Year 1994--200 West Area Groundwater Monitoring Networks

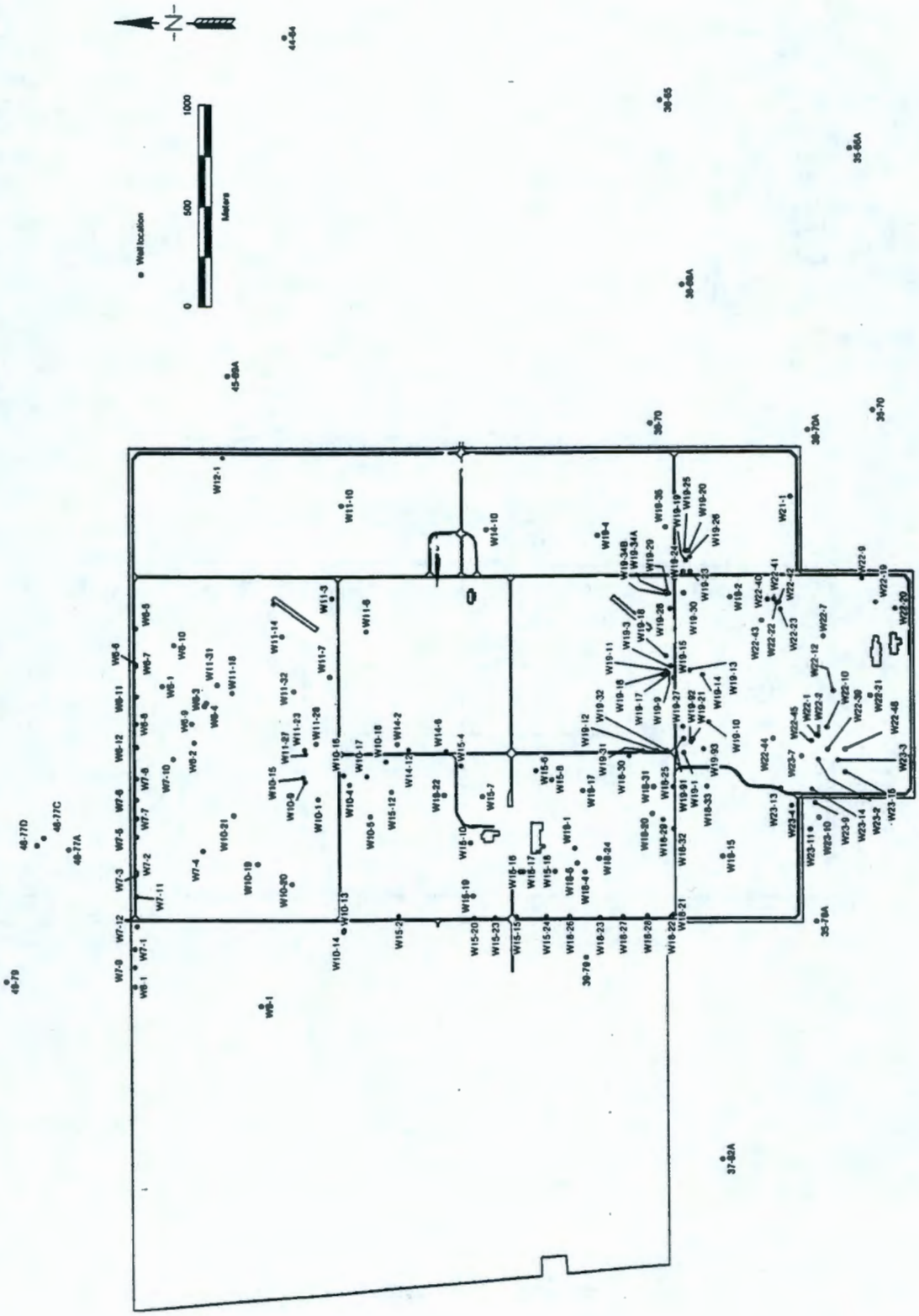


Figure 1-4. Fiscal Year 1994--200 West Area Groundwater Monitoring Networks by Program

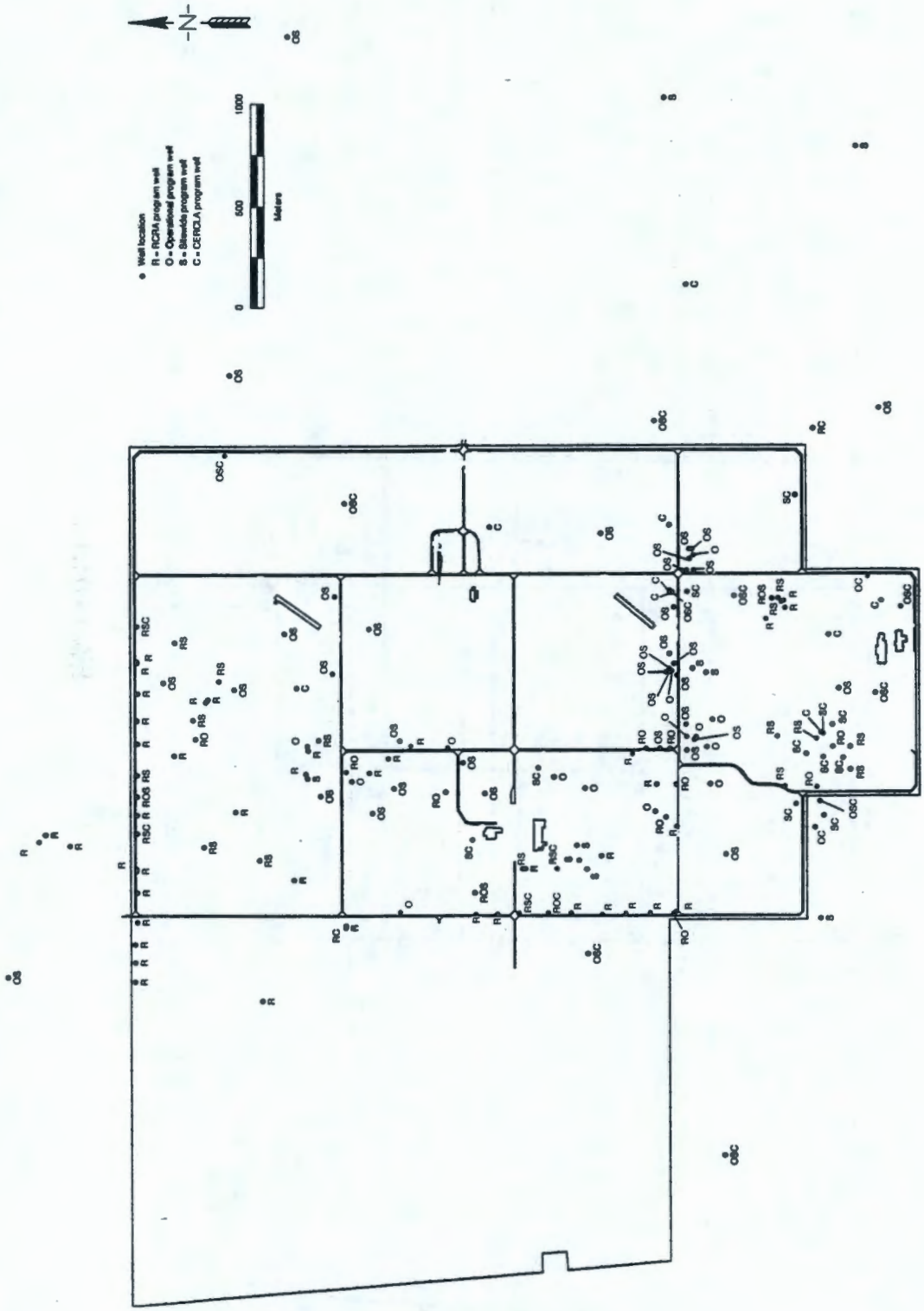


Figure 1-5. 200 Area Effluent Volumes by Year

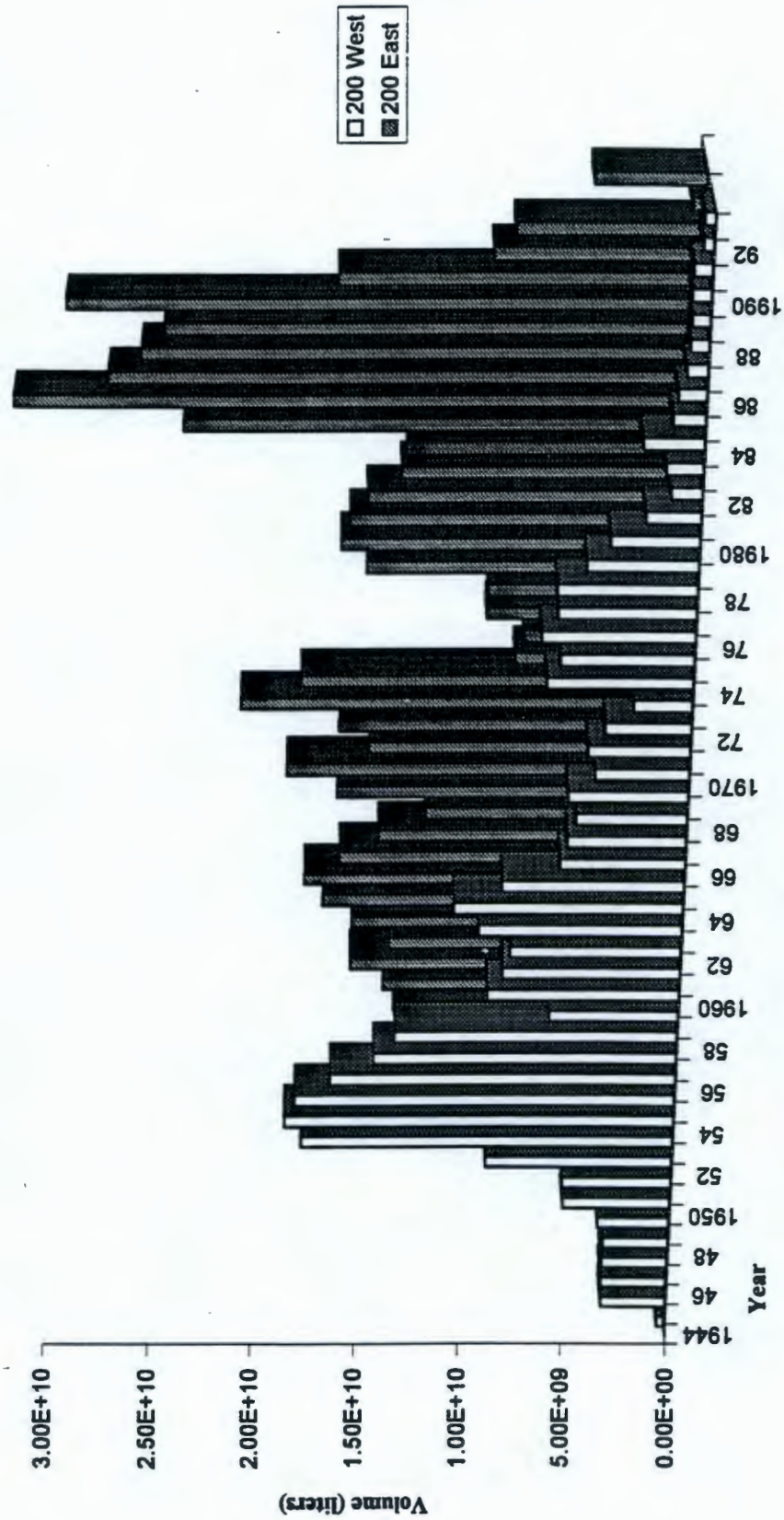


Figure 1-6a. Water Table Fluctuations in the 200 West Area Well 699-39-79

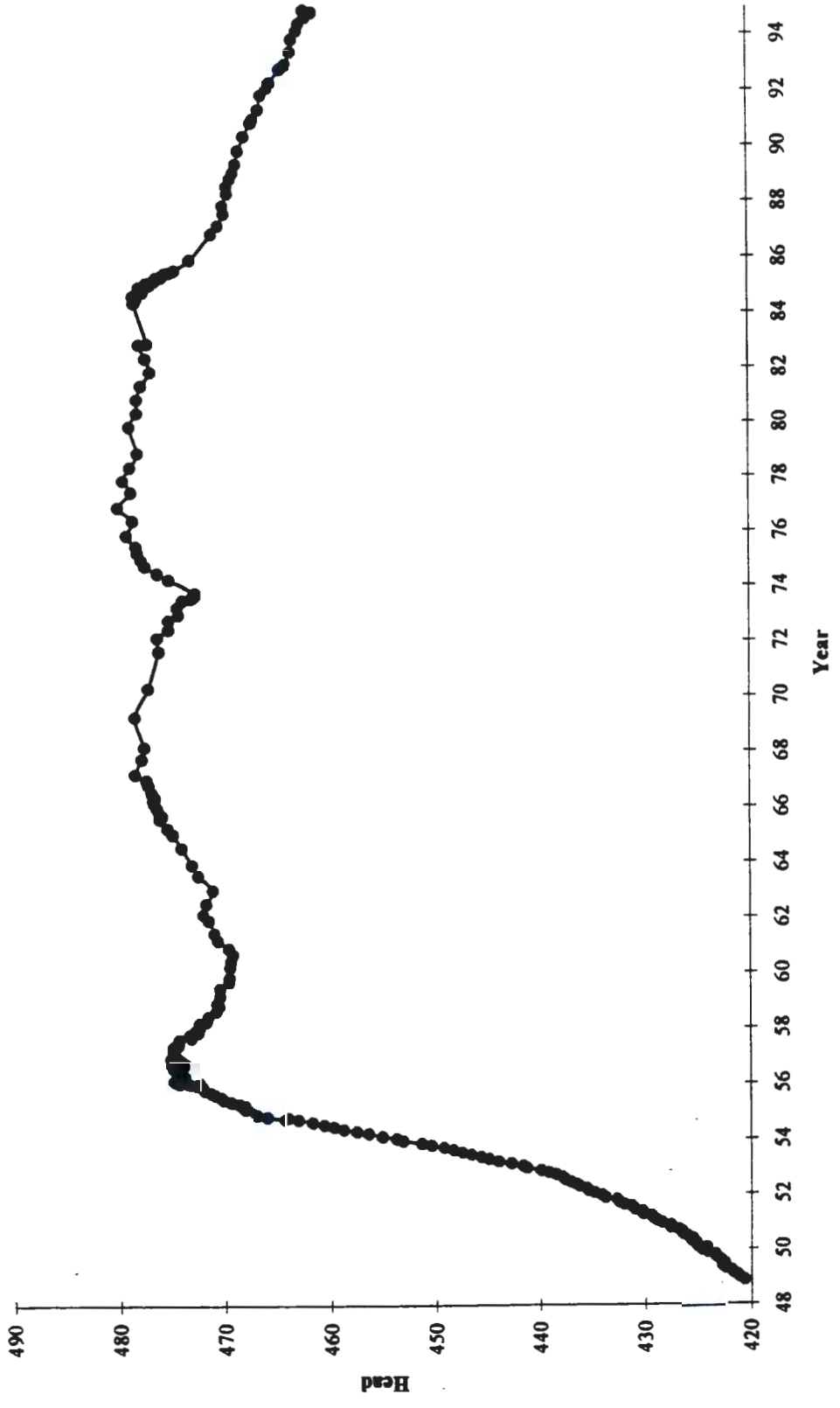
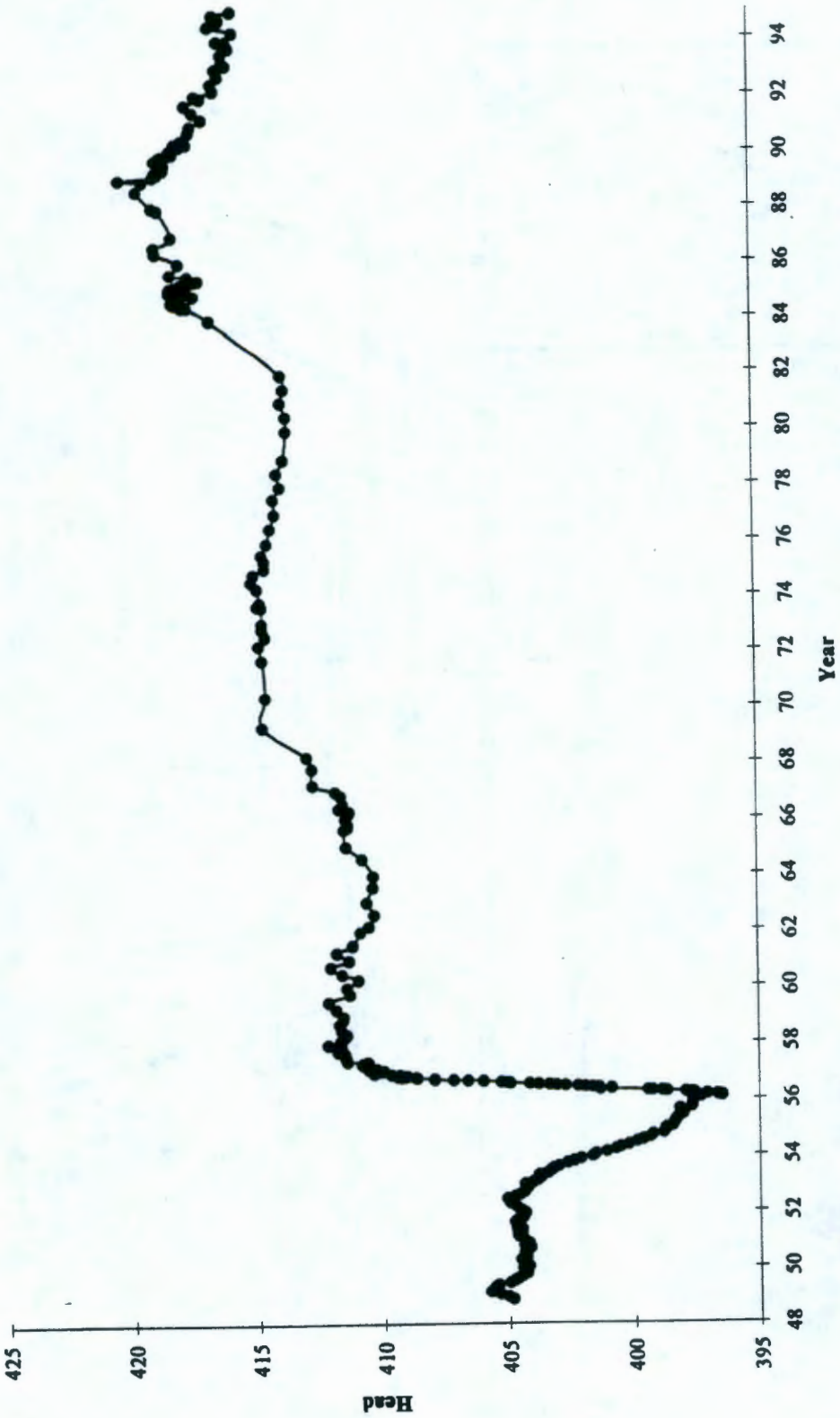


Figure 1-6b. Water Table Fluctuations in the 200 East Area Well 699-45-42



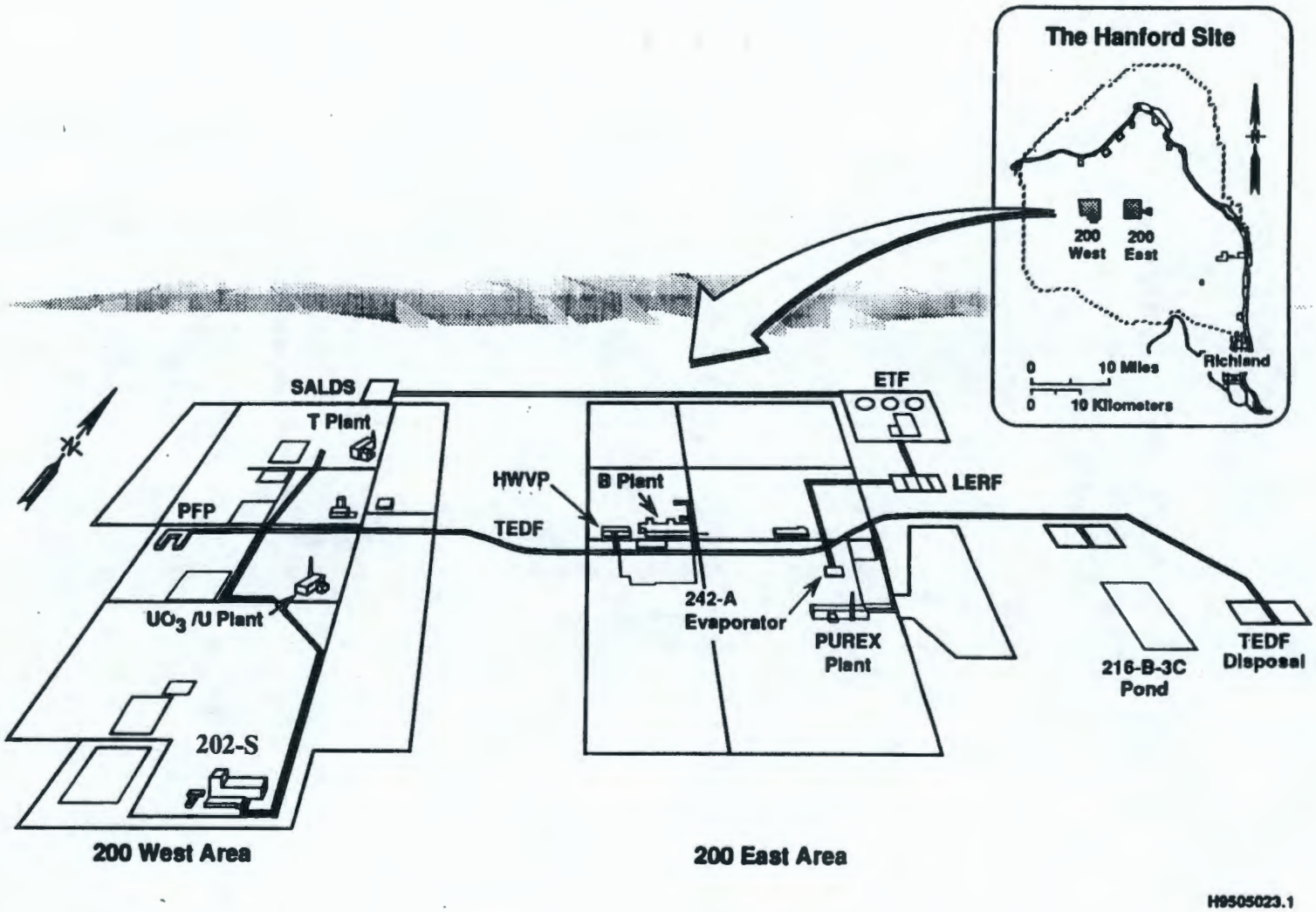


Figure 1-7. Liquid Effluent Facilities in the 200 Areas

Table 1-1. Number of Groundwater Monitoring Wells Sampled by Program within the Central Plateau

RCRA	OPERATIONAL	SITEWIDE	CERCLA	UNCLASSIFIED	NUMBER OF WELLS
			Yes		27
		Yes			60
		Yes	Yes		21
	Yes				15
	Yes		Yes		4
	Yes	Yes			64
	Yes	Yes	Yes		18
Yes					118
Yes			Yes		3
Yes		Yes			64
Yes		Yes	Yes		12
Yes	Yes				19
Yes	Yes		Yes		1
Yes	Yes	Yes			9
				Yes	14
				Grand Total	**449**

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2.0 ESTIMATION OF IMPACTS TO THE GROUNDWATER MONITORING NETWORKS

This section presents the approach used to evaluate potential impacts to the wells used by the four monitoring networks. A detailed evaluation of the impacts caused by the following is provided:

- pump-and-treat operations in the 200 West Area (200-UP-1 and 200-ZP-1)
- cessation of liquid discharges to groundwater
- operation of the TEDF in 200 East Area.

The potential impact of pump-and-treat activities in the 200 East Area (200-BP-5) and Project C-018H in the 200 West Area are minimal and have been excluded from additional study. Details regarding these projects can be found in WHC (1993) and DOE-RL (1995), respectively. The exclusion of these projects from the detailed evaluation does not substantively affect conclusions drawn from this work. Pump-and-treat treatability activities in the 200 East Area impact very limited areas and are currently complete. There are no pump-and-treat activities planned for the 200-BP-5 Operable Unit. Project C-018H discharges a maximum of 570 L/min (150 gal/min) into an area about 427 m (1,400 ft) north of the 200 West Area. Hydraulic impacts on existing monitoring systems will be minimal due to the low injection rates, the small number of monitoring wells around the facility, and the significant distance from other 200 West Area monitoring wells. No further evaluation of the potential impacts from either project to the monitoring networks will be provided.

2.1 PUMP-AND-TREAT OPERATIONS

The following section evaluates the effects of two pump-and-treat systems on the existing groundwater monitoring systems operating in the 200 West Area. The evaluation identifies potential hydraulic and chemical impacts for full-scale operation of each system. Both systems currently withdraw contaminated groundwater from one or more extraction wells, treat to remove the priority contaminants, and inject the water upgradient into one or more injection well.

The 200-UP-1 pump-and-treat system is currently operating at approximately 190 L/min (50 gal/min) and consists of one injection and one withdrawal well. The Phase II 200-ZP-1 pump-and-treat system is currently operating at 570 L/min (150 gal/min) using three extraction wells and one injection well. The Phase III upgrade to this system will be installed in fiscal year (FY) 1997 and will increase extraction rates to 1,130-1,900 L/min (300-500 gal/min) using six extraction wells and five injection wells. Both projects have the potential to produce hydraulic and/or chemical impacts to nearby monitoring wells.

2.1.1 Approach

The Theis equation provides the theoretical basis for estimating hydraulic impacts caused by extraction or injection of groundwater. To estimate the potential hydraulic impact at each monitoring well, the following steps were performed.

- The drawdown (increase) caused by each withdrawal (injection) center was estimated using the Theis equation.
- The change in water level at each monitoring well was calculated.
- The new water table elevation was calculated by summing the "change" to most recent water table elevations.
- The depth of water above the bottom of the screen or slotted section (water column) of the well was determined, based on individual well construction data (Appendix B).

Monitoring wells likely to experience changes in water quality were more difficult to determine. Wells experiencing potential chemical impacts were identified by their nearness to injection wells, or by their potential to be located in an area where the groundwater flow system that the well is monitoring is changed by the pump-and-treat system. Any well experiencing increasing water levels was assumed to be "chemically" impacted. Treated water injected into the groundwater system is assumed to dilute the historically measured contaminant values in these wells.

Additionally, it was assumed that monitoring wells downgradient of injection centers or downgradient of hydraulic barriers were also likely to be impacted. In either case, alteration of the existing flow system was assumed to cause the well to experience potential changes to the quality of the water surrounding it. These effects are time dependent and would cover larger areas with time. It was beyond the scope of this study to directly estimate the extent of these impacts. However, a general categorization of "in the vicinity" was used to identify this type of monitoring well. Monitoring wells located nearby to the situations described previously were selected by a visual examination of well maps.

2.1.2 Methodology

The Theis equation, as follows, was used to estimate aquifer drawdowns and mounding caused by the proposed pumping and injection centers:

$$h_o - h(r,t) = \frac{Q}{4\pi T} \int_u^\infty \frac{e^{-u}\, du}{u}$$

where

$$u = \frac{r^2 S}{4Tt}$$

Use of the Theis equation requires certain geologic formation properties. For this evaluation, the assumed formational properties are the following: transmissivity (T) of 230 m^2/day (2,500 ft^2/day) (hydraulic conductivity 15 m/day [50 ft/day], aquifer thickness of 15 m [50 ft]), a specific yield (S) of 0.15, and a time interval (t) of 365 days.

Figure 2-1 shows the theoretical drawdown curves for the extraction and injection rates used to estimate hydraulic impacts (i.e., 150 L/min [40 gal/min] for 200-UP-1 injection and withdrawal, and 240 L/min [62.5 gal/min] and 470 L/min [125 gal/min] for 200-ZP-1 withdrawal and injection wells). [Note: Since these calculations were made, the systems have been placed into operation at 190 L/min (50 gal/min) for 200-UP-1 and about 570 L/min (150 gal/min) for 200-ZP-1. These rates are sufficiently close to those used in the predictions that the drawdown curves are still considered valid for approximation.] According to the principle stating that superposition of solutions that drawdown from multiple wells is additive, the total drawdown (or mound) at each monitoring well was estimated and can be found in Table 2-1.

Table 2-1 presents the magnitude of the hydraulic impact to each monitoring well and identifies if the impact is considered significant. Section 1.2 provides the definition of a significant hydraulic impact. The predicted change in the water column within each respective well is provided under the heading, "Hydraulic Impact." The column titled "Measured Water Column" refers to current water levels, which were measured over the last 5 years. The column titled "Predicted Water Column" refers to a theoretical time when either the 200-ZP-1 or 200-UP-1 pump-and-treat system is operating at design capacity and the hydraulic system has stabilized.

Figure 2-2 shows the monitoring well network in the area of the 200 West Area pump-and-treat systems. Both treatment systems are shown. Circles around each proposed system well indicate the extent of the cone of depression (or mound) caused by the withdrawal (or injection) of water. The analytical approach assumes an aquifer that is both isotropic and homogeneous. The size of the circle is indicative of the area in which a change in the depth of the water table of 0.3 m (1 ft) or more is predicted. Overlapping circles represent areas where hydraulic impacts are additive.

2.1.3 Impacts on Groundwater Monitoring due to Pump-and-Treat Operations

Approximately 75 monitoring wells potentially will be impacted by the 200-ZP-1 pump-and-treat operations. All of these monitoring wells could potentially experience changes in chemical concentrations of monitored contaminants due to operation of the 200-ZP-1 system. These effects would be caused by the reversal of flow directions around a well or by the addition of treated water upgradient from a well. Reinjected treated water from pump-and-treat systems may

dilute the concentrations of the removed constituents in the area downgradient of reinjection but may also increase concentrations of constituents not removed (e.g., nitrates). It depends on where the specific reinjection wells are placed relative to the contaminants. Reinjected water should not have an appreciable effect on the vadose zone because water level changes are small. Such effects should be determined as part of the pump-and-treat performance evaluation activities.

Included among the wells affected by operation of the 200-ZP-1 system are 35 monitoring wells used in the RCRA network. Potential changes in water levels to the existing monitoring system will not be sufficient to interfere with sampling at any well.

It is estimated that 15 monitoring wells will be potentially impacted by the 200-UP-1 pump-and-treat system. None of the 15 wells impacted by the operation of the 200-UP-1 system are RCRA monitoring wells. Well numbers impacted by the 200-UP-1 pump-and-treat are given in Table 2-1. Exact locations are given in Appendix B. A graphical representation showing well locations is found in Figures 1-1 through 1-4. The name of the sampling program using each well (as of 1994) can be found in Appendix A.

Changes in water chemistry and/or vadose zone effects resulting from operation of the 200-UP-1 system are not expected to be significant. Potential changes in water levels to the existing monitoring system will not be sufficient to interfere with sampling at any well.

Vertical hydraulic gradients produced by mounding in the injection areas and from groundwater removal in the extraction areas are not expected to affect water quality significantly in the upper unconfined aquifer. If there is an effect, it would be minor compared to the dominating influence from long-term artificial recharge due to the residual U-Pond mound in the 200-ZP-1 area. Additionally, the potential for movement of groundwater from the shallow unconfined aquifer to the deeper confined aquifer and the basalt aquifers is minimal because of low vertical hydraulic conductivities in the suprabasalt sediments, the presence of mud and silt units in the lower part of the aquifer, and the low conductivities of the basalt flow interiors.

2.2 CEASING DISCHARGE TO THE SOIL COLUMN

Nearly 450 monitoring wells were examined to determine whether the declining water table would reduce the elevation of water within the well to a level that potentially could interfere with groundwater monitoring activities. Table 1-1 shows the number of wells used by each monitoring program within the 200 Area Plateau. The column listed as "nonclassified" represents wells that were sampled over the last 2 years and were not part of the 1994 sampling, but were included in the analysis. Information in Appendix A supports Table 1-1.

2.2.1 Approach

The effects of ceasing discharge of liquids to the soil column were addressed with a trend analysis of measured water table elevations for each well. Based on historic water levels, the rate of change of the water depth within each well was computed and extrapolated to predict water levels for the year 2005. The predicted water table elevation was then compared to the elevation of the bottom of the well screen or perforated interval. Appendix B provides well construction information used in the comparison.

Table 1-1 summarizes the number of wells sampled by each of the four monitoring networks in 1994. The number of wells sampled by each program changes on a yearly basis, but a substantial portion of the wells remains constant from year to year. Of the 449 wells located within the boundaries of the Central Plateau, 371 had sufficient historical data on which to base a prediction. A well had to have at least four water-level measurements to be included. Data were trended from 1992 to the present to estimate the rate of decline of the water within each well. A predictor equation was then developed to extrapolate the rate of decline over a 10-year period.

A semi-logarithmic predictor equation was used for wells with declining water levels. The semi-logarithmic projection was done by performing a linear prediction on the log of the water level data. This predictor equation type was considered applicable for a dewatering situation (Lindsey et al. 1975). Wells showing increasing water levels were analyzed and extrapolated with a linear predictor equation. After initial predictions were completed, a visual inspection of the results led to the elimination of several outliers.

2.2.2 Methodology

For each well, a regression equation of water elevation on time was solved for slope and intercept. The equation for slope of a set of data is given by

$$m = \frac{n\sum xy - \sum x \sum y}{n\sum x^2 - (\sum x)^2}$$

where:

m = slope
n = number of results
x = date
y = water level or log of the water level.

The equation for obtaining the intercept is given by

$$b = \bar{y} - m\bar{x}$$

where:

b = intercept
$x\ bar$ = average of the dates
m = slope obtained from the previous equation,
$y\ bar$ = average of the water levels or log of the water levels

After the slope is obtained, it is a simple matter to obtain a prediction using the slope intercept equation:

$$y = mx + b$$

2.2.3 Impacts on Groundwater Monitoring due to Ceasing Liquid Discharge

Based on the approach presented, 74 or approximately 20 percent of the wells analyzed are potentially impacted by ceasing liquid discharge to the soil column. Of the 74 wells identified, 14 currently are impacted by declining water levels. Table 2-2 summarizes the results of the analysis. For the purpose of this report, it is assumed that less than 1.5 m (5 ft) of water above the bottom of the well screen defines a potentially impacted well. All other wells had minimal predicted impacts. Appendix C tabulates the predicted depth of the water above the bottom of the sampling screen (water column) for each of the 371 wells analyzed in the Central Plateau. "Predicted Water Column" in Appendix C refers to the predicted (i.e., extrapolated) height of water above the bottom of the well screen or perforation for a time horizon of 10 years into the future. "Current Water Column" refers to the height of water currently (i.e., in 1994) found above the bottom of the screen or perforations.

2.3 TREATED EFFLUENT DISPOSAL FACILITY (PROJECT W-049H)

Collection, rerouting, and reduction of liquids currently discharged to the soil column likely will impact the groundwater monitoring system in the 200 East Area. Discharges to the C Lobe of B Pond will be reduced and partially rerouted to the new TEDF. In 1995, liquids discharged to B Pond averaged about 11,400 L/min (3,000 gal/min) (DOE-RL 1996) and included the following:

- 242-A Evaporator Steam Condensate
- 242-A Evaporator Cooling Water
- 241-A Tank Farm Cooling Water
- 244-AR Vault Cooling Water
- 284-E Power Plant Wastewater

- B Plant Cooling Water
- B Plant Chemical Sewer Wastewater
- Plutonium/Uranium Extraction (PUREX) Facility Chemical Sewer Wastewater
- 242-A-81 Water Services Building Discharges.

The last three facilities' liquid discharges have been rerouted to the new TEDF. Additionally, water from the following facilities from the 200 West Area have been rerouted from crib disposal to the TEDF (Crane 1994, DOE-RL 1994b):

- PFP Wastewater
- T Plant Laboratory Wastewater
- 222-S Laboratory Wastewater
- 284 West Power Plant Wastewater.

Based on monthly averages, the flow rate to the TEDF is expected to be 2,400 L/min (640 gal/min). The average monthly flow rate of all future and current sources is expected to be 2,800 L/min (750 gal/min). Remaining liquids released to the C Lobe of B Pond will be rerouted to the TEDF by October 1997.

2.3.1 Approach and Methodology

Examination of the historical trends to predict hydraulic impacts in the vicinity of B Pond had the potential to underpredict the effects of the TEDF. Start of operations in the facility is too recent to see its impact in the groundwater record. To refine estimates of the potential changes to the water table over time in this area, results from a previous study (Davis et al. 1993) were used along with current water table elevations.

Previous work (Davis et al. 1993) estimated the potential changes to the groundwater system caused by the operation of the TEDF. A calibrated, three-dimensional, finite-element model was used to simulate four possible operational alternatives then under consideration. Each alternative examined different levels of liquid discharges divided between the C Lobe of B Pond and the TEDF over a 40-year time horizon.

Scenario 1 assumed 2,270 L/min (600 gal/min) was discharged to the TEDF receiving pond and 265 L/min (70 gal/min) to the C Lobe of B Pond. The simulation results of Scenario 1 (Davis et al. 1993) were used to assess the impacts to the groundwater monitoring system at the end of the first 10 years of simulated operation. This scenario most closely matches current expected future conditions of the four scenarios considered. These simulation results were used to predict changes in the water table at each monitoring well in the following manner.

- A surface that represented the difference between the simulated 1995 water table and the Scenario 1 predicted water table was computed.

- The predicted difference at each monitoring well location within the impacted area was computed.

- The future water column height in each monitoring well within the potentially impacted area was estimated.

Figure 2-3 shows the monitoring wells and the extent of the predicted impacts. Appendix B contains construction details for the 112 wells identified in the potentially impacted area. Appendix D contains the complete listing of the monitoring wells and the extent of the predicted impact for each well.

2.3.2 Impacts of the Treated Effluent Disposal Facility (Project W-049H)

Examination of Table 2-3 shows that 9 of a possible 112 monitoring wells potentially would be impacted by the year 2005 by Project W-049H. As stated previously, an "impacted" well is defined as one having less than 1.5 m (5 ft) of water above the bottom of the screen or perforated interval. Five of the nine wells were previously identified as "impacted" under the trending and extrapolation approach described in Section 2.2. The four wells not previously identified as "impacted" are located near the C Lobe of the B Pond facility.

Figure 2-1. Theis Predictions--Drawdowns vs. Distance for Time--365 Days

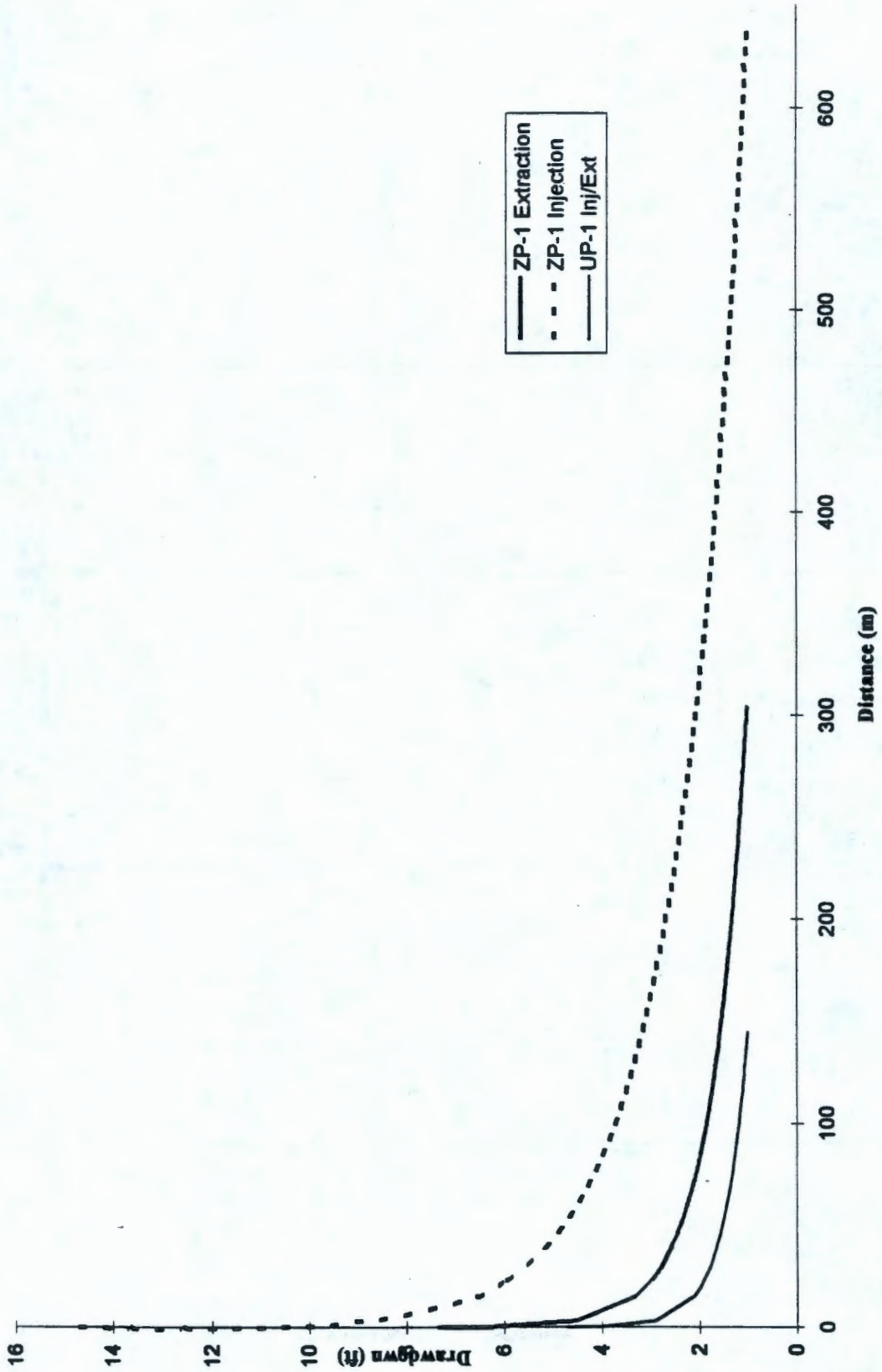

Figure 2-2. Monitoring Wells and Extent of Potential Impacts Caused by Pump-and-Treat Operations in the 200 West Area (365 Days After Start of Operation)

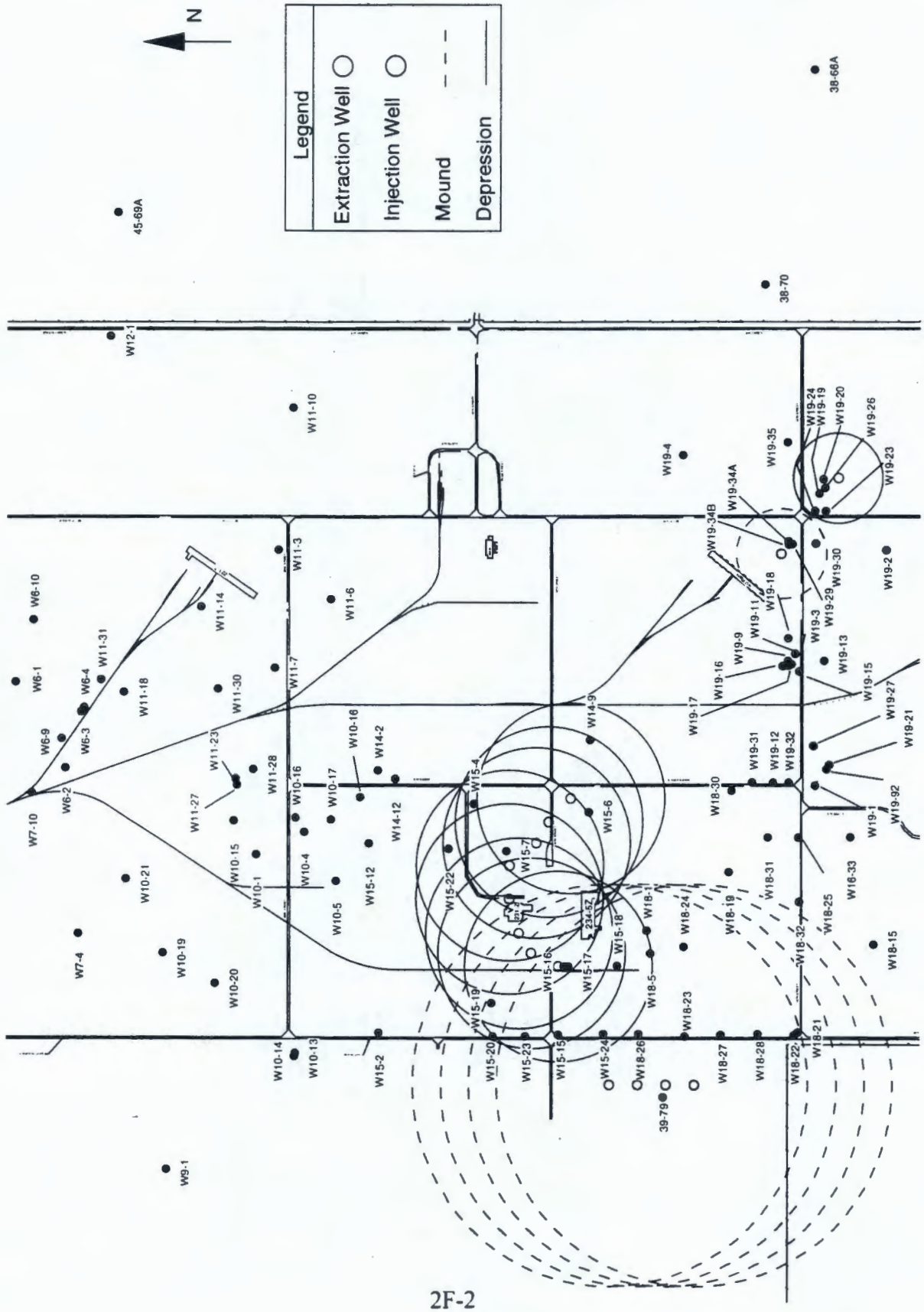

Figure 2-3. Monitoring Wells and Extent of Potential Impacts Caused by Operation of the Treated Effluent Disposal Facility--Year 2005

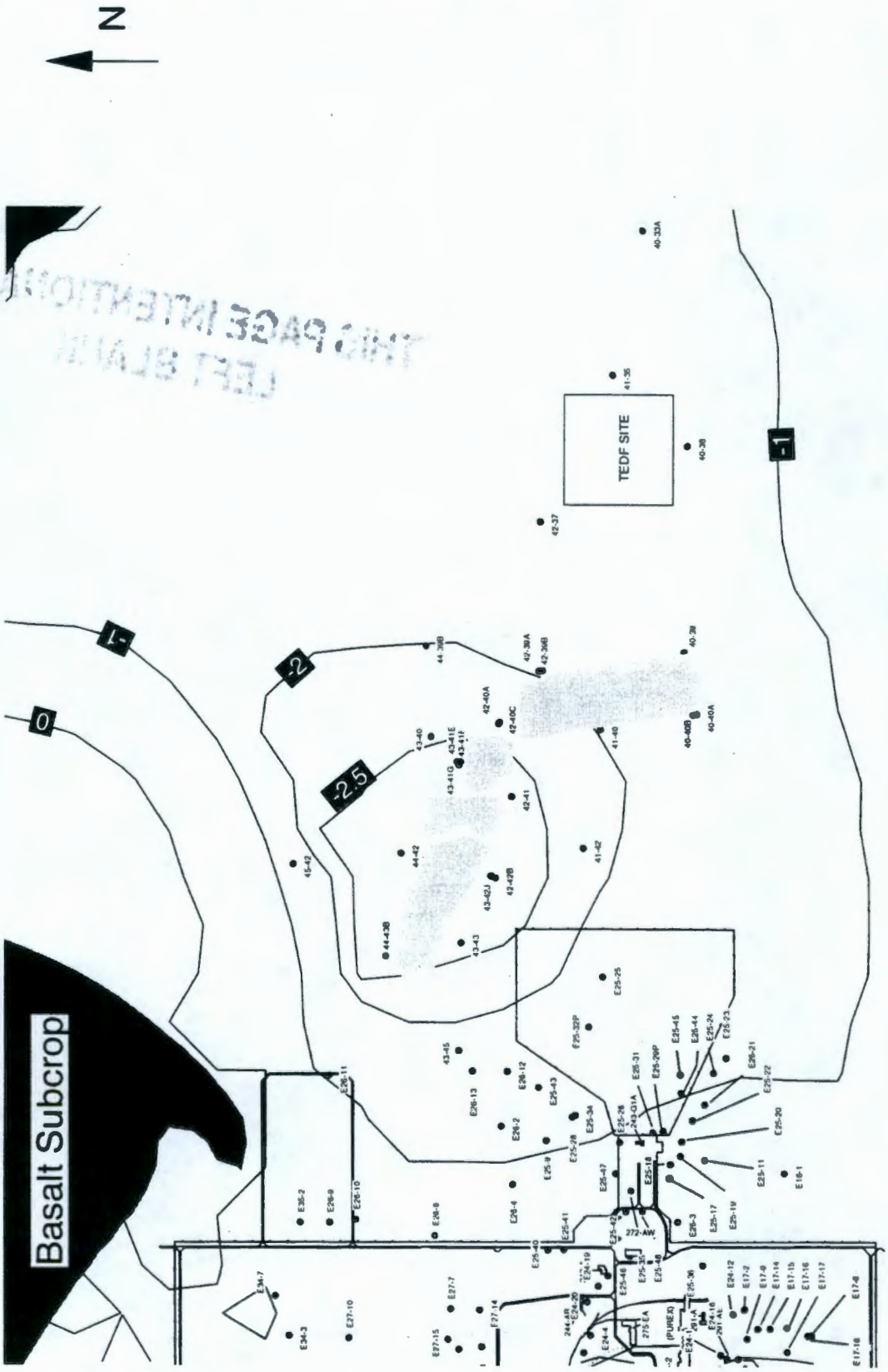

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Table 2-1. Monitoring Wells Impacted by Pump-and-Treat Operations in the 200 West Area (Sheet 1 of 3)

Well	Impacting System	Hydraulic Impact (ft)	Measured Water Column (ft)	Predicted Water Column (ft)	Comment	Predicted Chemical Impact	RCRA Well
299-W10-1	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W10-13	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W10-14	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W10-15	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W10-16	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W10-17	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W10-18	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W10-19	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W10-20	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W10-21	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W10-4	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W10-5	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W11-18	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W11-23	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W11-27	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W11-28	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W11-3	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W11-30	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W11-31	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W11-4	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W11-6	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W11-7	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W14-12	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W14-2	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W14-9	ZP-1	-2.38	N/A	N/A	Well has been Grouted	N/A	
299-W15-1	ZP-1	-9.72	95.5	85.78		NO	
299-W15-10	ZP-1	-8.59	85.67	77.08		NO	
299-W15-11	ZP-1	-6.06	79.82	73.76		NO	
299-W15-12	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W15-15	ZP-1	5.27	18.57	23.84		YES	Yes
299-W15-16	ZP-1	-1.80	16.44	14.64		NO	Yes
299-W15-17	ZP-1	-1.10	210.91	209.81		NO	Yes

Table 2-1. Monitoring Wells Impacted by Pump-and-Treat Operations in the 200 West Area (Sheet 2 of 3)

Well	Impacting System	Hydraulic Impact (ft)	Measured Water Column (ft)	Predicted Water Column (ft)	Comment	Predicted Chemical Impact	RCRA Well
299-W15-18	ZP-1	4.03	15.4	19.43		YES	Yes
299-W15-19	ZP-1	0.02	7.89	7.91		YES	Yes
299-W15-2	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W15-20	ZP-1	3.04	6.82	9.86		YES	Yes
299-W15-22	ZP-1	-3.51	15.15	11.64		NO	Yes
299-W15-23	ZP-1	3.91	5.04	8.95		YES	Yes
299-W15-24	ZP-1	8.71	5.14	13.85		YES	Yes
299-W15-4	ZP-1	-3.59	18.85	15.26		NO	
299-W15-6	ZP-1	-5.08	216.81	211.73		NO	
299-W15-7	ZP-1	-9.52	148.91	139.39		NO	
299-W18-1	ZP-1	5.28	N/A	N/A	NO TOC Information	N/A	
299-W18-15	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W18-19	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W18-2	ZP-1	5.70	66.05	71.75		YES	
299-W18-21	ZP-1	5.43	20.69	26.12		YES	Yes
299-W18-22	ZP-1	5.59	242.3	247.89		YES	Yes
299-W18-23	ZP-1	10.62	17.51	28.13		YES	Yes
299-W18-24	ZP-1	5.74	16.36	22.10		YES	Yes
299-W18-25	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W18-26	ZP-1	10.91	5.52	16.43		YES	Yes
299-W18-27	ZP-1	8.86	12.9	21.76		YES	Yes
299-W18-28	ZP-1	7.02	13.99	21.01		YES	Yes
299-W18-30	ZP-1[1]	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W18-31	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W18-32	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W18-33	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W18-4	ZP-1	6.70	59.92	66.62		YES	
299-W18-5	ZP-1	5.11	55.17	60.28		YES	
299-W19-1	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-12	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-13	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-15	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-16	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-17	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-18	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	

Table 2-1. Monitoring Wells Impacted by Pump-and-Treat Operations in the 200 West Area (Sheet 3 of 3)

Well	Impacting System	Hydraulic Impact (ft)	Measured Water Column (ft)	Predicted Water Column (ft)	Comment	Predicted Chemical Impact	RCRA Well
299-W19-19	UP-1	-1.30	10.83	9.53		NO	
299-W19-2	UP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-20	UP-1	-1.54	16.12	14.58		NO	
299-W19-21	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-23	UP-1	-1.13	15.52	14.39		NO	
299-W19-24	UP-1	-1.06	12.27	11.21		NO	
299-W19-25	UP-1	-1.40	13.05	11.65		NO	
299-W19-26	UP-1	-1.50	10.56	9.06		NO	
299-W19-27	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-28	UP-1	1.43	11.27	12.70		YES	
299-W19-29	UP-1	1.56	12.14	13.70		YES	
299-W19-3	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-30	UP-1	1.12	16.54	17.66		YES	
299-W19-31	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W19-32	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	Yes
299-W19-34A	UP-1	1.56	N/A	N/A	No WL Information	N/A	
299-W19-34B	UP-1	1.65	N/A	N/A	No WL Information	N/A	
299-W19-35	UP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-4	UP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-9	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
299-W19-92	ZP-1	N/A	N/A	N/A	Downgradient Well	YES	
699-38- 70	UP-1	N/A	N/A	N/A	Downgradient Well	YES	
699-39-79	ZP-1 [1]	15.39	85.67	101.06		YES	

Table 2-2. Number of Wells Potentially Impacted by Ceasing Liquid Discharge to the Soil Column--Year 2005

Predicted Water Column	Number of Wells	Percentage
Less than 5 ft	74	19.90%
Between 5 and 10 ft	113	30.50%
Between 10 and 20 ft	53	14.30%
Greater than 20 ft	131	35.30%
Number of Wells Reviewed	371	100.00%

Table 2-3. Nearby Monitoring Wells with Potential Hydraulic Impacts from the Operation of the Treated Effluent Disposal Facility

Impacted Monitoring Well	Predicted Hydraulic Impact	Predicted by Trend
299-E17-9	YES	YES
299-E24-4	YES	NO
299-E26-9	YES	YES
299-E34-3	YES	YES
299-E35-2	YES	YES
699-42-41	YES	NO
699-43-45	YES	NO
699-44-43B	YES	NO
699-53-47A	YES	YES

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3.0 CONCLUSIONS

This report presents the results of a significant analytical effort evaluating the impacts to groundwater monitoring networks from cessation of discharges to the soil column, pump-and-treat activities, and the rerouting of liquid discharges on the 200 Area plateau of the Hanford Site. Interrelationships were considered between the size of each discharge or withdrawal system, the number of shared wells, the impact of a declining watertable, and the potential impacts of pump-and-treat systems in the 200 West Area.

Detailed results of these evaluations for the wells sampled in the 200 Areas are provided in the appendices. Summary results and conclusions are provided as follows.

- Four sampling projects currently sample over 400 individual wells within the Central Plateau. Each of the four projects share and report much of the same information.

- Full-scale operation of the pump-and-treat systems currently proposed for the 200 West Area will not impact the ability to sample the existing monitoring well networks. Contaminant concentrations in over 90 monitoring wells will, however, be impacted by withdrawal and injection of groundwater. Most of the groundwater monitoring impacts are associated with operation of the 200-ZP-1 pump-and-treat system. The major impact is on the RCRA monitoring program (35 wells), although other projects are also potentially affected.

- The ability to monitor for groundwater impacts caused by liquids potentially seeping from the burial grounds in the vicinity of the 200-ZP-1 pump-and-treat system could be substantively reduced.

- Because of reduced liquid discharges to the soil, approximately 20 percent (74 wells) of the existing groundwater monitoring wells will have potential sampling problems because of insufficient water column within the sampling intervals of the wells in the next 10 years. The ability of each monitoring program to meet its individual monitoring requirements without these wells is beyond the scope of this evaluation.

- The operation of TEDF and the reduction of liquid discharges to B Pond have the potential to cause sampling problems by lowering the existing water table and causing an additional four monitoring wells to have potential sampling problems.

- The discharges from the ETF to a crib-like structure located north of the 200 West Area will not cause significant sampling problems for the monitoring well systems.

- As groundwater remediation expands in the 200 Areas, there is a reasonable expectation that monitoring requirements and remediation needs will increasingly interfere with each other. This interference also could potentially lead to variant interpretations of groundwater sampling results.

4.0 RECOMMENDATIONS

A compliance evaluation should be made of the regulatory impact of the technical evaluations contained in this report. A site-specific compliance evaluation is beyond the scope of this report. Such an evaluation is the responsibility of the affected project and/or program. The evaluation(s) should accomplish the following.

- For each RCRA unit, determine whether any of the impacts identified in this report affect the compliance status of the existing RCRA monitoring program.

- For any RCRA unit whose monitoring compliance is impacted, determine appropriate actions necessary to achieve compliance. Potential alternative compliance actions include monitoring other existing wells (including remediation wells) for appropriate RCRA constituents during the period when the groundwater is affected by the remedial action.

- Document (by Tri-Party Agreement change form or other appropriate mechanism) the agreement of the parties regarding the alternative compliance actions.

- Determine whether the monitoring requirements imposed by applicable DOE orders or CERCLA decision documents are impacted by effects identified in this report.

- For each such impact, determine appropriate actions to achieve compliance with applicable requirements.

A programmatic evaluation is also recommended. This programmatic evaluation should be conducted in a manner similar to the process used for the development of data quality objectives, i.e., the data quality objective process, and should include each of the four monitoring projects. It should examine the current scope and magnitude of each monitoring program against its implementing regulation, the changing Hanford Site mission, and overlap with other projects. Each monitoring program should be evaluated to determine (1) whether each of the groundwater projects is appropriate, effective, and efficient, and (2) how the integration of projects can be used to satisfy shared program objectives.

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APPENDIX A

CENTRAL PLATEAU MONITORING WELLS BY PROGRAM FOR 1994

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Appendix A: Central Plateau Monitoring Wells by Sampling Program for 1994

Well	Project	RCRA	OPERATIONAL	SITEWIDE	CERCLA
299-E13-14	SITEWIDE			Yes	
299-E13-5	SITEWIDE			Yes	
299-E16-1	OPER		Yes	Yes	
299-E16-2	OPER		Yes	Yes	
299-E17-1	A-10	Yes		Yes	
299-E17-12	OPER		Yes	Yes	
299-E17-13	OPER		Yes	Yes	
299-E17-14	A-36B	Yes		Yes	
299-E17-15	A-36B	Yes		Yes	
299-E17-16	A-36B	Yes		Yes	
299-E17-17	A-36B	Yes		Yes	
299-E17-18	A-36B	Yes		Yes	
299-E17-19	A-10	Yes		Yes	
299-E17-2	SITEWIDE			Yes	
299-E17-20	A-10	Yes		Yes	
299-E17-5	A-36B	Yes		Yes	
299-E17-6	SITEWIDE			Yes	
299-E17-8	SITEWIDE			Yes	
299-E17-9	A-36B	Yes			
299-E18-1	BPOND	Yes			
299-E18-2	2101	Yes			
299-E18-3	2101	Yes			
299-E18-4	2101	Yes			
299-E23-1	OPER		Yes	Yes	
299-E24-1	SITEWIDE			Yes	
299-E24-11	SITEWIDE			Yes	
299-E24-12	SITEWIDE			Yes	
299-E24-16	A-10	Yes		Yes	
299-E24-17	A-10	Yes		Yes	
299-E24-18	A-10	Yes		Yes	
299-E24-19	SST	Yes	Yes		
299-E24-2	A-10	Yes			
299-E24-20	SST	Yes			
299-E24-4	OPER		Yes	Yes	
299-E24-5	OPER		Yes	Yes	
299-E24-7	OPER		Yes	Yes	
299-E24-8	SITEWIDE			Yes	
299-E25-11	A-29	Yes	Yes	Yes	
299-E25-17	OPER		Yes	Yes	
299-E25-18	A-29	Yes	Yes		
299-E25-19	A-29	Yes			
299-E25-20	A-10	Yes	Yes	Yes	
299-E25-21	A-29	Yes		Yes	
299-E25-22	OPER		Yes		
299-E25-23	SITEWIDE			Yes	
299-E25-24	OPER		Yes	Yes	
299-E25-25	GROUT	Yes			

Well	Project	RCRA	OPERATIONAL	SITEWIDE	CERCLA
299-E25-26	A-29	Yes		Yes	
299-E25-28	A-29	Yes		Yes	
299-E25-29P	GROUT	Yes			
299-E25-3	SITEWIDE			Yes	
299-E25-31	A-29	Yes		Yes	
299-E25-32P	A-29	Yes			
299-E25-34	A-29	Yes		Yes	
299-E25-35	A-29	Yes			
299-E25-36	A-10	Yes		Yes	
299-E25-37	GROUT	Yes	Yes	Yes	
299-E25-39	GROUT	Yes	Yes	Yes	
299-E25-40	SST	Yes			
299-E25-41	SST	Yes	Yes		
299-E25-42	A-29	Yes		Yes	
299-E25-43	A-29	Yes		Yes	
299-E25-44	GROUT	Yes			
299-E25-45	GROUT	Yes			
299-E25-46	SST	Yes			
299-E25-47	A-29	Yes		Yes	
299-E25-48	A-29	Yes		Yes	
299-E25-6	OPER		Yes	Yes	
299-E25-9	OPER		Yes	Yes	
299-E26-10	LERF	Yes		Yes	
299-E26-11	LERF	Yes	Yes		
299-E26-12	A-29	Yes		Yes	
299-E26-13	A-29	Yes		Yes	
299-E26-2	OPER		Yes		
299-E26-4	SITEWIDE			Yes	
299-E26-8	OPER		Yes	Yes	
299-E26-9	LERF	Yes	Yes		
299-E27-10	LLBG	Yes		Yes	
299-E27-11	B-63	Yes			
299-E27-12	SST	Yes			
299-E27-13	SST	Yes			
299-E27-14	SST	Yes	Yes		
299-E27-15	SST	Yes	Yes		
299-E27-16	B-63	Yes			
299-E27-17	LLBG	Yes			
299-E27-19	B-63	Yes			
299-E27-7	SST	Yes			
299-E27-8	LLBG	Yes			
299-E27-9	LLBG	Yes			
299-E28-1	OPER		Yes	Yes	Yes
299-E28-12	OPER		Yes	Yes	
299-E28-13	SITEWIDE			Yes	
299-E28-18	OPER		Yes		
299-E28-2	OPER		Yes	Yes	Yes
299-E28-21	OPER		Yes	Yes	
299-E28-23	OPER		Yes	Yes	Yes
299-E28-24	OPER		Yes	Yes	
299-E28-25	OPER		Yes	Yes	

Well	Project	RCRA	OPERATIONAL	SITEWIDE	CERCLA
299-E28-26	LLBG	Yes		Yes	
299-E28-27	LLBG	Yes		Yes	
299-E28-28	LLBG	Yes		Yes	
299-E28-5	OPER		Yes	Yes	
299-E28-6	OPER		Yes	Yes	Yes
299-E28-7	SITEWIDE			Yes	
299-E28-9	OPER		Yes		
299-E32-10	LLBG	Yes		Yes	
299-E32-2	LLBG	Yes		Yes	Yes
299-E32-3	LLBG	Yes			
299-E32-4	BPOND	Yes		Yes	
299-E32-5	LLBG	Yes	Yes	Yes	
299-E32-6	LLBG	Yes			
299-E32-7	LLBG	Yes			
299-E32-8	LLBG	Yes		Yes	
299-E32-9	LLBG	Yes			
299-E33-12	200-BP-5			Yes	Yes
299-E33-13	200-BP-5				Yes
299-E33-14	200-BP-5				Yes
299-E33-15	200-BP-5				Yes
299-E33-26	200-BP-5				Yes
299-E33-28	LLBG	Yes			Yes
299-E33-29	LLBG	Yes			
299-E33-3	SITEWIDE			Yes	
299-E33-30	LLBG	Yes		Yes	Yes
299-E33-31	SST	Yes			
299-E33-32	SST	Yes			
299-E33-33	B-63	Yes			
299-E33-34	LLBG	Yes		Yes	Yes
299-E33-35	LLBG	Yes		Yes	Yes
299-E33-36	B-63	Yes			
299-E33-37	B-63	Yes	Yes		
299-E33-38	200-BP-5				Yes
299-E33-39	200-BP-5				Yes
299-E33-40	200-BP-5				Yes
299-E33-41	SST	Yes			
299-E33-42	SST	Yes			
299-E33-43	SST	Yes			
299-E33-5	SITEWIDE			Yes	
299-E33-7	200-BP-5				Yes
299-E34-10	B-63	Yes			
299-E34-11	LLBG	Yes		Yes	
299-E34-12	LLBG	Yes			
299-E34-2	LLBG	Yes		Yes	Yes
299-E34-3	LLBG	Yes		Yes	
299-E34-5	LLBG	Yes		Yes	Yes
299-E34-7	LLBG	Yes	Yes	Yes	
299-E34-8	B-63	Yes	Yes		
299-E34-9	LLBG	Yes		Yes	
299-E35-2	LERF	Yes			
299-W10-1	OPER		Yes	Yes	

Well	Project	RCRA	OPERATIONAL	SITEWIDE	CERCLA
299-W10-13	LLBG	Yes			Yes
299-W10-14	LLBG	Yes			
299-W10-15	SST	Yes			
299-W10-16	SST	Yes	Yes		
299-W10-17	SST	Yes			
299-W10-18	SST	Yes			
299-W10-19	LLBG	Yes		Yes	
299-W10-20	LLBG	Yes			
299-W10-21	LLBG	Yes			
299-W10-4	OPER		Yes		
299-W10-5	OPER		Yes	Yes	
299-W11-10	OPER		Yes	Yes	Yes
299-W11-14	OPER		Yes	Yes	
299-W11-18	OPER		Yes	Yes	
299-W11-23	OPER		Yes		
299-W11-27	SST	Yes			
299-W11-28	SST	Yes		Yes	
299-W11-3	OPER		Yes	Yes	
299-W11-31	LLBG	Yes		Yes	
299-W11-32	200-ZP-1				Yes
299-W11-6	OPER		Yes	Yes	
299-W11-7	OPER		Yes	Yes	
299-W12-1	OPER		Yes	Yes	Yes
299-W14-12	SST	Yes			
299-W14-2	OPER		Yes	Yes	
299-W15-10	200-ZP-1			Yes	Yes
299-W15-12	OPER		Yes	Yes	
299-W15-15	LLBG	Yes		Yes	Yes
299-W15-16	LLBG	Yes		Yes	
299-W15-17	LLBG	Yes			
299-W15-18	LLBG	Yes		Yes	Yes
299-W15-19	LLBG	Yes	Yes	Yes	
299-W15-2	OPER		Yes		
299-W15-20	LLBG	Yes			
299-W15-22	SST	Yes	Yes		
299-W15-23	LLBG	Yes			
299-W15-24	LLBG	Yes	Yes		Yes
299-W15-4	OPER		Yes	Yes	
299-W15-6	200-ZP-1			Yes	Yes
299-W15-7	OPER		Yes	Yes	
299-W18-1	SITEWIDE			Yes	
299-W18-15	OPER		Yes	Yes	
299-W18-21	LLBG	Yes			
299-W18-22	LLBG	Yes	Yes		
299-W18-23	LLBG	Yes			
299-W18-24	LLBG	Yes			
299-W18-25	SST	Yes	Yes		
299-W18-26	LLBG	Yes			
299-W18-27	LLBG	Yes			
299-W18-28	LLBG	Yes			
299-W18-29	LLBG	Yes	Yes		

Well	Project	RCRA	OPERATIONAL	SITEWIDE	CERCLA
299-W18-30	SST	Yes			
299-W18-31	SST	Yes			
299-W18-32	LLBG	Yes			
299-W18-33	OPER		Yes		
299-W18-4	SITEWIDE			Yes	
299-W18-5	SITEWIDE			Yes	
299-W19-1	OPER		Yes	Yes	
299-W19-11	OPER		Yes	Yes	
299-W19-12	OPER		Yes	Yes	
299-W19-13	SITEWIDE			Yes	
299-W19-15	OPER		Yes	Yes	
299-W19-16	OPER		Yes	Yes	
299-W19-17	OPER		Yes	Yes	
299-W19-18	OPER		Yes	Yes	
299-W19-19	OPER		Yes	Yes	
299-W19-2	OPER		Yes	Yes	Yes
299-W19-20	OPER		Yes	Yes	
299-W19-21	OPER		Yes		
299-W19-23	OPER		Yes	Yes	
299-W19-24	OPER		Yes	Yes	
299-W19-25	OPER		Yes	Yes	
299-W19-26	OPER		Yes		
299-W19-27	OPER		Yes	Yes	
299-W19-28	OPER		Yes	Yes	
299-W19-29	OPER		Yes	Yes	Yes
299-W19-3	OPER		Yes	Yes	
299-W19-30	200-UP-1			Yes	Yes
299-W19-31	SST	Yes	Yes		
299-W19-32	SST	Yes	Yes		
299-W19-34A	200-UP-1				Yes
299-W19-34B	200-UP-1				Yes
299-W19-35	200-UP-1				Yes
299-W19-4	OPER		Yes	Yes	
299-W19-9	OPER		Yes		
299-W19-91	OPER		Yes		
299-W19-92	OPER		Yes	Yes	
299-W21-1	200-UP-1			Yes	Yes
299-W22-10	200-UP-1			Yes	Yes
299-W22-19	200-UP-1				Yes
299-W22-2	200-UP-1			Yes	Yes
299-W22-20	OPER		Yes	Yes	Yes
299-W22-21	OPER		Yes	Yes	Yes
299-W22-22	U-12	Yes		Yes	
299-W22-23	U-12	Yes			
299-W22-39	SST	Yes	Yes		
299-W22-40	U-12	Yes	Yes	Yes	
299-W22-41	U-12	Yes		Yes	
299-W22-42	ERDF	Yes			
299-W22-43	U-12	Yes			
299-W22-44	SST	Yes		Yes	
299-W22-45	SST	Yes		Yes	

Well	Project	RCRA	OPERATIONAL	SITEWIDE	CERCLA
299-W22-46	SST	Yes		Yes	
299-W22-7	200-UP-1				Yes
299-W22-9	OPER		Yes		Yes
299-W23-10	200-UP-1			Yes	Yes
299-W23-13	SST	Yes		Yes	
299-W23-14	SST	Yes	Yes		
299-W23-15	SST	Yes		Yes	
299-W23-2	200-UP-1			Yes	Yes
299-W23-3	200-UP-1			Yes	Yes
299-W23-4	200-UP-1			Yes	Yes
299-W23-7	200-UP-1			Yes	Yes
299-W23-9	OPER		Yes	Yes	Yes
299-W26-10	S-10	Yes		Yes	
299-W26-12	S-10	Yes		Yes	
299-W26-6	OPER		Yes		Yes
299-W26-7	S-10	Yes		Yes	Yes
299-W26-8	S-10	Yes		Yes	
299-W26-9	S-10	Yes		Yes	Yes
299-W27-1	OPER		Yes		Yes
299-W27-2	S-10	Yes			
299-W6-1	OPER		Yes	Yes	
299-W6-10	LLBG	Yes		Yes	
299-W6-11	LLBG	Yes			
299-W6-12	LLBG	Yes			
299-W6-2	LLBG	Yes	Yes		
299-W6-3	LLBG	Yes			
299-W6-4	LLBG	Yes			
299-W6-5	LLBG	Yes		Yes	Yes
299-W6-6	LLBG	Yes			
299-W6-7	LLBG	Yes			
299-W6-8	LLBG	Yes			
299-W6-9	LLBG	Yes		Yes	
299-W7-1	LLBG	Yes			
299-W7-10	LLBG	Yes			
299-W7-11	LLBG	Yes			
299-W7-12	LLBG	Yes			
299-W7-2	LLBG	Yes			
299-W7-3	LLBG	Yes			
299-W7-4	LLBG	Yes		Yes	
299-W7-5	LLBG	Yes		Yes	Yes
299-W7-6	LLBG	Yes	Yes	Yes	
299-W7-7	LLBG	Yes			
299-W7-8	LLBG	Yes		Yes	
299-W7-9	LLBG	Yes			
299-W8-1	LLBG	Yes			
299-W9-1	LLBG	Yes			
699-22-35	SWL	Yes			
699-22-70	SITEWIDE			Yes	
699-23-34A	SWL	Yes		Yes	
699-23-34B	SWL	Yes		Yes	
699-24-33	SWL	Yes			

Well	Project	RCRA	OPERATIONAL	SITEWIDE	CERCLA
699-24-34A	SWL	Yes			
699-24-34B	SWL	Yes			
699-24-34C	SWL	Yes			
699-24-35	SWL	Yes			
699-24-46	SITEWIDE			Yes	
699-25-33A	NRDW	Yes			
699-25-34A	NRDW	Yes			
699-25-34B	NRDW	Yes		Yes	
699-25-34C	SWL	Yes			
699-25-34D	NRDW	Yes		Yes	
699-25-70	SITEWIDE			Yes	
699-26-33	NRDW	Yes			
699-26-34A	NRDW	Yes			
699-26-34B	NRDW	Yes			
699-26-35A	SWL	Yes			
699-26-35C	NRDW	Yes			
699-26-89	SITEWIDE			Yes	
699-28-40	SITEWIDE			Yes	
699-29-78	SITEWIDE			Yes	
699-31-31	SITEWIDE			Yes	
699-31-31P	SITEWIDE			Yes	
699-32-43	SITEWIDE			Yes	
699-32-62	OPER		Yes		Yes
699-32-70B	SITEWIDE			Yes	
699-32-72A	SITEWIDE			Yes	
699-32-72B	ERDF	Yes			
699-32-77	SITEWIDE			Yes	
699-33-42	SITEWIDE			Yes	
699-33-56	SITEWIDE			Yes	
699-34-41B	SITEWIDE			Yes	
699-34-42	OPER		Yes	Yes	
699-34-51	SITEWIDE			Yes	
699-34-61	ERDF	Yes			
699-34-88	200-ZP-1				Yes
699-35-66A	SITEWIDE			Yes	
699-35-70	OPER		Yes	Yes	
699-35-78A	SITEWIDE			Yes	
699-36-46Q	SITEWIDE			Yes	
699-36-61A	OPER		Yes	Yes	Yes
699-36-61B	SITEWIDE			Yes	
699-36-70A	U-12	Yes			Yes
699-37-43	OPER		Yes	Yes	
699-37-82A	OPER		Yes	Yes	Yes
699-38-61	ERDF	Yes			
699-38-65	SITEWIDE			Yes	
699-38-68A	200-UP-1				Yes
699-38-70	OPER		Yes	Yes	Yes
699-39-39	SITEWIDE			Yes	
699-39-79	OPER		Yes	Yes	Yes
699-40-33A	SITEWIDE			Yes	
699-40-36	BPOND	Yes			

Well	Project	RCRA	OPERATIONAL	SITEWIDE	CERCLA
699-40-39	BPOND	Yes			
699-40-40A	BPOND	Yes			
699-40-40B	BPOND	Yes			
699-40-62	OPER		Yes	Yes	Yes
699-41-35	BPOND	Yes			
699-41-40	BPOND	Yes		Yes	
699-41-42	BPOND	Yes			
699-42-37	BPOND	Yes			
699-42-39A	BPOND	Yes		Yes	
699-42-39B	BPOND	Yes		Yes	
699-42-40A	BPOND	Yes			
699-42-40C	BPOND	Yes		Yes	
699-42-41	BPOND	Yes			
699-42-42B	BPOND	Yes		Yes	
699-43-40	BPOND	Yes			
699-43-41E	BPOND	Yes		Yes	
699-43-41F	BPOND	Yes			
699-43-41G	BPOND	Yes			
699-43-42J	BPOND	Yes			
699-43-43	A-29	Yes		Yes	
699-43-45	A-29	Yes			
699-44-39B	BPOND	Yes			
699-44-42	BPOND	Yes			
699-44-43B	BPOND	Yes			
699-44-64	OPER		Yes	Yes	
699-45-42	OPER		Yes	Yes	
699-45-69A	OPER		Yes	Yes	
699-47-35A	SITEWIDE			Yes	
699-47-46A	SITEWIDE			Yes	
699-47-50	200-BP-5				Yes
699-47-60	200-ZP-1			Yes	Yes
699-48-50	200-BP-5				Yes
699-48-71	OPER		Yes	Yes	Yes
699-48-77A	C018H	Yes			
699-48-77C	C018H	Yes			
699-48-77D	C018H	Yes			
699-49-28	SITEWIDE			Yes	
699-49-55A	SITEWIDE			Yes	
699-49-55B	200-BP-5			Yes	Yes
699-49-57A	200-BP-5			Yes	Yes
699-49-57B	200-BP-5				Yes
699-49-79	OPER		Yes	Yes	
699-50-45	SITEWIDE			Yes	
699-50-48B	SITEWIDE			Yes	
699-50-53A	200-BP-5			Yes	Yes
699-50-53B	200-BP-5			Yes	Yes
699-50-85	SITEWIDE			Yes	
699-51-46	SITEWIDE			Yes	
699-51-63	200-ZP-1			Yes	Yes
699-51-75	SITEWIDE			Yes	
699-52-46A	OPER		Yes	Yes	

Well	Project	RCRA	OPERATIONAL	SITEWIDE	CERCLA
699-52-48	SITEWIDE			Yes	
699-52-54	200-BP-5				Yes
699-52-57	200-BP-5				Yes
699-53-47A	SITEWIDE			Yes	
699-53-47B	OPER		Yes		
699-53-48A	OPER		Yes	Yes	
699-53-48B	OPER		Yes		
699-53-50	OPER		Yes	Yes	
699-53-55A	200-BP-5				Yes
699-53-55B	200-BP-5				Yes
699-53-55C	200-BP-5				Yes
699-54-34	SITEWIDE			Yes	
699-54-48	OPER		Yes	Yes	
699-54-49	OPER		Yes	Yes	
699-54-57	200-BP-5			Yes	Yes
699-55-40	SITEWIDE			Yes	
699-55-50C	OPER		Yes	Yes	
699-55-55	200-BP-5				Yes
699-55-57	200-BP-5			Yes	Yes
699-55-60A	OPER		Yes	Yes	
699-55-76	SITEWIDE			Yes	
699-56-43	OPER		Yes	Yes	
699-56-53	OPER		Yes	Yes	
699-57-29A	SITEWIDE			Yes	
699-57-59	200-BP-5				Yes
699-59-55	OPER		Yes		
699-59-58	OPER		Yes	Yes	Yes
699-60-57	200-BP-5			Yes	Yes
699-60-60	200-BP-5				Yes
699-61-37	SITEWIDE			Yes	
699-61-62	SITEWIDE			Yes	

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APPENDIX B

WELL CONSTRUCTION INFORMATION FOR WELLS MONITORING IN THE CENTRAL PLATEAU

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Appendix B: Well Consturction Information for Wells Monitored in the Central Plateau

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-E13-14	134474.132	573087.497	320	369			737.69	2.95
299-E13-5	134319.579	573607.493	330	365			743.06	1.1
299-E16-1	135221.646	575782.1			468	510	696.44	1.8
299-E16-2	135419.286	576129.205	265	336			681.09	2.5
299-E17-1	135386.153	574977.079	303	333			719.17	2.5
299-E17-12	135125.906	574905.372			313	334	721.7	2.7
299-E17-13	135172.575	574948.031			317	337	719.25	1.9
299-E17-14	135333.739	575140.608			312	332	722.18	3.08
299-E17-15	135282.047	575142.781			311	330	721.78	3.08
299-E17-16	135210.78	575145.774			309	330	720.58	2.8
299-E17-17	135209.74	575046.178			309	331	719.92	2.95
299-E17-18	135123.586	575112.433			309	329	720.65	3
299-E17-19	135414.871	575017.183			304	327	719.33	2.95
299-E17-2	135389.899	575221.115	303	398			716.07	2
299-E17-20	135415.328	574938.108			304	324	719.23	2.99
299-E17-5	135278.548	575093.967	298	335			718.69	1.4
299-E17-6	135108.177	575113.117	300	460			720.1	2.9
299-E17-8	135407.223	574884.076	303	362			718.38	1.7
299-E17-9	135378.599	575100.32	310	320			717.64	1.7
299-E18-1	135200.161	573296.567			309	329	720.24	3.8
299-E18-2	135291.022	573392.241			309	330	721.21	2.9
299-E18-3	135277.94	573428.989			309	330	722.04	3.55
299-E18-4	135259.27	573428.668			308	328	721.57	3.2
299-E23-1	136016.551	574043.396	310	340			713.1	3.7
299-E24-1	135490.738	575032.1	300	341			716.22	1.7
299-E24-11	135483.062	574882.6	308	362			718.39	2.4
299-E24-12	135437.372	575202.222	310	320			716.28	1.7
299-E24-16	135464.364	575017.622			304	324	718.27	3
299-E24-17	135463.882	574937.812			309	329	718.69	3
299-E24-18	135469.764	574647.088			307	328	719.28	3
299-E24-19	136003.512	575316.952			280	301	693.65	2.8
299-E24-2	135493.023	574973.639	295	348			717.47	2.1

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-E24-20	136049.4	575251.1			279	300	689.28	3.43
299-E24-4	136035.197	575112.422	272	298			696.69	1.9
299-E24-5	136063.506	575040.922	274	327			696.61	1.8
299-E24-7	135560.454	574406.517	305	350			716.01	2.2
299-E24-8	136271.812	574546.779	280	372			688.81	1.555
299-E25-11	135558.572	575835	265	335			681.28	1.6
299-E25-17	135702.51	575760.245	273	295			690	1.9
299-E25-18	135699.304	575817.379	269	294			679.05	0
299-E25-19	135659.027	575852.333	270	295			677.2	0
299-E25-20	135654	575910.942	269	294			676.3	0
299-E25-21	135558.408	576063.016	270	293			677.27	2.6
299-E25-22	135609.375	575998.483			265	295	674.02	2.4
299-E25-23	135467.222	576255.758	273	304			680.13	2.4
299-E25-24	135520.843	576193.873	270	290			679.55	0
299-E25-25	135984.406	576588.887			269	289	669.42	0
299-E25-26	135912.861	575907.504			269	289	668.52	0.04
299-E25-28	136111.693	576011.773			320	340	662.44	2.1
299-E25-29P	135729.444	575953.833			257	277	673.06	1.555
299-E25-3	135670.354	575580.346	270	312			689.73	5.8
299-E25-31	135772.251	575948.016			259	279	672.53	2.1
299-E25-32P	136044.335	576382.422			259	279	669.19	1.555
299-E25-34	136100.011	576019.038			252	272	662.87	2.25
299-E25-35	135864.687	575708.338			261	281	674.39	3.4
299-E25-36	135566.372	575403.611			297	318	707.39	3
299-E25-37	135818.074	575948.977			260	281	673.29	3
299-E25-39	135837.27	576581.88			258	278	671.23	2.78
299-E25-40	136212.317	575464.675			252	273	665.91	2.9
299-E25-41	136145.925	575466.061			255	276	671.46	3.2
299-E25-42	135887.6	575622.8			267	289	683.29	3.85
299-E25-43	136251.5	576132.3			238	259	649.89	3.37
299-E25-44	135656.638	576109.942			266	286	675.29	2.39
299-E25-45	135659.702	576185.956			269	290	678.45	2.71
299-E25-46	135963.502	575359.726			286	306	694.81	3.02
299-E25-47	135931.544	575778.953			263	283	673.77	3.36

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-E25-48	135815.69	575623.851			274	294.25	682.31	2.63
299-E25-6	136163.971	575683.761	234	288			658.31	1.8
299-E25-9	136219.638	575914.147	233	288			654.86	1.5
299-E26-10	137023.494	575588.999			191	206	601.47	2.98
299-E26-11	137134.6	576179.951			200	206	599.68	2.96
299-E26-12	136383.2	576197.7			218	239	630.74	3.47
299-E26-13	136528.6	576199.3			191.7	212.3	605.02	3.47
299-E26-2	136408.771	575973.136			220	265	635.3	2.1
299-E26-4	136360.882	575733.962	225	281			647.76	2
299-E26-8	136687.227	575522.231			326	396	602.76	2.7
299-E26-9	137133.118	575576.137			190	201	602.89	3
299-E27-10	137052.481	575100.298			212	232	624.47	2.05
299-E27-11	137062.736	574652.93			230	251	643.29	2.95
299-E27-12	136583.533	575054.135			247	268	661.15	3.3
299-E27-13	136489.226	575064.916			254	275	669.19	3
299-E27-14	136498.244	575217.341			246	267	658.54	3
299-E27-15	136630.359	575095.256			238	259	652.87	2.8
299-E27-16	137164.856	574179.237			239	260	652.13	2.9
299-E27-17	137122.01	574547.31			223	244	634.72	3.47
299-E27-18	137119.29	574299.61			241.4	261.8	650.15	0
299-E27-19	137103.59	574355.07			242	262	650.88	3.05
299-E27-7	136619.403	575220.59			241	281	634.87	1.3
299-E27-8	137044.178	574759.08			226	246	637.83	3.2
299-E27-9	137040.904	574917.649			219	239	629.21	1.9
299-E28-1	136732.611	573933.503	277	324	273	322	685.2	2.7
299-E28-12	136428.68	573162.999	348	349			708.6	2.4
299-E28-13	136484.872	573083.642	367	368			706	2.9
299-E28-17	136331.686	573461.2	289	335			708.56	0
299-E28-18	136767.778	573104.076	260	325			692.58	2.53
299-E28-2	136863.891	573704.482	288	318			680.84	1.6
299-E28-21	136829.633	573038.446	257	325			688.75	2.25
299-E28-23	136730.748	573781.892			278	328	687	1.5
299-E28-24	136727.768	573785.436	318	329	277	327	686.19	0
299-E28-25	136736.73	573776.927			279	329	685.67	1.9

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-E28-26	137024.016	572941.553			279	299	687.26	2.4
299-E28-27	137070.063	573226.784			270	290	680.58	2.2
299-E28-28	137108.259	572804.351	275	295			686.55	3
299-E28-5	136856.669	574033.843	259	304			672.07	1.7
299-E28-6	136416.718	573781.931	310	339			700.11	2.3
299-E28-7	136719.127	573794.205	270	335			686.59	2
299-E28-9	136587.219	573096.47	290	340			700.77	1.8
299-E32-10	137741.69	572951.13			225	245	637.88	3.05
299-E32-2	137467.509	572648.02			258	278	670.06	2.2
299-E32-3	137383.996	572600.614			266	286	676.51	1.2
299-E32-4	137187.218	572603.743			278	298	685.88	1.2
299-E32-5	137285.125	572599.697			271	292	682.14	3.02
299-E32-6	137515.1	572600.4			255	276	667.45	3.51
299-E32-7	137647.05	572600.38			246	267	658.37	3.53
299-E32-8	137741.47	572663.39			235	255	645.54	3.46
299-E32-9	137741.69	572795.11			231	251	643.33	3.53
299-E33-10	137258.189	573255.504	259	285	250	290	671.18	2.86
299-E33-12	137632.223	573780.53			305	385	623.45	2.4
299-E33-13	137584.387	573706.488	210	235			628.34	2.47
299-E33-14	137567.216	573985.612	212	227			622.05	2.5
299-E33-15	137540.698	573810.288	222	237			627.29	2.51
299-E33-18	137386.064	573779.166	240	266			651.86	2.52
299-E33-1A	137614.032	573632.341	215	235				2.59
299-E33-26	137681.471	573333.348	199	220			632.72	2.43
299-E33-28	137375.019	573226.365			256	276	664.23	1.6
299-E33-29	137231.193	573227.858			263	283	673.77	2.2
299-E33-3	137666.036	573633.132	219	231			630.58	2.6
299-E33-30	137467.779	572923.796			255	275	663.7	1.8
299-E33-31	137491.439	573524.98			235	256	647.48	3.06
299-E33-32	137354.019	573524.825			246	267	660.02	3.09
299-E33-33	137301.934	574080.137			227	248	640.39	2.99
299-E33-34	137740.427	573104.458			219	239	633.57	2.94
299-E33-35	137605.098	573220.798			228	249	643.01	2.96
299-E33-36	137239.981	574068.54			234	255	646.67	3

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-E33-37	137185.421	574091.477			240	261	653.01	3.09
299-E33-38	137594.489	573591.158			211	240	631.95	2
299-E33-39	137637.367	573843.523			208	229	623.29	2.9
299-E33-40	137723.099	573546.232			294	305	624.58	3.32
299-E33-41	137369.94	573707.19			245	261	654.95	3.42
299-E33-42	137424.38	573520.99			230	260	654.3	3.42
299-E33-43	137325.43	573523.19			250	271	662.68	3.5
299-E33-5	137606.421	573574.225	218	235			634.72	2.56
299-E33-7	137695.968	573574.025	215	231			627.77	4
299-E34-10	137224.57	574284.4			225	246	639.77	2.76
299-E34-11	137581.78	574176.16			208	218	617.95	3.16
299-E34-12	137168.544	574411.004			224	245	638.83	2.97
299-E34-2	137220.694	574634.81			220	240	630.8	1.8
299-E34-3	137301.437	575110.254			193	213	611.52	2.04
299-E34-5	137743.332	574643.809			171	191	590.79	1.8
299-E34-7	137357.745	575274.184			194	205	604.25	3.11
299-E34-8	137249.622	574206.438			230	248	640.52	3
299-E34-9	137429.82	574186.02			213	234	628.69	2.72
299-E35-2	137255.055	575576.109			191	202	602.36	2.95
299-W10-1	136734.565	566663.096	190	270			677.26	5.2
299-W10-13	136606.806	566027.407			227	247	699.04	2.46
299-W10-14	136608.895	566017.194			427	447	699.43	2.34
299-W10-15	136808.048	566770.382			201	222	675.9	3.19
299-W10-16	136606.615	566780.89			198	219	672.76	3
299-W10-17	136491.246	566775.439			201	223	670.84	2.93
299-W10-18	136396.286	566846.866			200	221	670.93	2.85
299-W10-19	137037.14	566346.19			214	235	682.99	2.95
299-W10-20	136866.645	566249.759			221.7	241.6	687.54	1.555
299-W10-21	137154.746	566583.998			209.3	229.3	674.06	1.555
299-W10-4	136578.079	566734.643	190	245			670.67	0
299-W10-5	136474.832	566578.595	175	220			672.31	1.6
299-W11-10	136616.274	568099.147	256	304			728.89	2.1
299-W11-14	136913.962	567457.917	250	313			715.16	1.6
299-W11-18	137161.379	567181.899	227	295			707	3

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-W11-20	137132.135	567183.592					706	0
299-W11-23	136801.085	566904.966	200	240			688.15	0.4
299-W11-27	136796.56	566884.97			213	234	685.27	3.46
299-W11-28	136743.74	566934.89			224	245	693.48	3.54
299-W11-3	136663.897	567641.717	254	320			718.46	1.2
299-W11-30	136858.86	567193.37			243	280	709.11	2.94
299-W11-31	137235.28	567221.58			241	261	706.86	3.12
299-W11-32	136854.74	567190.738						1.555
299-W11-6	136492.855	567482.317	260	310			716.23	1.6
299-W11-7	136675.334	567260.884	245	290			709.11	1
299-W12-1	137206.116	568331.248	274	309			726.46	2.26
299-W14-12	136284.17	566905.69			198	219	670.52	3.44
299-W14-2	136340.409	566932.32	181	222			667.38	0
299-W14-9	135650.662	567031.737	416	535				0
299-W15-1	135942.964	566554.281	190	295			672.86	0
299-W15-10	135981.097	566448.653	183	297			676	3
299-W15-11	136000.707	566412.234	183	297			677	0
299-W15-12	136368.771	566699.207	195	215			670.07	2.7
299-W15-15	135751.498	566088.827			223	253	697.96	2.22
299-W15-16	135733.597	566307.034			208	238	684.89	2.27
299-W15-17	135718.958	566306.891			423	433	684.64	1.79
299-W15-18	135561.726	566308.701			208	238	685.71	2.16
299-W15-19	135968.695	566189.082	214	235			691.6	3.12
299-W15-2	136336.237	566093.762	218	258			693.51	3.4
299-W15-20	135964.179	566082.882			220	241	698.36	2.93
299-W15-22	136110.928	566683.041			199	220	670.77	3.06
299-W15-23	135858.13	566083.652			219	240	699.49	3.23
299-W15-24	135605.734	566091.128			220	241	699.37	3.12
299-W15-4	136027.684	566826.271	170	216			662	2.1
299-W15-6	135654.395	566801.511	175	408			661.5	2.93
299-W15-7	135920.234	566675.859	182	350			664	2.9
299-W18-1	135465.661	566421.968	195	425				2.6
299-W18-15	134733.478	566380.033	170	243			660.76	1.3
299-W18-19	135202.53	566610.485	185	250	175	205	671.03	2.53

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-W18-2	135383.588	566380.16	200	278	205	255	681	2
299-W18-21	134978.714	566097.667			196	226	668.62	2.12
299-W18-22	134990.142	566088.62			417	448	668.49	2
299-W18-23	135342.459	566084.554			220	251	696.81	2.06
299-W18-24	135346.316	566370.843			206	236	684.35	2.2
299-W18-25	134978.22	566721.48			194	215	666.04	3.01
299-W18-26	135491.686	566091.273			222.2	243.3	699.05	0
299-W18-27	135226.8	566090.5			217	238	690.25	3.47
299-W18-28	135107.1	566092.9			208	229	679.99	3.48
299-W18-29	135028.4	566561.2			119	135	674.14	3.49
299-W18-30	135193.95	566871.07			198	234	672.84	3.4
299-W18-31	135075.47	566721.83			187	222	664.16	3.43
299-W18-32	134975.646	566515.583			202	222	676.65	2.9
299-W18-33	134811.123	566723.315			198.5	228.8	668.91	1.555
299-W18-4	135415.786	566305.564	200	278	197	254	684	3
299-W18-5	135453.55	566349.234	195	274			683	3
299-W19-1	134925.623	566886.932	178	299			673.77	1.6
299-W19-11	135001.502	567276.81			220	250	695.7	0
299-W19-12	135059.446	566897.131			210	250	673.25	1.78
299-W19-13	134897.262	567288.87			212	249	695.08	2.17
299-W19-15	134975.778	567254.252			225	275	693.28	1.4
299-W19-16	135029.208	567270.681			225	275	694.93	1.6
299-W19-17	135012.805	567287.942			228	353	698.86	1.67
299-W19-18	135012.357	567360.647			230	355	698.7	2.2
299-W19-19	134914.447	567826.905			230	250	694.9	2.13
299-W19-2	134694.649	567646.642	235	295			694.04	1.4
299-W19-20	134901.071	567873.965			231	251	691.04	2.5
299-W19-21	134879.771	566953.376			201	226	678.79	1.58
299-W19-23	134893.051	567771.6			233	255	698.44	2.22
299-W19-24	134927.743	567771.555			231	251	696.95	1.97
299-W19-25	134916.359	567874.66			228	248	691.64	2.15
299-W19-26	134894.72	567845.484			228	248	693.6	2.49
299-W19-27	134930.575	567014.387			208	228	683.91	3.1
299-W19-28	134991.193	567589.789			234	255	703.09	2.94

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-W19-29	134999.512	567664.106			234	255	702.13	3.32
299-W19-3	134989.178	567311.104	230	280			697.67	1.5
299-W19-30	134924.81	567666.14			233	253	699.37	3.22
299-W19-31	135127.48	566897			201	223	674.19	3.13
299-W19-32	135009.29	566896.55			202	222	674.9	2.98
299-W19-34A	135012.305	567673.644			324	340		1.555
299-W19-34B	135010.654	567662.876			412	421		1.555
299-W19-35	135015.151	567992.101			240	270		1.555
299-W19-4	135351.193	567950.235	255	535			715.26	1.3
299-W19-9	135012.07	567272.361	215	302	211	241	693.77	0.55
299-W19-91	134926.743	566954.503			110	120	677.9	2.48
299-W19-92	134888.787	566939.398			113	123	677.9	1.9
299-W21-1	134397.186	568140.639	220	290			699.26	1.38
299-W22-10	134215.144	567012.978	203	311			672.21	1.09
299-W22-19	133975.284	567623.227	212	395			681.26	0
299-W22-2	134260.126	566970.66	195	285			670	1.42
299-W22-20	133879.246	567593.094	205	299			676.13	1.5
299-W22-21	134004.303	567167.704	200	285			670	2.6
299-W22-22	134464.315	567617.274	225	300			690.05	1.63
299-W22-23	134445.26	567587	200	300			690.7	2.1
299-W22-39	134213.67	566903.88			200	221	668.26	3
299-W22-40	134509.99	567634.57			224	245	692.23	3
299-W22-41	134479.46	567637.04			224	245	691.74	2.97
299-W22-42	134452.2	567623.16			223	243	691.42	2.96
299-W22-43	134539.24	567532.48			224	244	691.35	2.83
299-W22-44	134484.42	566955.99			205	242	678.13	3.36
299-W22-45	134292.51	566945.16			198	234	666.21	3.24
299-W22-46	134127.84	566903.85			193	229	671.18	3.58
299-W22-7	134233.667	567455.949	214	308	214	274	687.41	0
299-W22-9	134042.732	567739.688	220	299			680	0.97
299-W23-10	134256.322	566570.346	165	230			664.77	0
299-W23-13	134445.93	566712.8			196	217	666.33	2.99
299-W23-14	134290.17	566708.67			194	215	664	3
299-W23-15	134127.23	566794			186	222	665.44	3.43

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-W23-2	134258.585	566853.868	184	235			663.48	0.58
299-W23-3	134162.585	566851.07	176	228			663.56	0.49
299-W23-4	134391.881	566628.216	180	295			662.63	1.5
299-W23-7	134342.347	566870.358	170	248	169	219	663.67	0.53
299-W23-9	134274.625	566641.985	164	230			664.5	3.2
299-W26-10	133499.11	566683.22			201	221	670.87	3.68
299-W26-12	133689.86	566900.97			207	228	675.69	3.44
299-W26-6	133406.002	566463.375			191	221		0
299-W26-7	133242.42	566325.45			184	205	651.99	3.4
299-W26-8	133663.488	566645.678			195	216	666.31	2.98
299-W26-9	133228.77	566491.847			185	205	654.16	2.95
299-W27-1	133750.345	567575.12			216	236	675.25	0
299-W27-2	133670.351	566908.267			406.1	416.6	677.11	0
299-W6-1	137510.118	567214.33	230	380			702.53	1.5
299-W6-10	137453.05	567413.34			251	272	712.48	2.8
299-W6-11	137634.825	567162.516			251	271	702.86	2.87
299-W6-12	137635.159	566915.534			241	257	692.51	1.555
299-W6-2	137351.002	566938.399			224	245	692.45	2.28
299-W6-3	137299.13	567118.18			410	420	699.83	3.34
299-W6-4	137290.49	567132.25			235	256	701.25	3.49
299-W6-5	137638.63	567493.33			264	285		3.12
299-W6-6	137638.72	567318.74			419	429	709.99	3.17
299-W6-7	137638.8	567311.3			247	267	710.28	3.43
299-W6-8	137638.8	567028.8			230	251	694.73	3.39
299-W6-9	137363.12	567031.61			231	252	696.1	2.82
299-W7-1	137647.125	565932.047			224	245	690.71	2.16
299-W7-10	137457.533	566858.212			221	241	689.66	2.89
299-W7-11	137636	566186.2			212	232	681.45	3.42
299-W7-12	137636.3	566040.8			219	240	687.93	3.29
299-W7-2	137638.502	566302.803			202	222	675.59	2.4
299-W7-3	137638.641	566292.031			449	470	676.14	2.43
299-W7-4	137308.243	566408.771			203	233	671.92	2.67
299-W7-5	137635.688	566476.026			207	228	673.05	2.64
299-W7-6	137636.314	566658.078			209	229	678.64	2.39

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
299-W7-7	137636.075	566566.749			207	228	674.94	2.98
299-W7-8	137636.665	566761.393			220	241	687.35	2.95
299-W7-9	137646.402	565844.438			220	241	692.09	2.98
299-W8-1	137646.639	565749.422			236	257	701.33	1.88
299-W9-1	137023.769	565657.655			266	286	737.73	2.37
699-22-35	130309.018	579340.584					533.97	0
699-22-70	130165.727	568798.297	125	373			614.96	2
699-23-34A	130552.382	579486.265			121	136	532.86	1.555
699-23-34B	130384.701	579433.025					533.5	0
699-24-33	130768.366	579720.068	116	164			524.27	1.7
699-24-34A	130669.377	579522.72			122	137	533.88	2.18
699-24-34B	130771.817	579554.117			122	137	533.5	2.23
699-24-34C	130886.874	579588.617			121	136	532.59	1.92
699-24-35	130914.962	579176.838			128	145	538.81	2.29
699-24-46	130793.84	575785.688	180	670			591.46	1.5
699-25-33A	131224.567	579712.204			191	201	528.97	2.16
699-25-34A	131230.891	579694.867			123	138	530.31	2
699-25-34B	131181.362	579679.415			118	138	529.4	2.4
699-25-34C	131037.834	579635.012			124	140	535.46	2.11
699-25-34D	131190.9	579589.793			127	162	537.91	3.44
699-25-70	131171.718	568544.855	185	440			629.7	1.3
699-26-33	131280.289	579709.73			124	144	535.66	1.9
699-26-34A	131467.551	579394.841			117	137	528.4	1.7
699-26-34B	131352.247	579629.347			118	154	530.27	3.8
699-26-35A	131347.254	579314.109			120	140	532.66	2
699-26-35C	131341.829	579332.031			193	203	532.68	2.03
699-26-89	131375.107	562778.705	165	488			653.08	0.7
699-28-40	131929.765	577621.709	150	462			559.44	2.6
699-29-78	132413.605	566211.593	599	600			647.03	2.5
699-31-31	132794.238	580551.687	135	540			529.32	2.42
699-31-31P	132793.975	580550.129	590	600			529.32	1.555
699-32-43	133278.606	576902.127	110	120			516.62	3
699-32-62	133215.938	571009.574	275	500			707.11	1.9
699-32-70B	133242.245	568461.999	207	330			666.68	1.2

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
699-32-72A	133362.612	567942.676	210	485				1.555
699-32-72B	133362.095	567935.006			214.62	244.93	669.47	1.555
699-32-77	133152.488	566416.794	175	290			653.9	2.25
699-33-42	133480.655	577020.556	111	121	115	125	516	2.9
699-33-56	133627.235	572922.693			315	409	716.98	1.55
699-34-41B	133911.728	577338.305	150	177			570.89	4.8
699-34-42	133714.647	577165.459	123	178			540.2	3
699-34-51	133808.476	574269.887	340	381			736.57	3.95
699-34-61	133809.837	571395.849					724.31	1.555
699-34-88	133937.611	563013.294	156	605			632.82	0
699-35-66A	134099.244	569857.861	260	415				1.555
699-35-70	133987.582	568566.483	235	320	233	253	693.22	1.6
699-35-78A	134271.27	566063.586	180	279			660.65	1.37
699-36-46Q	134530.166	575996.142			440	450		1.5
699-36-61A	134557.106	571395.472	330	389			748.11	1.6
699-36-61B	134586.889	571401.207	330	505			749.26	2.8
699-36-70A	134308.839	568466.679			257.48	287.74	705.43	1.555
699-37-43	134782.511	576828.526	290	495			690.17	1.3
699-37-82A	134739.82	564906.955	155	410			636.75	2.7
699-38-61	134997.269	571219.118					675.19	1.555
699-38-65	135039.847	570090.185	220	520			753.53	2.3
699-38-68A	134931.603	569180.305						1.555
699-38-70	135089.205	568500.94	255	380			710.86	1.8
699-39-39	135391.649	578052.395	110	194			536.65	2.6
699-39-79	135411.87	565890.922	195	295			673.94	2.5
699-40-33A	135822.433	579680.859	106	185			518.05	1.48
699-40-36	135633.831	578789.249			209	220	528.92	3.1
699-40-39	135645.605	577938.043	201	212			541.84	2.89
699-40-40A	135594.092	577680.079			215	226	541.21	3.46
699-40-40B	135609.63	577677.461			187	199	542.18	3.5
699-40-62	135764.444	571164.292	335	374			747.7	0.13
699-41-35	135947.421	579079.667			184	202	520.38	3
699-41-40	135995.881	577613.886			164	174	545.94	2.94
699-41-42	136067.945	577122.035			270	281	643.91	3.61

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
699-42-37	136247.22	578476.754			144	155	519.42	3.22
699-42-39A	136251.752	577857.064			169	180	558.14	3.47
699-42-39B	136236.401	577859.033			203	214	558.32	3.46
699-42-40A	136421.763	577638.127			140	171	545.53	2
699-42-40C	136417.942	577644.381			307	390	546.16	2
699-42-41	136365.592	577335.188			134	155	567.3	3.27
699-42-42B	136433.923	576998.097			193	203	583.23	4
699-43-40	136705.33	577583.115			114	135	542.2	3.44
699-43-41E	136594.352	577478.655			135	146	550.86	2.97
699-43-41F	136579.005	577479.36			165	176	551.01	2.95
699-43-41G	136586.611	577466.411			188	199	551.34	3.38
699-43-42J	136451.901	577006.203			157	177	581.68	3.4
699-43-43	136576.286	576728.505			157	177	579.37	3.4
699-43-45	136585.729	576283.815			183	203	597.68	3
699-44-39B	136727.386	577960.618			99	119	513.4	3.78
699-44-42	136833.581	577099.318			151	172	579.22	3.3
699-44-43B	136897.718	576673.277			156	176	580.12	2.9
699-44-64	136897.434	570390.651	316	442			725.59	2.25
699-45-42	137286.372	577055.094	158	180			577.33	1.7
699-45-69A	137182.679	568729.3	274	366			725.46	1.2
699-47-35A	137780.1	579312.491	65	102			476.36	2.15
699-47-46A	137820.739	575869.826	168	181			580.14	2
699-47-50	137887.166	574798.717			260	295	584.22	2.5
699-47-60	137968.732	571474.38	235	277			651.52	2.5
699-48-50	138227.088	574817.584			160	180	574.06	2.76
699-48-71	138056.941	568387.914	239	302			688.15	1.65
699-48-77A	137968.857	566413.228			212	233	674.72	2.47
699-48-77C	138086.801	566468.954					674.28	1.555
699-48-77D	138119.268	566433.302					673.87	0
699-49-28	138520.874	581323.51			167	177	535.4	3.1
699-49-55A	138351.781	573146.301	125	135	124	139	531.03	2.56
699-49-55B	138350.879	573138.718			175	226	531.12	2.6
699-49-57A	138389.24	572544.276	144	161			552.8	2.6
699-49-57B	138381.034	572536.452			219	230	555.99	2.77

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
699-49-79	138271.108	565771.123	225	265			689.2	1.1
699-50-45	138783.367	576172.755			133	178	451.41	2.27
699-50-48B	138715.913	575390.732			213	250	550.39	1.75
699-50-53A	138670.477	573649.666	142	156			557.46	2.5
699-50-53B	138659.519	573655.45			209	225	557.62	2.59
699-50-85	138669.323	564130.196	285	545			739.35	1.56
699-51-46	139001.588	575738.496			113	163	444.63	2.05
699-51-63	139148.408	570664.4	157	183			571.84	1.6
699-51-75	138906.286	566978.076	190	370			641.51	2.25
699-52-46A	139358.005	575903.296	175	225			455.61	1.85
699-52-48	139195.665	575231.474			153	195	466.06	0.9
699-52-54	139193.172	573254.242			156	167	568.45	2.87
699-52-57	139115.316	572761.346			149	160	561.8	3.45
699-53-47A	139489.296	575417.545	22	33			438.28	1
699-53-47B	139485.275	575416.12			26	46	438.58	1.9
699-53-48A	139593.885	575338.712	44	53			442.45	2.25
699-53-48B	139595.705	575336.306			17	44	442.71	2.35
699-53-50	139700.592	574584.129			144	194	444.21	1.8
699-53-55A	139631.884	573115.859	165	280			576.56	2.55
699-53-55B	139624.964	573110.622	232	252			576.84	2.56
699-53-55C	139624.113	573114.995			187	221	576.13	2.04
699-54-34	140009.502	579497.656			156	166	550.24	3.13
699-54-45A	140001.429	576314.759			95	105	494.29	3
699-54-48	139821.176	575357.767			42	63	457.02	2.31
699-54-49	139825.684	574988.009			32	52		1.9
699-54-57	140029.626	572619.411			236	321	576.24	2.56
699-55-40	140346.524	577550.24			135	145	543.13	3.14
699-55-50C	140243.409	574660.418	35	59			444.43	2
699-55-55	140150.538	573227.561			148.4	169.3	563.77	0
699-55-57	140119.853	572445.432	139	169			568.13	2.54
699-55-60A	140267.374	571562.954	190	230			572.89	0
699-55-76	140225.816	566723.421	141	221			583.24	1.1
699-55-89	140199.451	562886.578	160	222			617.43	1.2
699-56-43	140627.536	576756.291			138	155	540.42	3

Well	Northing	Easting	Perforated Interval (BGS) Minimum (ft)	Perforated Interval (BGS) Maximum (ft)	Screened Interval (BGS) Minimum (ft)	Screened Interval (BGS) Maximum (ft)	TOC Elevation (ft)	Stickup (ft)
699-56-53	140650.663	573794.188			190	270	434.34	1.8
699-57-29A	140899.725	581133.96	50	65			408.47	1.42
699-57-59	140923.719	571830.216			166	186	576.26	2.96
699-59-55	141544.5	573049.38	144	145			431.88	0
699-59-58	141414.963	572273.618			85	100	498.02	2.56
699-60-57	141870.325	572623.495			55	75	469.48	2.26
699-60-60	141763.907	571588.581	100	127			511.95	2.37
699-61-37	141964.333	578587.189			66	76	442.94	3.3
699-61-62	141921.659	570914.859	86	100			497.47	3

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APPENDIX C

DECLINING WATER TABLE PREDICTIONS

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Appendix C: Declining Water Table (DWT) Predictions

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-E13-14	7	28.71	Log	25.93	-2.78	-0.28
299-E16-1	6	222.24	Log	216.24	-6.00	-0.60
299-E17-1	21	16.85	Log	12.68	-4.17	-0.42
299-E17-12	11	15.69	Log	11.54	-4.15	-0.41
299-E17-13	17	20.19	Log	16.38	-3.81	-0.38
299-E17-14	18	13.93	Log	10.20	-3.73	-0.37
299-E17-15	21	11.53	Log	7.89	-3.64	-0.36
299-E17-16	19	13.10	Log	9.26	-3.84	-0.38
299-E17-17	21	14.95	Log	9.89	-5.06	-0.51
299-E17-18	20	12.34	Log	7.91	-4.43	-0.44
299-E17-19	17	11.16	Log	5.56	-5.60	-0.56
299-E17-20	23	8.91	Log	3.70	-5.21	-0.52
299-E17-5	19	18.19	Log	14.24	-3.95	-0.40
299-E17-6	12	144.12	Log	138.83	-5.29	-0.53
299-E17-8	8	46.26	Log	41.14	-5.12	-0.51
299-E17-9	23	4.45	Log	2.02	-2.43	-0.24
299-E18-1	48	13.82	Log	9.41	-4.41	-0.44
299-E18-2	43	12.67	Log	8.70	-3.97	-0.40
299-E18-3	44	12.75	Log	8.49	-4.26	-0.43
299-E18-4	46	10.93	Log	7.06	-3.87	-0.39
299-E23-1	6	32.24	Log	28.41	-3.83	-0.38
299-E24-16	19	10.00	Log	6.93	-3.07	-0.31
299-E24-17	16	13.50	Log	12.81	-0.69	-0.07
299-E24-18	20	12.71	Log	8.31	-4.40	-0.44
299-E24-19	47	11.14	Log	7.75	-3.39	-0.34
299-E24-2	19	33.97	Log	29.43	-4.54	-0.45
299-E24-20	49	15.48	Log	11.61	-3.87	-0.39
299-E24-7	7	37.65	Log	33.18	-4.47	-0.45
299-E24-8	5	86.92	Log	82.30	-4.62	-0.46
299-E25-11	30	56.55	Log	51.74	-4.81	-0.48
299-E25-18	26	15.93	Log	11.55	-4.38	-0.44
299-E25-19	25	18.71	Log	14.55	-4.16	-0.42
299-E25-20	26	18.51	Log	13.79	-4.72	-0.47
299-E25-21	18	19.63	Log	15.21	-4.42	-0.44
299-E25-22	6	24.09	Log	18.59	-5.50	-0.55
299-E25-24	8	11.62	Log	7.49	-4.13	-0.41
299-E25-25	8	22.05	Log	15.71	-6.34	-0.63
299-E25-26	51	21.89	Log	17.03	-4.86	-0.49
299-E25-28	52	81.31	Log	76.41	-4.90	-0.49
299-E25-31	18	8.02	Log	2.24	-5.78	-0.58
299-E25-32P	54	12.05	Log	8.65	-3.40	-0.34
299-E25-34	54	12.81	Log	8.20	-4.61	-0.46
299-E25-35	51	11.54	Log	7.35	-4.19	-0.42
299-E25-36	27	14.70	Log	10.79	-3.91	-0.39
299-E25-37	7	12.34	Log	6.09	-6.25	-0.62
299-E25-39	13	12.07	Log	5.48	-6.59	-0.66
299-E25-40	49	11.11	Log	7.49	-3.62	-0.36

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-E25-41	49	9.21	Log	5.54	-3.67	-0.37
299-E25-42	53	11.11	Log	7.04	-4.07	-0.41
299-E25-43	47	14.28	Log	9.95	-4.33	-0.43
299-E25-44	4	15.40	Log	7.55	-7.85	-0.78
299-E25-45	4	16.61	Log	8.60	-8.01	-0.80
299-E25-46	37	15.63	Log	10.15	-5.48	-0.55
299-E25-47	38	14.27	Log	10.53	-3.74	-0.37
299-E25-48	37	17.05	Log	13.25	-3.80	-0.38
299-E25-6	16	30.15	Log	25.58	-4.57	-0.46
299-E25-9	15	33.78	Log	29.84	-3.94	-0.39
299-E26-10	27	9.30	Log	5.27	-4.03	-0.40
299-E26-11	22	15.16	Log	14.84	-0.32	-0.03
299-E26-12	51	13.63	Log	9.46	-4.17	-0.42
299-E26-13	52	12.53	Log	8.06	-4.47	-0.45
299-E26-2	15	33.10	Log	28.93	-4.17	-0.42
299-E26-4	6	37.46	Log	32.94	-4.52	-0.45
299-E26-8	7	180.74	Log	177.67	-3.07	-0.31
299-E26-9	20	3.07	Log	0.57	-2.50	-0.25
299-E27-10	20	10.99	Log	5.71	-5.28	-0.53
299-E27-11	22	11.65	Log	7.91	-3.74	-0.37
299-E27-12	49	11.37	Log	7.79	-3.58	-0.36
299-E27-13	49	10.13	Log	6.30	-3.83	-0.38
299-E27-14	46	12.66	Log	8.88	-3.78	-0.38
299-E27-15	47	10.81	Log	5.97	-4.84	-0.48
299-E27-16	21	10.96	Log	7.05	-3.91	-0.39
299-E27-17	22	14.11	Log	10.39	-3.72	-0.37
299-E27-18	5	12.97	Log	10.54	-2.43	-0.24
299-E27-19	5	15.25	Log	10.64	-4.61	-0.46
299-E27-7	45	48.89	Log	44.77	-4.12	-0.41
299-E27-8	22	12.57	Log	8.55	-4.02	-0.40
299-E27-9	22	12.91	Log	9.10	-3.81	-0.38
299-E28-1	5	43.10	Log	42.05	-1.05	-0.11
299-E28-12	7	44.68	Log	40.21	-4.47	-0.45
299-E28-17	7	28.01	Log	22.01	-6.00	-0.60
299-E28-18	12	36.43	Log	31.17	-5.26	-0.53
299-E28-2	6	40.27	Linear	42.73	2.46	0.25
299-E28-21	6	39.51	Log	32.40	-7.11	-0.71
299-E28-26	43	15.24	Log	10.68	-4.56	-0.46
299-E28-27	42	12.92	Log	8.78	-4.14	-0.41
299-E28-28	41	12.40	Log	7.89	-4.51	-0.45
299-E28-5	9	34.89	Log	27.55	-7.34	-0.73
299-E28-6	7	42.73	Log	38.27	-4.46	-0.45
299-E28-7	10	52.06	Log	47.43	-4.63	-0.46
299-E28-9	8	42.44	Log	38.04	-4.40	-0.44
299-E32-10	19	11.35	Log	4.62	-6.73	-0.67
299-E32-2	43	11.04	Log	6.71	-4.33	-0.43
299-E32-3	43	11.52	Log	7.20	-4.32	-0.43
299-E32-4	44	14.05	Log	9.35	-4.70	-0.47
299-E32-5	42	13.84	Log	8.07	-5.77	-0.58
299-E32-6	22	13.29	Log	9.26	-4.03	-0.40

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-E32-7	42	13.33	Log	8.96	-4.37	-0.44
299-E32-8	42	14.00	Log	9.71	-4.29	-0.43
299-E32-9	42	12.40	Log	8.49	-3.91	-0.39
299-E33-12	19	166.08	Log	158.19	-7.89	-0.79
299-E33-13	17	10.00	Log	2.71	-7.29	-0.73
299-E33-14	18	9.14	Log	5.09	-4.05	-0.41
299-E33-15	18	13.94	Log	6.83	-7.11	-0.71
299-E33-18	37	17.97	Log	13.38	-4.59	-0.46
299-E33-28	42	14.47	Log	9.88	-4.59	-0.46
299-E33-29	42	12.53	Log	8.54	-3.99	-0.40
299-E33-3	18	4.65	Log	1.16	-3.49	-0.35
299-E33-30	43	14.15	Log	9.66	-4.49	-0.45
299-E33-31	48	12.93	Log	8.96	-3.97	-0.40
299-E33-32	48	11.32	Log	7.26	-4.06	-0.41
299-E33-33	54	11.30	Log	7.76	-3.54	-0.35
299-E33-34	43	9.60	Log	6.12	-3.48	-0.35
299-E33-35	40	9.68	Log	5.92	-3.76	-0.38
299-E33-36	25	10.41	Log	5.54	-4.87	-0.49
299-E33-37	21	12.28	Log	8.32	-3.96	-0.40
299-E33-38	20	11.09	Log	7.34	-3.75	-0.37
299-E33-39	20	9.44	Log	5.89	-3.55	-0.35
299-E33-40	15	85.69	Log	80.75	-4.94	-0.49
299-E33-41	46	10.64	Log	7.89	-2.75	-0.28
299-E33-42	49	10.48	Log	6.71	-3.77	-0.38
299-E33-43	45	12.86	Log	8.54	-4.32	-0.43
299-E33-5	29	4.12	Log	2.04	-2.08	-0.21
299-E33-7	19	8.83	Log	3.60	-5.23	-0.52
299-E34-10	22	10.35	Log	6.87	-3.48	-0.35
299-E34-11	14	4.61	Log	2.13	-2.48	-0.25
299-E34-12	12	10.32	Log	3.36	-6.96	-0.70
299-E34-2	25	12.25	Log	8.08	-4.17	-0.42
299-E34-3	21	4.99	Log	2.17	-2.82	-0.28
299-E34-5	25	4.43	Log	1.57	-2.86	-0.29
299-E34-7	10	5.09	Log	2.33	-2.76	-0.28
299-E34-8	23	10.02	Log	4.56	-5.46	-0.55
299-E34-9	20	9.34	Log	5.85	-3.49	-0.35
299-E35-2	26	4.86	Log	1.44	-3.42	-0.34
299-W10-13	45	10.89	Log	5.04	-5.85	-0.58
299-W10-14	44	210.65	Log	200.65	-10.00	-1.00
299-W10-15	52	9.10	Log	4.92	-4.18	-0.42
299-W10-16	53	9.33	Log	4.90	-4.43	-0.44
299-W10-17	55	15.55	Log	9.75	-5.80	-0.58
299-W10-18	55	14.18	Log	8.66	-5.52	-0.55
299-W10-19	22	14.04	Log	8.32	-5.72	-0.57
299-W10-20	5	15.28	Log	8.93	-6.35	-0.64
299-W10-21	9	14.74	Log	9.50	-5.23	-0.52
299-W10-5	10	9.98	Log	4.21	-5.77	-0.58
299-W11-10	12	29.35	Log	21.34	-8.01	-0.80
299-W11-14	10	55.68	Log	47.68	-8.00	-0.80
299-W11-23	41	11.49	Log	3.14	-8.35	-0.84

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-W11-27	51	11.64	Log	5.97	-5.67	-0.57
299-W11-28	22	15.39	Log	10.98	-4.41	-0.44
299-W11-31	12	13.32	Log	5.09	-8.23	-0.82
299-W11-6	10	52.29	Log	45.31	-6.98	-0.70
299-W11-7	9	41.15	Log	34.82	-6.33	-0.63
299-W12-1	7	33.02	Log	25.38	-7.64	-0.76
299-W14-12	51	14.11	Log	9.06	-5.05	-0.51
299-W15-10	5	85.67	Log	73.04	-12.63	-1.26
299-W15-12	43	9.01	Log	3.99	-5.02	-0.50
299-W15-15	18	18.57	Log	9.38	-9.19	-0.92
299-W15-16	22	16.44	Log	8.40	-8.04	-0.80
299-W15-17	20	210.91	Log	199.22	-11.69	-1.17
299-W15-18	19	15.40	Log	6.58	-8.82	-0.88
299-W15-19	20	7.89	Log	2.64	-5.25	-0.52
299-W15-20	20	6.82	Log	1.50	-5.32	-0.53
299-W15-22	54	15.15	Log	7.92	-7.23	-0.72
299-W15-23	20	5.04	Log	0.78	-4.26	-0.43
299-W15-24	19	5.14	Log	0.85	-4.29	-0.43
299-W15-4	9	18.85	Log	15.81	-3.04	-0.30
299-W18-15	7	46.25	Log	31.01	-15.24	-1.52
299-W18-21	20	20.69	Log	10.30	-10.39	-1.04
299-W18-22	20	242.30	Log	229.15	-13.15	-1.32
299-W18-23	21	17.51	Log	8.58	-8.93	-0.89
299-W18-24	16	16.36	Log	6.82	-9.54	-0.95
299-W18-25	49	13.22	Log	3.50	-9.72	-0.97
299-W18-26	20	5.52	Log	0.93	-4.59	-0.46
299-W18-27	22	12.90	Log	4.98	-7.92	-0.79
299-W18-28	23	13.99	Log	5.60	-8.39	-0.84
299-W18-29	23	9.93	Linear	18.27	8.34	0.83
299-W18-30	50	26.27	Log	14.75	-11.52	-1.15
299-W18-31	48	22.66	Log	10.37	-12.29	-1.23
299-W18-32	11	9.34	Log	1.45	-7.89	-0.79
299-W18-33	20	22.11	Log	8.32	-13.79	-1.38
299-W19-1	11	87.78	Log	68.96	-18.82	-1.88
299-W19-12	39	40.21	Log	27.38	-12.83	-1.28
299-W19-15	9	41.99	Log	29.54	-12.45	-1.25
299-W19-19	6	10.83	Log	3.56	-7.27	-0.73
299-W19-2	6	57.34	Log	47.31	-10.03	-1.00
299-W19-20	16	16.12	Log	7.42	-8.70	-0.87
299-W19-21	31	9.58	Log	1.83	-7.75	-0.77
299-W19-23	4	15.52	Log	7.85	-7.67	-0.77
299-W19-24	10	12.27	Log	5.07	-7.20	-0.72
299-W19-25	6	13.05	Log	1.84	-11.21	-1.12
299-W19-26	8	10.56	Log	4.01	-6.55	-0.66
299-W19-27	28	7.63	Log	1.57	-6.06	-0.61
299-W19-28	12	11.27	Log	3.38	-7.89	-0.79
299-W19-29	10	12.14	Log	4.64	-7.50	-0.75
299-W19-3	4	42.58	Log	30.82	-11.76	-1.18
299-W19-31	50	13.64	Log	5.35	-8.29	-0.83
299-W19-32	48	11.65	Log	3.56	-8.09	-0.81

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-W19-4	5	276.85	Log	264.04	-12.81	-1.28
299-W21-1	6	43.44	Log	34.53	-8.91	-0.89
299-W22-19	5	167.18	Log	152.59	-14.59	-1.46
299-W22-21	6	72.61	Log	58.25	-14.36	-1.44
299-W22-22	10	67.41	Log	54.51	-12.90	-1.29
299-W22-23	7	65.83	Log	59.63	-6.20	-0.62
299-W22-39	47	11.90	Log	3.92	-7.98	-0.80
299-W22-40	29	9.40	Log	3.19	-6.21	-0.62
299-W22-41	33	9.83	Log	3.53	-6.30	-0.63
299-W22-42	34	7.99	Log	2.15	-5.84	-0.58
299-W22-43	34	9.57	Log	3.12	-6.45	-0.64
299-W22-44	43	24.53	Log	13.23	-11.30	-1.13
299-W22-45	30	27.26	Log	16.27	-10.99	-1.10
299-W22-46	47	17.34	Log	7.89	-9.45	-0.94
299-W22-7	5	75.81	Log	61.40	-14.41	-1.44
299-W23-13	45	12.03	Log	3.11	-8.92	-0.89
299-W23-14	47	11.96	Log	3.64	-8.32	-0.83
299-W23-15	47	26.61	Log	15.08	-11.53	-1.15
299-W23-2	12	31.94	Log	15.39	-16.55	-1.65
299-W23-3	16	23.87	Log	9.47	-14.40	-1.44
299-W23-4	5	94.26	Log	74.68	-19.58	-1.96
299-W23-7	16	45.18	Log	25.35	-19.83	-1.98
299-W26-10	21	8.19	Log	1.87	-6.32	-0.63
299-W26-12	17	10.48	Log	3.02	-7.46	-0.75
299-W26-7	16	12.71	Log	5.08	-7.63	-0.76
299-W26-8	24	8.40	Log	1.99	-6.41	-0.64
299-W26-9	25	8.57	Log	3.10	-5.47	-0.55
299-W27-2	8	194.23	Log	183.20	-11.03	-1.10
299-W6-1	6	133.71	Log	126.21	-7.50	-0.75
299-W6-10	12	15.66	Log	8.58	-7.08	-0.71
299-W6-11	12	24.45	Log	18.80	-5.65	-0.57
299-W6-12	12	20.57	Log	13.10	-7.48	-0.75
299-W6-2	46	11.18	Log	5.84	-5.34	-0.53
299-W6-3	22	179.00	Log	170.95	-8.05	-0.81
299-W6-4	24	14.37	Log	8.31	-6.06	-0.61
299-W6-6	22	174.80	Log	167.94	-6.86	-0.69
299-W6-7	22	12.83	Log	7.65	-5.18	-0.52
299-W6-8	17	13.68	Log	8.55	-5.13	-0.51
299-W6-9	13	14.82	Log	6.71	-8.11	-0.81
299-W7-1	44	13.39	Log	7.67	-5.72	-0.57
299-W7-10	44	9.75	Log	4.40	-5.35	-0.54
299-W7-11	44	10.78	Log	5.36	-5.42	-0.54
299-W7-12	44	12.27	Log	6.33	-5.94	-0.59
299-W7-2	44	4.66	Log	1.11	-3.55	-0.36
299-W7-3	44	251.26	Log	243.27	-7.99	-0.80
299-W7-4	43	21.55	Log	15.05	-6.50	-0.65
299-W7-5	44	12.92	Log	7.36	-5.56	-0.56
299-W7-6	44	7.93	Log	2.99	-4.94	-0.49
299-W7-7	46	11.50	Log	6.04	-5.46	-0.55
299-W7-8	42	10.73	Log	4.22	-6.51	-0.65

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-W7-9	44	9.35	Log	4.14	-5.21	-0.52
299-W8-1	46	14.96	Log	10.70	-4.26	-0.43
299-W9-1	47	9.50	Log	4.70	-4.80	-0.48
699-23-34A	23	5.46	Log	3.60	-1.86	-0.19
699-24-33	56	42.23	Log	37.88	-4.35	-0.43
699-24-34A	53	6.05	Log	2.98	-3.07	-0.31
699-24-34B	53	6.52	Log	3.44	-3.08	-0.31
699-24-34C	53	6.10	Log	3.14	-2.96	-0.30
699-24-35	54	9.26	Log	5.75	-3.51	-0.35
699-25-33A	47	74.91	Log	69.40	-5.51	-0.55
699-25-34A	47	9.70	Log	4.86	-4.84	-0.48
699-25-34B	45	9.40	Log	5.21	-4.19	-0.42
699-25-34C	53	7.43	Log	4.28	-3.15	-0.31
699-25-34D	25	29.33	Log	27.44	-1.89	-0.19
699-25-70	5	256.84	Log	247.32	-9.52	-0.95
699-26-33	48	9.83	Log	5.80	-4.03	-0.40
699-26-34A	22	10.04	Log	4.73	-5.31	-0.53
699-26-34B	27	28.33	Log	24.50	-3.83	-0.38
699-26-35A	53	8.95	Log	5.32	-3.63	-0.36
699-26-35C	47	73.14	Log	67.58	-5.56	-0.56
699-26-89	6	306.00	Log	300.10	-5.90	-0.59
699-28-40	43	306.23	Log	301.23	-5.00	-0.50
699-29-78	8	413.65	Log	399.99	-13.66	-1.37
699-31-31	42	413.79	Log	409.20	-4.59	-0.46
699-32-43	10	7.86	Log	4.33	-3.53	-0.35
699-32-62	9	222.32	Log	219.41	-2.91	-0.29
699-32-70B	8	112.60	Log	103.05	-9.55	-0.95
699-32-77	10	94.86	Log	82.80	-12.06	-1.21
699-33-42	8	9.48	Log	4.55	-4.93	-0.49
699-33-56	6	96.16	Log	91.69	-4.47	-0.45
699-34-41B	6	12.45	Log	8.70	-3.75	-0.38
699-34-42	8	42.35	Log	36.73	-5.62	-0.56
699-34-51	7	50.32	Log	46.13	-4.19	-0.42
699-34-88	6	438.82	Log	430.52	-8.30	-0.83
699-35-70	12	75.71	Log	66.78	-8.93	-0.89
699-35-78A	11	80.95	Log	66.42	-14.53	-1.45
699-36-61A	11	49.80	Log	44.75	-5.05	-0.51
699-37-43	14	208.45	Log	204.95	-3.50	-0.35
699-37-82A	8	239.19	Log	228.27	-10.92	-1.09
699-38-65	10	197.29	Log	193.08	-4.21	-0.42
699-38-70	12	119.33	Log	107.60	-11.73	-1.17
699-39-39	38	73.18	Linear	76.33	3.15	0.31
699-39-79	11	85.67	Log	72.40	-13.27	-1.33
699-40-33A	16	78.51	Log	75.63	-2.88	-0.29
699-40-36	37	105.00	Log	104.80	-0.20	-0.02
699-40-39	53	85.51	Log	84.64	-0.87	-0.09
699-40-40A	52	99.24	Log	98.53	-0.71	-0.07
699-40-40B	52	71.70	Linear	71.85	0.15	0.01
699-40-62	12	30.54	Log	24.89	-5.65	-0.57
699-41-35	39	96.70	Log	96.64	-0.06	-0.01

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
699-41-40	52	46.26	Linear	47.70	1.44	0.14
699-41-42	31	51.70	Linear	53.36	1.66	0.17
699-42-37	36	53.85	Linear	55.93	2.08	0.21
699-42-39A	52	46.41	Linear	47.95	1.54	0.15
699-42-39B	53	77.60	Linear	80.41	2.81	0.28
699-42-40A	52	49.30	Linear	54.18	4.88	0.49
699-42-40C	18	258.74	Log	255.95	-2.79	-0.28
699-42-41	50	11.27	Linear	14.00	2.73	0.27
699-42-42B	49	39.65	Linear	39.81	0.16	0.02
699-43-40	49	16.45	Linear	21.69	5.24	0.52
699-43-41E	49	18.65	Linear	21.92	3.27	0.33
699-43-41F	49	48.54	Linear	51.13	2.59	0.26
699-43-41G	50	67.64	Linear	69.57	1.93	0.19
699-43-42J	51	16.15	Linear	16.21	0.06	0.01
699-43-43	49	13.90	Linear	14.21	0.31	0.03
699-43-45	50	10.45	Log	6.70	-3.75	-0.37
699-44-39B	29	29.81	Linear	44.66	14.85	1.49
699-44-42	50	15.33	Log	15.17	-0.16	-0.02
699-44-43B	49	12.10	Log	9.87	-2.23	-0.22
699-44-64	9	123.99	Log	119.45	-4.54	-0.45
699-45-42	16	19.92	Log	18.30	-1.62	-0.16
699-45-69A	4	86.44	Log	77.27	-9.17	-0.92
699-47-35A	13	40.45	Log	37.26	-3.19	-0.32
699-47-46A	12	5.38	Log	1.77	-3.61	-0.36
699-47-50	20	116.24	Log	109.53	-6.71	-0.67
699-47-60	18	29.50	Log	24.26	-5.24	-0.52
699-48-50	16	11.68	Log	7.18	-4.50	-0.45
699-48-71	12	58.63	Log	52.08	-6.55	-0.65
699-48-77A	5	15.01	Log	10.70	-4.31	-0.43
699-49-28	5	37.69	Log	33.69	-4.00	-0.40
699-49-55A	19	8.11	Log	3.63	-4.48	-0.45
699-49-55B	19	98.98	Log	91.99	-6.99	-0.70
699-49-57A	16	11.50	Log	7.41	-4.09	-0.41
699-49-57B	17	78.18	Log	72.43	-5.75	-0.57
699-49-79	11	30.90	Log	25.14	-5.76	-0.58
699-50-45	6	136.34	Log	131.24	-5.10	-0.51
699-50-48B	6	106.31	Log	100.67	-5.64	-0.56
699-50-53A	14	2.47	Log	0.26	-2.21	-0.22
699-50-53B	15	71.71	Log	64.74	-6.97	-0.70
699-50-85	8	261.18	Log	255.68	-5.50	-0.55
699-51-46	6	126.35	Log	121.58	-4.77	-0.48
699-51-63	9	16.40	Log	11.90	-4.50	-0.45
699-51-75	9	178.32	Log	171.84	-6.48	-0.65
699-52-46A	8	178.80	Log	175.04	-3.76	-0.38
699-52-48	6	133.59	Log	127.90	-5.69	-0.57
699-52-54	12	2.60	Log	0.48	-2.12	-0.21
699-52-57	8	2.27	Log	0.11	-2.16	-0.22
699-53-47A	8	0.90	Log	0.15	-0.75	-0.08
699-53-47B	8	14.52	Log	12.65	-1.87	-0.19
699-53-48A	10	15.79	Log	14.66	-1.13	-0.11

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
699-53-48B	7	8.27	Linear	12.32	4.05	0.41
699-53-50	9	154.46	Log	148.85	-5.61	-0.56
699-53-55A	18	106.82	Log	100.77	-6.05	-0.60
699-53-55B	18	78.21	Log	72.60	-5.61	-0.56
699-53-55C	18	48.11	Log	42.68	-5.43	-0.54
699-54-34	8	28.00	Log	25.99	-2.01	-0.20
699-54-45A	5	11.72	Linear	12.02	0.30	0.03
699-54-48	10	8.81	Log	5.64	-3.17	-0.32
699-54-57	21	148.33	Log	141.81	-6.52	-0.65
699-55-40	6	13.68	Log	10.98	-2.70	-0.27
699-55-50C	8	17.32	Log	13.12	-4.20	-0.42
699-55-55	8	6.20	Log	2.96	-3.24	-0.32
699-55-57	14	4.14	Log	1.20	-2.94	-0.29
699-55-76	9	81.71	Log	76.20	-5.51	-0.55
699-55-89	4	59.48	Log	56.83	-2.65	-0.26
699-56-43	6	24.88	Log	21.05	-3.83	-0.38
699-56-53	8	238.31	Log	232.26	-6.05	-0.60
699-57-29A	7	12.06	Log	8.41	-3.65	-0.36
699-57-59	12	13.57	Log	9.43	-4.14	-0.41
699-59-58	11	4.83	Log	2.11	-2.72	-0.27
699-60-57	13	8.53	Log	4.71	-3.82	-0.38
699-60-60	11	17.88	Log	13.43	-4.45	-0.45
699-61-37	8	17.48	Log	14.02	-3.46	-0.35
699-61-62	10	6.00	Log	2.43	-3.57	-0.36

Wells with Predicted Water Columns Less Than 5 feet

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-E17-20	23	8.91	Log	3.70	-5.21	-0.52
299-E17-9	23	4.45	Log	2.02	-2.43	-0.24
299-E25-31	18	8.02	Log	2.24	-5.78	-0.58
299-E26-9	20	3.07	Log	0.57	-2.50	-0.25
299-E32-10	19	11.35	Log	4.62	-6.73	-0.67
299-E33-13	17	10.00	Log	2.71	-7.29	-0.73
299-E33-3	18	4.65	Log	1.16	-3.49	-0.35
299-E33-5	29	4.12	Log	2.04	-2.08	-0.21
299-E33-7	19	8.83	Log	3.60	-5.23	-0.52
299-E34-11	14	4.61	Log	2.13	-2.48	-0.25
299-E34-12	12	10.32	Log	3.36	-6.96	-0.70
299-E34-3	21	4.99	Log	2.17	-2.82	-0.28
299-E34-5	25	4.43	Log	1.57	-2.86	-0.29
299-E34-7	10	5.09	Log	2.33	-2.76	-0.28
299-E34-8	23	10.02	Log	4.56	-5.46	-0.55
299-E35-2	26	4.86	Log	1.44	-3.42	-0.34
299-W10-15	52	9.10	Log	4.92	-4.18	-0.42
299-W10-16	53	9.33	Log	4.90	-4.43	-0.44
299-W10-5	10	9.98	Log	4.21	-5.77	-0.58
299-W11-23	41	11.49	Log	3.14	-8.35	-0.84
299-W15-12	43	9.01	Log	3.99	-5.02	-0.50
299-W15-19	20	7.89	Log	2.64	-5.25	-0.52
299-W15-20	20	6.82	Log	1.50	-5.32	-0.53
299-W15-23	20	5.04	Log	0.78	-4.26	-0.43
299-W15-24	19	5.14	Log	0.85	-4.29	-0.43
299-W18-25	49	13.22	Log	3.50	-9.72	-0.97
299-W18-26	20	5.52	Log	0.93	-4.59	-0.46
299-W18-27	22	12.90	Log	4.98	-7.92	-0.79
299-W18-32	11	9.34	Log	1.45	-7.89	-0.79
299-W19-19	6	10.83	Log	3.56	-7.27	-0.73
299-W19-21	31	9.58	Log	1.83	-7.75	-0.77
299-W19-25	6	13.05	Log	1.84	-11.21	-1.12
299-W19-26	8	10.56	Log	4.01	-6.55	-0.66
299-W19-27	28	7.63	Log	1.57	-6.06	-0.61
299-W19-28	12	11.27	Log	3.38	-7.89	-0.79
299-W19-29	10	12.14	Log	4.64	-7.50	-0.75
299-W19-32	48	11.65	Log	3.56	-8.09	-0.81
299-W22-39	47	11.90	Log	3.92	-7.98	-0.80
299-W22-40	29	9.40	Log	3.19	-6.21	-0.62
299-W22-41	33	9.83	Log	3.53	-6.30	-0.63
299-W22-42	34	7.99	Log	2.15	-5.84	-0.58
299-W22-43	34	9.57	Log	3.12	-6.45	-0.64
299-W23-13	45	12.03	Log	3.11	-8.92	-0.89
299-W23-14	47	11.96	Log	3.64	-8.32	-0.83
299-W26-10	21	8.19	Log	1.87	-6.32	-0.63
299-W26-12	17	10.48	Log	3.02	-7.46	-0.75
299-W26-8	24	8.40	Log	1.99	-6.41	-0.64
299-W26-9	25	8.57	Log	3.10	-5.47	-0.55

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-W7-10	44	9.75	Log	4.40	-5.35	-0.54
299-W7-2	44	4.66	Log	1.11	-3.55	-0.36
299-W7-6	44	7.93	Log	2.99	-4.94	-0.49
299-W7-8	42	10.73	Log	4.22	-6.51	-0.65
299-W7-9	44	9.35	Log	4.14	-5.21	-0.52
299-W9-1	47	9.50	Log	4.70	-4.80	-0.48
699-23-34A	23	5.46	Log	3.60	-1.86	-0.19
699-24-34A	53	6.05	Log	2.98	-3.07	-0.31
699-24-34B	53	6.52	Log	3.44	-3.08	-0.31
699-24-34C	53	6.10	Log	3.14	-2.96	-0.30
699-25-34A	47	9.70	Log	4.86	-4.84	-0.48
699-25-34C	53	7.43	Log	4.28	-3.15	-0.31
699-26-34A	22	10.04	Log	4.73	-5.31	-0.53
699-32-43	10	7.86	Log	4.33	-3.53	-0.35
699-33-42	8	9.48	Log	4.55	-4.93	-0.49
699-47-46A	12	5.38	Log	1.77	-3.61	-0.36
699-49-55A	19	8.11	Log	3.63	-4.48	-0.45
699-50-53A	14	2.47	Log	0.26	-2.21	-0.22
699-52-54	12	2.60	Log	0.48	-2.12	-0.21
699-52-57	8	2.27	Log	0.11	-2.16	-0.22
699-53-47A	8	0.90	Log	0.15	-0.75	-0.08
699-55-55	8	6.20	Log	2.96	-3.24	-0.32
699-55-57	14	4.14	Log	1.20	-2.94	-0.29
699-59-58	11	4.83	Log	2.11	-2.72	-0.27
699-60-57	13	8.53	Log	4.71	-3.82	-0.38
699-61-62	10	6.00	Log	2.43	-3.57	-0.36

Wells with Predicted Water Columns Between 5 and 10 Feet

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-E17-15	21	11.53	Log	7.89	-3.64	-0.36
299-E17-16	19	13.10	Log	9.26	-3.84	-0.38
299-E17-17	21	14.95	Log	9.89	-5.06	-0.51
299-E17-18	20	12.34	Log	7.91	-4.43	-0.44
299-E17-19	17	11.16	Log	5.56	-5.60	-0.56
299-E18-1	48	13.82	Log	9.41	-4.41	-0.44
299-E18-2	43	12.67	Log	8.70	-3.97	-0.40
299-E18-3	44	12.75	Log	8.49	-4.26	-0.43
299-E18-4	46	10.93	Log	7.06	-3.87	-0.39
299-E24-16	19	10.00	Log	6.93	-3.07	-0.31
299-E24-18	20	12.71	Log	8.31	-4.40	-0.44
299-E24-19	47	11.14	Log	7.75	-3.39	-0.34
299-E25-24	8	11.62	Log	7.49	-4.13	-0.41
299-E25-32P	54	12.05	Log	8.65	-3.40	-0.34
299-E25-34	54	12.81	Log	8.20	-4.61	-0.46
299-E25-35	51	11.54	Log	7.35	-4.19	-0.42
299-E25-37	7	12.34	Log	6.09	-6.25	-0.62
299-E25-39	13	12.07	Log	5.48	-6.59	-0.66
299-E25-40	49	11.11	Log	7.49	-3.62	-0.36
299-E25-41	49	9.21	Log	5.54	-3.67	-0.37
299-E25-42	53	11.11	Log	7.04	-4.07	-0.41
299-E25-43	47	14.28	Log	9.95	-4.33	-0.43
299-E25-44	4	15.40	Log	7.55	-7.85	-0.78
299-E25-45	4	16.61	Log	8.60	-8.01	-0.80
299-E26-10	27	9.30	Log	5.27	-4.03	-0.40
299-E26-12	51	13.63	Log	9.46	-4.17	-0.42
299-E26-13	52	12.53	Log	8.06	-4.47	-0.45
299-E27-10	20	10.99	Log	5.71	-5.28	-0.53
299-E27-11	22	11.65	Log	7.91	-3.74	-0.37
299-E27-12	49	11.37	Log	7.79	-3.58	-0.36
299-E27-13	49	10.13	Log	6.30	-3.83	-0.38
299-E27-14	46	12.66	Log	8.88	-3.78	-0.38
299-E27-15	47	10.81	Log	5.97	-4.84	-0.48
299-E27-16	21	10.96	Log	7.05	-3.91	-0.39
299-E27-8	22	12.57	Log	8.55	-4.02	-0.40
299-E27-9	22	12.91	Log	9.10	-3.81	-0.38
299-E28-27	42	12.92	Log	8.78	-4.14	-0.41
299-E28-28	41	12.40	Log	7.89	-4.51	-0.45
299-E32-2	43	11.04	Log	6.71	-4.33	-0.43
299-E32-3	43	11.52	Log	7.20	-4.32	-0.43
299-E32-4	44	14.05	Log	9.35	-4.70	-0.47
299-E32-5	42	13.84	Log	8.07	-5.77	-0.58
299-E32-6	22	13.29	Log	9.26	-4.03	-0.40
299-E32-7	42	13.33	Log	8.96	-4.37	-0.44
299-E32-8	42	14.00	Log	9.71	-4.29	-0.43
299-E32-9	42	12.40	Log	8.49	-3.91	-0.39
299-E33-14	18	9.14	Log	5.09	-4.05	-0.41
299-E33-15	18	13.94	Log	6.83	-7.11	-0.71

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-E33-28	42	14.47	Log	9.88	-4.59	-0.46
299-E33-29	42	12.53	Log	8.54	-3.99	-0.40
299-E33-30	43	14.15	Log	9.66	-4.49	-0.45
299-E33-31	48	12.93	Log	8.96	-3.97	-0.40
299-E33-32	48	11.32	Log	7.26	-4.06	-0.41
299-E33-33	54	11.30	Log	7.76	-3.54	-0.35
299-E33-34	43	9.60	Log	6.12	-3.48	-0.35
299-E33-35	40	9.68	Log	5.92	-3.76	-0.38
299-E33-36	25	10.41	Log	5.54	-4.87	-0.49
299-E33-37	21	12.28	Log	8.32	-3.96	-0.40
299-E33-38	20	11.09	Log	7.34	-3.75	-0.37
299-E33-39	20	9.44	Log	5.89	-3.55	-0.35
299-E33-41	46	10.64	Log	7.89	-2.75	-0.28
299-E33-42	49	10.48	Log	6.71	-3.77	-0.38
299-E33-43	45	12.86	Log	8.54	-4.32	-0.43
299-E34-10	22	10.35	Log	6.87	-3.48	-0.35
299-E34-2	25	12.25	Log	8.08	-4.17	-0.42
299-E34-9	20	9.34	Log	5.85	-3.49	-0.35
299-W10-13	45	10.89	Log	5.04	-5.85	-0.58
299-W10-17	55	15.55	Log	9.75	-5.80	-0.58
299-W10-18	55	14.18	Log	8.66	-5.52	-0.55
299-W10-19	22	14.04	Log	8.32	-5.72	-0.57
299-W10-20	5	15.28	Log	8.93	-6.35	-0.64
299-W10-21	9	14.74	Log	9.50	-5.23	-0.52
299-W11-27	51	11.64	Log	5.97	-5.67	-0.57
299-W11-31	12	13.32	Log	5.09	-8.23	-0.82
299-W14-12	51	14.11	Log	9.06	-5.05	-0.51
299-W15-15	18	18.57	Log	9.38	-9.19	-0.92
299-W15-16	22	16.44	Log	8.40	-8.04	-0.80
299-W15-18	19	15.40	Log	6.58	-8.82	-0.88
299-W15-22	54	15.15	Log	7.92	-7.23	-0.72
299-W18-23	21	17.51	Log	8.58	-8.93	-0.89
299-W18-24	16	16.36	Log	6.82	-9.54	-0.95
299-W18-28	23	13.99	Log	5.60	-8.39	-0.84
299-W18-33	20	22.11	Log	8.32	-13.79	-1.38
299-W19-20	16	16.12	Log	7.42	-8.70	-0.87
299-W19-23	4	15.52	Log	7.85	-7.67	-0.77
299-W19-24	10	12.27	Log	5.07	-7.20	-0.72
299-W19-31	50	13.64	Log	5.35	-8.29	-0.83
299-W22-46	47	17.34	Log	7.89	-9.45	-0.94
299-W23-3	16	23.87	Log	9.47	-14.40	-1.44
299-W26-7	16	12.71	Log	5.08	-7.63	-0.76
299-W6-10	12	15.66	Log	8.58	-7.08	-0.71
299-W6-2	46	11.18	Log	5.84	-5.34	-0.53
299-W6-4	24	14.37	Log	8.31	-6.06	-0.61
299-W6-7	22	12.83	Log	7.65	-5.18	-0.52
299-W6-8	17	13.68	Log	8.55	-5.13	-0.51
299-W6-9	13	14.82	Log	6.71	-8.11	-0.81
299-W7-1	44	13.39	Log	7.67	-5.72	-0.57
299-W7-11	44	10.78	Log	5.36	-5.42	-0.54

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-W7-12	44	12.27	Log	6.33	-5.94	-0.59
299-W7-5	44	12.92	Log	7.36	-5.56	-0.56
299-W7-7	46	11.50	Log	6.04	-5.46	-0.55
699-24-35	54	9.26	Log	5.75	-3.51	-0.35
699-25-34B	45	9.40	Log	5.21	-4.19	-0.42
699-26-33	48	9.83	Log	5.80	-4.03	-0.40
699-26-35A	53	8.95	Log	5.32	-3.63	-0.36
699-34-41B	6	12.45	Log	8.70	-3.75	-0.38
699-43-45	50	10.45	Log	6.70	-3.75	-0.37
699-44-43B	49	12.10	Log	9.87	-2.23	-0.22
699-48-50	16	11.68	Log	7.18	-4.50	-0.45
699-49-57A	16	11.50	Log	7.41	-4.09	-0.41
699-54-48	10	8.81	Log	5.64	-3.17	-0.32
699-57-29A	7	12.06	Log	8.41	-3.65	-0.36
699-57-59	12	13.57	Log	9.43	-4.14	-0.41

Wells with Predicted Water Columns Between 10 and 20 Feet

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-E17-1	21	16.85	Log	12.68	-4.17	-0.42
299-E17-12	11	15.69	Log	11.54	-4.15	-0.41
299-E17-13	17	20.19	Log	16.38	-3.81	-0.38
299-E17-14	18	13.93	Log	10.20	-3.73	-0.37
299-E17-5	19	18.19	Log	14.24	-3.95	-0.40
299-E24-17	16	13.50	Log	12.81	-0.69	-0.07
299-E24-20	49	15.48	Log	11.61	-3.87	-0.39
299-E25-18	26	15.93	Log	11.55	-4.38	-0.44
299-E25-19	25	18.71	Log	14.55	-4.16	-0.42
299-E25-20	26	18.51	Log	13.79	-4.72	-0.47
299-E25-21	18	19.63	Log	15.21	-4.42	-0.44
299-E25-22	6	24.09	Log	18.59	-5.50	-0.55
299-E25-25	8	22.05	Log	15.71	-6.34	-0.63
299-E25-26	51	21.89	Log	17.03	-4.86	-0.49
299-E25-36	27	14.70	Log	10.79	-3.91	-0.39
299-E25-46	37	15.63	Log	10.15	-5.48	-0.55
299-E25-47	38	14.27	Log	10.53	-3.74	-0.37
299-E25-48	37	17.05	Log	13.25	-3.80	-0.38
299-E26-11	22	15.16	Log	14.84	-0.32	-0.03
299-E27-17	22	14.11	Log	10.39	-3.72	-0.37
299-E27-18	5	12.97	Log	10.54	-2.43	-0.24
299-E27-19	5	15.25	Log	10.64	-4.61	-0.46
299-E28-26	43	15.24	Log	10.68	-4.56	-0.46
299-E33-18	37	17.97	Log	13.38	-4.59	-0.46
299-W11-28	22	15.39	Log	10.98	-4.41	-0.44
299-W15-4	9	18.85	Log	15.81	-3.04	-0.30
299-W18-21	20	20.69	Log	10.30	-10.39	-1.04
299-W18-29	23	9.93	Linear	18.27	8.34	0.83
299-W18-30	50	26.27	Log	14.75	-11.52	-1.15
299-W18-31	48	22.66	Log	10.37	-12.29	-1.23
299-W22-44	43	24.53	Log	13.23	-11.30	-1.13
299-W22-45	30	27.26	Log	16.27	-10.99	-1.10
299-W23-15	47	26.61	Log	15.08	-11.53	-1.15
299-W23-2	12	31.94	Log	15.39	-16.55	-1.65
299-W6-11	12	24.45	Log	18.80	-5.65	-0.57
299-W6-12	12	20.57	Log	13.10	-7.48	-0.75
299-W7-4	43	21.55	Log	15.05	-6.50	-0.65
299-W8-1	46	14.96	Log	10.70	-4.26	-0.43
699-42-41	50	11.27	Linear	14.00	2.73	0.27
699-43-42J	51	16.15	Linear	16.21	0.06	0.01
699-43-43	49	13.90	Linear	14.21	0.31	0.03
699-44-42	50	15.33	Log	15.17	-0.16	-0.02
699-45-42	16	19.92	Log	18.30	-1.62	-0.16
699-48-77A	5	15.01	Log	10.70	-4.31	-0.43
699-51-63	9	16.40	Log	11.90	-4.50	-0.45
699-53-47B	8	14.52	Log	12.65	-1.87	-0.19
699-53-48A	10	15.79	Log	14.66	-1.13	-0.11
699-53-48B	7	8.27	Linear	12.32	4.05	0.41

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
699-54-45A	5	11.72	Linear	12.02	0.30	0.03
699-55-40	6	13.68	Log	10.98	-2.70	-0.27
699-55-50C	8	17.32	Log	13.12	-4.20	-0.42
699-60-60	11	17.88	Log	13.43	-4.45	-0.45
699-61-37	8	17.48	Log	14.02	-3.46	-0.35

Wells with Predicted Water Columns Greater Than 20 Feet

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-E13-14	7	28.71	Log	25.93	-2.78	-0.28
299-E16-1	6	222.24	Log	216.24	-6.00	-0.60
299-E17-6	12	144.12	Log	138.83	-5.29	-0.53
299-E17-8	8	46.26	Log	41.14	-5.12	-0.51
299-E23-1	6	32.24	Log	28.41	-3.83	-0.38
299-E24-2	19	33.97	Log	29.43	-4.54	-0.45
299-E24-7	7	37.65	Log	33.18	-4.47	-0.45
299-E24-8	5	86.92	Log	82.30	-4.62	-0.46
299-E25-11	30	56.55	Log	51.74	-4.81	-0.48
299-E25-28	52	81.31	Log	76.41	-4.90	-0.49
299-E25-6	16	30.15	Log	25.58	-4.57	-0.46
299-E25-9	15	33.78	Log	29.84	-3.94	-0.39
299-E26-2	15	33.10	Log	28.93	-4.17	-0.42
299-E26-4	6	37.46	Log	32.94	-4.52	-0.45
299-E26-8	7	180.74	Log	177.67	-3.07	-0.31
299-E27-7	45	48.89	Log	44.77	-4.12	-0.41
299-E28-1	5	43.10	Log	42.05	-1.05	-0.11
299-E28-12	7	44.68	Log	40.21	-4.47	-0.45
299-E28-17	7	28.01	Log	22.01	-6.00	-0.60
299-E28-18	12	36.43	Log	31.17	-5.26	-0.53
299-E28-2	6	40.27	Linear	42.73	2.46	0.25
299-E28-21	6	39.51	Log	32.40	-7.11	-0.71
299-E28-5	9	34.89	Log	27.55	-7.34	-0.73
299-E28-6	7	42.73	Log	38.27	-4.46	-0.45
299-E28-7	10	52.06	Log	47.43	-4.63	-0.46
299-E28-9	8	42.44	Log	38.04	-4.40	-0.44
299-E33-12	19	166.08	Log	158.19	-7.89	-0.79
299-E33-40	15	85.69	Log	80.75	-4.94	-0.49
299-W10-14	44	210.65	Log	200.65	-10.00	-1.00
299-W11-10	12	29.35	Log	21.34	-8.01	-0.80
299-W11-14	10	55.68	Log	47.68	-8.00	-0.80
299-W11-6	10	52.29	Log	45.31	-6.98	-0.70
299-W11-7	9	41.15	Log	34.82	-6.33	-0.63
299-W12-1	7	33.02	Log	25.38	-7.64	-0.76
299-W15-10	5	85.67	Log	73.04	-12.63	-1.26
299-W15-17	20	210.91	Log	199.22	-11.69	-1.17
299-W18-15	7	46.25	Log	31.01	-15.24	-1.52
299-W18-22	20	242.30	Log	229.15	-13.15	-1.32
299-W19-1	11	87.78	Log	68.96	-18.82	-1.88
299-W19-12	39	40.21	Log	27.38	-12.83	-1.28
299-W19-15	9	41.99	Log	29.54	-12.45	-1.25
299-W19-2	6	57.34	Log	47.31	-10.03	-1.00
299-W19-3	4	42.58	Log	30.82	-11.76	-1.18
299-W19-4	5	276.85	Log	264.04	-12.81	-1.28
299-W21-1	6	43.44	Log	34.53	-8.91	-0.89
299-W22-19	5	167.18	Log	152.59	-14.59	-1.46
299-W22-21	6	72.61	Log	58.25	-14.36	-1.44
299-W22-22	10	67.41	Log	54.51	-12.90	-1.29

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
299-W22-23	7	65.83	Log	59.63	-6.20	-0.62
299-W22-7	5	75.81	Log	61.40	-14.41	-1.44
299-W23-4	5	94.26	Log	74.68	-19.58	-1.96
299-W23-7	16	45.18	Log	25.35	-19.83	-1.98
299-W27-2	8	194.23	Log	183.20	-11.03	-1.10
299-W6-1	6	133.71	Log	126.21	-7.50	-0.75
299-W6-3	22	179.00	Log	170.95	-8.05	-0.81
299-W6-6	22	174.80	Log	167.94	-6.86	-0.69
299-W7-3	44	251.26	Log	243.27	-7.99	-0.80
699-24-33	56	42.23	Log	37.88	-4.35	-0.43
699-25-33A	47	74.91	Log	69.40	-5.51	-0.55
699-25-34D	25	29.33	Log	27.44	-1.89	-0.19
699-25-70	5	256.84	Log	247.32	-9.52	-0.95
699-26-34B	27	28.33	Log	24.50	-3.83	-0.38
699-26-35C	47	73.14	Log	67.58	-5.56	-0.56
699-26-89	6	306.00	Log	300.10	-5.90	-0.59
699-28-40	43	306.23	Log	301.23	-5.00	-0.50
699-29-78	8	413.65	Log	399.99	-13.66	-1.37
699-31-31	42	413.79	Log	409.20	-4.59	-0.46
699-32-62	9	222.32	Log	219.41	-2.91	-0.29
699-32-70B	8	112.60	Log	103.05	-9.55	-0.95
699-32-77	10	94.86	Log	82.80	-12.06	-1.21
699-33-56	6	96.16	Log	91.69	-4.47	-0.45
699-34-42	8	42.35	Log	36.73	-5.62	-0.56
699-34-51	7	50.32	Log	46.13	-4.19	-0.42
699-34-88	6	438.82	Log	430.52	-8.30	-0.83
699-35-70	12	75.71	Log	66.78	-8.93	-0.89
699-35-78A	11	80.95	Log	66.42	-14.53	-1.45
699-36-61A	11	49.80	Log	44.75	-5.05	-0.51
699-37-43	14	208.45	Log	204.95	-3.50	-0.35
699-37-82A	8	239.19	Log	228.27	-10.92	-1.09
699-38-65	10	197.29	Log	193.08	-4.21	-0.42
699-38-70	12	119.33	Log	107.60	-11.73	-1.17
699-39-39	38	73.18	Linear	76.33	3.15	0.31
699-39-79	11	85.67	Log	72.40	-13.27	-1.33
699-40-33A	16	78.51	Log	75.63	-2.88	-0.29
699-40-36	37	105.00	Log	104.80	-0.20	-0.02
699-40-39	53	85.51	Log	84.64	-0.87	-0.09
699-40-40A	52	99.24	Log	98.53	-0.71	-0.07
699-40-40B	52	71.70	Linear	71.85	0.15	0.01
699-40-62	12	30.54	Log	24.89	-5.65	-0.57
699-41-35	39	96.70	Log	96.64	-0.06	-0.01
699-41-40	52	46.26	Linear	47.70	1.44	0.14
699-41-42	31	51.70	Linear	53.36	1.66	0.17
699-42-37	36	53.85	Linear	55.93	2.08	0.21
699-42-39A	52	46.41	Linear	47.95	1.54	0.15
699-42-39B	53	77.60	Linear	80.41	2.81	0.28
699-42-40A	52	49.30	Linear	54.18	4.88	0.49
699-42-40C	18	258.74	Log	255.95	-2.79	-0.28
699-42-42B	49	39.65	Linear	39.81	0.16	0.02

Well	Number of Measurments	Current Water Column (ft)	Predictor	Predicted Water Column (ft)	Difference (ft)	Rate of Decline (ft/yr)
699-43-40	49	16.45	Linear	21.69	5.24	0.52
699-43-41E	49	18.65	Linear	21.92	3.27	0.33
699-43-41F	49	48.54	Linear	51.13	2.59	0.26
699-43-41G	50	67.64	Linear	69.57	1.93	0.19
699-44-39B	29	29.81	Linear	44.66	14.85	1.49
699-44-64	9	123.99	Log	119.45	-4.54	-0.45
699-45-69A	4	86.44	Log	77.27	-9.17	-0.92
699-47-35A	13	40.45	Log	37.26	-3.19	-0.32
699-47-50	20	116.24	Log	109.53	-6.71	-0.67
699-47-60	18	29.50	Log	24.26	-5.24	-0.52
699-48-71	12	58.63	Log	52.08	-6.55	-0.65
699-49-28	5	37.69	Log	33.69	-4.00	-0.40
699-49-55B	19	98.98	Log	91.99	-6.99	-0.70
699-49-57B	17	78.18	Log	72.43	-5.75	-0.57
699-49-79	11	30.90	Log	25.14	-5.76	-0.58
699-50-45	6	136.34	Log	131.24	-5.10	-0.51
699-50-48B	6	106.31	Log	100.67	-5.64	-0.56
699-50-53B	15	71.71	Log	64.74	-6.97	-0.70
699-50-85	8	261.18	Log	255.68	-5.50	-0.55
699-51-46	6	126.35	Log	121.58	-4.77	-0.48
699-51-75	9	178.32	Log	171.84	-6.48	-0.65
699-52-46A	8	178.80	Log	175.04	-3.76	-0.38
699-52-48	6	133.59	Log	127.90	-5.69	-0.57
699-53-50	9	154.46	Log	148.85	-5.61	-0.56
699-53-55A	18	106.82	Log	100.77	-6.05	-0.60
699-53-55B	18	78.21	Log	72.60	-5.61	-0.56
699-53-55C	18	48.11	Log	42.68	-5.43	-0.54
699-54-34	8	28.00	Log	25.99	-2.01	-0.20
699-54-57	21	148.33	Log	141.81	-6.52	-0.65
699-55-76	9	81.71	Log	76.20	-5.51	-0.55
699-55-89	4	59.48	Log	56.83	-2.65	-0.26
699-56-43	6	24.88	Log	21.05	-3.83	-0.38
699-56-53	8	238.31	Log	232.26	-6.05	-0.60

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APPENDIX D

PREDICTED IMPACTS TO MONITORING WELLS FROM PROJECT W-049H

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Appendix D: Predicted Impacts to Monitoring Wells From Project W-049H

Well	Modeled Impact (ft)	Measured Water Column (ft)	Predicted Water Column (ft)
299-E16-1	-2.11	222.24	220.13
299-E16-2	-3.17	58.90	55.73
299-E17-14	-0.41	13.93	13.52
299-E17-15	-0.36	11.53	11.17
299-E17-16	-0.30	13.10	12.80
299-E17-17	-0.06	14.95	14.89
299-E17-18	-0.22	12.34	12.12
299-E17-19	0.01	11.16	11.17
299-E17-5	-0.21	18.19	17.98
299-E17-6	-0.22	144.12	143.90
299-E17-9	-0.29	4.45	4.16
299-E24-16	-0.04	10.00	9.96
299-E24-19	-1.26	11.14	9.88
299-E24-20	-0.97	15.48	14.51
299-E24-4	-0.40	4.88	4.48
299-E25-11	-2.51	56.55	54.04
299-E25-17	-2.29	21.74	19.45
299-E25-18	-2.44	15.93	13.49
299-E25-19	-2.53	18.71	16.18
299-E25-20	-2.67	18.51	15.84
299-E25-21	-3.06	19.63	16.57
299-E25-22	-2.86	24.09	21.23
299-E25-23	-3.53	33.41	29.88
299-E25-24	-3.45	11.62	8.17
299-E25-25	-5.54	22.05	16.51
299-E25-26	-3.02	21.89	18.87
299-E25-28	-3.90	81.31	77.41
299-E25-29P	-2.86	7.91	5.04
299-E25-3	-1.88	27.62	25.74
299-E25-31	-2.91	8.02	5.11
299-E25-32P	-5.24	12.05	6.81
299-E25-34	-3.91	12.81	8.90
299-E25-35	-2.23	11.54	9.31
299-E25-36	-1.41	14.70	13.29
299-E25-37	-2.99	12.34	9.35
299-E25-39	-5.16	12.07	6.91
299-E25-40	-1.77	11.11	9.34
299-E25-41	-1.78	9.21	7.43
299-E25-42	-2.06	11.11	9.05
299-E25-43	-4.51	14.28	9.77
299-E25-44	-3.33	15.40	12.07
299-E25-45	-3.62	16.61	12.99
299-E25-46	-1.42	15.63	14.21
299-E25-47	-2.51	14.27	11.76
299-E25-48	-1.98	17.05	15.07
299-E25-6	-2.40	30.15	27.75
299-E25-9	-3.56	33.78	30.22

Well	Modeled Impact (ft)	Measured Water Column (ft)	Predicted Water Column (ft)
299-E26-10	-1.71	9.30	7.59
299-E26-11	-3.40	15.16	11.76
299-E26-12	-4.93	13.63	8.70
299-E26-13	-5.20	12.53	7.33
299-E26-2	-4.09	33.10	29.01
299-E26-4	-2.83	37.46	34.63
299-E26-8	-1.91	180.74	178.83
299-E26-9	-1.24	3.07	1.83
299-E27-10	-0.06	10.99	10.93
299-E27-12	-0.31	11.37	11.06
299-E27-13	-0.33	10.13	9.80
299-E27-14	-0.79	12.66	11.87
299-E27-15	-0.40	10.81	10.41
299-E27-7	-0.75	48.89	48.14
299-E34-3	-0.08	4.99	4.91
299-E34-7	-0.05	5.09	5.04
299-E35-2	-0.78	4.86	4.08
699-39-39	-5.21	73.18	67.97
699-40-33A	-4.49	78.51	74.02
699-40-36	-4.25	105.00	100.75
699-40-39	-5.37	85.51	80.14
699-40-40A	-5.62	99.24	93.62
699-40-40B	-5.65	71.70	66.05
699-41-35	-4.22	96.70	92.48
699-41-40	-6.49	46.26	39.77
699-41-42	-7.36	51.70	44.34
699-42-37	-4.82	53.85	49.03
699-42-39A	-6.47	46.41	39.94
699-42-39B	-6.44	77.60	71.16
699-42-40A	-7.68	49.30	41.62
699-42-40C	-7.64	258.74	251.10
699-42-41	-9.10	11.27	2.17
699-42-42B	-9.65	39.65	30.00
699-43-40	-8.14	16.45	8.31
699-43-41E	-8.86	18.65	9.79
699-43-41F	-8.87	48.54	39.67
699-43-41G	-8.94	67.64	58.70
699-43-42J	-9.73	16.15	6.42
699-43-43	-8.79	13.90	5.11
699-43-45	-5.80	10.45	4.65
699-44-39B	-6.59	29.81	23.22
699-44-42	-9.06	15.33	6.27
699-44-43B	-9.06	12.10	3.04
699-45-42	-4.63	19.92	15.29
699-47-35A	-5.11	40.45	35.34
699-47-46A	0.00	5.38	5.38
699-49-28	-0.88	37.69	36.81
699-50-45	0.00	136.34	136.34
699-50-48B	0.00	106.31	106.31
699-51-46	0.00	126.35	126.35

Well	Modeled Impact (ft)	Measured Water Column (ft)	Predicted Water Column (ft)
699-52-46A	0.00	178.80	178.80
699-52-48	0.00	133.59	133.59
699-53-47A	0.02	0.90	0.92
699-53-47B	0.02	14.52	14.54
699-53-48A	0.05	15.79	15.84
699-53-48B	0.05	8.27	8.32
699-54-34	-0.28	28.00	27.72
699-54-45A	0.09	11.72	11.81
699-54-48	0.03	8.81	8.84
699-55-40	-0.10	13.68	13.58

Wells with Predicted Water Columns Less Than 5 Feet

Well	Measured Water Column (ft)	Predicted Water Column (ft)	Modeled Impact (ft)
299-E17-9	4.45	4.16	-0.29
299-E24-4	4.88	4.48	-0.40
299-E26-9	3.07	1.83	-1.24
299-E34-3	4.99	4.91	-0.08
299-E35-2	4.86	4.08	-0.78
699-42-41	11.27	2.17	-9.10
699-43-45	10.45	4.65	-5.80
699-44-43B	12.10	3.04	-9.06
699-53-47A	0.90	0.92	0.02

Wells with Predicted Water Columns Between 5 and 10 Feet

Well	Measured Water Column (ft)	Predicted Water Column (ft)	Modeled Impact (ft)
299-E24-16	10.00	9.96	-0.04
299-E24-19	11.14	9.88	-1.26
299-E25-24	11.62	8.17	-3.45
299-E25-29P	7.91	5.04	-2.86
299-E25-31	8.02	5.11	-2.91
299-E25-32P	12.05	6.81	-5.24
299-E25-34	12.81	8.90	-3.91
299-E25-35	11.54	9.31	-2.23
299-E25-37	12.34	9.35	-2.99
299-E25-39	12.07	6.91	-5.16
299-E25-40	11.11	9.34	-1.77
299-E25-41	9.21	7.43	-1.78
299-E25-42	11.11	9.05	-2.06
299-E25-43	14.28	9.77	-4.51
299-E26-10	9.30	7.59	-1.71
299-E26-12	13.63	8.70	-4.93
299-E26-13	12.53	7.33	-5.20
299-E27-13	10.13	9.80	-0.33
299-E34-7	5.09	5.04	-0.05
699-43-40	16.45	8.31	-8.14
699-43-41E	18.65	9.79	-8.86
699-43-42J	16.15	6.42	-9.73
699-43-43	13.90	5.11	-8.79
699-44-42	15.33	6.27	-9.06
699-47-46A	5.38	5.38	0.00
699-53-48B	8.27	8.32	0.05
699-54-48	8.81	8.84	0.03

Wells with Predicted Water Columns Between10 and 20 Feet

Well	Measured Water Column (ft)	Predicted Water Column (ft)	Modeled Impact (ft)
299-E17-14	13.93	13.52	-0.41
299-E17-15	11.53	11.17	-0.36
299-E17-16	13.10	12.80	-0.30
299-E17-17	14.95	14.89	-0.06
299-E17-18	12.34	12.12	-0.22
299-E17-19	11.16	11.17	0.01
299-E17-5	18.19	17.98	-0.21
299-E24-20	15.48	14.51	-0.97
299-E25-17	21.74	19.45	-2.29
299-E25-18	15.93	13.49	-2.44
299-E25-19	18.71	16.18	-2.53
299-E25-20	18.51	15.84	-2.67
299-E25-21	19.63	16.57	-3.06
299-E25-25	22.05	16.51	-5.54
299-E25-26	21.89	18.87	-3.02
299-E25-36	14.70	13.29	-1.41
299-E25-44	15.40	12.07	-3.33
299-E25-45	16.61	12.99	-3.62
299-E25-46	15.63	14.21	-1.42
299-E25-47	14.27	11.76	-2.51
299-E25-48	17.05	15.07	-1.98
299-E26-11	15.16	11.76	-3.40
299-E27-10	10.99	10.93	-0.06
299-E27-12	11.37	11.06	-0.31
299-E27-14	12.66	11.87	-0.79
299-E27-15	10.81	10.41	-0.40
699-45-42	19.92	15.29	-4.63
699-53-47B	14.52	14.54	0.02
699-53-48A	15.79	15.84	0.05
699-54-45A	11.72	11.81	0.09
699-55-40	13.68	13.58	-0.10

Wells with Predicted Water Columns Greater Than 20 Feet

Well	Measured Water Column (ft)	Predicted Water Column (ft)	Modeled Impact (ft)
299-E16-1	222.24	220.13	-2.11
299-E16-2	58.90	55.73	-3.17
299-E17-6	144.12	143.90	-0.22
299-E25-11	56.55	54.04	-2.51
299-E25-22	24.09	21.23	-2.86
299-E25-23	33.41	29.88	-3.53
299-E25-28	81.31	77.41	-3.90
299-E25-3	27.62	25.74	-1.88
299-E25-6	30.15	27.75	-2.40
299-E25-9	33.78	30.22	-3.56
299-E26-2	33.10	29.01	-4.09
299-E26-4	37.46	34.63	-2.83
299-E26-8	180.74	178.83	-1.91
299-E27-7	48.89	48.14	-0.75
699-39-39	73.18	67.97	-5.21
699-40-33A	78.51	74.02	-4.49
699-40-36	105.00	100.75	-4.25
699-40-39	85.51	80.14	-5.37
699-40-40A	99.24	93.62	-5.62
699-40-40B	71.70	66.05	-5.65
699-41-35	96.70	92.48	-4.22
699-41-40	46.26	39.77	-6.49
699-41-42	51.70	44.34	-7.36
699-42-37	53.85	49.03	-4.82
699-42-39A	46.41	39.94	-6.47
699-42-39B	77.60	71.16	-6.44
699-42-40A	49.30	41.62	-7.68
699-42-40C	258.74	251.10	-7.64
699-42-42B	39.65	30.00	-9.65
699-43-41F	48.54	39.67	-8.87
699-43-41G	67.64	58.70	-8.94
699-44-39B	29.81	23.22	-6.59
699-47-35A	40.45	35.34	-5.11
699-49-28	37.69	36.81	-0.88
699-50-45	136.34	136.34	0.00
699-50-48B	106.31	106.31	0.00
699-51-46	126.35	126.35	0.00
699-52-46A	178.80	178.80	0.00
699-52-48	133.59	133.59	0.00
699-54-34	28.00	27.72	-0.28

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