Report

2011 Annual Progress Report

Former Raytheon Facilities
350 Ellis Street
Mountain View, California
CIWQS ID: 202473

Prepared for:
Raytheon Company

13 April 2012

Project No. 23016-2100

Locus TECHNOLOGIES

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13 April 2012

Ms. Penny Reddy
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U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

RE: Raytheon Site Specific 2011 Annual Progress Report
Former Raytheon Facilities
350 Ellis Street, Mountain View, California
Project Number 23016-2100

Dear Ms. Reddy:

Enclosed are two copies of the 2011 Annual Progress Report for the Raytheon site specific work performed from 1 January through 31 December 2011 at the groundwater treatment system located at 350 Ellis Street in Mountain View, California.

If you have any questions regarding this transmittal, please contact me.

Very truly yours,

Greg S. Taylor
Environmental Program Manager

GST/lm

Enclosure

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2011 Annual Progress Report

Former Raytheon Facilities
350 Ellis Street, Mountain View, California

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FORMER RAYTHEON FACILITIES
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

1. INTRODUCTION

This Annual Progress Report was prepared by Locus Technologies on behalf of Raytheon Company (Raytheon) for the former Raytheon facilities located at 350 Ellis Street in Mountain View, California (CIWQS Place Identification: 202473) (Figure 1). This progress report contains a summary of site activities and data from January 1, 2011, through December 31, 2011. On May 6, 2005, the U.S. Environmental Protection Agency (EPA) agreed to change the reporting frequency for the Middlefield-Ellis-Whisman (MEW) site to annual, and requested specific items to be included in the report. This annual report fulfills the provisions specified in the May 6, 2005 EPA correspondence.

1.1. Site Background

The former Raytheon site located at 350 Ellis Street in Mountain View, California is approximately 18 acres (Figure 1). Mountain View is a town of approximately 70,000 residents, located in Santa Clara County. The former Raytheon facilities are part of the MEW site, where a number of companies were involved in activities requiring storage, handling, and use of chemicals. These companies are referred to as the MEW Companies in this document.

Agricultural development in this area began in the mid-1800s. Until about 1960, orchards, low crops, and greenhouse gardening dominated the area. North of U.S. Highway 101, Moffett Federal Airfield (Moffett Field) was commissioned in 1933. Ames Research Center, also north of the highway, was originally opened in 1940 adjacent to Moffett Field as a laboratory of the National Advisory Committee on Aeronautics. The facility at 350 Ellis Street was constructed around 1959 and was operated by Raytheon from 1961 to 1997 as a semiconductor manufacturing facility.

Several buildings at the MEW site have changed ownership and occupancy. For the former Raytheon site at 350 Ellis Street, the property was sold to Fairchild Semiconductor Corporation in 1997. The facility was demolished in 2000, when Veritas Software Corporation purchased the property and built

an office campus consisting of five buildings (A, B, C, D and E) and a multi-level garage. Symantec acquired Veritas in 2005 and now owns the property.

1.2. Local Hydrogeology

Aquifers in the MEW area include of shallow and deep aquifer systems separated by a laterally extensive aquitard approximately 40 feet thick. The shallow aquifer system is generally less than 160 feet below ground surface (bgs) south of U.S. Highway 101, and generally less than 100 feet bgs north of U.S. Highway 101. Subdivisions within the shallow aquifer have been designated the "A", "B1", "B2", and "B3" Aquifers. The regional aquitard is designated the "B/C" Aquitard. The water-bearing zones below the "B/C" Aquitard are termed the "C" Aquifer and the Deep Aquifer.

The direction of groundwater flow at the MEW site is generally to the north. However, the presence of various groundwater extraction systems near the former Raytheon sites and the slurry walls at 350 Ellis Street and 369 North Whisman Road has altered the local direction of the groundwater gradient. At 350 Ellis Street, the groundwater in the "A" and "B1" Aquifers is contained by the slurry wall enclosure and groundwater extraction wells RAY-1A and RAY-1B1 (Figure 2).

1.3. Summary of Onsite Remedial Actions

The record of decision (ROD) for the MEW site was issued in May 1989. Remedial Action Objectives (RAOs) were developed as a result of data collected during the Remedial Investigation (HLA, 1988) to aid in the development and screening of remedial alternatives to be considered for the ROD. The Feasibility Study (Canonie, 1988) for the MEW site lists the RAOs to be:

1. Protection of potential potable water supply;
2. Remediation or control of relatively elevated concentrations of chemicals present in localized vadose zone soils below the ground surface that could migrate into the shallow groundwater system;
3. Remediation or control of groundwater, which contains elevated concentrations of chemicals, including control of discharge of such groundwater into surface water.

For the vadose soils, the ROD selects two remedial technologies: 1) in situ soil vapor extraction (SVE) with treatment by vapor-phase granular activated carbon (GAC), and/or 2) excavation with treatment by aeration. The cleanup levels for soils containing TCE have been established in the ROD to be 1 milligram per kilogram (mg/kg) for soils contained within slurry wall enclosures, and 0.5 mg/kg for soils outside slurry walls.

For groundwater, the ROD proposes remediation and hydraulic control using groundwater extraction and groundwater treatment by air stripping or liquid-phase GAC. The cleanup level for groundwater containing TCE at the site is 5 micrograms per liter (µg/L) in the shallow aquifers, and 0.8 µg/L in the deep aquifers.

Remediation at the former Raytheon facility locations includes mitigation measures that have addressed chemicals in the groundwater, soils, and air. For soils, mitigation measures have included soil vapor extraction and excavation. To address groundwater, a groundwater extraction and treatment system was installed in 1986, which currently consists of eight extraction wells and an ozone oxidation system with activated carbon. A slurry wall was constructed in 1987 to a depth of 100 feet below ground surface around the site perimeter, penetrating the "A" and "B1" Aquifers, and partially penetrating the "B2" Aquifer. Injection of potassium permanganate was implemented in 1999 to address concentrations in groundwater and saturated soil near the northwest corner of the site. For indoor air, mitigation measures have included monitoring, conduit sealing, and installation of air purification systems.

Implementation and results of the prior mitigation measures for the site have been documented in previous reports (Golder, 1988; GT, 1995, 1996; IT, 2000; Locus, 2002, 2003a, 2003b, 2004a, 2008d; Haley & Aldrich, 2009; Locus, 2011a). The status and progress of the current remedial actions is described in Section 2. Appendix A, the annual remedy performance checklist, contains a summary of all past and current onsite remedial actions.

1.4. Summary of 2011 Activities and Deliverables

The following activities were completed at the 350 Ellis Street facility during this reporting period:

January	♦ 17th – Monthly treatment system sampling. ♦ 28th – 2,000-lb liquid-phase GAC vessel was changed out; the system was shut down for approximately 24 hours.
February	♦ 15th – 2010 Annual NPDES report was submitted to the RWQCB (Locus, 2011a). ♦ 21st – Monthly treatment system sampling. ♦ 22nd – Groundwater treatment system was shut down for 20 hours due to a problem with the ozone generator.
March	♦ 16th – Inspection of the air purification units at the property.

	♦ 21st – Monthly treatment system sampling. ♦ 24th – Measured semiannual water elevations for the regional monitoring program and for well pairs at 350 Ellis Street. ♦ 29th – 2,000-lb liquid–phase GAC vessel was changed out; the system was shut down for approximately 23 hours.
April	♦ 1st – Treatment system was shutdown for 8 hours due to low oxygen flow. ♦ 15th – 2010 Annual Report was submitted to EPA. (Locus, 2011b). ♦ 18th – Monthly treatment system sampling. ♦ 22th – Groundwater elevations were measured in selected wells to monitor the capture zone of RAY-1A.
May	♦ 6th, 13th, 20th, and 27th - Groundwater elevations were measured in selected wells to monitor the capture zone of RAY-1A. ♦ 13th – Submitted first quarter 2011 NPDES report to RWQCB (Locus, 2011c). ♦ 16th – Monthly treatment system sampling. ♦ 23rd – 2,000-lb liquid–phase GAC vessel was changed out; the system was shut down for approximately 23 hours. ♦ 26th – Measured quarterly water elevations at the Raytheon well pairs. Due to equipment malfunction, the data from this event could not be retrieved.
June	♦ 6th – The pump in RAY 1A was replaced. ♦ 20th – Monthly treatment system sampling. ♦ 22nd – Inspection of the air purification units at the property. ♦ 3rd, 10th, 17th, and 24th – Groundwater elevations were measured in selected wells to monitor the capture zone of RAY-1A.
July	♦ 1st and 8th – Groundwater elevations were measured in selected wells to monitor the capture zone of RAY-1A. ♦ 19th – Monthly treatment system sampling. ♦ 28th – Analytical results for the July 19 samples were received from the laboratory, which reported vinyl chloride in the effluent. The treatment system was immediately resampled and shut down. ♦ 29th – Analytical results for the confirmation samples showed that vinyl chloride was present in the effluent. 30th – A temporary packer was installed in extraction well R-65B2 to prevent flow from this artesian well during the treatment system shutdown.

August	♦ 3rd – GAC was replaced and allowed to soak overnight. ♦ 4th – The treatment system was temporarily restarted (well R-65B2 remained shut down), with the effluent diverted to a storage tank for testing. ♦ 5th – Analytical data for the August 4 samples indicated that no detectable VOCs were present in the effluent. Normal operation of the groundwater treatment system resumed. ♦ 5th – A noncompliance report was submitted to RWQCB in accordance with NPDES permit requirements (Locus, 2011f). ♦ 11th – The existing pump and a permanent packer were installed in extraction well R65B2. The well resumed extraction to the groundwater treatment system. ♦ 12th, 19th, and 26th – Groundwater elevations were measured in selected wells to monitor the capture zone of RAY-1A. ♦ 15th – Submitted second quarter 2011 NPDES report to RWQCB (Locus, 2011d). ♦ 18th – Monthly treatment system sampling. ♦ 26th – Measured quarterly water elevations at the Raytheon well pairs.
September	♦ 2nd – Groundwater treatment system at the property was shut down for 10 hours due to an issue with the ozone generator. ♦ 2nd – Groundwater elevations were measured in selected wells to monitor the capture zone of RAY-1A. ♦ 6th to 20th – Five year site-specific groundwater sampling event. ♦ 8th – Groundwater treatment system shutdown for 12 hours due to an issue with the ozone generator. ♦ 9th – Extraction well RE-23A was found to be non-operational due to a failed pump. ♦ 15th – Measured semiannual water elevations per the regional monitoring program and water elevations in the site-specific well pairs at Raytheon. ♦ 19th – Monthly treatment system sampling ♦ 19th – Inspection of the air purification units at the property. ♦ 20th to 21st – Annual site-specific monitoring well sampling. ♦ 20th to 29th – MEW RGRP annual sampling event. ♦ 27th – 2,000-lb liquid–phase GAC vessel was changed out; the system was shut down for approximately 22 hours.

	♦ 28th –Renewal application for the BAAQMD permit was submitted.
October	♦ 7th – Groundwater elevations were measured in selected wells to monitor the capture zone of RAY-1A. ♦ 17th – Monthly treatment system sampling. ♦ 27th – The air purification units at the property were shut down in preparation for replacement of carbon canisters in the units. ♦ 28th – A new pump was installed in extraction well RE-23A, and the well resumed normal operation.
November	♦ 3rd- – Inspection of the air purification units at the property. Carbon canisters were replaced in all units (rooms A106, A112, B104, and C110). ♦ 4th and 11th – Groundwater elevations were measured in selected wells to monitor the capture zone of RAY-1A. ♦ 7th – Monthly treatment system sampling. ♦ 15th – 2,000-lb liquid–phase GAC vessel was changed out; the system was shut down for approximately 21 hours. ♦ 15th – Submitted third quarter 2010 NPDES report to RWQCB (Locus, 2011e).
December	♦ 2nd – Groundwater elevations were measured in selected wells to monitor the capture zone of RAY-1A. ♦ 20th – Monthly treatment system sampling.

2. GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

2.1. System Description and Performance

The groundwater treatment system consists of a hydrogen peroxide/ozone oxidation system and a liquid-phase GAC unit. The oxidation system consists of one skid-mounted high-pressure oxidation (HiPOx™) unit, designed and manufactured by Applied Process Technology, Inc., followed by one 2,000-lb liquid-phase GAC vessel. The hydrogen peroxide/ozone oxidation system operates by injecting 25% hydrogen peroxide and ozone generated from liquid oxygen into ten 2-inch pipeline reactors. During the oxidation process, the volatile organic compounds (VOCs) and 1, 4-dioxane are oxidized. Following oxidation, the treated groundwater flows through a 2,000-lb GAC vessel for final polish. Treated effluent from the groundwater treatment system is conveyed to Stevens Creek for discharge under the NPDES permit.

The oxidation system was installed in late November 2003 and began full operation in December 2003. A start-up report was submitted to the RWQCB and EPA in January 2004. All sampling procedures and start-up procedures were in accordance with the RWQCB's *Self-Monitoring Program for Discharges of Extracted and Treated Groundwater Resulting From the Cleanup of Groundwater Polluted by Volatile Organic Compounds, NPDES No. CAG912003, Order No. 99-051.* A new NPDES permit NPDES No. CAG912003, *Order No. R2-2009-0059* was issued on November 17, 2009. The sampling conducted after November 2009 was performed based on new permit requirements.

Groundwater is extracted from eight extraction wells and treated at the groundwater treatment system. Five extraction wells are located inside, and three outside, of the slurry wall enclosure (Figures 2 and 3). In 2011, the groundwater treatment system operated at an average of approximately 29 gpm. Groundwater flow rates for the extraction wells and the average monthly treatment system flow rates are presented in Table 1.

2.1.1. Treatment System Sampling and Mass Removal

Monthly treatment system samples are collected from the influent (RAYINF), effluent of the HiPOx™ system (RAYMID), and system effluent (RAYEFT). Monthly samples are analyzed for VOCs using

EPA Method 8260B for the EPA 8010 analyte list. Results for the system influent and effluent sampling points are presented in Table 2.

During 2011, the groundwater treatment system treated approximately 14.35 million gallons of water, and 309 lbs of VOCs were removed by the treatment system. A total of 15,558 lbs of VOCs have been removed by the groundwater extraction system since 1986. Table 3 and Figures 5 and 6 present a summary of the VOC influent concentration and cumulative VOC mass removed for the Raytheon groundwater treatment system since 1986.

2.1.2. System Performance

During 2011, there was one event which caused unplanned down-time for the groundwater treatment system for approximately seven days from July 28 to August 5. A full description of this event is provided in Section **Error! Reference source not found.** below. In 2011, the treatment system operated approximately 97% of the time, and was shut down in isolated instances for O&M and other reasons outlined in Chapter 1 of this report.

Other than this event, and the scheduled carbon change-outs, system maintenance, and unexpected shutdowns and associated well and/or system repairs, the treatment system operated continuously during 2011.

2.2. Treatment System Operations and Maintenance

Raytheon is conducting long-term monitoring and maintenance activities in accordance with the current operation and maintenance (O&M) manual (Locus, 2004b). The primary activities associated with O&M include:

- Monthly groundwater treatment system sampling, in accordance with NPDES permit requirements. Laboratory analytical reports for sampling conducted in 2011 are included in Appendix C.
- Semiannual groundwater elevation measurements of all accessible monitoring wells, and quarterly groundwater elevation measurements of slurry wall well pairs (defined as a pair of wells, one on the inside and one on the outside of the wall to monitor direction of groundwater gradient across the wall), and vertical well clusters (wells located near each other but screened in different hydraulic units to monitor the direction of the groundwater gradient between the units). Historical well hydrographs are included in Appendix D.
- Groundwater sampling of a network of monitoring wells. Laboratory analytical reports are included in Appendix C. Historical water quality concentrations from

1992 to the present are included in Appendix E for the chemicals of concern. Also included in Appendix E are concentration trend plots for TCE, cis-1, 2-DCE and vinyl chloride.

- Inspecting the conditions of the groundwater monitoring and extraction wells (Figures 2 and 3).
- Inspecting and monitoring the treatment system operation.

Soil cleanup was achieved by implementing a SVE system. The system met its cleanup objective and was decommissioned in 2000. In 2004, EPA confirmed that soil cleanup at the MEW site is complete (EPA, 2004). Therefore, there are no ongoing O&M activities for SVE or the soil cleanup actions. The remaining component of the cleanup is groundwater extraction, as chemicals still remain in the groundwater at the site. The primary O&M activities include monitoring the groundwater and inspecting and maintaining the groundwater treatment system.

Raytheon has historically maintained inward hydraulic gradients across the slurry wall. Since 2000, when the property was developed, an outward gradient has been observed across the northern slurry wall. Although outward gradients have been observed, the RAOs will not be impacted for the following reasons:

1. Raytheon has installed extraction wells in the "A" and "B1" Aquifers immediately downgradient of the slurry wall (RAY-1A and RAY-1B1). Though the capture zone analyses appear to demonstrate that these wells provide an adequate capture of the groundwater immediately downgradient of the slurry wall, 6,200 µg/L TCE was detected in well 24A in 2010. In 2011, the extraction rate of RAY-1A was increased in an attempt to expand the capture zone to include this well. The activities associated with identifying the appropriate extraction rate for well RAY-1A are described in Section 3 of this report. The increased pumping rate improved capture of water near well 24A, but it was not possible to expand the capture zone to include the well. In 2011, 2,000 µg/L TCE was detected in well 24A. This concentration is consistent with historical data for this well. The decreased TCE concentration in well 24A suggests that the increased pumping rate may have been successful in addressing the TCE concentrations near the well even though the well is not itself included within the capture zone.
2. The slurry wall is a low-permeability wall that results in minimal chemical migration through it even if the gradient is outward. The flux of chemicals across a low-permeability wall is small. Furthermore, groundwater and chemicals tend migrate along easier pathways: inside the slurry wall enclosure, chemicals would preferentially move towards extraction wells RE-23A, RE-24A, RE-25A, and RE-5A rather than through the low-permeability slurry wall.

The slurry wall and the pumping activities within its enclosure and the groundwater extraction well immediately downgradient of the slurry wall physically contain chemicals.

2.3. Hydraulic Control and Capture Zone Analysis

2.3.1. Methodology

Hydraulic control and groundwater capture at 350 Ellis Street is evaluated according to EPA's 2008 guidance, *A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems, Final Project Report* (EPA, 2008a). Multiple lines of evidence are used in this evaluation:

- Groundwater elevations are used to assess slurry wall gradients within the same aquifer and vertical gradients across aquitards;
- Comparison of interpreted capture zone to target capture zone using potentiometric surface maps, capture zone width calculations, and flow budget calculations; and
- Groundwater concentration trends.

2.3.2. Estimated Capture Zones

Table 4 summarizes the quarterly well pair and semi-annual site-wide groundwater level measurement data for this reporting period. Groundwater elevation contours from the March 2011 semiannual gauging event are included on Figures 7 and 8 for the "A" and "B1" Aquifers, and Figures 11 through 13 for the Upper "B2", Lower "B2", and "B3" Aquifers. Groundwater elevation contours from the September 2011 semiannual gauging event are included on Figures 9 and 10 for the "A" and "B1" Aquifers, and Figures 14 through 16 for the Upper "B2", Lower "B2", and "B3" Aquifers.

The capture zones for March and September 2011 were estimated using capture zone width calculations (and evaluation of the groundwater elevation contours) as described below.

The extent of a capture zone upgradient of an extraction well (X_0) is determined by (EPA, 2008a):

$$X_0 = \frac{-Q}{2\pi Ti};$$

Where:

Q is the well's extraction rate (gpd),
T is the transmissivity of the aquifer (gpd/ft),
i is the hydraulic gradient of the aquifer (unitless).

The distance from the well to the lateral extent of the capture zone (Y_{well}), perpendicular to the direction of groundwater flow, is determined by (EPA, 2008a):

$$Y_{well} = \frac{\pm Q}{4Ti}.$$

The width of the capture zone at the well location is $2Y_{well}$. EPA (2008a) also describes an equation to determine the maximum width of the capture zone. However, this calculation is not applicable to this site because of the presence of the slurry wall upgradient of the well. The results of the capture zone width calculations are shown in Table 5. The capture zones of wells RAY-1A and RAY-1B1 are depicted on Figures 7 through 10. Previous reports for the MEW Site have noted variability in aquifer transmissivity of up to four orders of magnitude (Locus, 2000). Therefore, the estimated dimensions of the capture zone may be affected by uncertainty in the transmissivity value.

RAY-1A and RAY-1B1 were placed to capture groundwater along the downgradient boundary of the Raytheon slurry wall (GT, 1995). This evaluation of the capture zones indicates that these wells effectively capture the groundwater along the slurry wall boundary. Further evaluation of the capture zone for RAY-1A is included in Chapter 3 of this report.

2.3.2.1.Flow Budget Calculations

Water balance calculations were performed to verify the estimated capture zones for the 350 Ellis Street site by comparing the groundwater flux flowing into the site with the volume of groundwater removed from extraction wells RAY-1A and RAY-1B1.

Theoretically, inflow to the aquifer could be caused by aerial recharge from precipitation, recharge from surface water bodies, lateral inflow from upgradient areas, or vertical flow between aquifer zones. Outflow is the rate of groundwater flow being removed from the aquifer. Outflow of water from the aquifer system could be caused by vertical leakage between aquifers and groundwater extraction.

As demonstrated in the Feasibility Study for the MEW site (Canonie, 1988), aerial recharge is considered to be negligible at the MEW site because most of the surface is covered by impermeable features such as paving and buildings. Infiltration is further limited by clays, which extend to a depth of approximately 10 to 15 feet at the site. With other inflow pathways being negligible, groundwater flow at the site is mostly attributed to the lateral flow from upgradient areas.

The estimated hydraulic gradients used in the water balance calculations are shown on Figures 7 through 10. The estimated groundwater flow into the aquifer and the estimated pumping required for

adequate capture are calculated in Table 6. The estimated flow rate into the capture zone is calculated from (EPA, 2008a):

$$Q = K \cdot (b \cdot w) \cdot i \cdot factor\ .$$

The variables are defined as follows:

Q = flow rate (gpd);
K = hydraulic conductivity (gpd/ft);
b = saturated aquifer thickness (ft). Note that transmissivity $T = K \cdot b$;
w = width of capture zone (ft);
i = hydraulic gradient (unitless);
factor = 1.5 - 2 is the "rule of thumb" value used to account for other contributions to the pumping well, such as flux from a river or induced vertical flow from another groundwater unit.

Because RAY-1A and RAY-1B1 are immediately downgradient of the slurry wall, groundwater removed from these wells must originate from incoming groundwater flux around the slurry wall. Consequently, the "w" factor in the formula above is interpreted as the width of the groundwater pathway to the east and west of the slurry wall that is eventually captured by the wells.

RAY-1A: Pumping rates in March and September 2011 were 1.98 gpm and 9.17 gpm, respectively. With an estimated width of the groundwater pathway around the approximately 850-ft wide slurry wall and an assumed factor of 1.5, the interpreted capture zones correspond to estimated pumping rates of 2.22 gpm in March and 8.91 gpm in September. These values are in good agreement with actual pumping rates (Table 6).

RAY-1B1: In March and September 2011, pumping rates were 3.30 and 0.33 gpm, respectively. The interpreted capture zones correspond to estimated pumping rates of 2.96 gpm in March and 0.37 gpm in September, which is in good agreement with actual pumping rates (Table 6).

2.3.2.2. Well Loss Calculations

The two factors used to determine well loss are the extraction rate and the well loss coefficient, which is dependent on well condition. RAY-1A and RAY-1B1 were properly designed and well developed, but it is possible that mild deterioration has occurred. Given the conditions of the wells, the well loss coefficient, C, is estimated to range from 0.5 – 1 min^2/m^5. In 2011, extraction rates ranged from 1.96 to 10.54 gpm in RAY-1A and 0.87 to 4.30 gpm in RAY-1B1. Table 7 presents potential losses in each

well assuming a range of extraction rates and loss coefficients. For all cases, the well losses are not significant and adjustments to groundwater levels in the two extraction wells are not necessary.

2.3.3. Horizontal (Slurry Wall) and Vertical (Aquitard) Groundwater Gradients

In March, May, August, and September, groundwater levels were measured to monitor the direction of the groundwater gradient across the slurry wall and the aquitards. Due to equipment malfunction the groundwater data could not be retrieved for the second quarter water levels collected on May 27, 2011. However, the groundwater data from all the other quarters are consistent, and the missing data from the May event are not expected to significantly affect the interpretation of results. A total of 7 well pairs are used to evaluate groundwater gradient directions across the slurry wall, and 15 well pairs are used to evaluate the vertical gradient directions across the aquitards (Figure 17).

Although outward gradients have been observed, the RAOs are not impacted because Raytheon has installed extraction wells in the "A" and "B1" Aquifers immediately downgradient of the slurry wall (RAY-1A and RAY-1B1). Capture zone analyses have demonstrated that these wells provide an adequate capture of the groundwater immediately downgradient of the slurry wall. Furthermore, the slurry wall is a low-permeability wall that results in minimal chemical migration across its walls, even if the gradient is outward. The flux of chemicals across a low-permeability wall is small. Groundwater and chemicals tend to migrate along easier pathways: inside the slurry wall enclosure, chemicals preferentially move towards extraction wells RE-23A, RE-24A, RE-25A, and RE-5A rather than through the low-permeability slurry wall. The slurry wall, the pumping activities within its enclosure, and the groundwater extraction wells immediately downgradient of the slurry wall physically contain chemicals.

Slurry Wall: In 2011, the groundwater extraction system and all eight extraction wells were operating. The quarterly water level measurements show that an inward gradient across the slurry wall has been maintained except in well pairs R-55A/RE-07A and R-05B1/RP-23B, which are located along the northern slurry wall (Table 8), where VOCs are captured by the existing extraction wells RAY-1A and RAY-1B1. Plots of the differences in hydraulic head across the slurry wall are shown on Figures 18 and 19.

Vertical Gradient Directions: The differences in water elevations between the "B1" and "A" Aquifers are shown in Table 9 and on Figure 20. In 2011, upward gradients were consistently observed in eight of the ten well pairs that are used to monitor the "A/B1" Aquitard gradient directions. The measurements show slight downward gradients in well pair R-67A/R-68B1, and R-60A/R-63B1. The

direction of vertical gradient across the "B1/B2 aquitard" and "Upper and Lower "B2" aquifer" was consistently upward throughout 2011 as shown in Table 9, and on Figures 21 and 22.

2.4. Onsite VOC Concentrations

Eleven site-specific monitoring wells are sampled annually, and twenty-four are sampled on five-year intervals (Tables 11 and 12). The annual sampling event for the Raytheon site-specific wells was conducted in October 2011. The analytical results for the 2011 annual samples are summarized in Table 11. The 5-year "A" Aquifer and "B1" Aquifer site-specific wells inside the slurry wall were also sampled in October 2011. The analytical results for this sampling event are summarized in Table 12. A total of 35 site-specific wells on the monitoring plan were sampled and analyzed for VOCs using EPA Method 8260, following the QA/QC procedures specified in the 1991 Unified Quality Assurance Project Plan (UQAPP).

2.4.1. Chemical Data Evaluation and Trend Analysis

The concentrations in monitoring wells sampled in 2011 were within the range of historical concentrations. Table 11 summarizes the analytical results for the annual sampling event. TCE, PCE, cis-1,2-DCE, and vinyl chloride concentrations and contours for the "A", "B1" and "B2" Aquifers are shown on Figures 23 through 34. Appendix E shows concentration trends for TCE, cis-1,2-dichloroethene, and vinyl chloride for selected wells in each aquifer since 1992.

2.4.2. Historical Data Summary

Groundwater monitoring has been conducted at Raytheon's former facility since the early 1980s. In general, most concentrations were detected at their highest levels early in the investigation and removal period. These levels were followed by a significant drop in concentrations in the "A", "B1", and "B2" Aquifers as a result of mitigation measures that have contained and/or removed sources in the groundwater and the unsaturated soils.

Influent treatment system data indicate that TCE comprises the majority of the chemicals being treated. Historical VOC concentrations are included in Appendix E.

2.5. Quality Assurance/Quality Control

A total of 83 water samples, five field blanks, five field duplicates, and eighteen trip blanks were collected and analyzed for VOCs using EPA Methods 8260B during this reporting period. No rinseate blanks were collected with treatment system samples because no reusable sampling equipment other

than the collection container was used to retrieve these samples. All quality assurance/quality control (QA/QC) followed the procedures specified in the 1991 UQAPP (Canonie, 1991). The quality of the entire data during this reporting period is still acceptable and valid. Appendix F presents the QA/QC report for this reporting period.

3. ADDITIONAL ACTIVITIES CONDUCTED IN 2011

One of the findings of the 2010 Annual Report (Locus, 2011b) recommended increased extraction from well RAY-1A in order to improve capture in the vicinity of monitoring well 24A. In 2011 Locus made a series of adjustments of the RAY-1A pumping rate and capture zone analyses to determine the pumping rate that maximized the capture zone in the vicinity of well 24A. The pumping rates were typically adjusted early in the week, on a Monday or Tuesday. After RAY-1A had pumped at a constant rate for a few days, groundwater elevations were measured in 11 wells located to the north, east, and west of the slurry wall enclosure. The water levels were typically measured on Fridays. Using these groundwater elevation measurements, the capture zone of RAY-1A was analyzed according to the EPA (2008) guidance. The methodology is described in Section 2.3 of this report.

The RAY-1A pumping rates, corresponding water level measurements, and selected capture zone analysis tables and figures are included in Appendix B. Table B-1 summarizes the measurements and pumping rates from each capture zone evaluation performed in 2011. In May 2011, several adjustments were made to try to increase the pumping rate in RAY-1A. Despite these adjustments, the pumping rate remained at 3.7 to 3.8 gpm. The capture zone analyses showed that this pumping rate did not provide adequate groundwater capture in the vicinity of well 24A, so it was determined that a more powerful pump should be installed and the pumping rate in RAY-1A should be increased.

A new pump was installed in RAY-1A on June 6, 2011, and a series of pumping rate increases and capture zone analyses were performed. Capture zone analysis maps and tables for four of these events are included in Appendix B as examples of this process. These four analyses also illustrate that pumping well RAY-1A at approximately 10.0 gpm provides the maximum groundwater capture in the vicinity of well 24A.

As a result of the changes to the RAY-1A pumping rate, groundwater capture was substantially improved in the vicinity of well 24A. The 2011 analytical data from well 24A suggest that the expanded capture zone may be adequate for its intended purpose of mitigating the elevated TCE concentrations in well 24A. In 2011 the TCE concentration in well 24A was 2,000 µg/L, notably lower than the 2010 concentration of 6,200 µg/L TCE. As discussed in Section 2.3.2, the estimated dimensions of the capture zones may be affected by uncertainty in the transmissivity value. Previous reports for the MEW Site have noted variability in aquifer transmissivity of up to four orders of magnitude (Locus, 2000), which directly affects the scale of the capture zone. Given this uncertainty, the concentration trend in well 24A appears to be a more reliable indicator of capture for this area.

Based on the results of these analyses, Locus revised the operational pumping rate for RAY-1A to 10.0 gpm. In 2012, Locus will measure the groundwater elevations in the eleven wells used for the capture zone analysis on a quarterly basis to verify that the capture zone remains consistent. The target pumping rate for RAY-1A may revised again after review of 2012 capture zones, or if sampling shows further reduction in the TCE concentration in well 24A.

No other additional activities were conducted in 2011.

4. PROBLEMS ENCOUNTERED

This section documents specific issues encountered during 2011.

During 2011, there was one event which caused unplanned down-time for the groundwater treatment system for approximately seven days from July 28 to August 5. Vinyl chloride was detected in an effluent sample at a concentration exceeding the NPDES permit limit. Upon receipt of the laboratory report, a confirmation sample was immediately collected and analyzed, which confirmed the result. The system was then shut down, and the granular activated carbon was replaced. After the carbon replacement, the effluent was resampled and no VOCs were detected. The system was then restarted on August 5. Additional details of this event were provided to RWQCB and EPA in correspondence dated July 29 and August 5.

5. TECHNICAL ASSESSMENT

5.1. Is the Remedy Functioning as Intended?

The review of documents, ARARs, risk assumptions, and the results of the site inspection indicate that the remedy is functioning as intended by the ROD, as modified by the Explanation of Significant Differences. The Feasibility Study (Canonie, 1988) for the MEW site lists the RAOs to be:

1. Protection of potential potable water supply;
2. Remediation or control of relatively elevated concentrations of chemicals present in localized vadose zone soils below the ground surface that could migrate to enter into the shallow groundwater system;
3. Remediation or control of groundwater, which contains elevated concentrations of chemicals, including control of discharge of such groundwater into surface water.

Several mitigation measures have been implemented at the 350 Ellis Street property to protect potential potable water supply in the shallow aquifer zone. The SVE system installed and operated at the 350 Ellis Street property achieved soil cleanup goals by remediating chemicals present in the vadose zone soils. The installation of a slurry wall at 350 Ellis Street effectively isolated the source areas, and, combined with pumping actions, resulted in a significant decrease in concentrations in the areas within and outside the slurry walls. The slurry wall and the pumping activities inside and outside the slurry wall achieved the third RAO by controlling sources.

In January 2003, 1, 4-dioxane concentrations above RWQCB criteria were detected in the effluent of the treatment system. The treatment system was modified in the fall of 2003 by replacing the air stripper with an oxidation system that is capable of destroying 1, 4-dioxane, and reducing the overall concentrations to below the RWQCB criteria.

The ROD for the MEW site defines cleanup goals for the soils and groundwater. Soil remediation goals were achieved through the implementation of the SVE system. Groundwater remediation goals have not yet been achieved, so groundwater extraction and treatment is ongoing.

5.2. Are Capture Zones Adequate?

Comprehensive water level measurements were collected semiannually. Capture zones are determined as recommended in the 2008 EPA guidance, by calculating plume widths, evaluation of flow lines based on groundwater elevation contours, and by water-balance calculations. If a pumping well does not provide adequate capture, the pumping rate is increased. If a capture zone exceeds the design requirements, then the pumping rate may be reduced.

Field measurements of water elevations from monitoring wells reflect site conditions. These data translate the actual conditions of the aquifer into water elevation data from which water elevation contours and capture zones are estimated. These estimates are dynamic in that they reflect hydrological changes in the aquifer (such as seasonal changes to water elevations and flow direction, and changes to pumping rates in regional and source control recovery wells).

As depicted in Figures 7 through 10, and calculated in Tables 5 and 6, the overall capture of the plume at the former Raytheon facilities appears to be adequate. In 2010, 6,200 µg/L TCE was detected in well 24A, suggesting that the capture zone of RAY-1A needed to be expanded. During 2011, Locus made a series of adjustments to the pumping rate of well RAY-1A and evaluated the resultant capture zones (Section 3). Based on these activities, Locus determined that 10 gpm was the most appropriate pumping rate for well RAY-1A. As a result of the changes to the RAY-1A pumping rate, groundwater capture was substantially improved in the vicinity of well 24A. In 2011, the TCE concentration in well 24A was measured at 2,000 µg/L, a significant reduction from the 2010 value. The 2011 concentration is consistent with historical TCE concentrations in the well.

5.3. Are Vertical Gradients Inside and Gradients Across the Slurry Walls Appropriate?

A total of 7 well pairs are used to evaluate groundwater gradient directions across the slurry wall, and 15 well pairs are used to evaluate the vertical gradient directions across the aquitards (Figure 17). In 2011, upward gradients were consistently observed in eight of the ten well pairs that are used to monitor the "A/B1" Aquitard gradient directions. The measurements show a slight downward gradient in well pair R-67A/R-68B1, and R-60A/R-63B1. The direction of vertical gradient across the "B1/B2 aquitard" and "Upper and Lower "B2" aquifer" was consistently upward throughout 2011. Onsite, the "A" Aquifer and "B1" Aquifer are entirely enclosed within the slurry wall, and the upward gradients across the "B1/B2" Aquitard (Table 9, Figure 21) and between the upper "B2" and lower "B2" Aquifers (Table 9, Figure 22) indicate that groundwater (and chemicals) will flow upward from the "B2" Aquifer into the "B1" Aquifer, where the VOCs are captured by the extraction wells.

It is generally desirable that the hydraulic gradient across slurry walls be inward. Until 2000, gradients had been mostly inward with a few exceptions that may have been due to the temporary shutdown of some extraction wells. During property redevelopment in 2000, several extraction wells were relocated. Since then, outward gradients have been observed in well pairs along the northern (downgradient) portion of the slurry wall. Although outward gradients have been observed, the RAOs will not be impacted because Raytheon has installed extraction wells in the "A" and "B1" Aquifers immediately downgradient of the slurry wall (RAY-1A and RAY-1B1). Capture zone analyses have demonstrated that these wells provide an adequate capture of the groundwater immediately downgradient of the slurry wall. Also, the slurry wall is a low-permeability wall that results in minimal chemical migration across its walls, even if the gradient is outward. The flux of chemicals across a low-permeability wall is small. Furthermore, groundwater and chemicals tend to migrate along easier pathways: inside the slurry wall enclosure, chemicals would preferentially move towards extraction wells RE-23A, RE-24A, RE-25A, and RE-5A rather than through the low-permeability slurry wall.

The slurry wall, the pumping activities within its enclosure, and the groundwater extraction wells immediately downgradient of the slurry wall physically contain chemicals.

5.4. Are Concentrations Decreasing Over Time?

Decreasing TCE concentrations have been observed in most wells since the start of remedial activities in 1986. However, TCE concentrations show an increasing trend since 2007 in well 24A, which is located downgradient of the slurry wall. In well 24A, TCE increased from 2,500 µg/L in December 2009 to 5,600 µg/L in December 2010. In 2011, TCE concentration was 2,000 µg/L, which is consistent with historical data for this well. Concentrations in this well have fluctuated since 2002.

Appendix E provides concentration plots for wells on the monitoring schedule.

6. CONCLUSIONS AND RECOMMENDATIONS

The current remedial actions at Raytheon's former facilities are protective of human health and the environment. Soil remediation is complete and the ongoing groundwater remediation has removed more than 15,558 pounds of VOCs. Since 2005, the groundwater treatment system has operated approximately 95% of the time.

In summary, the VOC concentrations at the site have generally decreased, but appear to have reached asymptotic levels in many wells. The rate of removal is expected to decrease annually, and the costs to operate the system are expected to increase by the inflation rate. Therefore, the cost per pound removed is expected to increase in future. The life-cycle assessment of the existing remedy indicates that many decades would be required to achieve the cleanup standards established in the ROD.

7. ACTIVITIES PLANNED FOR 2012

The following site-specific activities are planned for 2012:

- Continued operation and maintenance of the groundwater treatment system.
- Continued well pair groundwater level measurements to evaluate the direction of the hydraulic gradient across the slurry wall and the aquitards.
- Collection of semiannual groundwater elevation measurements (in March and September) as part of the regional groundwater monitoring program. Collection of quarterly groundwater elevation measurements from well pairs in May and August.
- Collection of groundwater samples will be conducted in September/October for the Raytheon site-specific program and the regional groundwater monitoring program.

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TABLES

TABLE 1
AVERAGE EXTRACTION WELL FLOW RATES
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Extraction Wells	January	February	March	April	May	June	July	August	September	October	November	December
RAY-1A	2.15	2.26	1.96	2.90	3.75	3.31	2.27	7.45	9.06	10.24	9.88	10.54
RAY-1B1	3.34	3.44	4.30	3.46	3.35	3.16	0.87	1.05	1.44	2.29	2.90	3.19
I-1B2	1.66	1.62	1.48	1.29	1.31	1.31	0.70	2.02	1.89	1.85	1.76	1.73
R-65B2	4.05	4.26	4.24	4.18	4.19	4.37	2.31	1.37	4.15	4.17	3.73	3.65
RE-05A	4.98	5.15	0.32	5.06	4.93	5.09	2.71	5.79	5.37	5.33	4.68	4.58
RE-23A	4.19	3.92	3.69	2.70	1.98	1.47	0.56	0.88	0.13	0.50	4.92	4.89
RE-24A	12.74	12.92	12.93	12.88	12.55	12.20	5.55	11.76	10.91	11.91	12.01	12.56
RE-25A	0.15	0.24	0.33	0.45	0.37	0.57	0.30	1.10	0.67	0.80	0.55	0.27
Average GWTS Discharge Flow Rate	27	27	25	27	26	25	25	27	28	35	40	42
Total treated groundwater (gallons)	**14,353,227**											

Notes:
1. Flow rates are calculated averages based on the total monthly flow from each well and through the treatment system, in gallons per minute (gpm).
2. GWTS - Groundwater Treatment System

TABLE 2
2011 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Parameter	Date	1/17/2011		2/21/2011		3/21/2011		4/18/2011		5/16/2011	
	Location	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF
	Sample Purpose	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
	Units										
1,1,1,2-TETRACHLOROETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
1,1,1-TRICHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,1,2-TRICHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,1-DICHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	0.016	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,1-DICHLOROETHENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	0.016	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,1-DICHLOROPROPENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
1,2,3-TRICHLOROBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
1,2,3-TRICHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
1,2,4-TRICHLOROBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
1,2,4-TRIMETHYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
1,2-DIBROMO-3-CHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0020	ND 0.050
1,2-DIBROMOETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
1,2-DICHLOROBENZENE	mg/l	ND 0.0005	0.017	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,2-DICHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,2-DICHLOROPROPANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,3,5-TRIMETHYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
1,3-DICHLOROBENZENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,3-DICHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
1,4-DICHLOROBENZENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
1,4-DIOXANE	mg/l	NT	NT	ND 0.0009	0.0030	NT	NT	NT	NT	NT	NT
2,2-DICHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
2-BUTANONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010	ND 0.25
2-HEXANONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010	ND 0.25
4-CHLOROTOLUENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
4-METHYL-2-PENTANONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010	ND 0.25
ACETONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010	ND 0.25
BENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
BROMOBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
BROMOCHLOROMETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
BROMODICHLOROMETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
BROMOFORM	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0010	ND 0.025
BROMOMETHANE	mg/l	ND 0.0010	ND 0.025	ND 0.0010	ND 0.025	ND 0.0010	ND 0.040	ND 0.0010	ND 0.040	ND 0.0010	ND 0.025

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 2
2011 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	Date	1/17/2011		2/21/2011		3/21/2011		4/18/2011		5/16/2011	
	Location	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF
	Sample Purpose	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Parameter	Units										
CARBON DISULFIDE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
CARBON TETRACHLORIDE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
CHLOROBENZENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
CHLOROETHANE	mg/l	ND 0.0010	ND 0.025	ND 0.0010	ND 0.025	ND 0.0010	ND 0.040	ND 0.0010	0.054	ND 0.0010	ND 0.025
CHLOROFORM	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
CHLOROMETHANE	mg/l	ND 0.0010	ND 0.025	ND 0.0010	ND 0.025	ND 0.0010	ND 0.040	ND 0.0010	0.063	ND 0.0010	ND 0.025
CIS-1,2-DICHLOROETHENE	mg/l	ND 0.0005	0.88	ND 0.0005	1.6	ND 0.0005	0.96	ND 0.0005	0.91	ND 0.0005	0.78
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
DIBROMOCHLOROMETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
DIBROMOMETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
DICHLORODIFLUOROMETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0010	ND 0.025
ETHYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
FREON 113	mg/l	ND 0.0020	ND 0.050	ND 0.0020	ND 0.050	ND 0.0020	ND 0.080	ND 0.0020	ND 0.080	ND 0.0020	ND 0.050
HEXACHLOROBUTADIENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0020	ND 0.050
ISOPROPYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
METHYL-T-BUTYL ETHER	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
METHYLENE CHLORIDE	mg/l	ND 0.020	ND 0.50	ND 0.020	ND 0.50	ND 0.020	ND 0.80	ND 0.020	ND 0.80	ND 0.010	ND 0.25
N-BUTYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
N-PROPYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
NAPHTHALENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0020	ND 0.050
o-XYLENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
PARA-ISOPROPYL TOLUENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
SEC-BUTYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
STYRENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
TERT- BUTYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
TETRACHLOROETHENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
TOLUENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005	ND 0.013
TRANS-1,2-DICHLOROETHENE	mg/l	ND 0.0005	0.068	ND 0.0005	0.085	ND 0.0005	0.067	ND 0.0005	0.049	ND 0.0005	0.064
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.0005	ND 0.020	ND 0.0005	ND 0.013
TRICHLOROETHENE	mg/l	ND 0.0005	1.5	ND 0.0005	3.0	ND 0.0005	1.9	ND 0.0005	1.9	ND 0.0005	1.8
TRICHLOROFLUOROMETHANE	mg/l	ND 0.0010	ND 0.025	ND 0.0010	ND 0.025	ND 0.0010	ND 0.040	ND 0.0010	ND 0.040	ND 0.0010	ND 0.025
VINYL ACETATE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010	ND 0.25
VINYL CHLORIDE	mg/l	ND 0.0005	0.045	ND 0.0005	0.071	ND 0.0005	0.045	ND 0.0005	0.078	ND 0.0005	0.030

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 2
2011 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Parameter	Date	6/20/2011		7/19/2011			7/28/2011	8/4/2011	8/18/2011		9/19/2011
	Location	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYINF	RAYEFT	RAYEFT	RAYEFT	RAYINF	RAYEFT
	Sample Purpose	REG	REG	REG	FD	REG	REG	REG	REG	REG	REG
	Units										
1,1,1,2-TETRACHLOROETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,1,1-TRICHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
1,1,2-TRICHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
1,1-DICHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
1,1-DICHLOROETHENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
1,1-DICHLOROPROPENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2,3-TRICHLOROBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2,3-TRICHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2,4-TRICHLOROBENZENE	mg/l	NT	NT	NT	NT	NT	ND 0.0010	NT	NT	NT	NT
1,2,4-TRIMETHYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2-DIBROMO-3-CHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2-DIBROMOETHANE	mg/l	NT	NT	NT	NT	NT	ND 0.0005	NT	NT	NT	NT
1,2-DICHLOROBENZENE	mg/l	ND 0.0005	0.015	ND 0.0005	ND 0.020	0.016	ND 0.0005	ND 0.0005	ND 0.0005	0.018	ND 0.0005
1,2-DICHLOROETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
1,2-DICHLOROPROPANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
1,3,5-TRIMETHYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,3-DICHLOROBENZENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
1,3-DICHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,4-DICHLOROBENZENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
1,4-DIOXANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
2,2-DICHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
2-BUTANONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
2-HEXANONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
4-CHLOROTOLUENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
4-METHYL-2-PENTANONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ACETONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BROMOBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BROMOCHLOROMETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BROMODICHLOROMETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
BROMOFORM	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0010	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
BROMOMETHANE	mg/l	ND 0.0010	ND 0.025	ND 0.0010	ND 0.040	ND 0.020	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.025	ND 0.0010

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 2
2011 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Parameter	Date	6/20/2011			7/19/2011		7/28/2011	8/4/2011	8/18/2011		9/19/2011
	Location	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYINF	RAYEFT	RAYEFT	RAYEFT	RAYINF	RAYEFT
	Sample Purpose	REG	REG	REG	FD	REG	REG	REG	REG	REG	REG
	Units										
CARBON DISULFIDE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
CARBON TETRACHLORIDE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
CHLOROBENZENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
CHLOROETHANE	mg/l	ND 0.0010	ND 0.025	ND 0.0010	ND 0.040	ND 0.020	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.025	ND 0.0010
CHLOROFORM	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0010	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
CHLOROMETHANE	mg/l	ND 0.0010	ND 0.025	ND 0.0010	ND 0.040	ND 0.020	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.025	ND 0.0010
CIS-1,2-DICHLOROETHENE	mg/l	ND 0.0005	0.71	ND 0.0005	0.95	1.0	ND 0.0005	ND 0.0005	ND 0.0005	0.52	ND 0.0005
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
DIBROMOCHLOROMETHANE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
DIBROMOMETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
DICHLORODIFLUOROMETHANE	mg/l	NT	NT	NT	NT	NT	ND 0.0005	NT	NT	NT	NT
ETHYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
FREON 113	mg/l	ND 0.0020	ND 0.050	ND 0.0020	ND 0.080	ND 0.040	ND 0.0005	ND 0.0020	ND 0.0020	ND 0.050	ND 0.0020
HEXACHLOROBUTADIENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
ISOPROPYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
METHYL-T-BUTYL ETHER	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
METHYLENE CHLORIDE	mg/l	ND 0.020	ND 0.50	ND 0.020	ND 0.80	ND 0.40	ND 0.0050	ND 0.020	ND 0.020	ND 0.50	ND 0.020
N-BUTYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
N-PROPYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
NAPHTHALENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
o-XYLENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
PARA-ISOPROPYL TOLUENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SEC-BUTYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
STYRENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TERT- BUTYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TETRACHLOROETHENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
TOLUENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TRANS-1,2-DICHLOROETHENE	mg/l	ND 0.0005	0.055	ND 0.0005	0.056	0.057	ND 0.0005	ND 0.0005	ND 0.0005	0.042	ND 0.0005
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.0005	ND 0.013	ND 0.0005	ND 0.020	ND 0.010	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.013	ND 0.0005
TRICHLOROETHENE	mg/l	ND 0.0005	1.6	ND 0.0005	2.2	2.2	ND 0.0005	ND 0.0005	ND 0.0005	1.2	ND 0.0005
TRICHLOROFLUOROMETHANE	mg/l	ND 0.0010	ND 0.025	ND 0.0010	ND 0.040	ND 0.020	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.025	ND 0.0010
VINYL ACETATE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
VINYL CHLORIDE	mg/l	ND 0.0005	0.076	0.0059	0.060	0.063	0.0079	ND 0.0005	ND 0.0005	0.071	ND 0.0005

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 2
2011 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	Date	9/19/2011	10/17/2011		11/7/2011		12/20/2011	
	Location	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF
	Sample Purpose	REG	REG	REG	REG	REG	REG	REG
Parameter	Units							
1,1,1,2-TETRACHLOROETHANE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,1,1-TRICHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
1,1,2-TRICHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
1,1-DICHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
1,1-DICHLOROETHENE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
1,1-DICHLOROPROPENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2,3-TRICHLOROBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2,3-TRICHLOROPROPANE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2,4-TRICHLOROBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2,4-TRIMETHYLBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2-DIBROMO-3-CHLOROPROPANE	mg/l	NT	NT	NT	ND 0.0020	ND 0.040	NT	NT
1,2-DIBROMOETHANE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2-DICHLOROBENZENE	mg/l	0.017	ND 0.0005	0.014	ND 0.0005	0.013	ND 0.0005	0.011
1,2-DICHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
1,2-DICHLOROPROPANE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
1,3,5-TRIMETHYLBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,3-DICHLOROBENZENE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
1,3-DICHLOROPROPANE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,4-DICHLOROBENZENE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
1,4-DIOXANE	mg/l	NT	NT	NT	NT	NT	ND 0.0009	0.0023
2,2-DICHLOROPROPANE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
2-BUTANONE	mg/l	NT	NT	NT	ND 0.010	ND 0.20	NT	NT
2-HEXANONE	mg/l	NT	NT	NT	ND 0.010	ND 0.20	NT	NT
4-CHLOROTOLUENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
4-METHYL-2-PENTANONE	mg/l	NT	NT	NT	ND 0.010	ND 0.20	NT	NT
ACETONE	mg/l	NT	NT	NT	ND 0.010	ND 0.20	NT	NT
BENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
BROMOBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
BROMOCHLOROMETHANE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
BROMODICHLOROMETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
BROMOFORM	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0010	ND 0.020	ND 0.0005	ND 0.0083
BROMOMETHANE	mg/l	ND 0.025	ND 0.0010	ND 0.025	ND 0.0010	ND 0.020	ND 0.0010	ND 0.017

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 2
2011 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	Date	9/19/2011	10/17/2011		11/7/2011		12/20/2011	
	Location	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF
	Sample Purpose	REG	REG	REG	REG	REG	REG	REG
Parameter	Units							
CARBON DISULFIDE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
CARBON TETRACHLORIDE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
CHLOROBENZENE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
CHLOROETHANE	mg/l	ND 0.025	ND 0.0010	ND 0.025	ND 0.0010	ND 0.020	ND 0.0010	ND 0.017
CHLOROFORM	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
CHLOROMETHANE	mg/l	ND 0.025	ND 0.0010	ND 0.025	ND 0.0010	ND 0.020	ND 0.0010	ND 0.017
CIS-1,2-DICHLOROETHENE	mg/l	0.48	ND 0.0005	0.53	ND 0.0005	0.66	ND 0.0005	0.63
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
DIBROMOCHLOROMETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
DIBROMOMETHANE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
DICHLORODIFLUOROMETHANE	mg/l	NT	NT	NT	ND 0.0010	ND 0.020	NT	NT
ETHYLBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
FREON 113	mg/l	ND 0.050	ND 0.0020	ND 0.050	ND 0.0020	ND 0.040	ND 0.0020	ND 0.033
HEXACHLOROBUTADIENE	mg/l	NT	NT	NT	ND 0.0020	ND 0.040	NT	NT
ISOPROPYLBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
METHYL-T-BUTYL ETHER	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
METHYLENE CHLORIDE	mg/l	ND 0.50	ND 0.020	ND 0.50	ND 0.010	ND 0.20	ND 0.020	ND 0.33
N-BUTYLBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
N-PROPYLBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
NAPHTHALENE	mg/l	NT	NT	NT	ND 0.0020	ND 0.040	NT	NT
o-XYLENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
PARA-ISOPROPYL TOLUENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
SEC-BUTYLBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
STYRENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
TERT- BUTYLBENZENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
TETRACHLOROETHENE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
TOLUENE	mg/l	NT	NT	NT	ND 0.0005	ND 0.010	NT	NT
TRANS-1,2-DICHLOROETHENE	mg/l	0.040	ND 0.0005	0.041	ND 0.0005	0.052	ND 0.0005	0.047
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.013	ND 0.0005	ND 0.013	ND 0.0005	ND 0.010	ND 0.0005	ND 0.0083
TRICHLOROETHENE	mg/l	1.3	ND 0.0005	1.1	ND 0.0005	1.1	ND 0.0005	1.5
TRICHLOROFLUOROMETHANE	mg/l	ND 0.025	ND 0.0010	ND 0.025	ND 0.0010	ND 0.020	ND 0.0010	ND 0.017
VINYL ACETATE	mg/l	NT	NT	NT	ND 0.010	ND 0.20	NT	NT
VINYL CHLORIDE	mg/l	0.058	ND 0.0005	0.043	ND 0.0005	0.054	ND 0.0005	0.037

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 3
CUMULATIVE VOC MASS REMOVAL
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
10/17/1986	12.37	2,473,490	0	0
10/27/1986	6.15	2,473,490	41.73	42
10/28/1986	4.59	2,473,490	3.11	45
10/29/1986	5.10	2,473,490	3.46	48
11/5/1986	5.05	3,452,400	33.46	82
11/12/1986	5.39	3,452,400	35.74	118
12/1/1986	5.00	2,787,540	72.64	190
12/29/1986	9.51	2,787,540	203.52	394
12/31/1986	6.36	2,787,540	9.72	403
1/19/1987	6.52	1,930,153	65.58	469
1/28/1987	7.16	1,930,153	34.09	503
2/23/1987	21.70	1,206,884	186.70	690
3/2/1987	13.24	3,775,862	95.95	786
3/13/1987	9.49	3,775,862	108.07	894
4/9/1987	9.25	3,078,120	210.78	1,105
4/22/1987	8.56	3,078,120	93.92	1,198
5/8/1987	4.88	1,837,494	39.34	1,238
5/28/1987	4.02	1,837,494	40.51	1,278
6/3/1987	4.19	2,527,500	17.42	1,296
6/8/1987	4.71	2,527,500	16.32	1,312
6/17/1987	5.42	2,527,500	33.80	1,346
6/25/1987	5.69	2,527,500	31.55	1,377
7/13/1987	4.16	3,866,196	79.38	1,457
7/31/1987	5.12	3,866,196	97.69	1,554
8/13/1987	3.86	3,740,305	51.46	1,606
8/27/1987	4.95	3,740,305	71.07	1,677
5/20/1988	4.10	217,000	65.13	1,742
6/7/1988	2.90	210,000	3.01	1,745
6/28/1988	2.80	210,000	3.39	1,749
10/3/1988	3.33	442,835	39.22	1,788
12/22/1988	2.80	442,835	27.20	1,815
3/28/1989	2.40	378,200	23.89	1,839
6/20/1989	2.80	474,000	30.57	1,869
9/21/1989	2.90	447,000	33.05	1,902
12/15/1989	2.00	461,900	21.53	1,924
3/30/1990	1.90	162,967	8.91	1,933
6/29/1990	1.80	438,000	19.67	1,953
9/28/1990	2.80	213,720	14.93	1,967
12/7/1990	1.05	1,116,000	22.49	1,990
3/28/1991	0.80	1,054,000	25.73	2,016
6/18/1991	0.66	733,740	10.89	2,027
9/16/1991	0.95	673,560	15.71	2,042
12/19/1991	0.63	737,862	11.98	2,054
3/26/1992	0.36	794,437	7.77	2,062
6/26/1992	0.48	747,060	8.97	2,071
9/24/1992	4.24	706,860	73.96	2,145
12/8/1992	8.39	846,920	146.07	2,291

TABLE 3
CUMULATIVE VOC MASS REMOVAL
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2/18/1993	5.93	1,011,164	118.37	2,409
3/11/1993	5.64	1,358,947	44.13	2,454
4/14/1993	4.66	1,460,100	63.43	2,517
5/25/1993	4.55	1,154,874	59.07	2,576
6/23/1993	5.24	1,353,270	56.38	2,632
7/22/1993	5.55	1,215,572	53.64	2,686
8/24/1993	6.04	1,085,279	59.31	2,745
9/23/1993	5.69	879,840	41.18	2,787
10/28/1993	6.00	877,021	50.50	2,837
11/24/1993	6.78	772,680	38.78	2,876
12/26/1993	7.48	822,988	54.01	2,930
1/13/1994	7.61	1,020,985	38.35	2,968
2/4/1994	7.47	804,160	36.23	3,004
3/4/1994	6.82	1,099,353	57.56	3,062
4/14/1994	7.19	1,035,300	83.68	3,146
5/12/1994	7.10	942,555	51.38	3,197
6/9/1994	7.11	911,880	49.77	3,247
7/14/1994	7.08	956,877	65.01	3,312
8/11/1994	5.28	1,098,640	44.53	3,356
9/15/1994	5.59	779,940	41.84	3,398
10/12/1994	5.33	877,393	34.62	3,433
11/10/1994	3.89	706,080	21.84	3,455
12/15/1994	6.10	791,926	46.36	3,501
1/6/1995	5.35	809,007	26.11	3,527
2/9/1995	4.55	975,912	41.39	3,569
3/9/1995	5.16	1,080,226	42.79	3,611
4/6/1995	5.13	967,170	38.09	3,649
5/15/1995	4.39	997,425	46.82	3,696
6/15/1995	5.04	966,390	41.40	3,738
7/13/1995	4.79	1,130,350	41.57	3,779
8/10/1995	5.54	906,720	38.56	3,818
9/18/1995	5.08	886,970	48.18	3,866
10/12/1995	5.58	830,380	30.49	3,896
11/9/1995	4.98	796,640	30.46	3,927
12/4/1995	6.23	826,780	35.31	3,962
1/31/1996	4.72	626,360	47.01	4,009
2/29/1996	5.65	705,320	31.69	4,041
3/31/1996	5.33	721,450	32.68	4,074
4/30/1996	5.56	827,560	37.85	4,111
5/23/1996	6.49	856,930	35.07	4,147
6/14/1996	4.88	1,299,060	38.24	4,185
7/11/1996	3.98	1,577,150	46.47	4,231
8/8/1996	4.43	1,068,297	36.33	4,268
9/27/1996	8.94	1,739,434	213.18	4,481
10/17/1996	6.01	2,309,683	76.12	4,557
11/17/1996	4.92	1,976,504	82.65	4,640
12/17/1996	4.33	1,704,181	60.70	4,700

TABLE 3
CUMULATIVE VOC MASS REMOVAL
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1/24/1997	4.64	1,874,988	236.15	4,793
2/13/1997	4.53	2,001,712	49.72	4,843
3/18/1997	4.76	2,428,607	104.60	4,947
4/16/1997	4.16	2,136,780	70.68	5,018
5/14/1997	4.57	2,280,782	80.02	5,098
6/19/1997	4.79	2,065,358	97.65	5,196
7/16/1997	5.21	2,294,318	88.49	5,284
8/20/1997	3.15	2,117,259	64.00	5,348
9/8/1997	7.11	2,382,011	88.23	5,436
10/2/1997	5.41	2,583,099	91.96	5,528
11/12/1997	4.91	2,059,288	113.66	5,642
12/11/1997	5.43	2,335,012	100.82	5,743
1/16/1998	4.34	2,320,835	99.42	5,842
2/25/1998	4.54	2,322,241	115.63	5,958
3/25/1998	4.38	2,322,667	78.10	6,036
4/10/1998	5.92	2,125,955	55.21	6,091
5/11/1998	6.66	2,181,943	123.51	6,215
6/8/1998	5.95	2,192,143	100.13	6,315
7/9/1998	2.96	2,187,687	55.04	6,370
8/4/1998	5.65	1,909,016	76.89	6,447
9/10/1998	6.31	1,837,103	117.60	6,564
10/30/1998	5.09	2,168,118	151.29	6,716
11/3/1998	5.23	2,050,814	11.76	6,727
12/3/1998	6.37	2,036,071	106.68	6,834
1/6/1999	9.38	2,371,413	207.36	7,041
2/1/1999	8.70	1,425,421	88.40	7,130
3/3/1999	6.00	1,657,431	81.80	7,212
4/6/1999	9.90	2,160,686	199.41	7,411
5/4/1999	6.34	2,113,299	102.86	7,514
6/9/1999	4.37	2,268,609	97.85	7,612
7/6/1999	6.00	1,961,659	87.13	7,699
8/3/1999	6.00	1,934,139	89.09	7,788
9/9/1999	6.00	2,474,267	150.60	7,939
10/4/1999	6.00	1,813,012	74.56	8,013
11/2/1999	6.00	1,845,816	88.06	8,101
12/6/1999	6.00	2,262,708	126.56	8,228
1/1/2000	6.00	1,539,993	65.87	8,294
3/3/2000	1.26	1,095,810	23.42	8,317
3/8/2000	1.61	1,095,810	2.42	8,320
3/22/2000	2.56	1,095,810	10.77	8,330
3/28/2000	0.84	1,095,810	1.51	8,332
5/9/2000	1.56	1,726,160	30.93	8,363
6/5/2000	1.02	838,365	6.35	8,369
6/21/2000	1.80	838,365	6.61	8,376
8/1/2000	1.52	838,365	14.31	8,390
9/5/2000	2.82	1,619,800	43.77	8,434
10/10/2000	1.35	1,947,460	25.23	8,459
11/6/2000	8.69	1,574,200	101.24	8,560
12/1/2000	10.00	1,411,950	96.80	8,657

TABLE 3
CUMULATIVE VOC MASS REMOVAL
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1/1/2001	3.80	1,080,750	34.31	8,691
2/1/2001	9.46	970,100	76.60	8,768
3/1/2001	8.01	1,182,000	79.04	8,847
4/1/2001	14.28	1,504,700	179.32	9,026
5/1/2001	9.90	937,150	77.43	9,104
6/1/2001	6.14	913,450	46.81	9,151
7/1/2001	6.80	575,185	32.64	9,183
8/1/2001	10.40	1,142,485	99.16	9,282
9/1/2001	10.00	1,107,530	92.43	9,375
10/1/2001	7.49	1,755,400	109.72	9,484
11/1/2001	7.35	1,453,700	89.17	9,574
12/1/2001	7.39	1,452,270	89.57	9,663
1/1/2002	7.48	1,706,930	106.55	9,770
2/1/2002	7.88	943,350	62.04	9,832
3/1/2002	5.95	1,039,650	51.58	9,883
4/1/2002	8.10	1,030,550	69.64	9,953
5/1/2002	7.86	1,395,950	91.57	10,045
6/1/2002	8.66	1,530,800	110.68	10,155
7/1/2002	9.55	957,600	76.32	10,232
8/1/2002	5.29	1,216,500	53.71	10,285
9/1/2002	6.21	1,310,900	67.94	10,353
10/1/2002	5.75	1,157,100	55.52	10,409
11/1/2002	8.05	1,086,575	73.00	10,482
12/1/2002	10.92	1,128,975	102.89	10,585
1/1/2003	9.99	1,355,675	113.03	10,698
2/1/2003	11.67	1,288,075	125.48	10,823
3/1/2003	11.07	1,434,490	132.55	10,956
4/1/2003	11.62	1,123,510	108.91	11,065
5/1/2003	8.48	663,730	46.95	11,112
6/1/2003	11.66	1,100,130	107.06	11,219
7/1/2003	10.78	993,850	89.41	11,308
8/1/2003	10.65	782,000	69.50	11,378
9/1/2003	4.14	1,208,490	41.75	11,419
10/1/2003	5.04	817,220	34.37	11,454
11/1/2003		0	0.00	11,497
12/1/2003	7.92	514,730	34.00	11,531
1/19/2004	7.17	896,910	53.67	11,585
2/24/2004	7.69	897,850	57.62	11,642
3/15/2004	7.52	922,240	57.88	11,700
4/26/2004	6.57	1,209,520	66.32	11,766
5/17/2004	7.02	1,024,285	60.01	11,826
6/21/2004	5.91	816,920	40.32	11,867
7/19/2004	3.35	586,065	16.40	11,883
8/17/2004	6.60	1,387,020	76.43	11,960
9/21/2004	6.24	1,751,543	91.15	12,051
10/19/2004	5.89	1,662,937	81.70	12,133
11/15/2004	4.10	1,343,380	46.01	12,179
12/20/2004	3.86	1,810,315	58.24	12,237

TABLE 3
CUMULATIVE VOC MASS REMOVAL
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1/19/2005	5.13	1,131,215	43.96	12,281
2/23/2005	4.29	1,283,835	52.75	12,333
3/21/2005	4.99	1,593,115	60.55	12,394
4/18/2005	4.95	1,672,165	69.33	12,463
5/16/2005	4.66	1,721,575	68.65	12,532
6/20/2005	4.78	1,540,810	60.53	12,593
7/18/2005	4.53	1,480,250	57.84	12,650
8/15/2005	4.43	1,801,230	67.17	12,718
9/19/2005	4.21	1,444,838	52.27	12,770
10/19/2005	4.72	1,463,479	53.23	12,823
11/21/2005	4.19	1,603,611	60.49	12,884
12/20/2005	3.81	1,377,038	46.41	12,930
1/16/2006	3.44	1,523,394	45.77	12,976
2/7/2006	3.76	1,348,990	41.69	13,017
3/15/2006	3.49	1,074,920	32.57	13,050
4/18/2006	3.22	1,328,115	37.74	13,088
5/16/2006	5.55	1,775,355	65.85	13,154
6/27/2006	5.44	1,445,663	66.78	13,220
7/20/2006	5.35	1,806,782	66.97	13,287
8/23/2006	4.70	1,262,105	68.57	13,356
9/22/2006	5.67	1,163,583	47.35	13,403
10/19/2006	5.63	1,815,987	85.61	13,489
11/15/2006	5.82	1,617,622	77.39	13,566
12/18/2006	5.33	1,649,200	77.35	13,644
1/15/2007	4.34	1,460,498	71.85	13,715
2/21/2007	4.11	1,494,310	67.55	13,783
3/20/2007	4.11	1,650,136	69.36	13,852
4/19/2007	4.44	1,427,088	71.49	13,924
5/21/2007	4.33	1,496,597	54.85	13,979
6/21/2007	4.35	1,036,802	37.46	14,016
7/18/2007	4.04	1,166,521	41.23	14,057
8/16/2007	3.38	1,658,509	52.08	14,109
9/17/2007	4.37	1,105,795	34.99	14,144
10/15/2007	4.11	1,554,429	54.95	14,199
11/21/2007	3.99	524,276	17.95	14,217
12/26/2007	3.92	145,473	4.84	14,222
1/21/2008	5.04	1,095,626	40.15	14,262
2/18/2008	4.06	991,811	39.71	14,302
3/17/2008	4.42	1,185,466	41.53	14,344
4/16/2008	4.08	1,529,220	54.31	14,398
5/20/2008	3.79	1,074,870	35.56	14,433
6/16/2008	3.64	1,185,285	32.75	14,466
7/9/2008	3.64	507,936	15.42	14,482
9/24/2008	0.59	247,343	0.19	14,482
10/15/2008	4.47	1,387,745	40.00	14,522
11/17/2008	6.13	1,086,198	49.00	14,571
12/17/2008	3.94	1,164,878	25.00	14,596

TABLE 3
CUMULATIVE VOC MASS REMOVAL
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1/20/2009	4.28	1,486,450	53.04	14,649
2/18/2009	5.96	1,088,423	54.08	14,703
3/16/2009	4.69	1,074,739	42.02	14,745
4/20/2009	4.17	1,063,959	36.99	14,782
5/18/2009	2.66	1,385,381	30.72	14,813
6/15/2009	4.47	1,049,972	39.13	14,852
7/20/2009	2.38	1,226,349	24.33	14,876
8/17/2009	2.30	1,064,645	20.41	14,897
9/21/2009	2.30	1,024,120	19.64	14,916
10/19/2009	2.40	1,179,441	23.60	14,940
11/16/2009	2.20	932,094	17.10	14,957
12/21/2009	3.08	1,197,182	30.74	14,970
1/18/2010	2.48	868,448	17.96	15,006
2/15/2010	2.07	882,502	15.22	15,021
3/15/2010	3.50	658,716	19.22	15,040
4/19/2010	1.68	977,397	13.72	15,054
5/17/2010	3.68	1,044,433	32.05	15,086
6/21/2010	2.89	1,176,812	28.32	15,114
7/19/2010	2.88	856,039	20.52	15,135
8/16/2010	2.15	607,092	10.90	15,146
9/20/2010	2.15	1,211,204	21.68	15,167
10/18/2010	2.64	1,386,567	30.51	15,198
11/15/2010	2.79	812,678	18.88	15,217
12/22/2010	2.80	1,392,139	32.45	15,249
1/21/2011	2.51	812,897	17.01	15,266
2/25/2011	4.79	1,102,459	44.01	15,310
3/25/2011	2.97	1,063,813	26.36	15,336
4/29/2011	3.05	1,231,474	31.35	15,368
5/27/2011	2.67	1,036,610	23.11	15,391
6/24/2011	2.46	978,064	20.03	15,411
7/29/2011	3.34	1,173,957	32.65	15,444
8/26/2011	1.85	765,901	11.82	15,455
9/30/2011	1.90	1,262,176	19.94	15,475
10/28/2011	1.73	1,361,315	19.61	15,495
11/25/2011	1.88	1,032,800	16.18	15,511
12/30/2011	2.23	2,531,761	46.96	15,558

TABLE 4
2011 GROUNDWATER ELEVATIONS
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
100A	3/24/2011	N	35.25	12.77	48.02
100A	9/15/2011	N	34.01	14.01	48.02
101B1	3/24/2011	N	44.19	10.73	54.92
101B1	9/15/2011	N	42.96	11.96	54.92
106A	3/24/2011	N	34.69	14.58	49.27
106A	9/15/2011	N	33.15	16.12	49.27
114B1	3/24/2011	N	36.14	10.76	46.9
114B1	9/15/2011	N	34.85	12.05	46.9
132B2	3/24/2011	N	35.42	13.79	49.21
132B2	9/15/2011	N	34.86	14.35	49.21
134B2	3/24/2011	N	37.96	9.89	47.85
134B2	9/15/2011	N	37.16	10.69	47.85
145B1	3/24/2011	N	40.4	13.6	54
145B1	9/15/2011	N	39	15	54
156B1	3/24/2011	N	40.16	10.75	50.91
156B1	9/15/2011	N	38.76	12.15	50.91
24A	3/24/2011	N	35.18	13.24	48.42
24A	9/15/2011	N	33.87	14.55	48.42
26A	3/24/2011	N	38.2	9	47.2
26A	9/15/2011	N	37.38	9.82	47.2
7B1	3/24/2011	N	35.24	13.37	48.61
7B1	9/15/2011	N	33.82	14.79	48.61
94B1	3/24/2011	N	35.84	12.15	47.99
94B1	9/15/2011	N	34.54	13.45	47.99
97B1	3/24/2011	N	35.35	13.81	49.16
97B1	9/15/2011	N	33.9	15.26	49.16
98B1	3/24/2011	N	42.32	11.78	54.1
98B1	9/15/2011	N	40.97	13.13	54.1
99B1	3/24/2011	N	35.29	13.82	49.11
99B1	9/15/2011	N	33.84	15.27	49.11
C-2	3/24/2011	N	47.32	15.98	63.3
C-2	9/15/2011	N	47.12	16.18	63.3
C-3	3/24/2011	N	48.12	10.02	58.14
C-3	9/15/2011	N	46.68	11.46	58.14
EW-1	3/24/2011	N	46.5	10.89	57.39

Notes:
ft - Feet
msl - Above mean sea level
toc - Below top of casing
NM - Not measured; car parked over the well

TABLE 4
2011 GROUNDWATER ELEVATIONS
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
EW-1	9/15/2011	N	46.25	11.14	57.39
EW-2	3/24/2011	N	46.16	13.88	60.04
EW-2	9/15/2011	N	46.3	13.74	60.04
EW-3	3/24/2011	N	46.83	12.72	59.55
EW-3	9/15/2011	N	46.48	13.07	59.55
EW-4	3/24/2011	N	47.18	13.65	60.83
EW-4	9/15/2011	N	46.72	14.11	60.83
I-1B2	3/24/2011	N	45.14	13.62	58.76
I-1B2	9/15/2011	N	40.8	17.96	58.76
IE10A	3/24/2011	N	46.29	13.7	59.99
IE10A	9/15/2011	N	45.74	14.25	59.99
IE24B1	3/24/2011	N	46.3	14.32	60.62
IE24B1	9/15/2011	N	45.52	15.1	60.62
IE6A	3/24/2011	N	47.19	16.64	63.83
IE6A	9/15/2011	N	46.89	16.94	63.83
IE7A	3/24/2011	N	47.41	16.54	63.95
IE7A	9/15/2011	N	46.86	17.09	63.95
IE9A	3/24/2011	N	46.31	14.8	61.11
IE9A	9/15/2011	N	45.61	15.5	61.11
IM10B(2)	3/24/2011	N	54.53	5.74	60.27
IM10B(2)	9/15/2011	N	53.84	6.43	60.27
IM18A	3/24/2011	N	47.1	14.29	61.39
IM18A	9/15/2011	N	46.55	14.84	61.39
IM19A	3/24/2011	N	47.35	16.2	63.55
IM19A	9/15/2011	N	46.84	16.71	63.55
IM19B(1)	3/24/2011	N	47.58	16.14	63.72
IM19B(1)	9/15/2011	N	46.8	16.92	63.72
IM6A	3/24/2011	N	45.75	12.84	58.59
IM6A	9/15/2011	N	45.08	13.51	58.59
IM6B(1)	3/24/2011	N	45.98	13.01	58.99
IM6B(1)	9/15/2011	N	45.18	13.81	58.99
IM7A	3/24/2011	N	46.95	11.57	58.52
IM7A	9/15/2011	N	46.6	11.92	58.52
IM7B(1)	3/24/2011	N	47.8	10.85	58.65
IM7B(1)	9/15/2011	N	47.41	11.24	58.65

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TABLE 4
2011 GROUNDWATER ELEVATIONS
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
IM8B(1)	3/24/2011	N	47.54	16.41	63.95
IOW1A	3/24/2011	N	46.31	13.52	59.83
IOW1A	9/15/2011	N	45.61	14.22	59.83
IOW1B1	3/24/2011	N	49.17	10.67	59.84
IOW1B1	9/15/2011	N	48.14	11.7	59.84
IOW3A	3/24/2011	N	45.57	13.17	58.74
IOW3A	9/15/2011	N	44.86	13.88	58.74
IOW3B1	3/24/2011	N	45.43	13.32	58.75
IOW3B1	9/15/2011	N	44.48	14.27	58.75
ME1A	3/24/2011	N	46.81	11.19	58
ME1A	9/15/2011	N	46.34	11.66	58
ME1B1	3/24/2011	N	49.83	8.17	58
ME1B1	9/15/2011	N	49.7	8.3	58
PW-1	3/24/2011	N	47.72	15.32	63.04
PW-1	9/15/2011	N	47.09	15.95	63.04
PW-2	3/24/2011	N	46.61	14.87	61.48
PW-2	9/15/2011	N	46.11	15.37	61.48
PW-3	3/24/2011	N	46.22	12.8	59.02
PW-3	9/15/2011	N	45.67	13.35	59.02
PW-4	3/24/2011	N	46.08	12.88	58.96
PW-4	9/15/2011	N	45.36	13.6	58.96
PW-5	3/24/2011	N	46.12	14.11	60.23
PW-5	9/15/2011	N	45.3	14.93	60.23
R10A	3/24/2011	N	38.93	12.9	51.83
R10A	9/15/2011	N	37.39	14.44	51.83
R14A	3/24/2011	N	46.56	8.85	55.41
R14A	9/15/2011	N	46.21	9.2	55.41
R15A	3/24/2011	N	46.92	10.02	56.94
R15A	9/15/2011	N	46.57	10.37	56.94
R17B2	3/24/2011	N	51.05	9.64	60.69
R17B2	9/15/2011	N	49.37	11.32	60.69
R18B3	3/24/2011	N	55.77	-4.11	51.66
R18B3	9/15/2011	N	54.21	-2.55	51.66
R1B1	3/24/2011	N	41.72	10.15	51.87
R1B1	9/15/2011	N	40.34	11.53	51.87
R20A	3/24/2011	N	46.94	10.06	57
R20A	9/15/2011	N	46.7	10.3	57

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TABLE 4
2011 GROUNDWATER ELEVATIONS
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R21A	3/24/2011	N	47.8	16.35	64.15
R21A	9/15/2011	N	47.48	16.67	64.15
R22B1	3/24/2011	N	50.15	12.58	62.73
R22B1	9/15/2011	N	50	12.73	62.73
R25A	3/24/2011	N	45.22	13.98	59.2
R25A	9/15/2011	N	44.84	14.36	59.2
R27A	3/24/2011	N	35.06	12.64	47.7
R27A	9/15/2011	N	33.3	14.4	47.7
R27B2	3/24/2011	N	49.08	2.58	51.66
R27B2	9/15/2011	N	50.13	1.53	51.66
R27B3	3/24/2011	N	54.29	-2.92	51.37
R27B3	9/15/2011	N	53.78	-2.41	51.37
R28B2	3/24/2011	N	56.07	1.5	57.57
R28B2	9/15/2011	N	55.49	2.08	57.57
R2A	3/24/2011	N	41.64	16.21	57.85
R2A	9/15/2011	N	42.56	15.29	57.85
R30B2	3/24/2011	N	51.05	11.95	63
R30B2	9/15/2011	N	50.77	12.23	63
R36A	3/24/2011	N	39.45	14.54	53.99
R36A	9/15/2011	N	40.45	13.54	53.99
R36B1	3/24/2011	N	46.73	12.02	58.75
R36B1	9/15/2011	N	46.49	12.26	58.75
R37B3	3/24/2011	N	61.44	-0.92	60.52
R37B3	9/15/2011	N	NA	NA	60.52
R39B2	3/24/2011	N	49.66	1.41	51.07
R39B2	9/15/2011	N	49.58	1.49	51.07
R3B1	3/24/2011	N	35.8	11.36	47.16
R3B1	9/15/2011	N	34.57	12.59	47.16
R40B1(B2)	3/24/2011	N	39.57	14.49	54.06
R40B1(B2)	9/15/2011	N	38.1	15.96	54.06
R41A	3/24/2011	N	39.55	11.45	51
R41A	9/15/2011	N	40.27	10.73	51
R41B2	3/24/2011	N	49.03	7.97	57
R41B2	9/15/2011	N	48.91	8.09	57
R42B1	3/24/2011	N	46.17	10.44	56.61

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TABLE 4
2011 GROUNDWATER ELEVATIONS
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R42B1	9/15/2011	N	46.69	9.92	56.61
R44A	3/24/2011	N	46.8	10.86	57.66
R44A	9/15/2011	N	46.47	11.19	57.66
R46B1	3/24/2011	N	46.45	11.55	58
R46B1	9/15/2011	N	46.12	11.88	58
R48A	3/24/2011	N	47.94	18.92	66.86
R48A	9/15/2011	N	47.81	19.05	66.86
R50A	3/24/2011	N	46.14	14.29	60.43
R50A	3/24/2011	N	46.31	14.12	60.43
R50A	9/15/2011	N	45.78	14.65	60.43
R50B2	3/24/2011	N	55.79	4.21	60
R50B2	9/15/2011	N	56.2	3.8	60
R51A	3/24/2011	N	47.22	12.78	60
R51A	9/15/2011	N	46.84	13.16	60
R51B3	3/24/2011	N	61.04	-1.18	59.86
R51B3	9/15/2011	N	61.42	-1.56	59.86
R52A	3/24/2011	N	46.99	17.01	64
R52A	9/15/2011	N	46.65	17.35	64
R52B2	3/24/2011	N	51.66	12.58	64.24
R52B2	9/15/2011	N	51.61	12.63	64.24
R53A	3/24/2011	N	43.53	15.07	58.6
R53A	9/15/2011	N	NA	NA	58.6
R53B2	3/24/2011	N	63.3	0.79	64.09
R53B2	9/15/2011	N	63.06	1.03	64.09
R54A	3/24/2011	N	44.12	13.06	57.18
R54A	9/15/2011	N	43.69	13.49	57.18
R54B3	3/24/2011	N	65.2	-0.68	64.52
R54B3	9/15/2011	N	64.92	-0.4	64.52
R55A	3/24/2011	N	34.53	13.23	47.76
R55A	9/15/2011	N	33.14	14.62	47.76
R55B2	3/24/2011	N	54.98	9.23	64.21
R55B2	9/15/2011	N	55.17	9.04	64.21
R56B3	3/24/2011	N	61.02	3.11	64.13
R56B3	9/15/2011	N	61.71	2.42	64.13
R57A	3/24/2011	N	43.59	10.12	53.71

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TABLE 4
2011 GROUNDWATER ELEVATIONS
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R57A	9/15/2011	N	43.06	10.65	53.71
R57B3	3/24/2011	N	60.08	-3.08	57
R57B3	9/15/2011	N	60.46	-3.46	57
R58A	3/24/2011	N	42.92	10.85	53.77
R58A	9/15/2011	N	43.33	10.44	53.77
R58B2	3/24/2011	N	43.93	6.65	50.58
R58B2	9/15/2011	N	44.46	6.12	50.58
R59A	3/24/2011	N	45.33	9.36	54.69
R59A	9/15/2011	N	44.59	10.1	54.69
R59B2	3/24/2011	N	51.17	0.12	51.29
R59B2	9/15/2011	N	50.99	0.3	51.29
R5B1	3/24/2011	N	35.32	12.12	47.44
R5B1	9/15/2011	N	34.04	13.4	47.44
R5B2	3/24/2011	N	50.45	0.01	50.46
R5B2	9/15/2011	N	49.41	1.05	50.46
R5B3	3/24/2011	N	54.12	-3.92	50.2
R5B3	9/15/2011	N	53.25	-3.05	50.2
R60A	3/24/2011	N	42.52	13.92	56.44
R60A	9/15/2011	N	43.52	12.92	56.44
R60B1	3/24/2011	N	51.69	6.32	58.01
R60B1	9/15/2011	N	57.31	0.7	58.01
R61B3	3/24/2011	N	61.53	-3.12	58.41
R61B3	9/15/2011	N	60.94	-2.53	58.41
R62A	3/24/2011	N	37.33	10.26	47.59
R62A	9/15/2011	N	36.63	10.96	47.59
R62B2	3/24/2011	N	56.46	0.45	56.91
R62B2	9/15/2011	N	55.47	1.44	56.91
R63A	3/24/2011	N	42.75	15.58	58.33
R63A	9/15/2011	N	43.7	14.63	58.33
R63B1	3/24/2011	N	42.45	14.07	56.52
R63B1	9/15/2011	N	43.39	13.13	56.52
R64B1	3/24/2011	N	47.18	9.47	56.65
R64B1	9/15/2011	N	47.65	9	56.65
R65B1(B2)	3/24/2011	U	51.49	1.51	53
R65B1(B2)	9/15/2011	N	NA	NA	53

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TABLE 4
2011 GROUNDWATER ELEVATIONS
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R66B1	3/24/2011	N	39.86	8.86	48.72
R66B1	9/15/2011	N	40.68	8.04	48.72
R67A	3/24/2011	N	43.03	14.55	57.58
R67A	9/15/2011	N	43.91	13.67	57.58
R67B1	3/24/2011	N	39.93	9.13	49.06
R67B1	9/15/2011	N	40.74	8.32	49.06
R68A	3/24/2011	N	42.23	15.21	57.44
R68A	9/15/2011	N	42.98	14.46	57.44
R68B1	3/24/2011	N	42.28	14.68	56.96
R68B1	9/15/2011	N	43.23	13.73	56.96
R68B2	3/24/2011	N	55.13	-0.22	54.91
R68B2	9/15/2011	N	55.01	-0.1	54.91
R69A	3/24/2011	N	40.66	15.56	56.22
R69A	9/15/2011	N	41.96	14.26	56.22
R69B1	3/24/2011	N	42.5	14.78	57.28
R69B1	9/15/2011	N	43.37	13.91	57.28
R69B2	3/24/2011	N	49.27	5.58	54.85
R69B2	9/15/2011	N	50.15	4.7	54.85
R6A	3/24/2011	N	47.39	8.25	55.64
R6A	9/15/2011	N	47.06	8.58	55.64
R70A	3/24/2011	N	NA	NA	57.33
R70A	9/15/2011	N	44.43	12.9	57.33
R70B1	3/24/2011	N	42.63	13.62	56.25
R70B1	9/15/2011	N	43.44	12.81	56.25
R71A	3/24/2011	N	41.58	12.95	54.53
R71A	9/15/2011	N	42.49	12.04	54.53
R72A	3/24/2011	N	40.9	15.57	56.47
R72A	9/15/2011	N	41.85	14.62	56.47
R72B2	3/24/2011	N	49.69	7.42	57.11
R72B2	9/15/2011	N	49.74	7.37	57.11
R73A	3/24/2011	N	42.54	16.65	59.19
R73A	9/15/2011	N	43.43	15.76	59.19
R73B2	3/24/2011	N	NA	NA	57.15
R73B2	9/15/2011	N	50.39	6.76	57.15

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TABLE 4
2011 GROUNDWATER ELEVATIONS
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R74A	3/24/2011	N	42.51	15.33	57.84
R74A	9/15/2011	N	43.31	14.53	57.84
R7B1	3/24/2011	N	42.73	13.74	56.47
R7B1	9/15/2011	N	43.52	12.95	56.47
RAY-1A	3/24/2011	N	32.31	12.9	45.21
RAY-1A	9/15/2011	N	30.89	14.32	45.21
RAY-1B1	3/24/2011	N	31.9	13.87	45.77
RAY-1B1	9/15/2011	N	32.74	13.03	45.77
RE10A	3/24/2011	N	42.85	15.8	58.65
RE10A	9/15/2011	N	43.63	15.02	58.65
RE11A	3/24/2011	N	38.21	10.54	48.75
RE11A	9/15/2011	N	39.34	9.41	48.75
RE12A	3/24/2011	N	39.52	9.12	48.64
RE12A	9/15/2011	N	40.23	8.41	48.64
RE1B2	3/24/2011	N	52.1	0.78	52.88
RE1B2	9/15/2011	N	51.48	1.4	52.88
RE21A	3/24/2011	N	38.58	11.3	49.88
RE21A	9/15/2011	N	39.85	10.03	49.88
RE22A	3/24/2011	N	38.19	11.62	49.81
RE22A	9/15/2011	N	39.42	10.39	49.81
RE23A	3/24/2011	N	39.76	13.9	53.66
RE23A	9/15/2011	N	42.16	11.5	53.66
RE24A	3/24/2011	N	42.99	12.25	55.24
RE24A	9/15/2011	N	38.24	17	55.24
RE25A	3/24/2011	N	41.8	15.2	57
RE25A	9/15/2011	N	43.04	13.96	57
RE3B1	3/24/2011	N	39.84	8.87	48.71
RE3B1	9/15/2011	N	40.65	8.06	48.71
RE5A	3/24/2011	N	41.43	15.42	56.85
RE5A	9/15/2011	N	42.05	14.8	56.85
RE7A	3/24/2011	N	39.05	9.56	48.61
RE7A	9/15/2011	N	40	8.61	48.61
RE8A	3/24/2011	N	39.68	11.98	51.66
RE8A	9/15/2011	N	40.56	11.1	51.66
RE9A	3/24/2011	N	41.61	17.12	58.73

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TABLE 4
2011 GROUNDWATER ELEVATIONS
FORMER RAYTHEON COMPANY FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
RE9A	9/15/2011	N	42.81	15.92	58.73
RH1A	3/24/2011	N	46.94	15.45	62.39
RH1A	3/24/2011	N	47.14	15.25	62.39
RH1A	9/15/2011	N	46.78	15.61	62.39
RP16B	3/24/2011	N	49.71	8.92	58.63
RP16B	9/15/2011	N	49.03	9.6	58.63
RP19B	3/24/2011	N	42.78	13.69	56.47
RP19B	9/15/2011	N	43.82	12.65	56.47
RP21B	3/24/2011	N	42.56	10.78	53.34
RP21B	9/15/2011	N	43.37	9.97	53.34
RP22B	3/24/2011	N	48.94	15.13	64.07
RP22B	9/15/2011	N	48.56	15.51	64.07
RP23B	3/24/2011	N	42.38	12.29	54.67
RP23B	9/15/2011	N	43.31	11.36	54.67
RP24B	3/24/2011	N	42.27	12.72	54.99
RP24B	9/15/2011	N	43.13	11.86	54.99
RP41B	3/24/2011	N	42.13	15.22	57.35
RP41B	9/15/2011	N	43.69	13.66	57.35
RP42B	3/24/2011	N	43.26	18.44	61.7
RP42B	9/15/2011	N	44.09	17.61	61.7
RP43B	3/24/2011	N	46.98	10.3	57.28
RP43B	9/15/2011	N	43.29	13.99	57.28
SOPZ-1	3/24/2011	N	47.23	15.07	62.3
SOPZ-1	9/15/2011	N	47.03	15.27	62.3
SOPZ-2	3/24/2011	N	45.68	14.98	60.66
SOPZ-2	9/15/2011	N	46.9	13.76	60.66
SOPZ-3	3/24/2011	N	46.21	15.57	61.78
SOPZ-3	9/15/2011	N	46.82	14.96	61.78

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TABLE 5
2011 CAPTURE ZONE WIDTH CALCULATION
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Well	Extraction Rate Q (gpm)	Transmissivity [1] (gpd/ft)	Hydraulic Gradient [2]	Distance from well to Capture Zone [3] X_o(ft)	Width of Capture Zone [4] Y_{well} (ft)
March 24, 2011					
RAY-1A	1.98	3940	0.013	9	14
RAY-1B1	3.30	3230	0.011	21	33
September 15, 2011					
RAY-1A	9.17	3940	0.013	41	64
RAY-1B1	0.33	3230	0.011	2	3

Notes:

1. The transmissivities used in the calculations were those calculated for the MEW aquifers in the 2-year evaluation report. (Note: Transmissivity, T=K*b)
2. The hydraulic gradient is calculated for each groundwater level event.
3. The distance is measured from the well to the downgradient end of the capture zone along the central line of the flow direction (calculated based on January 2008 EPA guidance on capture zone analysis).
4. The calculation is based on January 2008 EPA guidance on capture zone analysis. Y_{well} is the capture zone width at the location of well from the central line of the plume.

TABLE 6
2011 WATER BALANCE RESULTS
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Well	Upgradient Width of Incoming Groundwater Flux[1] (ft)	Transmissivity [2] (gpd/ft)	Hydraulic Gradient [3]	Estimated Pumping Rate [4] (gpm)	Actual Pumping Rate (gpm)
March 24, 2011					
RAY-1A	30	3940	0.018	2.22	1.98
RAY-1B1	80	3230	0.011	2.96	3.30
September 15, 2011					
RAY-1A	155	3940	0.014	8.91	9.17
RAY-1B1	10	3230	0.011	0.37	0.33

Notes:

1. The width of the controlled area is determined from the most recent water level contours and capture zone maps.
2. The transmissivities used in the calculations were those calculated for the MEW aquifers in the 2-year evaluation report.(Note: (Transmissivity, T=K*b)
3. The hydraulic gradient is calculated for each groundwater level event.
4. The estimated flow rate is calculated based on January 2008 EPA guidance on capture zone analysis, the estimated flow rate into capture zone is calculated using the equation : Q= K x (b x w) x i x factor . A factor of 1.5 - 2 is the "rule of thumb" value used to account for other contributions to a pumping well such as flux from a river or induced vertical flow from another groundwater unit.

TABLE 7
WELL LOSS CALCULATIONS
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Well Loss Coefficient C (min^2/m^5)	Well Extraction Rate Q (gpm)	Calculated Well Loss $S_L = CQ^2$ (feet)
0.5	0.25	1.47E-06
1	0.25	2.94E-06
4	0.25	1.18E-05
0.5	0.5	5.88E-06
1	0.5	1.18E-05
4	0.5	4.70E-05
0.5	1	2.35E-05
1	1	4.70E-05
4	1	1.88E-04
0.5	1.5	5.29E-05
1	1.5	1.06E-04
4	1.5	4.23E-04
0.5	2	9.40E-05
1	2	1.88E-04
4	2	7.52E-04
0.5	2.5	1.47E-04
1	2.5	2.94E-04
4	2.5	1.18E-03
0.5	3	2.12E-04
1	3	4.23E-04
4	3	1.69E-03
0.5	4.5	4.76E-04
1	4.5	9.52E-04
4	4.5	3.81E-03
0.5	6	8.46E-04
1	6	1.69E-03
4	6	6.77E-03
0.5	7.5	1.32E-03
1	7.5	2.64E-03
4	7.5	1.06E-02
0.5	9	1.90E-03
1	9	3.81E-03
4	9	1.52E-02
0.5	10.5	2.59E-03
1	10.5	5.18E-03
4	10.5	2.07E-02
0.5	12	3.38E-03
1	12	6.77E-03
4	12	2.71E-02
0.5	13.5	4.28E-03
1	13.5	8.57E-03
4	13.5	3.43E-02

TABLE 8
DIFFERENTIAL WATER LEVELS IN WELL PAIRS ACROSS THE SLURRY WALL
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Well No.	3/24/2011		8/25/2011		9/15/2011	
	Water Elevation (ft msl)	Difference (ft)	Water Elevation (ft msl)	Difference (ft)	Water Elevation (ft msl)	Difference (ft)
R-06A	47.39	7.94	47.19	6.75	47.06	6.61
R-36A	39.45		40.44		40.45	
R-59A	45.33	2.41	44.69	1.45	44.59	1.26
R-58A	42.92		43.24		43.33	
R-57A	43.59	1.07	43.15	-0.35	43.06	-0.46
R-60A	42.52		43.50		43.52	
R-64B1	47.18	4.73	47.69	4.51	47.65	4.26
R-63B1	42.45		43.18		43.39	
R-60B1	51.69	8.96	51.41	7.94	51.41	7.89
R-07B1	42.73		43.47		43.52	
R-55A	34.53	-4.52	33.23	-10.24	33.14	-10.38
RE-07A	39.05		43.47		43.52	
R-05B1	35.32	-7.06	34.08	-9.15	34.04	-9.27
RP-23B	42.38		43.23		43.31	

Notes:

A positive difference indicates an inward gradient.

ft - feet

msl - above mean sea level

NA - Not Available

* The second quarter water levels were collected on May 27, 2011, but due to equipment malfunction the data could not be retrieved.

TABLE 9
DIFFERENTIAL WATER LEVELS IN WELL PAIRS ACROSS THE AQUITARD
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	3/24/2011		8/25/2011		9/15/2011	
Well No.	Water Elevation (ft msl)	Difference (ft)	Water Elevation (ft msl)	Difference (ft)	Water Elevation (ft msl)	Difference (ft)
RP-21B	42.56	3.01	43.36	--	43.37	3.10
R-41A	39.55		NM		40.27	
R-59B2 (l)	51.17	1.51	51.28	1.70	50.99	1.41
R-39B2 (u)	49.66		49.58		49.58	
R-65B1B2	51.49	8.57	NM	--	NM	--
R-58A	42.92		43.24		43.33	
R-07B1	42.73	3.28	43.47	3.03	43.52	3.07
R-36A	39.45		40.44		40.45	
R-62B2 (l)	56.46	6.77	55.49	5.74	55.47	5.73
R-72B2 (u)	49.69		49.75		49.74	
R-63B1	42.45	-0.07	43.18	-0.32	43.39	-0.13
R-60A	42.52		43.5		43.52	
R-68B2 (l)	55.13	5.86	55.10	4.89	55.01	4.86
R-69B2 (u)	49.27		50.21		50.15	
R-73B2	NM	--	NM	NM	50.39	7.16
R-68B1	42.28		NM		43.23	
R-68B1	42.28	-0.75	NM	NM	43.23	-0.68
R-67A	43.03		43.85		43.91	
RP-19B	42.78	0.26	43.80	0.30	43.82	0.30
R-60A	42.52		43.5		43.52	
RP-42B	43.26	0.72	44.17	0.74	44.09	0.66
R-73A	42.54		43.43		43.43	
RP-43B	46.98	6.08	43.44	1.67	43.29	1.44
R-72A	40.90		41.77		41.85	
R-67B1	39.93	1.74	40.71	1.42	40.74	1.32
RE-22A	38.19		39.29		39.42	
R-67B1	39.93	0.25	40.71	0.26	40.74	0.18
RE-08A	39.68		40.45		40.56	
R-70B1	42.63	1.97	43.40	1.59	43.44	1.48
R-69A	40.66		41.81		41.96	

Notes:

A positive difference indicates an upward gradient.

ft - feet

msl - above mean sea level

NA - Not Available

NM = Not measured because a car was parked over the well.

* The second quarter water levels were taken on May 27, 2011. Due to equipment malfunction the data could not be retrieved.

TABLE 10
MONITORING AND REPORTING SCHEDULES
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Wells Monitored Annually		
"A" Aquifer	**"B1" Aquifer**	**"B2" Aquifer**
24A	007B1	I-1B2
83A	94B1	R-17B2
100A	97B1	
R-52A	RAY-1B1	
RAY-1A		

Wells Monitored Every Five Years		
"A" Aquifer	**"B1" Aquifer**	**"B2" Aquifer**
R-36A	R-7B1	R-27B2
R-41A	R-67B1	R-39B2
R-60A	RP-19B	R-65B1B2
R-72A	RP-21B	R-68B2
RE-07A	RP-23B	RE-1B2
RE-08A	RP-24B	
RE-09A	RP-41B	
RE-10A	RP-43B	
RE-23A		
RE-24A		
RE-25A		

Reporting Schedule		
Report	**Agency**	**Frequency**
NPDES	RWQCB	Quarterly (Submitted on the 15th day of February, May, August and September of each year)
Annual Progress Report	US EPA	Annually (submitted in April of each year)

TABLE 11
SUMMARY OF 2011 SITE - SPECIFIC MONITORING WELL VOC DATA
FORMER RAYTHEON FACILITIES
MOUNTAIN VIEW, CALIFORNIA

Parameter	Location / Date / Sample Purpose / Units	100A 10/20/2011 REG	24A 10/21/2011 FD	24A 10/21/2011 REG	7B1 10/21/2011 REG	83A 10/20/2011 REG	94B1 10/21/2011 REG	97B1 10/21/2011 REG	I-1B2 10/21/2011 REG	R17B2 10/21/2011 REG	R52A 10/20/2011 REG
1,1,1-TRICHLOROETHANE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	0.0045	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
1,1,2-TRICHLOROETHANE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
1,1-DICHLOROETHANE	mg/l	0.0033	ND 0.020	ND 0.013	0.0007	0.0036	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
1,1-DICHLOROETHENE	mg/l	0.0039	ND 0.020	ND 0.013	ND 0.0005	0.0046	0.0043	0.011	ND 0.0010	ND 0.0025	ND 0.0005
1,2-DICHLOROBENZENE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
1,2-DICHLOROETHANE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
1,2-DICHLOROPROPANE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
1,3-DICHLOROBENZENE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
1,4-DICHLOROBENZENE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
BROMODICHLOROMETHANE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
BROMOFORM	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
BROMOMETHANE	mg/l	ND 0.0025	ND 0.040	ND 0.025	ND 0.0010	ND 0.0025	ND 0.0040	ND 0.010	ND 0.0020	ND 0.0050	ND 0.0010
CARBON TETRACHLORIDE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
CHLOROBENZENE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
CHLOROETHANE	mg/l	ND 0.0025	ND 0.040	ND 0.025	ND 0.0010	ND 0.0025	ND 0.0040	ND 0.010	ND 0.0020	ND 0.0050	ND 0.0010
CHLOROFORM	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
CHLOROMETHANE	mg/l	ND 0.0025	ND 0.040	ND 0.025	ND 0.0010	ND 0.0025	ND 0.0040	ND 0.010	ND 0.0020	ND 0.0050	ND 0.0010
CIS-1,2-DICHLOROETHENE	mg/l	0.17	1.5	1.5	0.040	0.093	0.021	0.064	0.0029	0.29	0.0006
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
DIBROMOCHLOROMETHANE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
FREON 113	mg/l	ND 0.0050	ND 0.080	ND 0.050	ND 0.0020	0.016	ND 0.0080	ND 0.020	ND 0.0040	ND 0.010	ND 0.0020
METHYLENE CHLORIDE	mg/l	ND 0.050	ND 0.80	ND 0.50	ND 0.020	ND 0.050	ND 0.080	ND 0.20	ND 0.040	ND 0.10	ND 0.020
TETRACHLOROETHENE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
TRANS-1,2-DICHLOROETHENE	mg/l	0.0035	ND 0.020	0.014	ND 0.0005	0.0014	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	ND 0.0010	ND 0.0025	ND 0.0005
TRICHLOROETHENE	mg/l	0.0060	2.0	1.6	0.021	0.20	0.26	0.77	0.18	0.24	0.041
TRICHLOROFLUOROMETHANE	mg/l	ND 0.0025	ND 0.040	ND 0.025	ND 0.0010	ND 0.0025	ND 0.0040	ND 0.010	ND 0.0020	ND 0.0050	ND 0.0010
VINYL CHLORIDE	mg/l	ND 0.0013	ND 0.020	ND 0.013	ND 0.0005	ND 0.0013	ND 0.0020	ND 0.0050	0.0021	ND 0.0025	ND 0.0005

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

mg/L - milligrams per Liter

TABLE 11
SUMMARY OF 2011 SITE - SPECIFIC MONITORING WELL VOC DATA
FORMER RAYTHEON FACILITIES
MOUNTAIN VIEW, CALIFORNIA

Parameter	Location / Date / Sample Purpose / Units	RAY-1A 10/21/2011 REG	RAY-1B1 10/21/2011 REG
1,1,1-TRICHLOROETHANE	mg/l	0.0027	ND 0.0025
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.0020	ND 0.0025
1,1,2-TRICHLOROETHANE	mg/l	ND 0.0020	ND 0.0025
1,1-DICHLOROETHANE	mg/l	0.0039	0.0025
1,1-DICHLOROETHENE	mg/l	0.0042	0.0041
1,2-DICHLOROBENZENE	mg/l	0.0042	ND 0.0025
1,2-DICHLOROETHANE	mg/l	ND 0.0020	ND 0.0025
1,2-DICHLOROPROPANE	mg/l	ND 0.0020	ND 0.0025
1,3-DICHLOROBENZENE	mg/l	ND 0.0020	ND 0.0025
1,4-DICHLOROBENZENE	mg/l	ND 0.0020	ND 0.0025
BROMODICHLOROMETHANE	mg/l	ND 0.0020	ND 0.0025
BROMOFORM	mg/l	ND 0.0020	ND 0.0025
BROMOMETHANE	mg/l	ND 0.0040	ND 0.0050
CARBON TETRACHLORIDE	mg/l	ND 0.0020	ND 0.0025
CHLOROBENZENE	mg/l	ND 0.0020	ND 0.0025
CHLOROETHANE	mg/l	ND 0.0040	ND 0.0050
CHLOROFORM	mg/l	ND 0.0020	ND 0.0025
CHLOROMETHANE	mg/l	ND 0.0040	ND 0.0050
CIS-1,2-DICHLOROETHENE	mg/l	0.058	0.039
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.0020	ND 0.0025
DIBROMOCHLOROMETHANE	mg/l	ND 0.0020	ND 0.0025
FREON 113	mg/l	0.013	ND 0.010
METHYLENE CHLORIDE	mg/l	ND 0.080	ND 0.10
TETRACHLOROETHENE	mg/l	ND 0.0020	ND 0.0025
TRANS-1,2-DICHLOROETHENE	mg/l	ND 0.0020	ND 0.0025
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.0020	ND 0.0025
TRICHLOROETHENE	mg/l	0.29	0.42
TRICHLOROFLUOROMETHANE	mg/l	ND 0.0040	ND 0.0050
VINYL CHLORIDE	mg/l	ND 0.0020	ND 0.0025

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

mg/L - milligrams per Liter

TABLE 12
VOC ANALYTICAL DATA - 2011 SITE-SPECIFIC FIVE YEAR WELLS
FORMER RAYTHEON FACILITIES
MOUNTAIN VIEW, CALIFORNIA

Parameter	Location / Date / Sample Purpose / Units	R27B2 10/13/2011 REG	R36A 10/17/2011 REG	R39B2 10/13/2011 REG	R41A 10/17/2011 REG	R60A 10/17/2011 REG	R65B1(B2) 10/7/2011 REG	R67B1 10/17/2011 REG	R68B2 10/13/2011 REG	R72A 10/7/2011 REG	R7B1 10/17/2011 REG
1,1,1-TRICHLOROETHANE	mg/l	ND 0.0017	0.0028	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
1,1,2-TRICHLOROETHANE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
1,1-DICHLOROETHANE	mg/l	ND 0.0017	0.018	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	0.0019	ND 0.0005
1,1-DICHLOROETHENE	mg/l	ND 0.0017	0.0029	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
1,2-DICHLOROBENZENE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
1,2-DICHLOROETHANE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
1,2-DICHLOROPROPANE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
1,3-DICHLOROBENZENE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
1,4-DICHLOROBENZENE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
BROMODICHLOROMETHANE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
BROMOFORM	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
BROMOMETHANE	mg/l	ND 0.0033	ND 0.0050	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.0025	ND 0.0010	ND 0.0010	ND 0.0033	ND 0.0010
CARBON TETRACHLORIDE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
CHLOROBENZENE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
CHLOROETHANE	mg/l	ND 0.0033	ND 0.0050	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.0025	ND 0.0010	ND 0.0010	ND 0.0033	ND 0.0010
CHLOROFORM	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	0.0008
CHLOROMETHANE	mg/l	ND 0.0033	ND 0.0050	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.0025	ND 0.0010	ND 0.0010	ND 0.0033	ND 0.0010
CIS-1,2-DICHLOROETHENE	mg/l	0.011	0.28	ND 0.0005	0.0015	0.0043	0.0014	0.014	ND 0.0005	0.21	0.0007
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
DIBROMOCHLOROMETHANE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
FREON 113	mg/l	ND 0.0067	ND 0.010	ND 0.0020	ND 0.0020	ND 0.0020	ND 0.0050	ND 0.0020	ND 0.0020	ND 0.0067	ND 0.0020
METHYLENE CHLORIDE	mg/l	ND 0.067	ND 0.10	ND 0.020	ND 0.020	ND 0.020	ND 0.050	ND 0.020	ND 0.020	ND 0.067	ND 0.020
TETRACHLOROETHENE	mg/l	ND 0.0017	0.0028	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
TRANS-1,2-DICHLOROETHENE	mg/l	ND 0.0017	0.0033	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	0.0019	ND 0.0005
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005
TRICHLOROETHENE	mg/l	0.25	0.26	ND 0.0005	0.027	0.030	0.14	0.094	ND 0.0005	0.11	0.0061
TRICHLOROFLUOROMETHANE	mg/l	ND 0.0033	ND 0.0050	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.0025	ND 0.0010	ND 0.0010	ND 0.0033	ND 0.0010
VINYL CHLORIDE	mg/l	ND 0.0017	ND 0.0025	ND 0.0005	ND 0.0005	ND 0.0005	ND 0.0013	ND 0.0005	ND 0.0005	ND 0.0017	ND 0.0005

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 12
VOC ANALYTICAL DATA - 2011 SITE-SPECIFIC FIVE YEAR WELLS
FORMER RAYTHEON FACILITIES
MOUNTAIN VIEW, CALIFORNIA

Parameter	Location / Date / Sample Purpose / Units	RE10A 10/20/2011 REG	RE1B2 10/13/2011 REG	RE23A 10/26/2011 REG	RE24A 10/7/2011 REG	RE25A 10/6/2011 FD	RE25A 10/6/2011 REG	RE7A 10/19/2011 REG	RE8A 10/6/2011 REG	RE9A 10/20/2011 FD	RE9A 10/20/2011 REG
1,1,1-TRICHLOROETHANE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
1,1,2-TRICHLOROETHANE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
1,1-DICHLOROETHANE	mg/l	ND 0.0050	ND 0.0005	0.014	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	0.67	0.60
1,1-DICHLOROETHENE	mg/l	ND 0.0050	ND 0.0005	0.021	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
1,2-DICHLOROBENZENE	mg/l	0.85	ND 0.0005	0.032	0.083	ND 0.020	ND 0.025	0.023	ND 0.050	ND 0.25	ND 0.31
1,2-DICHLOROETHANE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
1,2-DICHLOROPROPANE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
1,3-DICHLOROBENZENE	mg/l	0.012	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
1,4-DICHLOROBENZENE	mg/l	0.17	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
BROMODICHLOROMETHANE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
BROMOFORM	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
BROMOMETHANE	mg/l	ND 0.010	ND 0.0010	ND 0.017	ND 0.071	ND 0.040	ND 0.050	ND 0.033	ND 0.10	ND 0.50	ND 0.63
CARBON TETRACHLORIDE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
CHLOROBENZENE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
CHLOROETHANE	mg/l	ND 0.010	ND 0.0010	ND 0.017	ND 0.071	ND 0.040	ND 0.050	ND 0.033	ND 0.10	ND 0.50	ND 0.63
CHLOROFORM	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
CHLOROMETHANE	mg/l	ND 0.010	ND 0.0010	ND 0.017	ND 0.071	ND 0.040	ND 0.050	ND 0.033	ND 0.10	ND 0.50	ND 0.63
CIS-1,2-DICHLOROETHENE	mg/l	ND 0.0050	ND 0.0005	1.8	2.0	1.8	1.9	0.61	2.7	43	38
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
DIBROMOCHLOROMETHANE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
FREON 113	mg/l	ND 0.020	ND 0.0020	ND 0.033	ND 0.14	ND 0.080	ND 0.10	ND 0.067	ND 0.20	ND 1.0	ND 1.3
METHYLENE CHLORIDE	mg/l	ND 0.20	ND 0.020	ND 0.33	ND 1.4	ND 0.80	ND 1.0	ND 0.67	ND 2.0	ND 10	ND 13
TETRACHLOROETHENE	mg/l	0.14	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
TRANS-1,2-DICHLOROETHENE	mg/l	ND 0.0050	ND 0.0005	0.19	0.15	0.037	0.040	0.14	ND 0.050	1.8	1.7
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.0050	ND 0.0005	ND 0.0083	ND 0.036	ND 0.020	ND 0.025	ND 0.017	ND 0.050	ND 0.25	ND 0.31
TRICHLOROETHENE	mg/l	0.020	ND 0.0005	1.5	4.3	3.7	3.7	2.6	7.1	26	26
TRICHLOROFLUOROMETHANE	mg/l	ND 0.010	ND 0.0010	ND 0.017	ND 0.071	ND 0.040	ND 0.050	ND 0.033	ND 0.10	ND 0.50	ND 0.63
VINYL CHLORIDE	mg/l	ND 0.0050	ND 0.0005	0.37	0.44	0.11	0.11	0.025	ND 0.050	ND 0.25	ND 0.31

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 12
VOC ANALYTICAL DATA - 2011 SITE-SPECIFIC FIVE YEAR WELLS
FORMER RAYTHEON FACILITIES
MOUNTAIN VIEW, CALIFORNIA

Parameter	Location / Date / Sample Purpose / Units	RP19B 10/17/2011 REG	RP21B 10/19/2011 REG	RP23B 10/19/2011 REG	RP24B 10/19/2011 REG	RP41B 10/17/2011 REG	RP43B 10/7/2011 REG
1,1,1-TRICHLOROETHANE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	0.0015
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
1,1,2-TRICHLOROETHANE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
1,1-DICHLOROETHANE	mg/l	ND 0.0031	0.0077	0.025	ND 0.0071	ND 0.0005	ND 0.0013
1,1-DICHLOROETHENE	mg/l	ND 0.0031	0.0068	0.017	ND 0.0071	ND 0.0005	ND 0.0013
1,2-DICHLOROBENZENE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	0.0013
1,2-DICHLOROETHANE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
1,2-DICHLOROPROPANE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
1,3-DICHLOROBENZENE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
1,4-DICHLOROBENZENE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
BROMODICHLOROMETHANE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
BROMOFORM	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
BROMOMETHANE	mg/l	ND 0.0063	ND 0.0071	ND 0.025	ND 0.014	ND 0.0010	ND 0.0025
CARBON TETRACHLORIDE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
CHLOROBENZENE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
CHLOROETHANE	mg/l	ND 0.0063	ND 0.0071	ND 0.025	ND 0.014	ND 0.0010	ND 0.0025
CHLOROFORM	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	0.0016
CHLOROMETHANE	mg/l	ND 0.0063	ND 0.0071	ND 0.025	ND 0.014	ND 0.0010	ND 0.0025
CIS-1,2-DICHLOROETHENE	mg/l	0.12	0.078	0.52	0.048	0.0018	0.0049
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
DIBROMOCHLOROMETHANE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
FREON 113	mg/l	ND 0.013	ND 0.014	ND 0.050	ND 0.029	ND 0.0020	ND 0.0050
METHYLENE CHLORIDE	mg/l	ND 0.13	ND 0.14	ND 0.50	ND 0.29	ND 0.020	ND 0.050
TETRACHLOROETHENE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	0.0021
TRANS-1,2-DICHLOROETHENE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013
TRICHLOROETHENE	mg/l	0.32	0.50	1.3	0.74	0.012	0.12
TRICHLOROFLUOROMETHANE	mg/l	ND 0.0063	ND 0.0071	ND 0.025	ND 0.014	ND 0.0010	ND 0.0025
VINYL CHLORIDE	mg/l	ND 0.0031	ND 0.0036	ND 0.013	ND 0.0071	ND 0.0005	ND 0.0013

Notes:

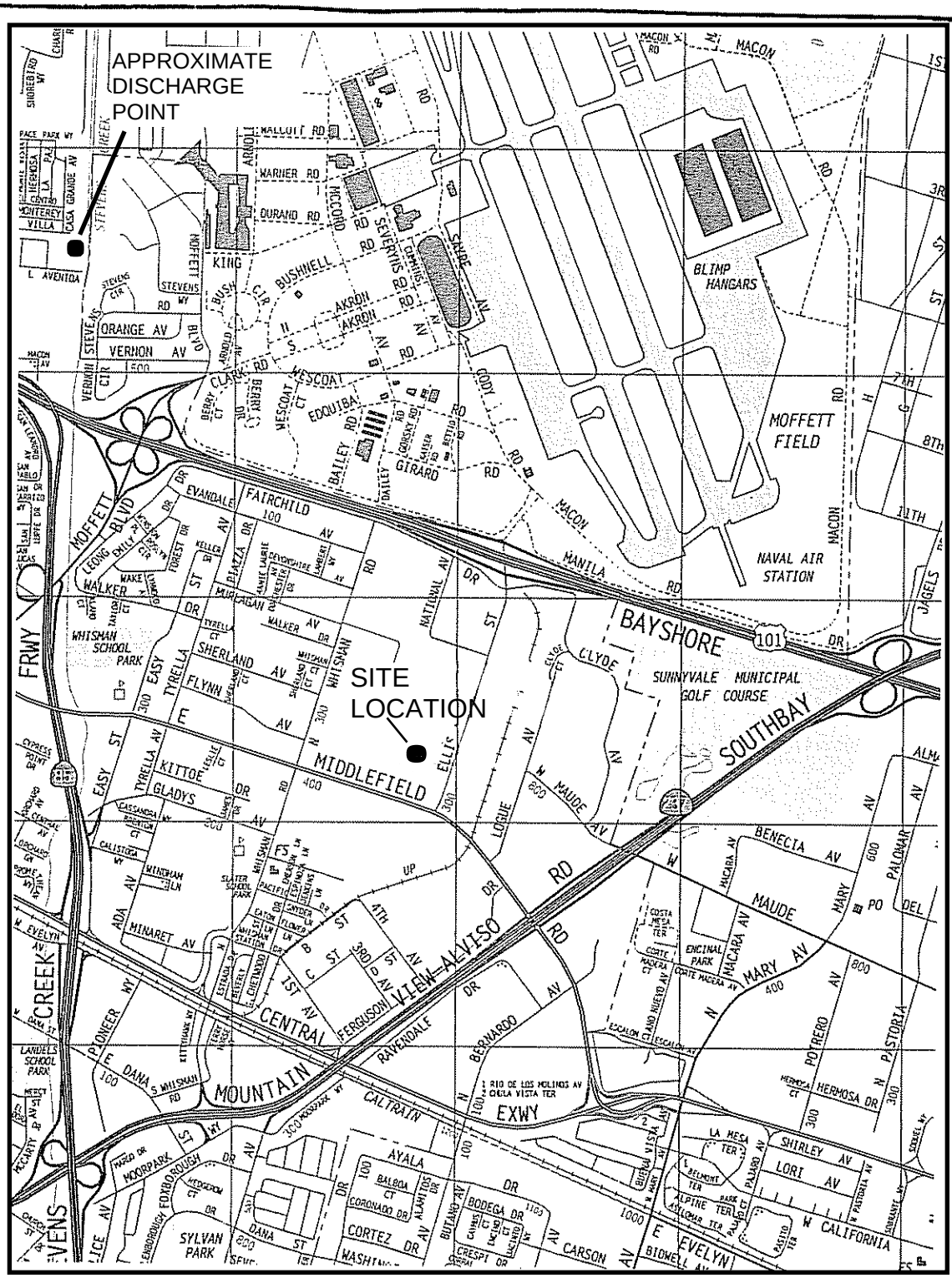
ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 13
TCE CONCENTRATION COMPARISONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Aquifer/ Location	Average Annual Concentration (mg/L)																		Concentration Comparisons															
	1986/87	1992	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2006/ 1986-87	2007/ 1986-87	2008/ 1986-87	2009/ 1986-87	2010/ 1986-87	2011/ 1986-87	2006/ 1997	2007/ 1997	2008/ 1997	2009/ 1997	2010/ 1997	2011/ 1997	2006/ 1998	2007/ 1998	2008/ 1998	2009/ 1998	2010/ 1998	2011/ 1998
A Aquifer Within Slurry Wall																																				
Wells Sampled	21	0	15	13	0	20	4	7	13	8	0	0	18	0	0	0	0	0	-82%	NA	NA	NA	NA	NA	-64%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average Conc	20.47	-	23.58	10.33	-	0.00	44.45	9.06	5.95	3.53	-	-	3.77	-	-	-	-	-																		
B1 Aquifer Within Slurry Wall																																				
Wells Sampled	15	0	16	9	1	13	0	4	8	4	0	0	12	0	0	0	0	8	-80%	NA	NA	NA	NA	-87%	42%	NA	NA	NA	NA	-11%	NA	NA	NA	NA	NA	NA
Average Conc	3.11	-	1.35	0.44	0.00	0.00	-	0.61	0.33	0.15	-	-	0.62	-	-	-	-	0.39																		
B2 Aquifer																																				
Wells Sampled	9	0	8	5	0	9	1	0	5	1	0	0	1	0	4	0	0	5	88%	NA	-22%	NA	NA	-30%	NA	NA	42%	NA	NA	27%	NA	NA	NA	NA	NA	NA
Average Conc	0.11	-	0.11	0.06	-	0.00	0.22	-	0.06	0.36	-	-	0.21	-	0.09	-	-	0.08																		
A Aquifer Outside Slurry Wall																																				
Wells Sampled	3	2	0	2	4	4	4	4	4	3	4	4	3	4	4	4	4	3	-97%	-99%	-98%	-98%	-98%	-97%	124%	-23%	59%	52%	52%	101%	51%	-48%	7%	2%	35%	35%
Average Conc	22.93	0.50	-	0.35	0.52	0.73	0.74	0.76	0.55	0.91	1.13	0.39	0.78	0.27	0.55	0.53	0.53	0.70																		
B1 Aquifer Outside Slurry Wall																																				
Wells Sampled	3	1	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	-88%	-85%	-86%	-87%	-87%	-87%	24%	51%	47%	37%	37%	36%	-38%	-24%	-27%	-31%	-32%	-32%
Average Conc	3.07	1.50	-	0.30	0.59	0.68	0.52	0.44	0.64	0.43	0.40	0.40	0.36	0.45	0.43	0.41	0.41	0.40																		

FIGURES



SCALE

2000 0 2000 FEET

SITE LOCATION MAP
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE: 1998 THOMAS GUIDE,
SANTA CLARA/SAN MATEO COUNTIES.

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1	13 AUG 03	ISSUED FOR REPORT	YZC		

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DRAWING NO. 23-016-A38

FIGURE 1

K:\23-016\A38.DWG 13 AUG 03

LEGEND:

SLURRY WALL

GROUNDWATER EXTRACTION WELL

GROUNDWATER MONITORING WELL

RAY-1B1 RAY-1A

007B1 132B2 097B1 R-05B2 R-05B3 094B1 026A 114B1
024A 099B1 106A 134B2 R-03B1
R-10A R-18B3 RE-11A R-27B3 R-27A R-55A 100A
R-01B1 R-27B2 R-58B2 R-05B1 R-62A
RE-08A RE-03B1 R-59B2 RE-12A R-66B1 RE-1B2
R-67B1 RE-07A R-39B2
RE-22A RE-21A
RP-21B
R-41A
RP-24B RE-23A RP-23B
156B1 R-69A
R-70B1 R-70A R-69B1
145B1 RE-24A RE-05A R-68A
R-40B1B2 R-58A R-02A
R-65B1B2 RE-25A
R-59A R-71A R-69B2 R-70B2
R-68B2
RP-43B
R-72A RE-09A RE-10A
98B1
R-60A R-64B1
R-74A
RP-19B
R-73A RP-42B R-63B1 R-57A
RP-41B R-67A
R-68B1 R-73B2
LOCATION OF GROUNDWATER TREATMENT SYSTEM
101B1 R-07B1
R-63A R-62B2 R-36A
I-1B2 RP-16B R-72B2
R-17B2 I-M1A R-14A
R-37B3 R-06A R-71B2
R-61B3 R-60B1
R-28B2
R-54A R-42B1
R-46B1 R-53A
R-36B1
R-33B2
IOW-3B1
IOW-3A IM-06A R-15A R-44A R-57B3
IM-06B1 IM-07A R-41B2
IM-07B1 ME-01A ME-01B1
Middlefield Road
PW-4B1
IOW-1A PW-3A R-20A R-25A
IE-09A IM-10B2 R-51A
IE-10A R-51B3 R-50B2
IE-24B1 PW-5B1
R-50A
PW-2A IOW-4B1
IM-08B1 RH-01A
IM-18A PW-1A
IE-07A IM-19A R-52B2 R-54B3
IM-19B1 R-56B3 R-53B2 R-21A R-30B2 R-22B1
IE-06A R-55B2 RP-22B
R-52A
ORCHARD
R-48A

Street
Ellis

REFERENCE:
MWH BASEMAP FILE NO. USCKIS-INDSURNDUSTRIAL\MLUBKE\RAYTHEON SM A AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

BASE MAP

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

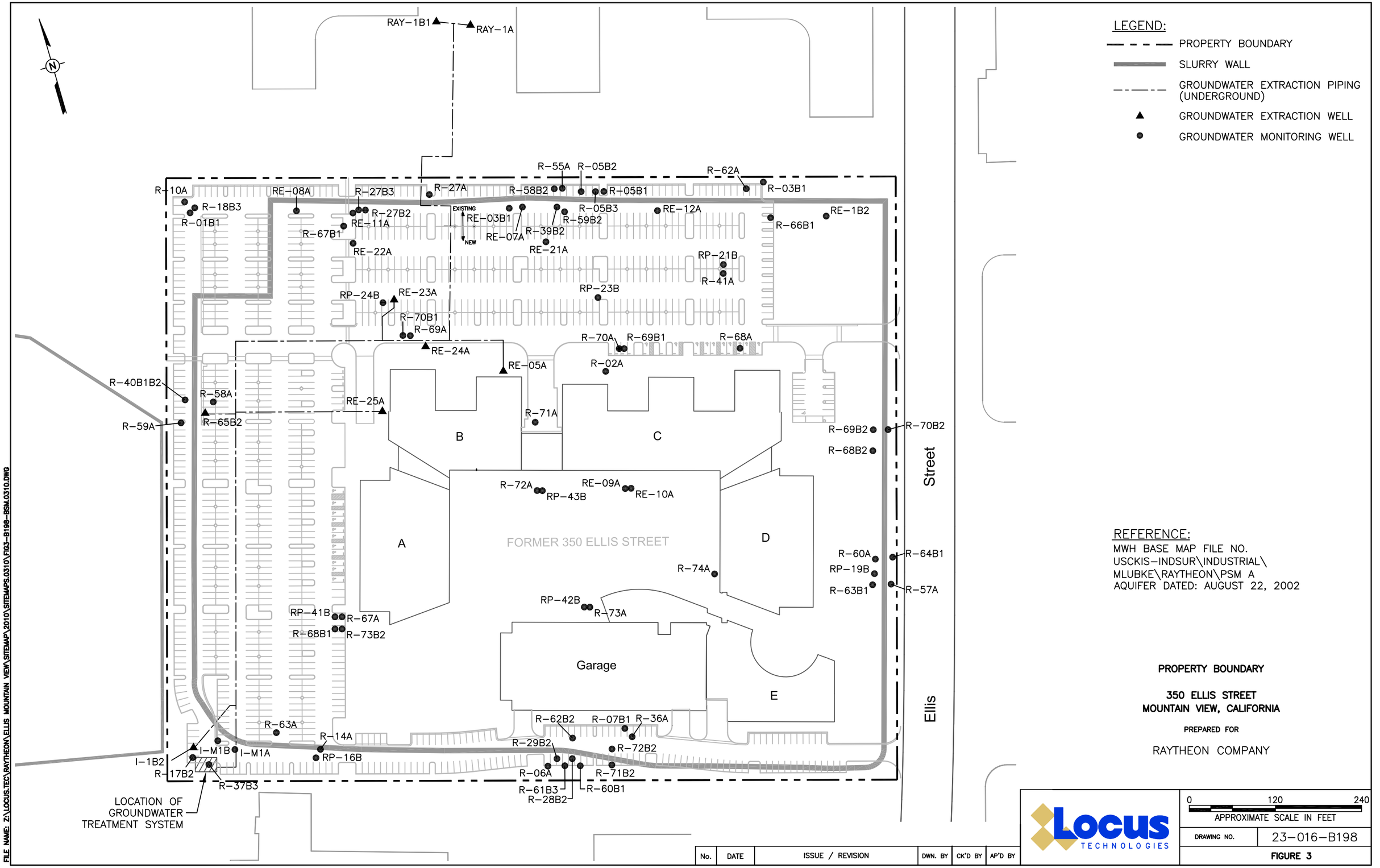
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B197

FIGURE 2

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\SITEMAP\2010\SITEMAPS.0310\FIG2-B197-BSM.0310.DWG



REFERENCE:
MWH BASE MAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM A
AQUIFER DATED: AUGUST 22, 2002

PROPERTY BOUNDARY

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

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0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B198

FIGURE 3

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\SITEMAP\2010\SITEMAPS.0310\FG3-B198-BSM.0310.DWG

FIGURE 4
TCE CONCENTRATIONS IN GROUNDWATER TREATMENT SYSTEM INFLUENT SINCE 2001
RAYTHEON COMPANY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

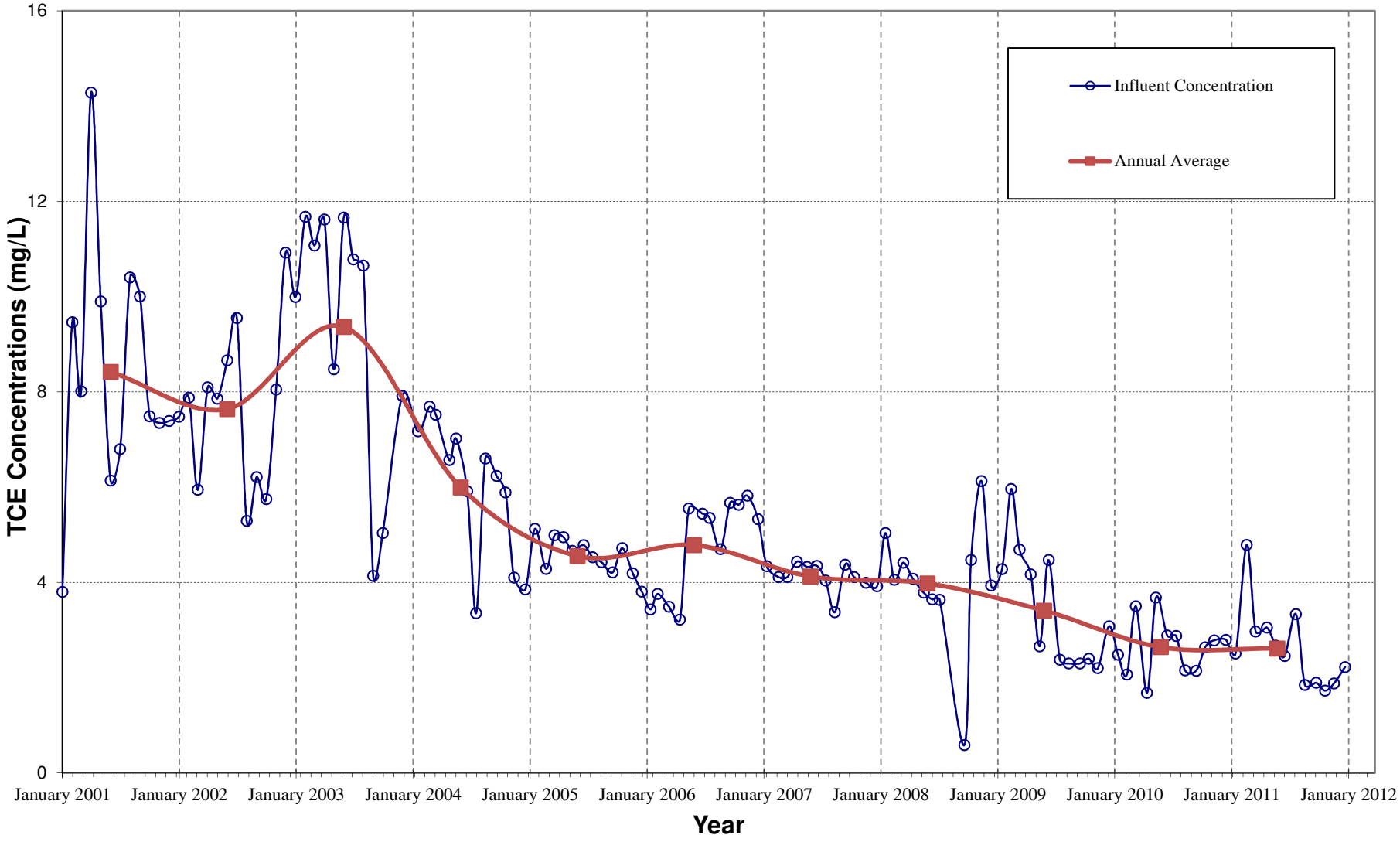
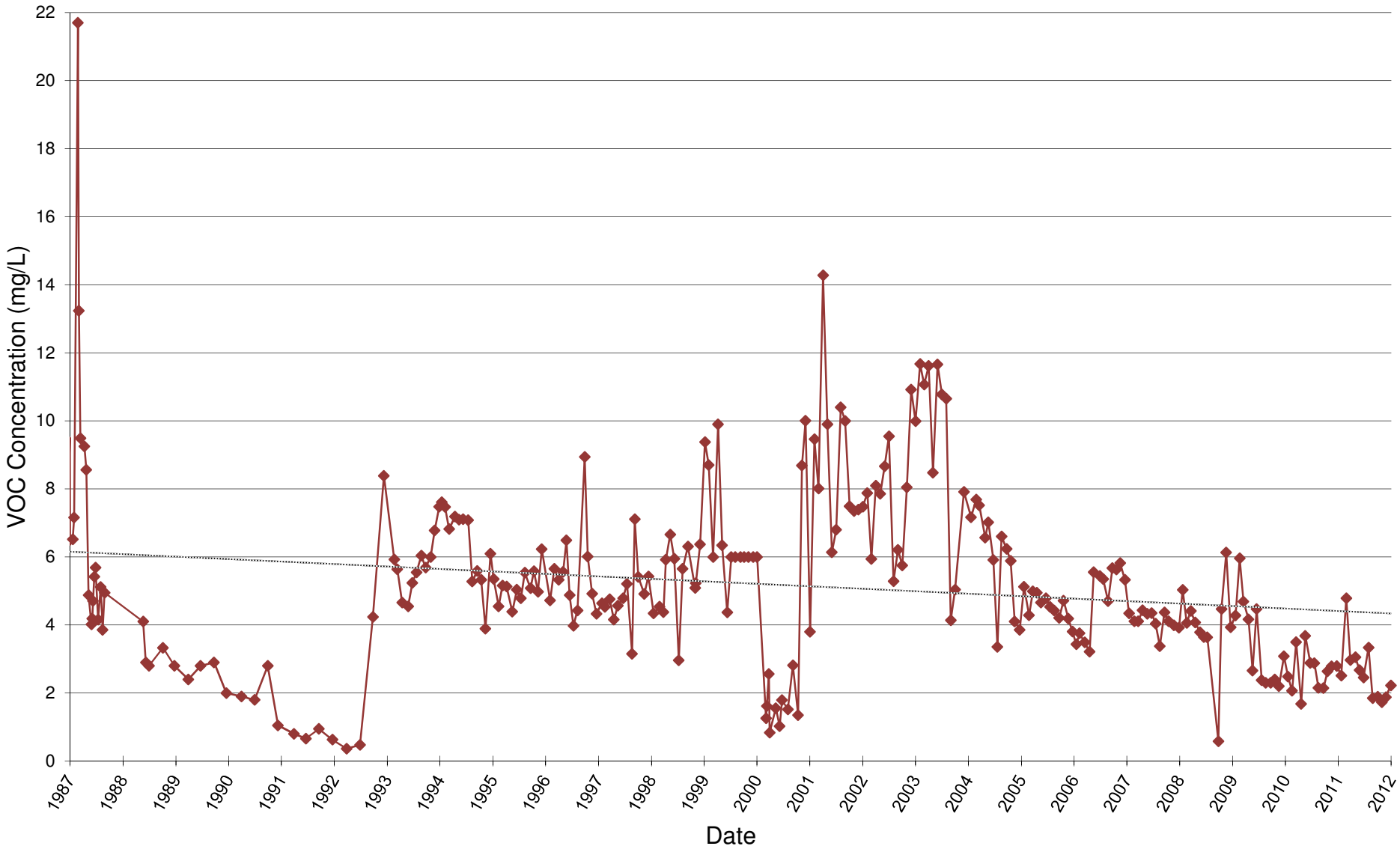
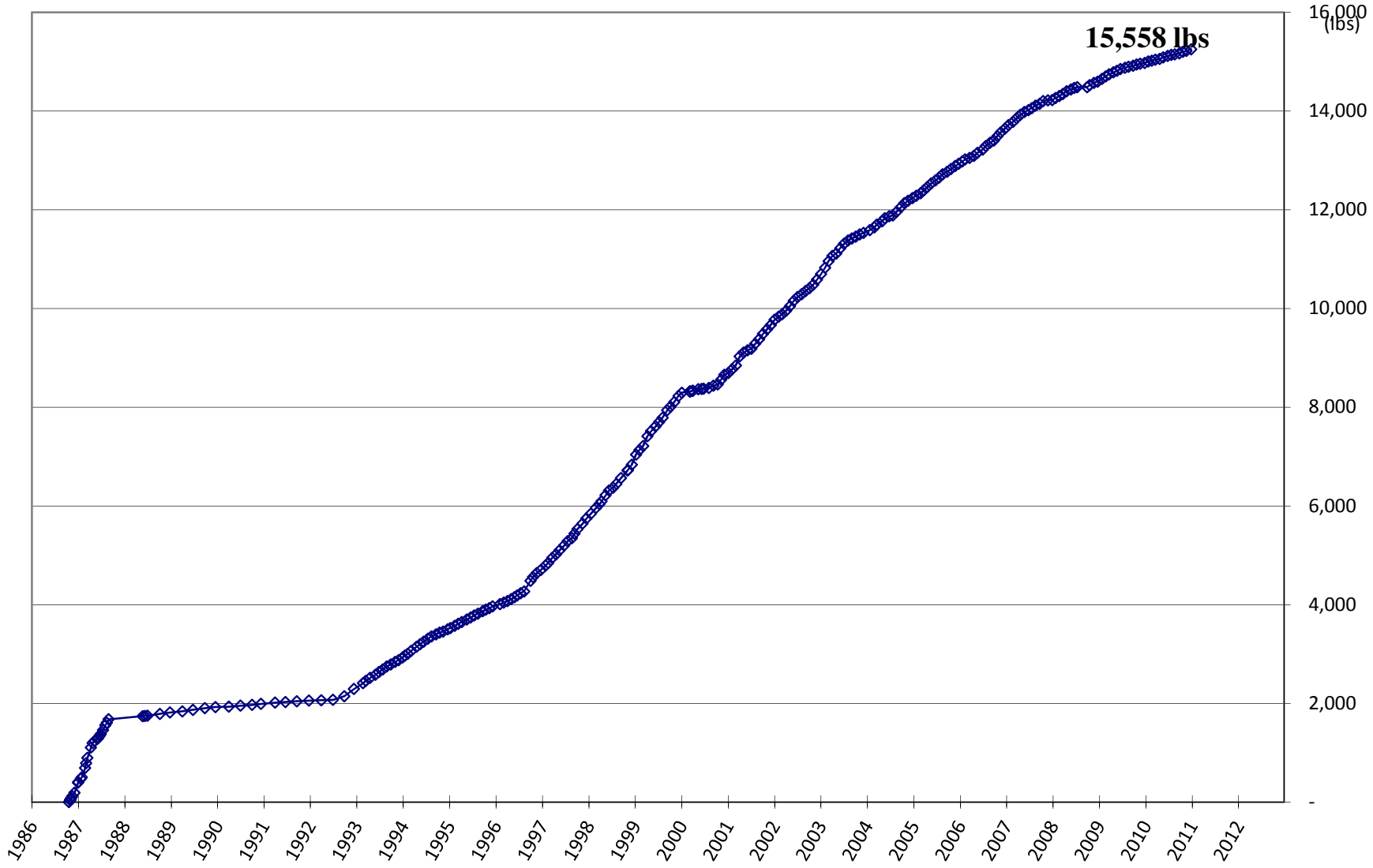


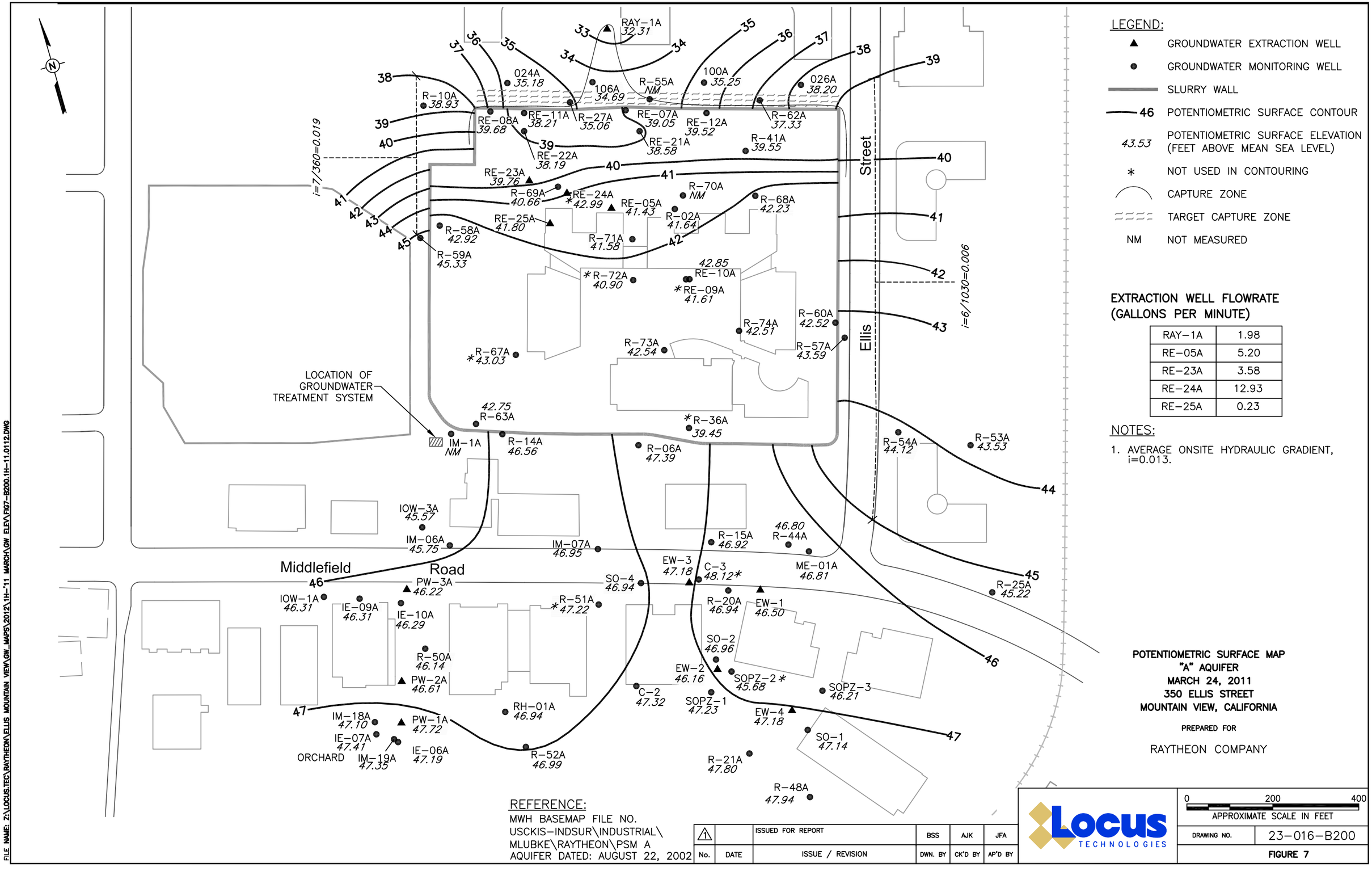
FIGURE 5
TOTAL INFLUENT GROUNDWATER CONCENTRATIONS
RAYTHEON COMPANY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

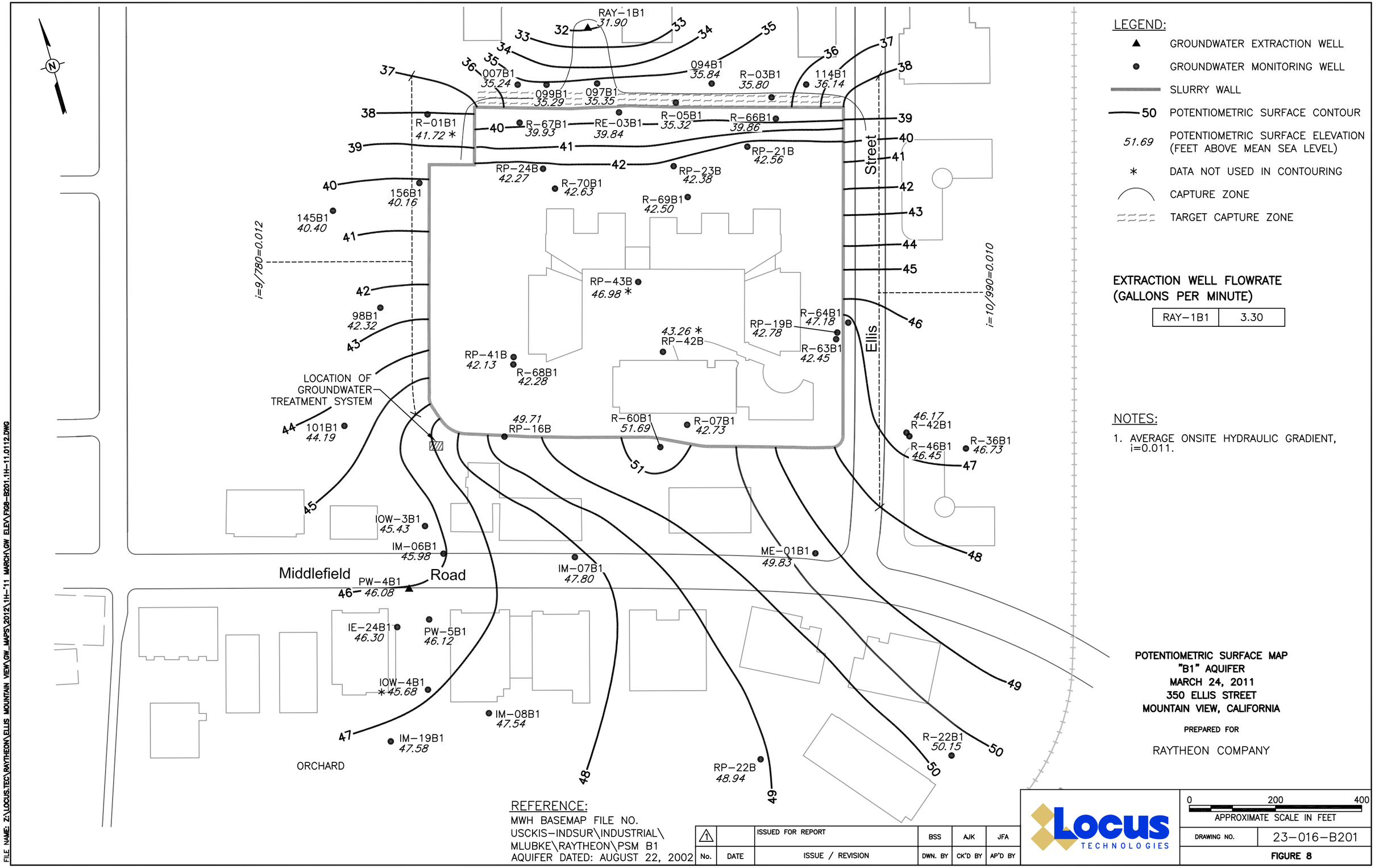


I:\Projects\R\Raytheon\23-016 Raytheon MEW\Annual Rpts\Annual 2011\Tables\Table 3 - Figs 4 5 6 VOC mass removal Fig 5 VOC Conc Chart 3/20/2012

FIGURE 6: CUMULATIVE VOC MASS REMOVAL
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA




RAY-1A 32.31
024A 35.18
106A 34.69
R-55A NM
100A 35.25
026A 38.20
R-10A 38.93
RE-08A 39.68
RE-11A 38.21
R-27A 35.06
RE-07A 39.05
RE-12A 39.52
R-62A 37.33
RE-21A 38.58
RE-22A 38.19
R-41A 39.55
RE-23A 39.76
R-69A 40.66
RE-24A *42.99
RE-05A 41.43
R-70A NM
R-68A 42.23
RE-25A 41.80
R-02A 41.64
R-58A 42.92
R-59A 45.33
R-71A 41.58
42.85
RE-10A
*R-72A 40.90
*RE-09A 41.61
R-60A 42.52
R-74A 42.51
R-57A 43.59
R-73A 42.54
*R-67A 43.03
LOCATION OF GROUNDWATER TREATMENT SYSTEM
42.75
R-63A
IM-1A NM
R-14A 46.56
*R-36A 39.45
R-06A 47.39
R-54A 44.12
R-53A 43.53
IOW-3A 45.57
IM-06A 45.75
IM-07A 46.95
R-15A 46.92
46.80
R-44A
ME-01A 46.81
EW-3 47.18
C-3 48.12*
R-25A 45.22
Middlefield Road
PW-3A 46.22
SO-4 46.94
IOW-1A 46.31
IE-09A 46.31
IE-10A 46.29
R-51A *47.22
R-20A 46.94
EW-1 46.50
SO-2 46.96
R-50A 46.14
EW-2 46.16
SOPZ-2* 45.68
SOPZ-3 46.21
PW-2A 46.61
C-2 47.32
SOPZ-1 47.23
EW-4 47.18
RH-01A 46.94
IM-18A 47.10
PW-1A 47.72
IE-07A 47.41
SO-1 47.14
ORCHARD
IM-19A 47.35
IE-06A 47.19
R-52A 46.99
R-21A 47.80
R-48A 47.94
i=7/360=0.019
i=6/1030=0.006
Ellis Street
LEGEND:
GROUNDWATER EXTRACTION WELL
GROUNDWATER MONITORING WELL
SLURRY WALL
46 POTENTIOMETRIC SURFACE CONTOUR
43.53 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
* NOT USED IN CONTOURING
CAPTURE ZONE
TARGET CAPTURE ZONE
NM NOT MEASURED
EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)
RAY-1A 1.98
RE-05A 5.20
RE-23A 3.58
RE-24A 12.93
RE-25A 0.23
NOTES:
1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.013.
POTENTIOMETRIC SURFACE MAP
"A" AQUIFER
MARCH 24, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA
PREPARED FOR
RAYTHEON COMPANY
REFERENCE:
MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\ MLUBKE\RAYTHEON\PSM A AQUIFER DATED: AUGUST 22, 2002
1 ISSUED FOR REPORT BSS AJK JFA
No. DATE ISSUE / REVISION DWN. BY CK'D BY AP'D BY
Locus TECHNOLOGIES
0 200 400
APPROXIMATE SCALE IN FEET
DRAWING NO. 23-016-B200
FIGURE 7
FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\1H-'11 MARCH\GW ELEV FIG7-B200.1H-11.0112.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 50 POTENTIOMETRIC SURFACE CONTOUR
- 51.69 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- * DATA NOT USED IN CONTOURING
- CAPTURE ZONE
- TARGET CAPTURE ZONE

EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)

RAY–1B1	3.30

NOTES:

1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.011.

REFERENCE:
MWH BASEMAP FILE NO. USCKIS–INDSUR\INDUSTRIAL\ MLUBKE\RAYTHEON\PSM B1 AQUIFER DATED: AUGUST 22, 2002

POTENTIOMETRIC SURFACE MAP
"B1" AQUIFER
MARCH 24, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

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0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23–016–B201

FIGURE 8

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\1H–'11 MARCH\GW ELEV FIG8–B201.1H–11.0112.DWG

LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 46 POTENTIOMETRIC SURFACE CONTOUR
- 46.63 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION
- * NOT USED IN CONTOURING
- CAPTURE ZONE
- TARGET CAPTURE ZONE
- NA DATA NOT AVAILABLE

EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)

RAY–1A	9.17
RE–05A	5.50
RE–23A(2)	0.00
RE–24A	11.08
RE–25A	0.78

NOTES:

1. THE AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.013
2. THE PUMP IN WELL RE–23A FAILED DURING THE FIRST WEEK OF SEPTEMBER. PUMPING FROM WELL RE–23A RESUMED IN OCTOBER AFTER THE PUMP WAS REPLACED.

POTENTIOMETRIC SURFACE MAP
"A" AQUIFER
SEPTEMBER 15, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO. USCKIS–INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\PSM A AQUIFER DATED: AUGUST 22, 2002

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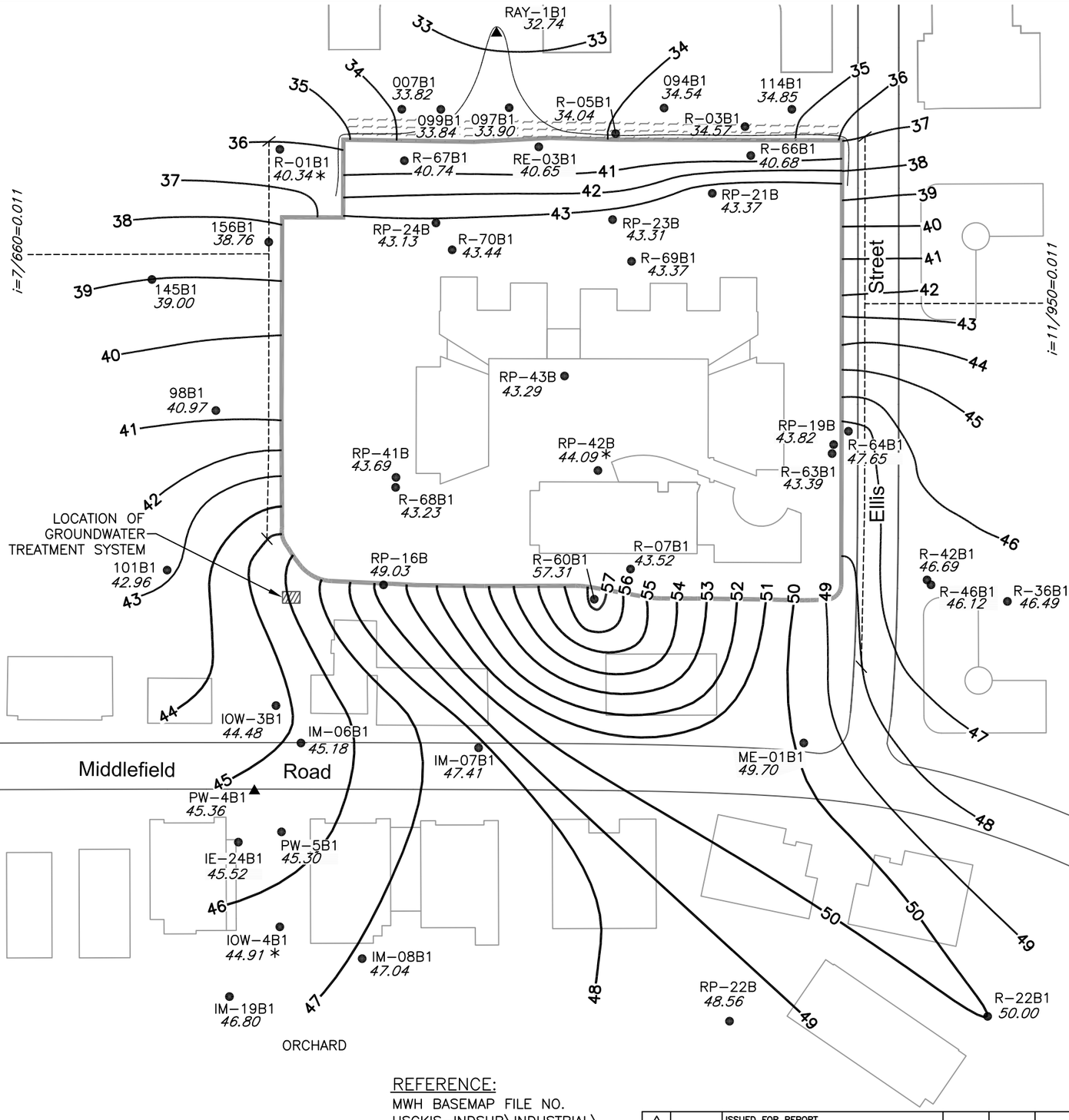
APPROXIMATE SCALE IN FEET

DRAWING NO. 23–016–B202

FIGURE 9

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\2H-'11 SEPT\GW ELEV\FIG9–B202.2H–11.0112.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 47 POTENTIOMETRIC SURFACE CONTOUR
- 43.69 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- * NOT USED IN CONTOURING
- CAPTURE ZONE
- TARGET CAPTURE ZONE

EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)

RAY–1B1	0.33

NOTES:

1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.011

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS–INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM B1
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
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POTENTIOMETRIC SURFACE MAP
"B1" AQUIFER
SEPTEMBER 15, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

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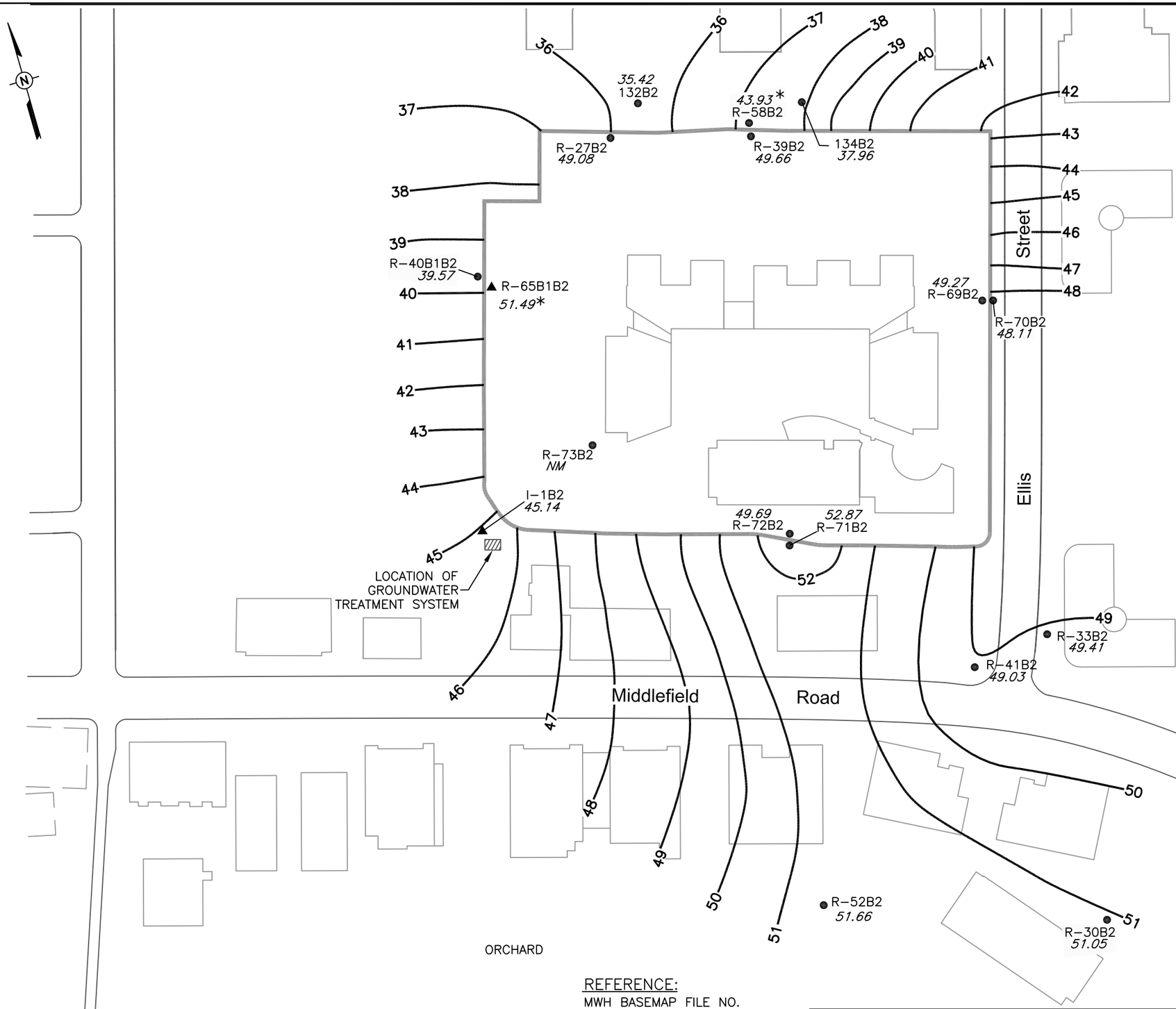
0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23–016–B203

FIGURE 10

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\2H–'11 SEPT\GW ELEV FIG10–B203.2H–11.0112.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 51 POTENTIOMETRIC SURFACE CONTOUR
- *49.41* POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- * NOT USED IN CONTOURING

EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)

I-1B2	1.50
R-65B1B2	4.30

NOTES:

1. R-65B1B2 IS LOCATED IN THE LOWER B2 AQUIFER.

REFERENCE:

MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\PSM UB2 AQUIFER DATED: AUGUST 22, 2002

POTENTIOMETRIC SURFACE MAP
UPPER "B2" AQUIFER
MARCH 24, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

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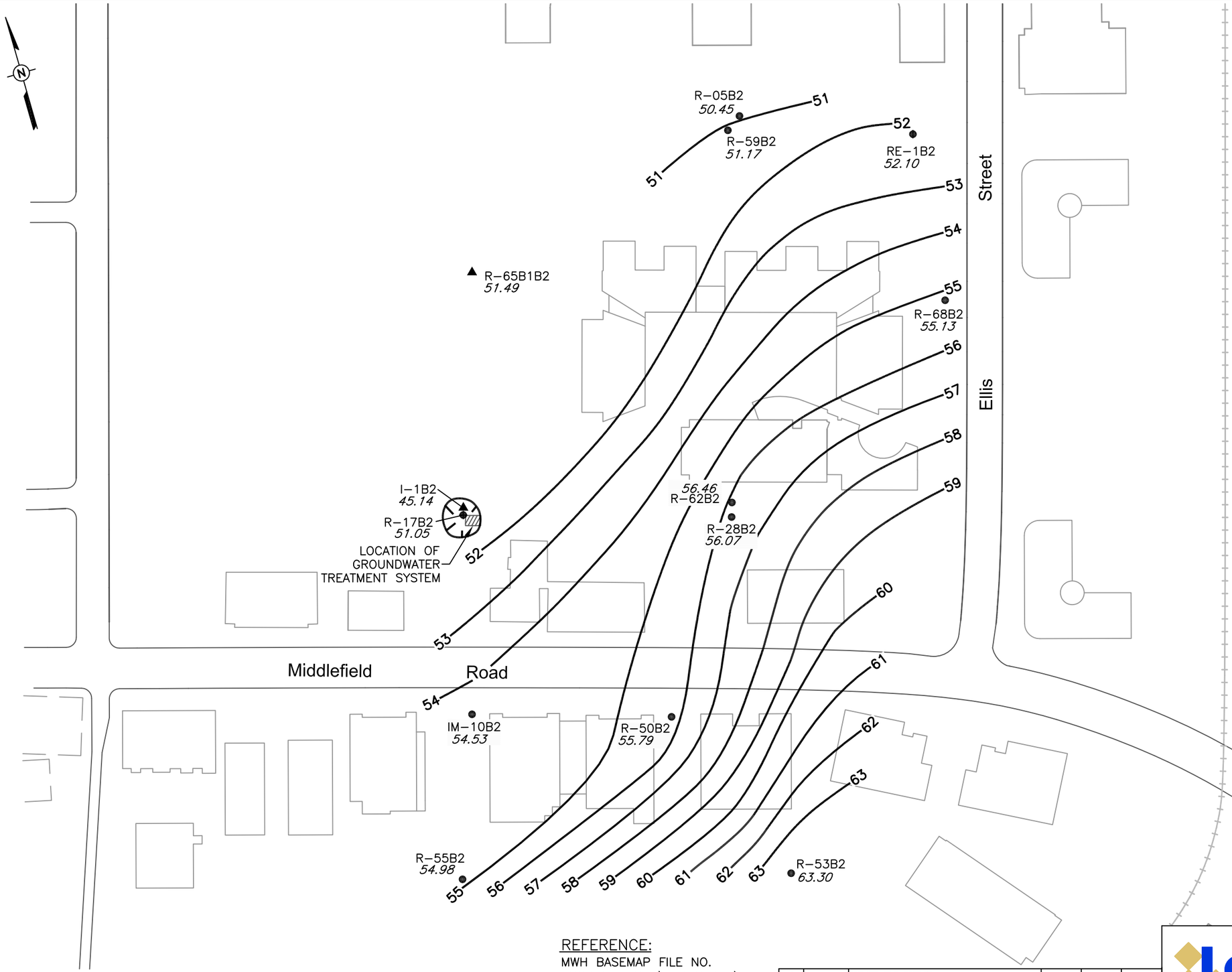
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B204

FIGURE 11

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\1H-'11 MARCH\GW ELEV\FIG11-B204.1H-11.0112.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 61 POTENTIOMETRIC SURFACE CONTOUR
- *63.30* POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION

EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)

I-1B2	1.50
R-65B1B2	4.30

POTENTIOMETRIC SURFACE MAP
LOWER "B2" AQUIFER
MARCH 24, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM LB2
AQUIFER DATED: AUGUST 22, 2002

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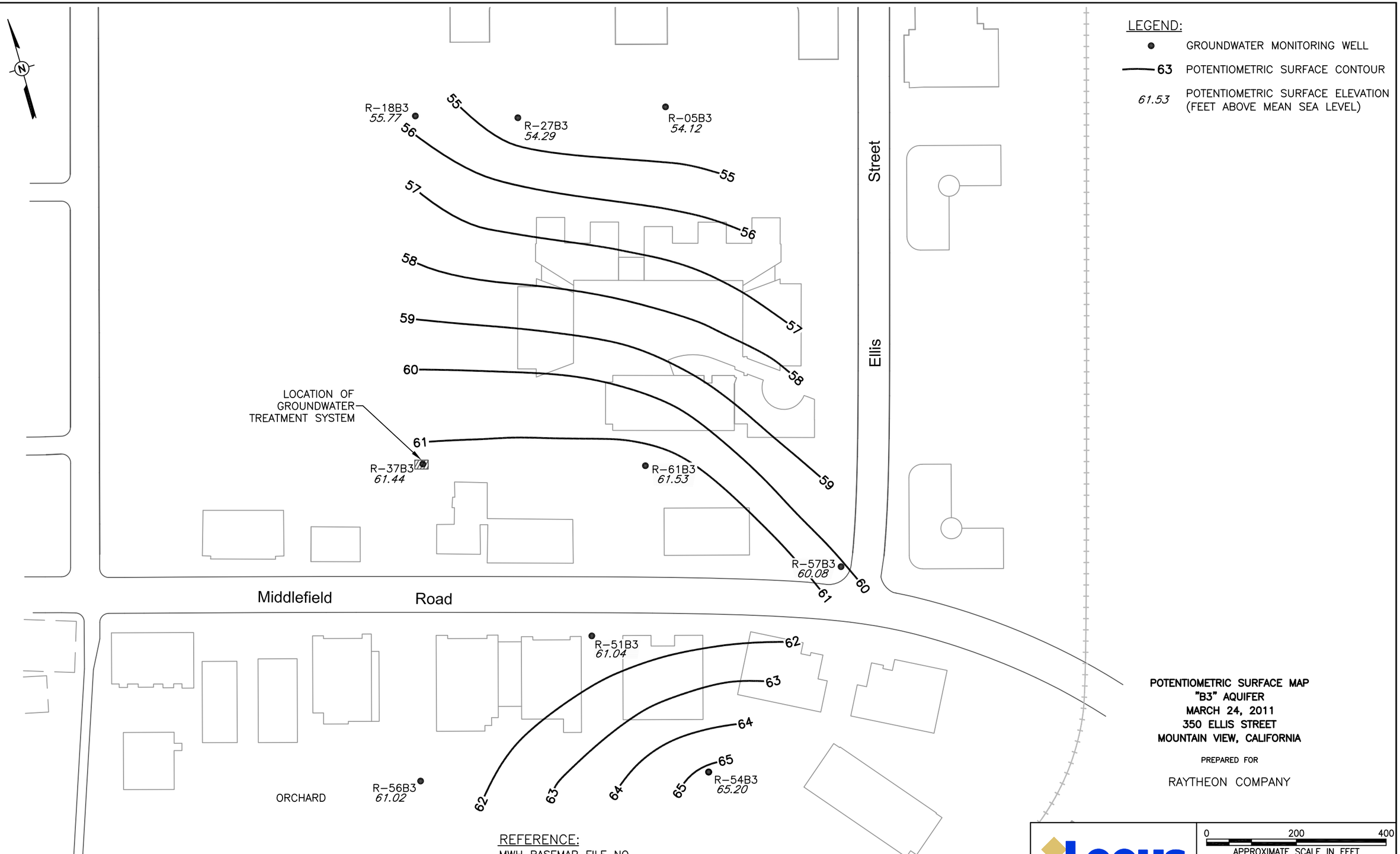
0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B205

FIGURE 12

FILE NAME: C:\ZDIR\RAYTHEON\FIG12-B205.1H-11.0112.DWG



REFERENCE:
MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\PSM A AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
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POTENTIOMETRIC SURFACE MAP
"B3" AQUIFER
MARCH 24, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

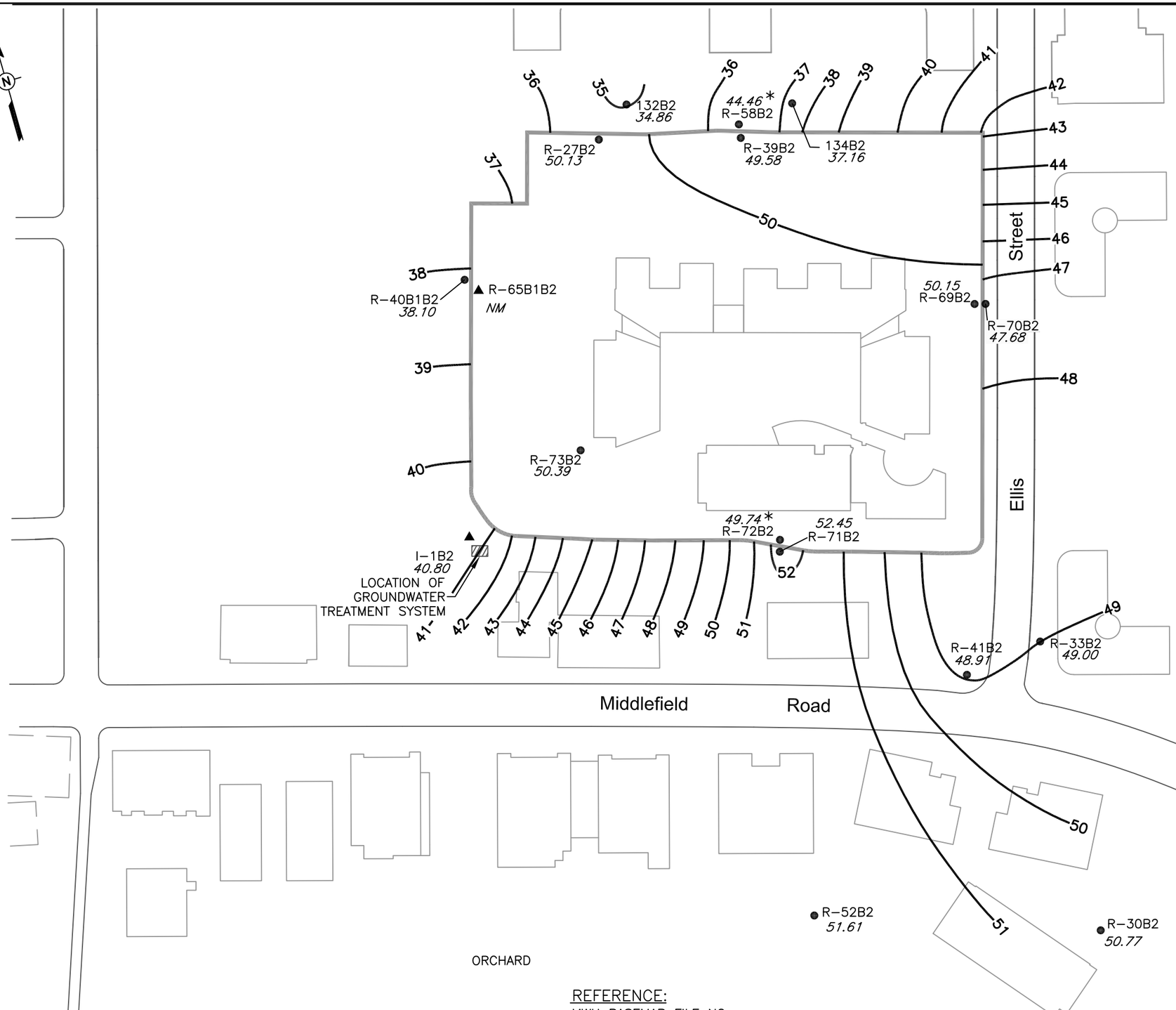
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B206

FIGURE 13

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\1H-'11 MARCH\GW ELEV\FIG13-B206.1H-11.0112.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 51 POTENTIOMETRIC SURFACE CONTOUR
- *47.68* POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- * NOT USED IN CONTOURING
- NM NOT MEASURED

EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)

I-1B2	1.91
R-65B1B2	4.23

NOTES:

1. R-65B1B2 IS LOCATED IN THE LOWER B2 AQUIFER.

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM UB2
AQUIFER DATED: AUGUST 22, 2002

POTENTIOMETRIC SURFACE MAP
UPPER "B2" AQUIFER
SEPTEMBER 15, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

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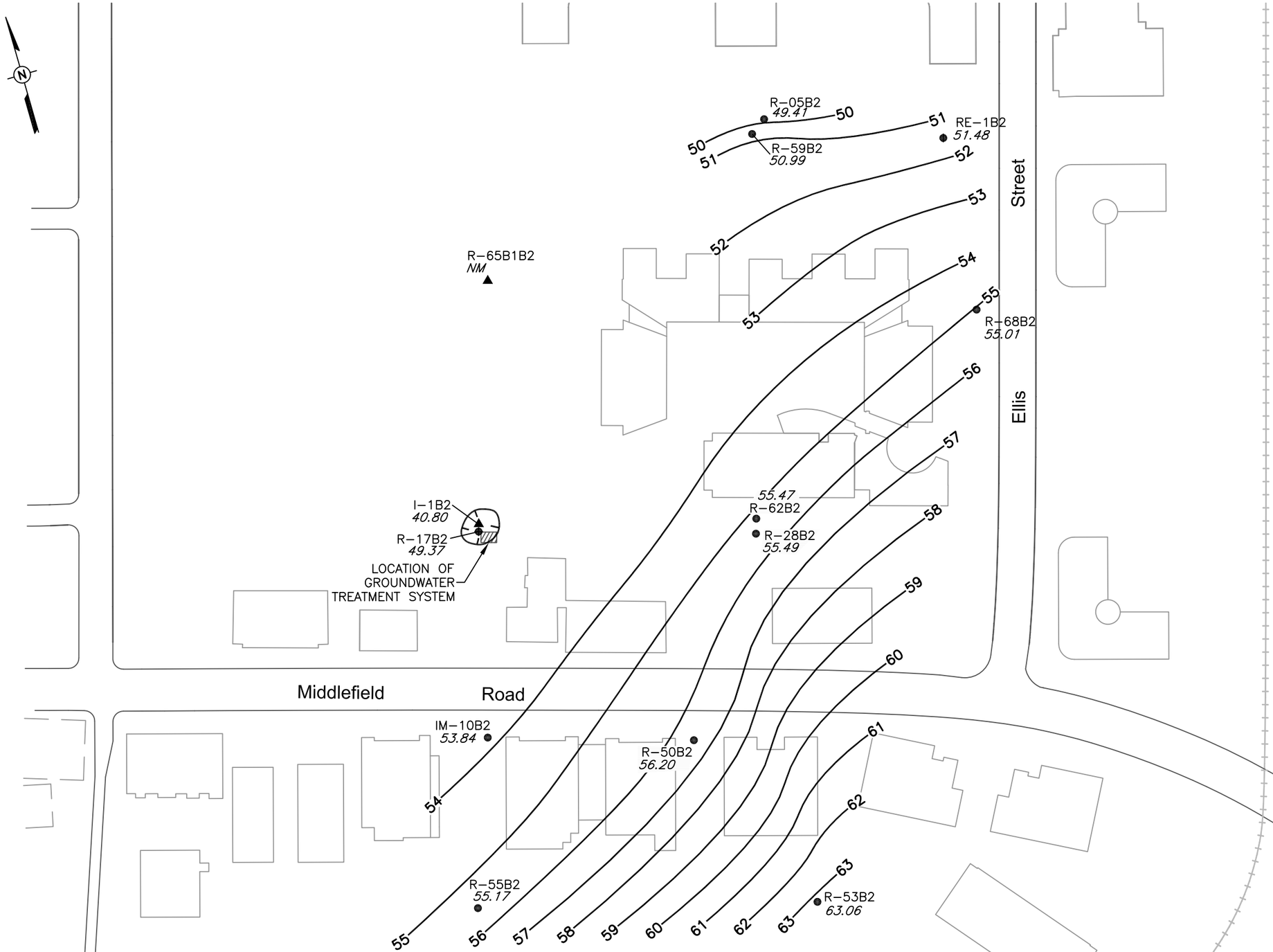
0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B207

FIGURE 14

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\2H-'11 SEPT\GW ELEV\FIG14-B207.2H-11.0112.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 61 POTENTIOMETRIC SURFACE CONTOUR
- *56.20* POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION
- NM NOT MEASURED

EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)

I–1B2	1.91
R–65B1B2	4.23

REFERENCE:
MWH BASEMAP FILE NO. USCKIS–INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\PSM LB2 AQUIFER DATED: AUGUST 22, 2002

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0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23–016–B208

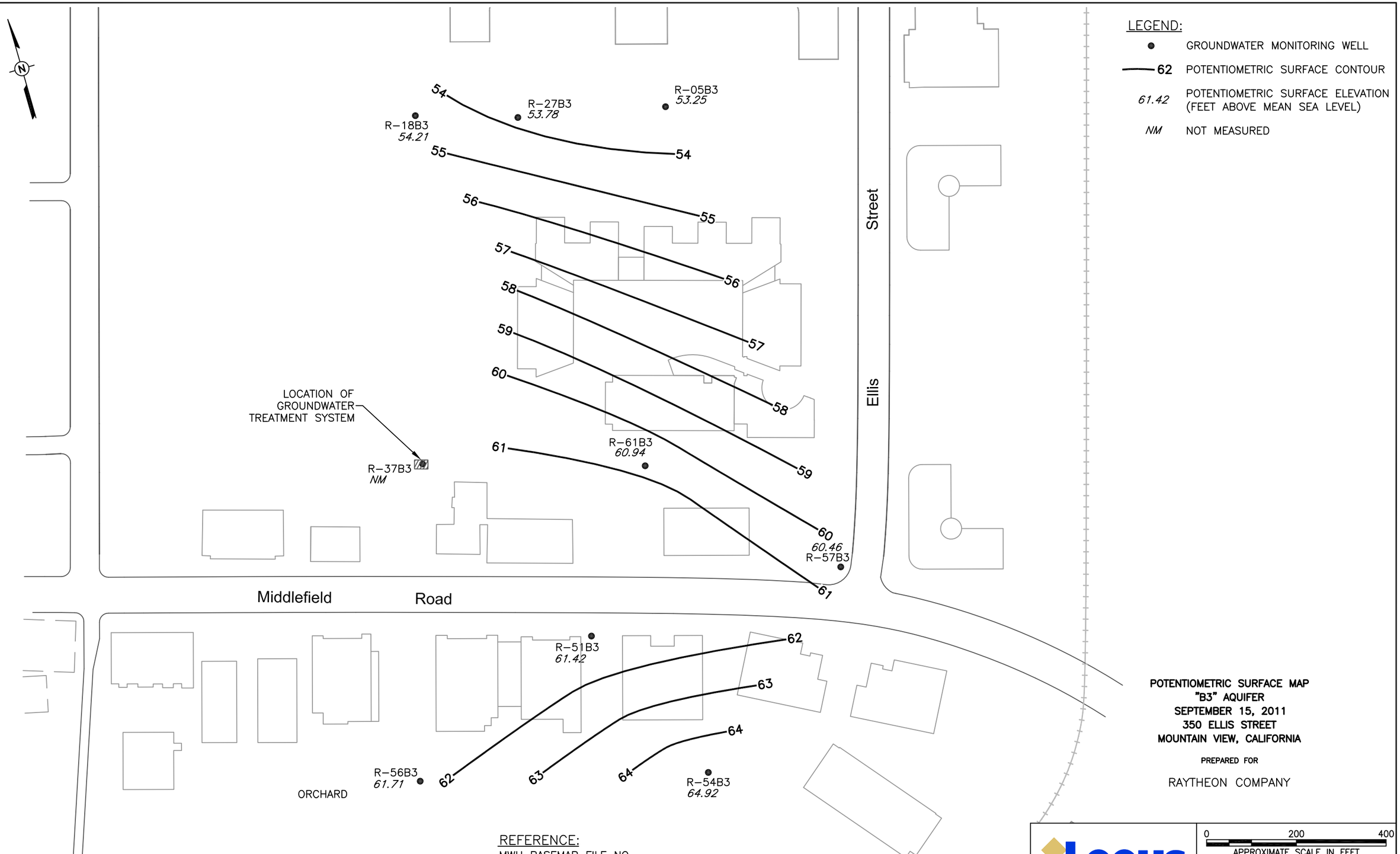
FIGURE 15

POTENTIOMETRIC SURFACE MAP
LOWER "B2" AQUIFER
SEPTEMBER 15, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\2H-11 SEPT\GW ELEV\FIG15-B208.2H-11.0112.DWG



POTENTIOMETRIC SURFACE MAP
"B3" AQUIFER
SEPTEMBER 15, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\PSM B3 AQUIFER DATED: AUGUST 22, 2002

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FIGURE 16

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\2H-11 SEPT\GW ELEV\FIG16-B209.2H-11.0112.DWG

LEGEND:

- PROPERTY BOUNDARY
- GROUNDWATER EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- SLURRY WALL

RAY-1B1 ▲ ▲ RAY-1A

R-10A, R-18B3, R-01B1

RE-08A, R-27B3, R-27B2, RE-11A, R-67B1, RE-22A

CLUSTER 12

CLUSTER 11

R-27A

WELL PAIR 6
(R-07A & R-55A)

R-58B2, R-55A, R-05B2, R-05B3, R-05B1

RE-03B1, RE-07A, RE-21A, R-39B2, R-59B2

CLUSTER 2

R-62A, R-03B1, RE-12A, R-66B1, RE-1B2

WELL PAIR 7
(RP-23B & R-05B1)

RP-23B

CLUSTER 1

RP-21B, R-41A

RP-24B, RE-23A

R-70B1, R-69A

CLUSTER 13

RE-24A

R-70A, R-69B1, R-68A

WELL PAIR 2
(R-58A & R-59A)

R-58A, R-40B1B2, R-59A, R-65B2

CLUSTER 3

RE-05A, R-02A

RE-25A, R-71A

R-69B2, R-70B2

CLUSTER 6

R-68B2

Street

R-72A, RP-43B, RE-09A, RE-10A

CLUSTER 10

WELL PAIR 4
(R-64B1 & R-63B1)

R-74A

R-60A, R-64B1

CLUSTER 8

RP-19B, R-63B1

CLUSTER 5

R-57A

RP-42B, R-73A

CLUSTER 9

RP-41B, R-67A, R-68B1, R-73B2

CLUSTER 7

WELL PAIR 3
(R-60A & R-57A)

LOCATION OF
GROUNDWATER
TREATMENT SYSTEM

I-M1B, R-63A, R-14A, I-1B2, I-M1A, R-17B2, R-37B3, RP-16B

WELL PAIR 5
(R-7B1 & R-60B1)

CLUSTER 4

R-62B2, R-07B1, R-36A, R-72B2, R-29B2, R-06A, R-71B2, R-61B3, R-28B2, R-60B1

WELL PAIR 1
(R-06A & R-36A)

Ellis

REFERENCE:
MWH BASE MAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM A
AQUIFER DATED: AUGUST 22, 2002

WELL CLUSTER AND WELL PAIR MAP
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

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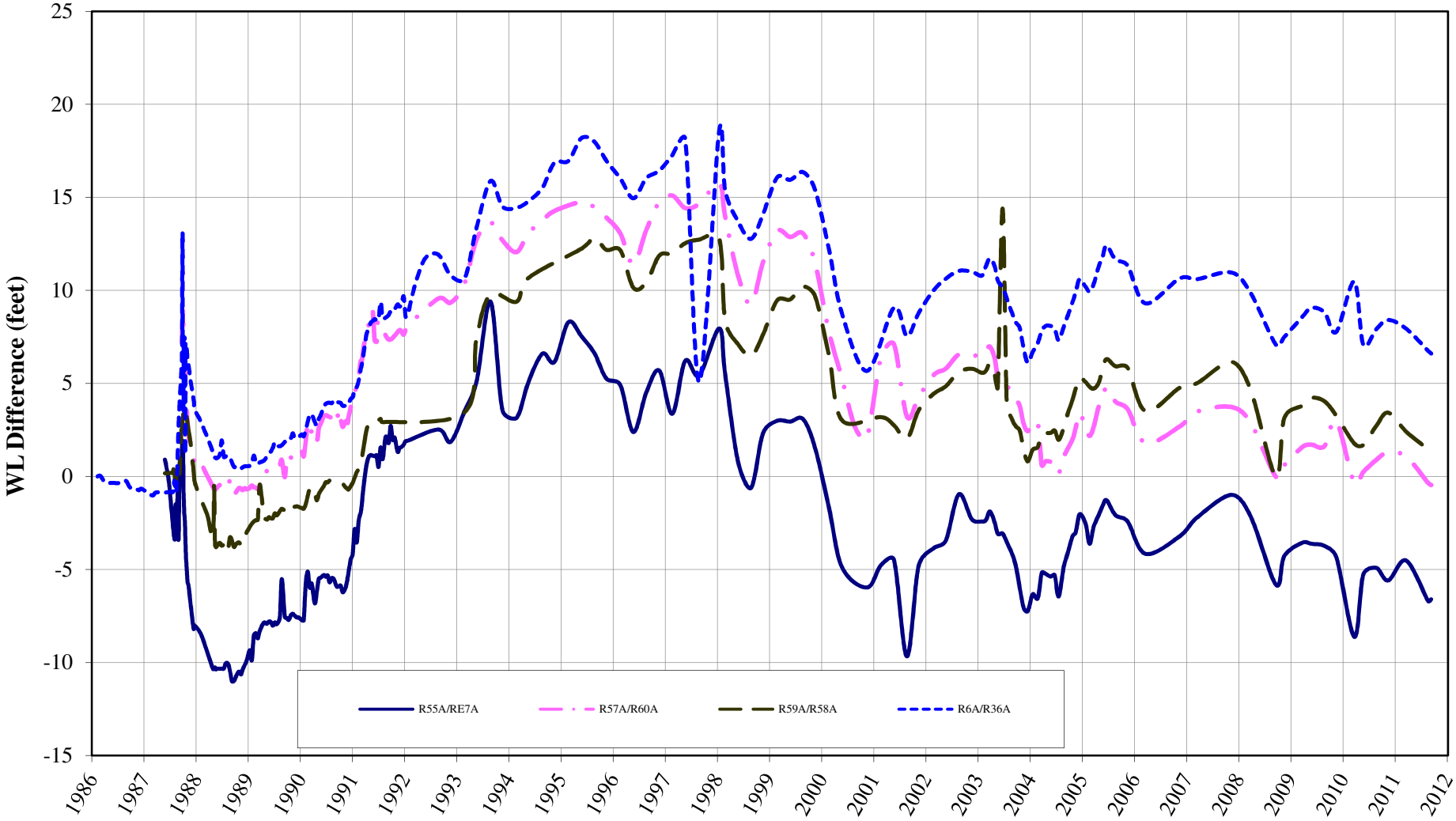
0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B199

FIGURE 17

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\SITEMAP\2010\SITEMAPS.0310\FIG17-B199-BSM.0310.DWG

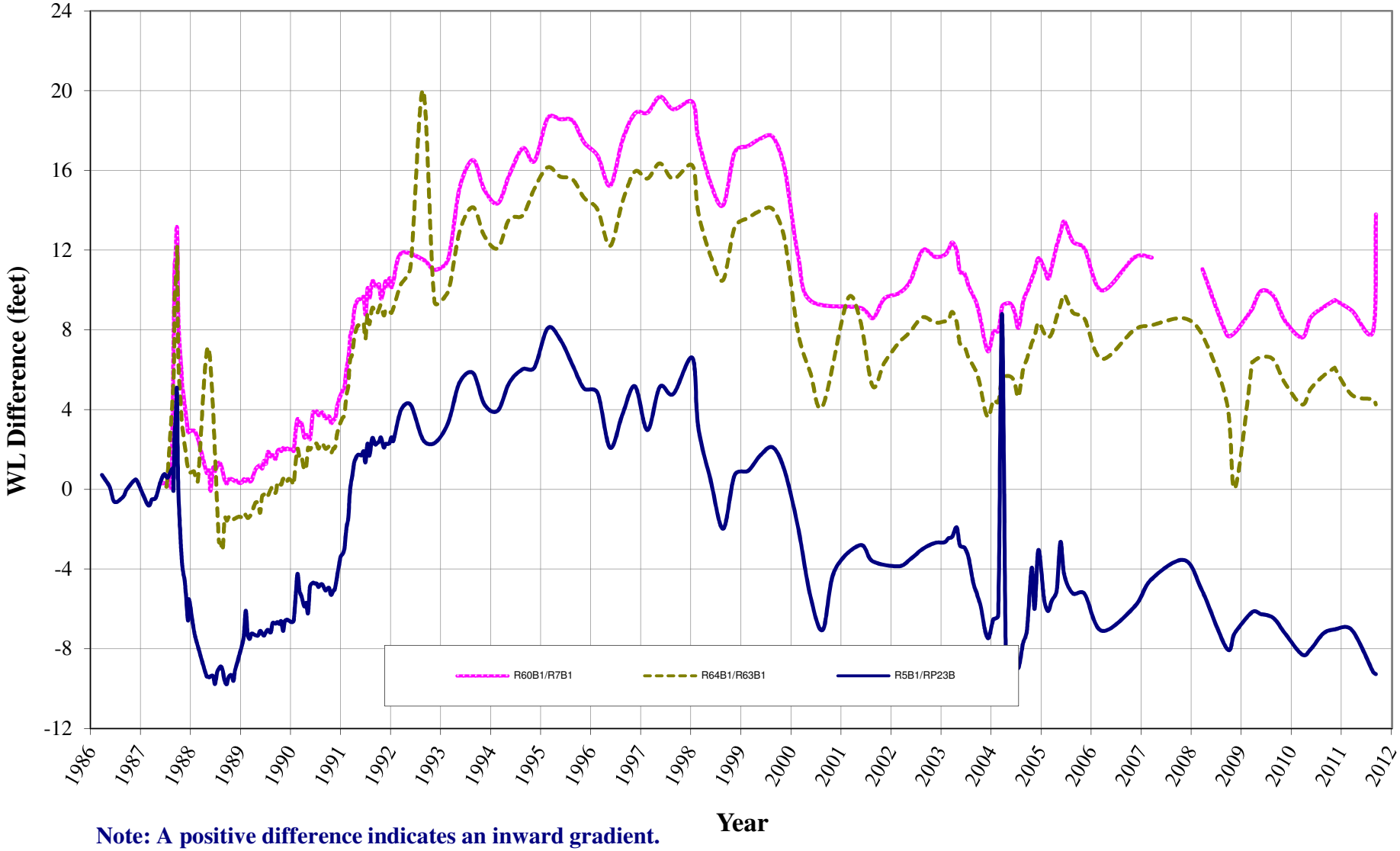
Figure 18
Water Elevation Differences Across the Slurry Wall in the "A" Aquifer
350 Ellis Street Site, Mountain View, California



Note: A positive difference indicates an inward gradient.

I:\23-016 Raytheon\Annual Rpts\Annual 2008\Figs 18-19 SlurryGrad.CZ.eval.Plots [Fig 18 A-Aquif.Chart] (02-Apr-09)

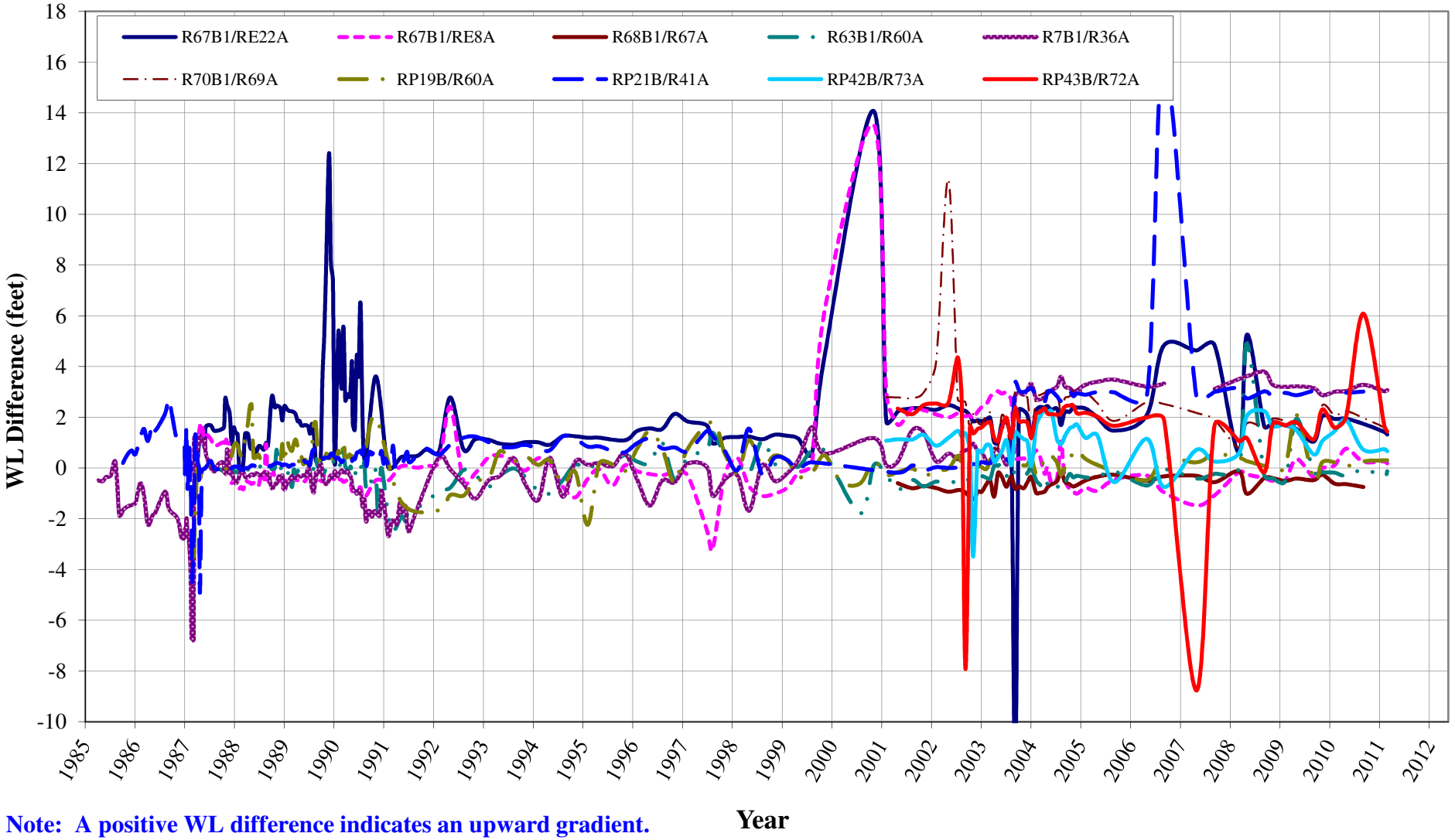
Figure 19
Water Elevation Differences Across the Slurry Wall in the "B1" Aquifer
350 Ellis Street Site, Mountain View, California



Note: A positive difference indicates an inward gradient.

I:\Projects\R\Raytheon\23-016 Raytheon MEW\Annual Rpts\Annual 2011\Figures\Figs 18-19 SlurryGrad.CZ.eval.Plots3/20/2012

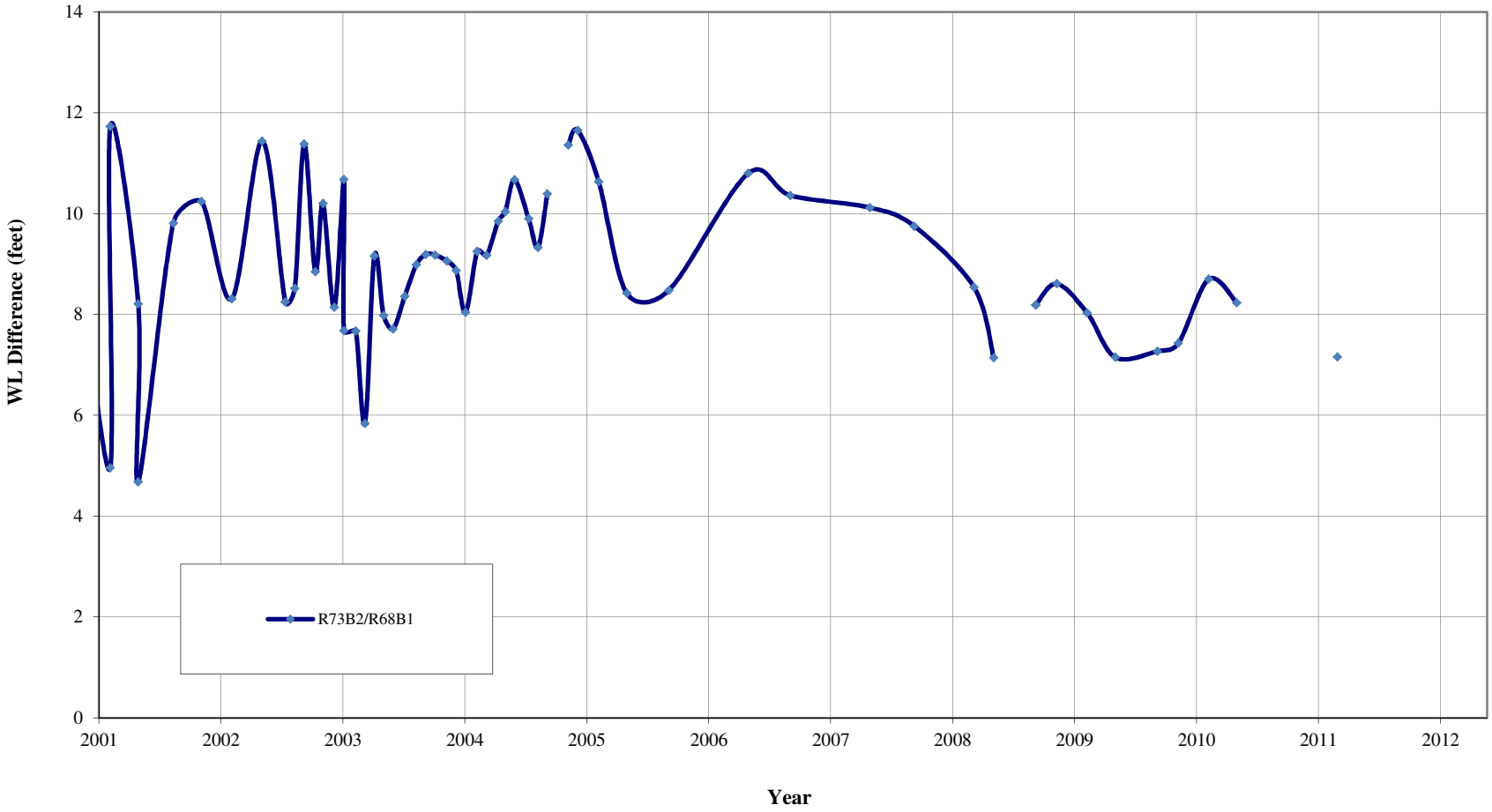
Figure 20
Water Elevation Differences Across A/B1 Aquitard
350 Ellis Street Site, Mountain View, California



Note: A positive WL difference indicates an upward gradient.

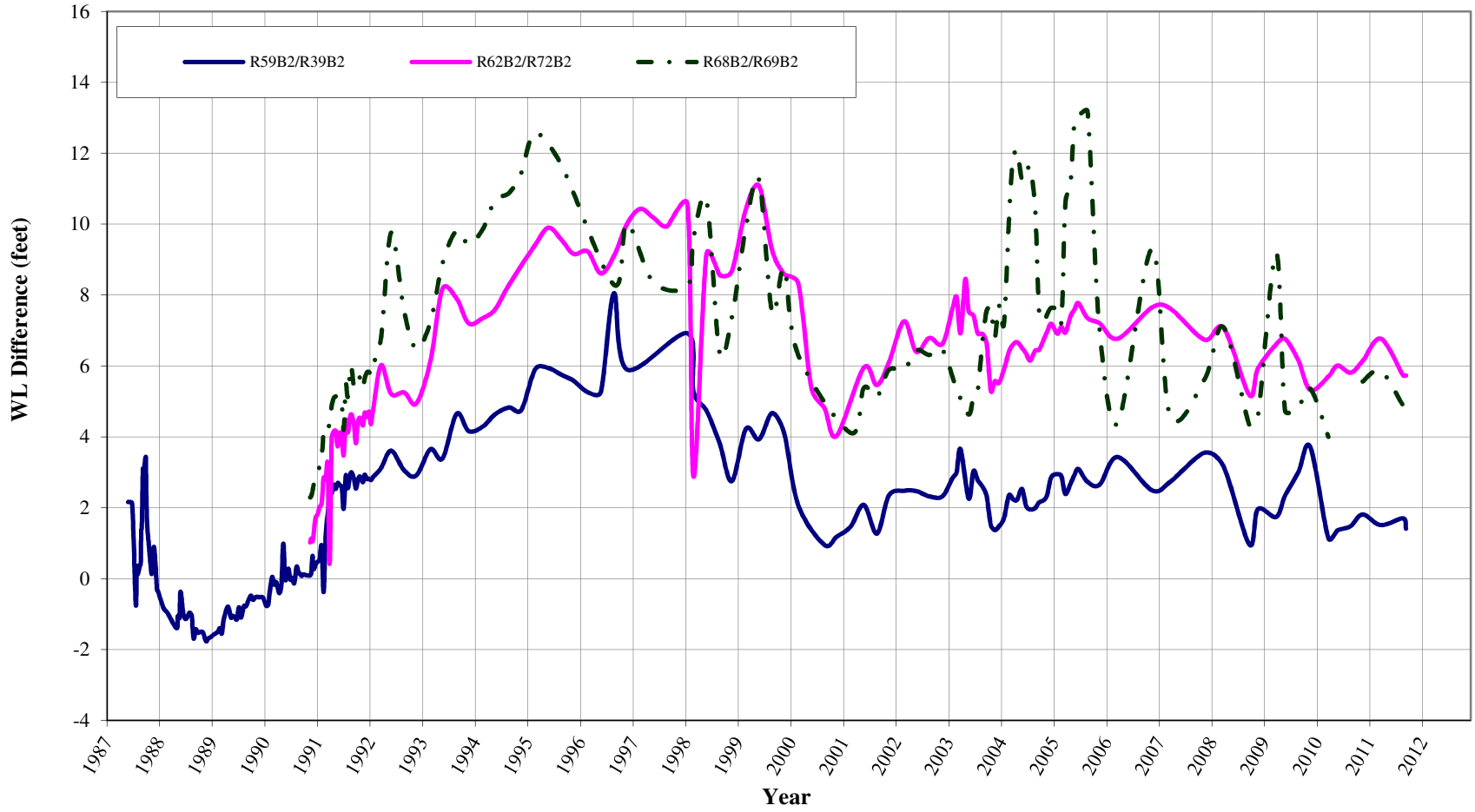
I:\Projects\R\Raytheon\23-016 Raytheon MEW\Annual Rpts\Annual 2011\Figures\Figs 20-22 Vert.Grad.eval.plots3/20/2012

Figure 21
Water Elevation Differences Across B1/B2 Aquitard
350 Ellis Street Site, Mountain View, California

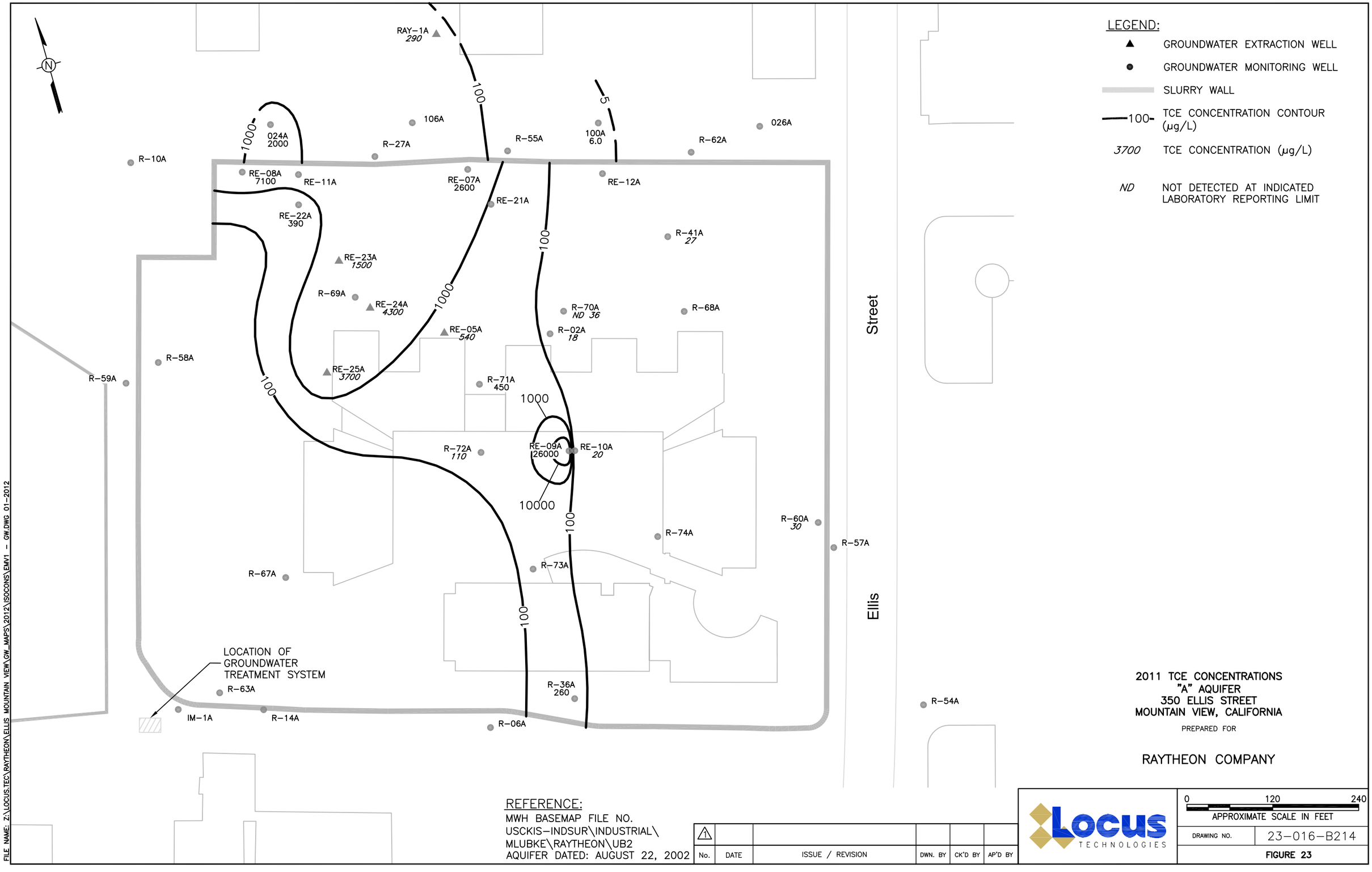


Note: A positive WL difference indicates an upward gradient.

Figure 22
Water Elevation Differences Between the Upper and Lower B2 Aquifers
350 Ellis Street Site, Mountain View, California



Note: A positive WL difference indicates an upward gradient.



2011 TCE CONCENTRATIONS
"A" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

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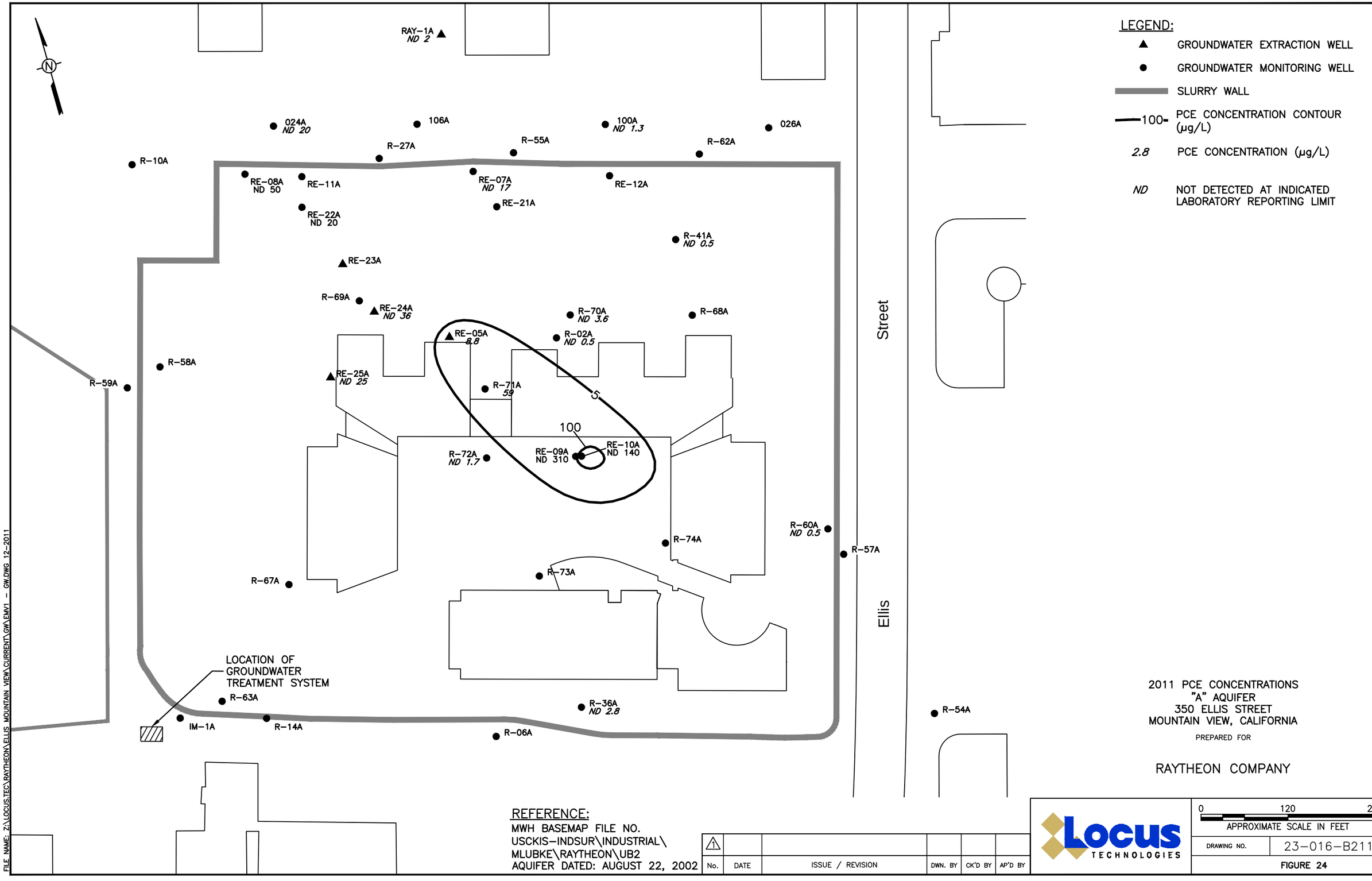
0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B214

FIGURE 23

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\ISOCONS\EMV1 - GW.DWG 01-2012



2011 PCE CONCENTRATIONS
"A" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

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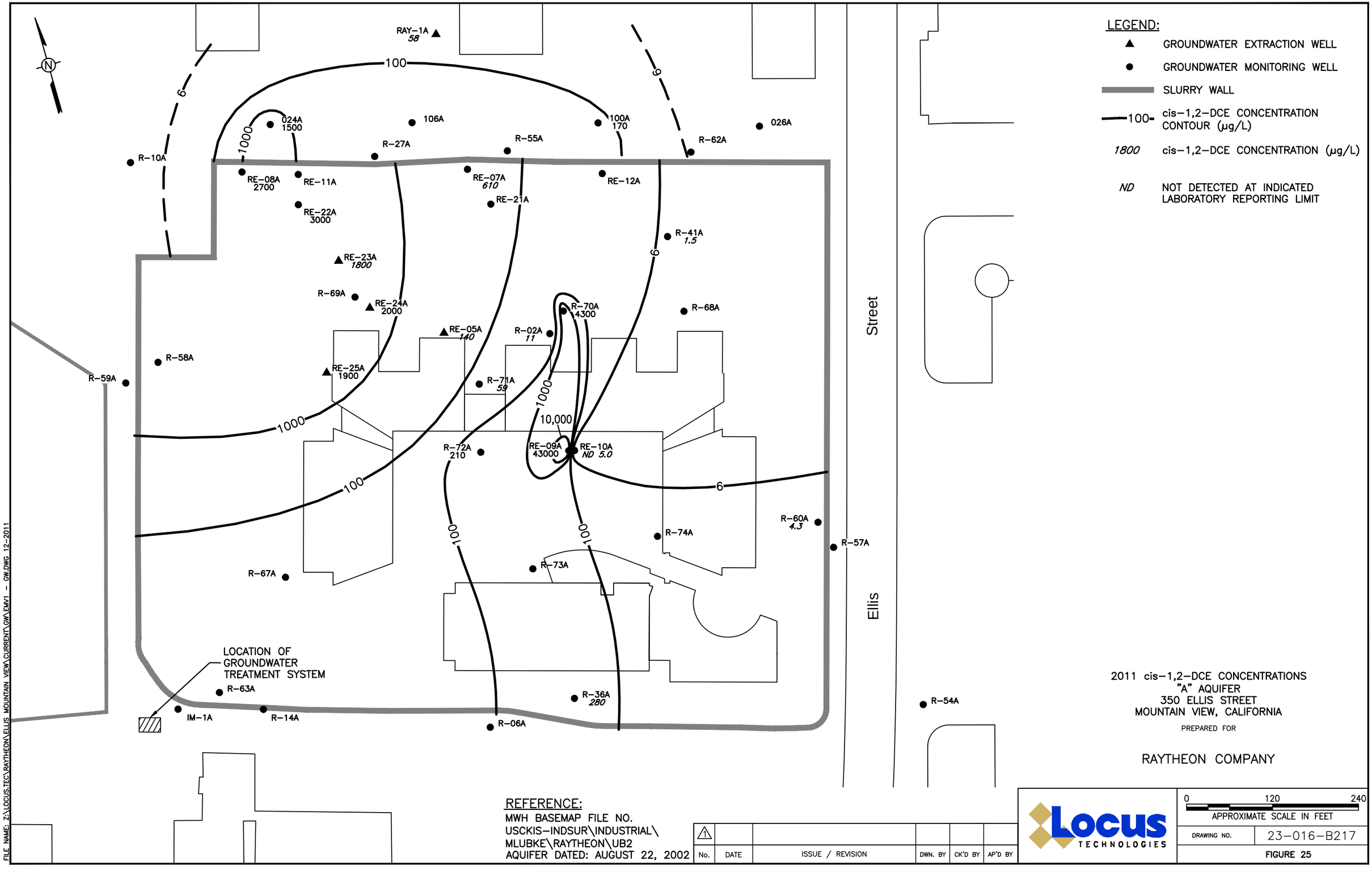
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B211

FIGURE 24

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - GW.DWG 12-2011



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 100- cis-1,2-DCE CONCENTRATION CONTOUR (µg/L)
- *1800* cis-1,2-DCE CONCENTRATION (µg/L)
- *ND* NOT DETECTED AT INDICATED LABORATORY REPORTING LIMIT

2011 cis-1,2-DCE CONCENTRATIONS
"A" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
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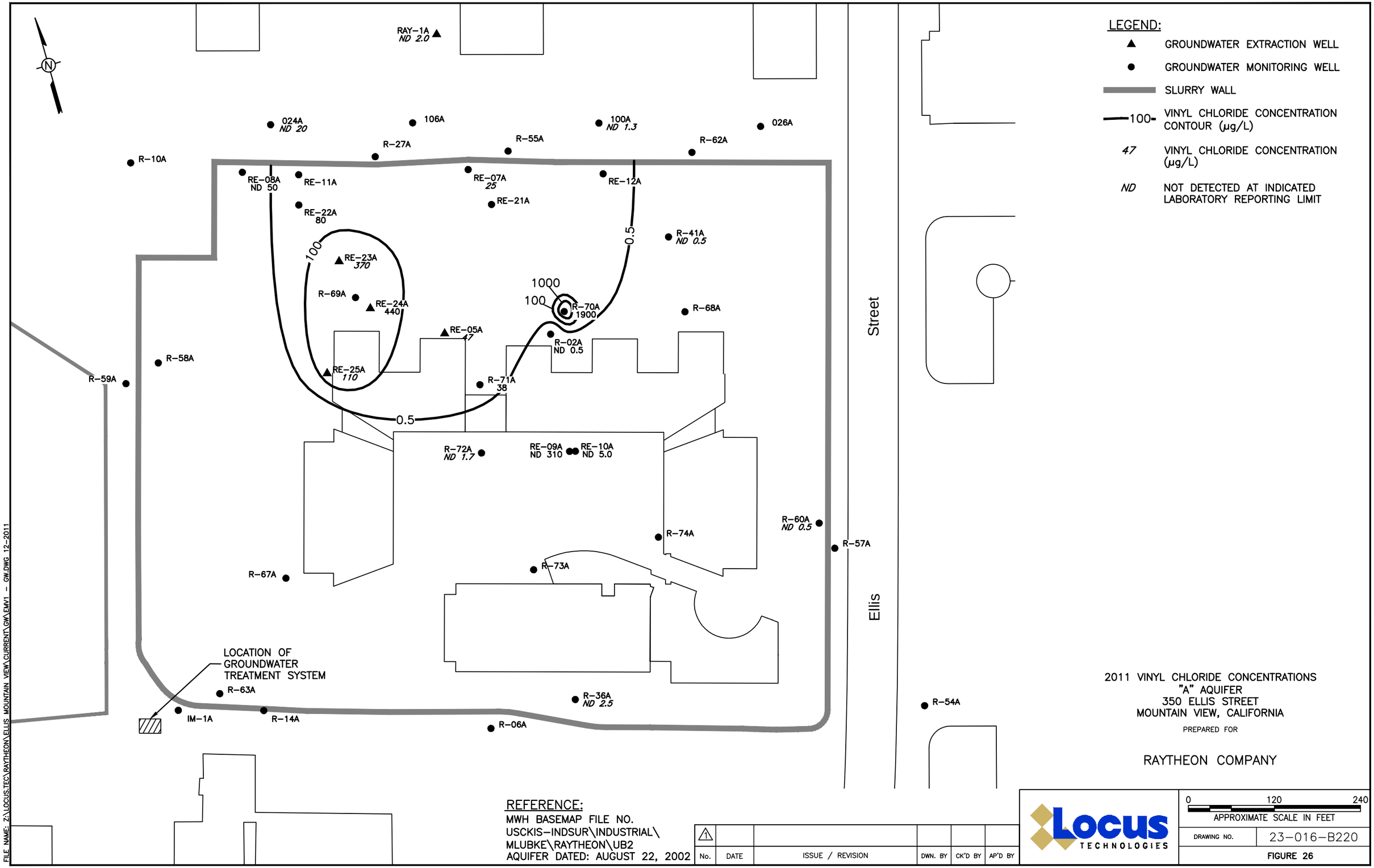
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B217

FIGURE 25

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - GW.DWG 12-2011



REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
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2011 VINYL CHLORIDE CONCENTRATIONS
"A" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

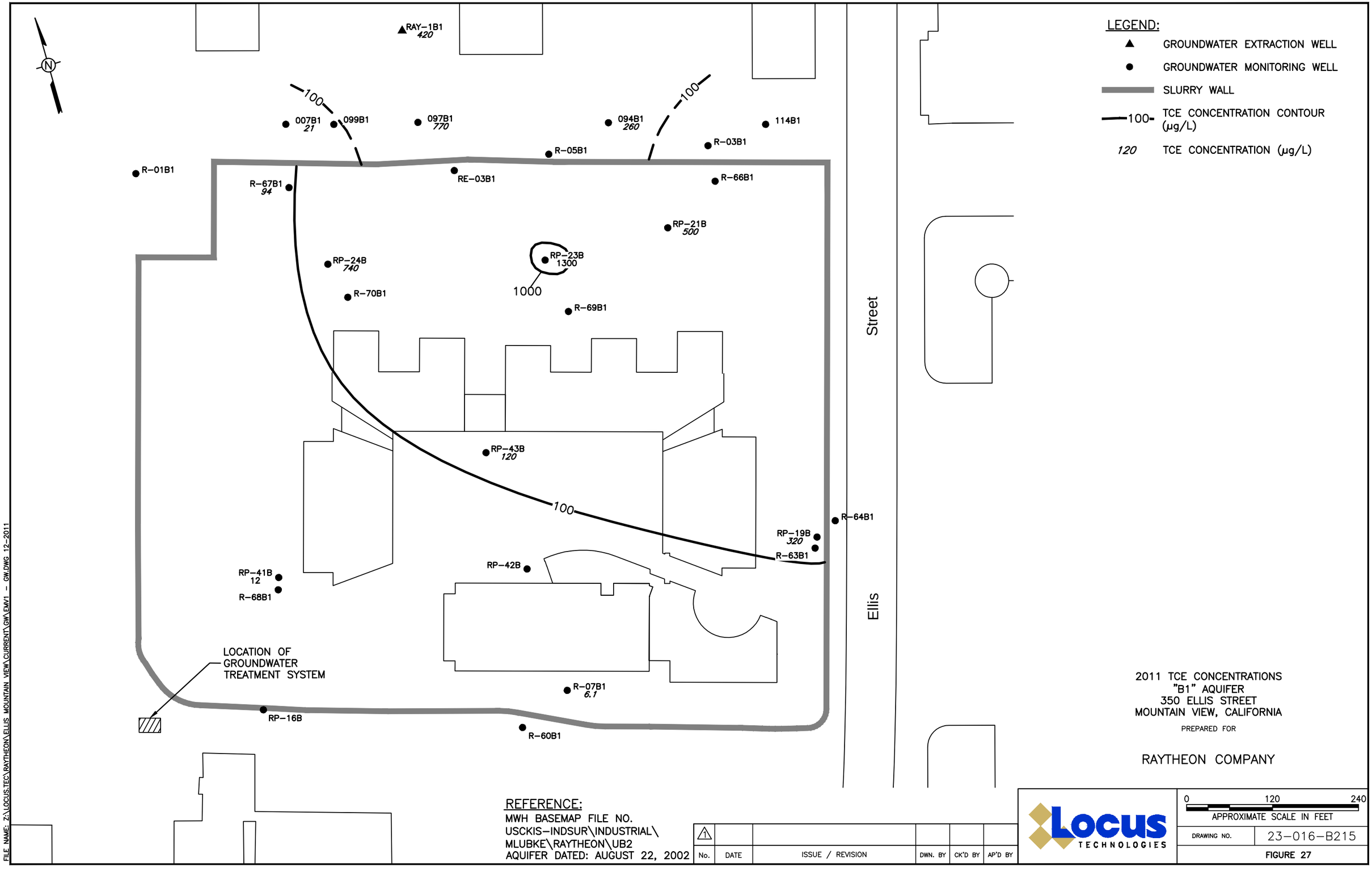
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B220

FIGURE 26

FILE NAME: Z:\LOCUS_TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - GW.DWG 12-2011



2011 TCE CONCENTRATIONS
"B1" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1					

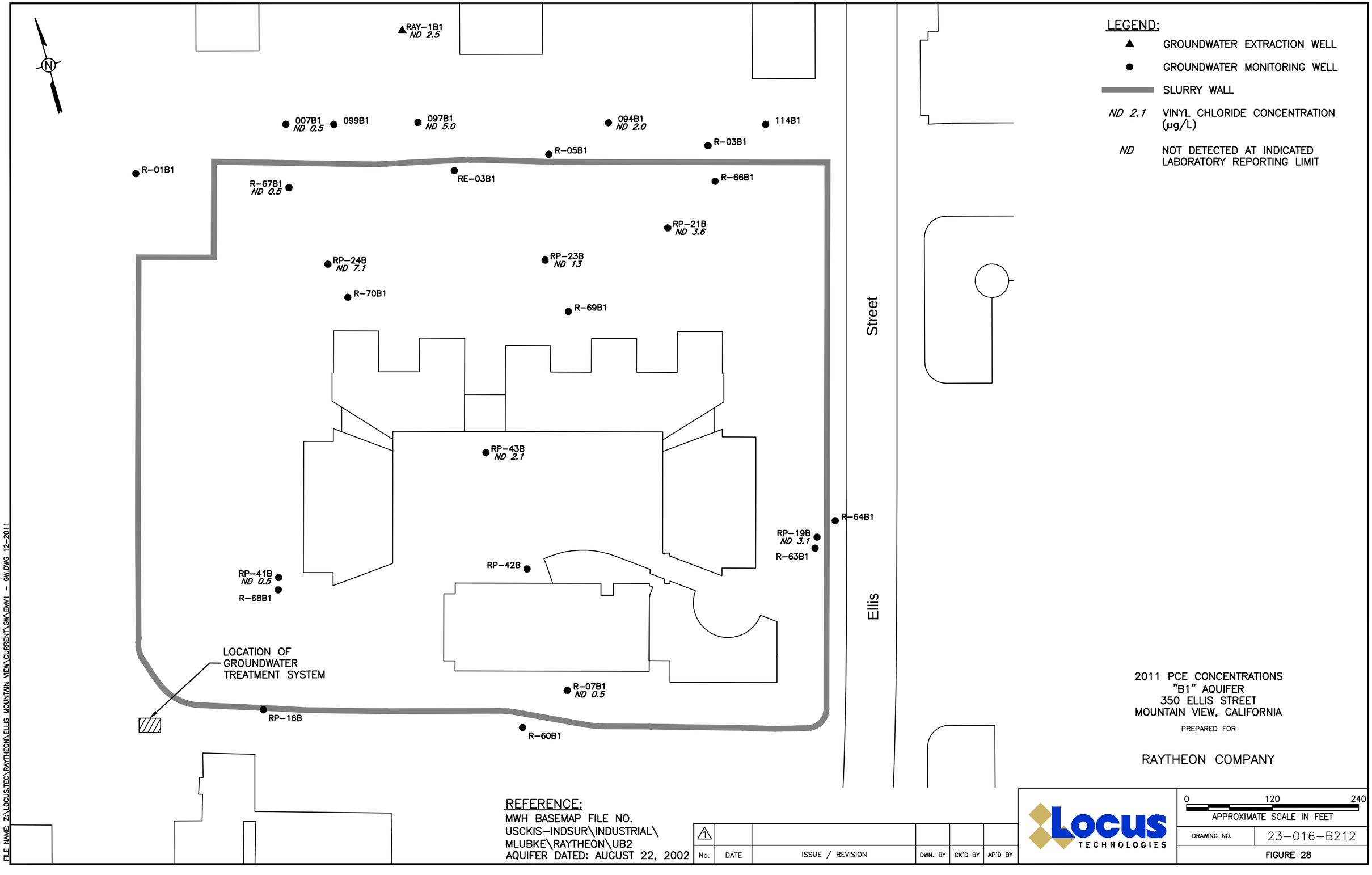
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B215

FIGURE 27

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - GW.DWG 12-2011



2011 PCE CONCENTRATIONS
"B1" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1					

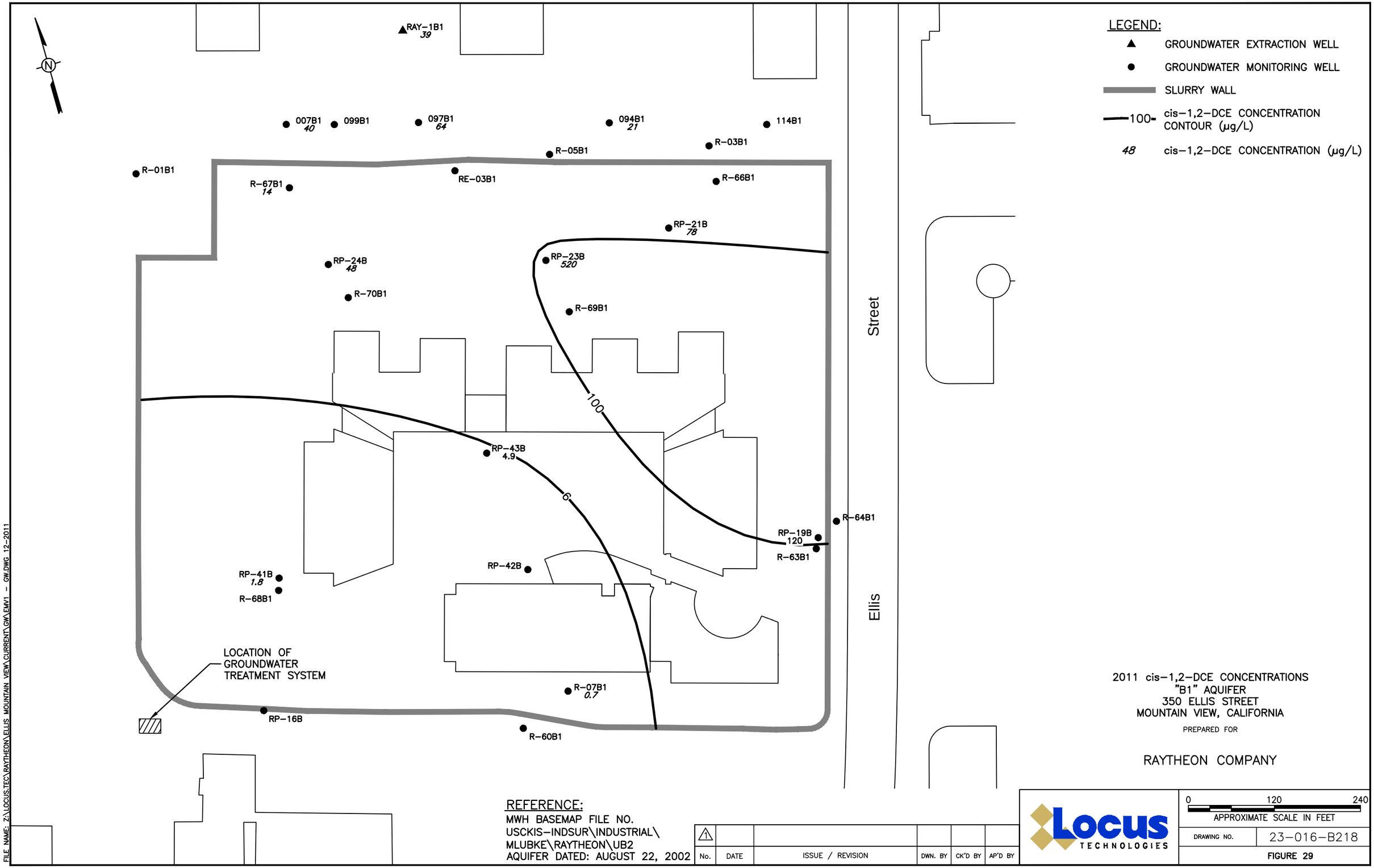
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B212

FIGURE 28

FILE NAME: Z:\LOCUS_TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - GW.DWG 12-2011



2011 cis-1,2-DCE CONCENTRATIONS
"B1" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1					

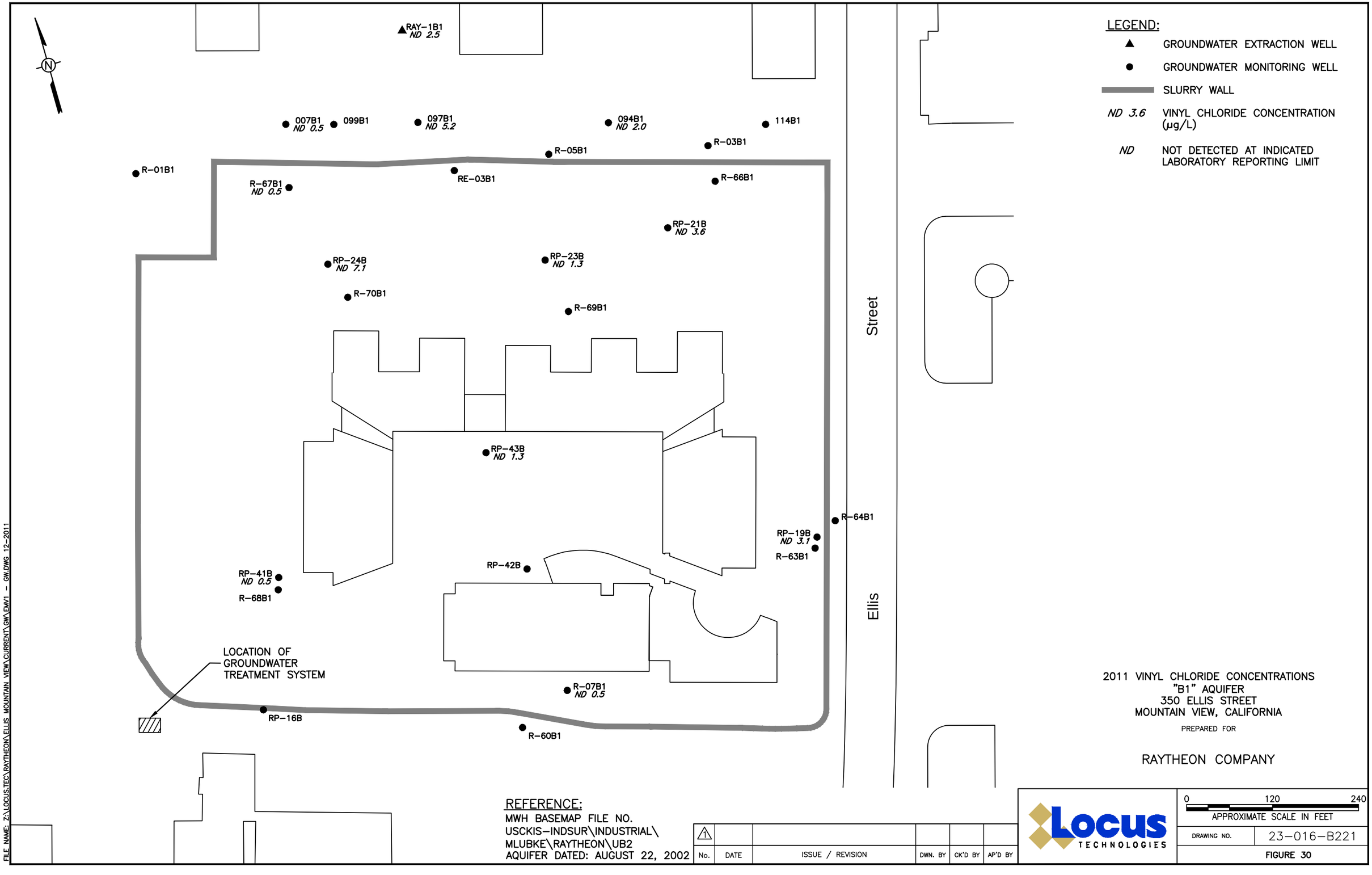
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B218

FIGURE 29

FILE NAME: Z:\LOCUS_TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - GW.DWG 12-2011



2011 VINYL CHLORIDE CONCENTRATIONS
"B1" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1					

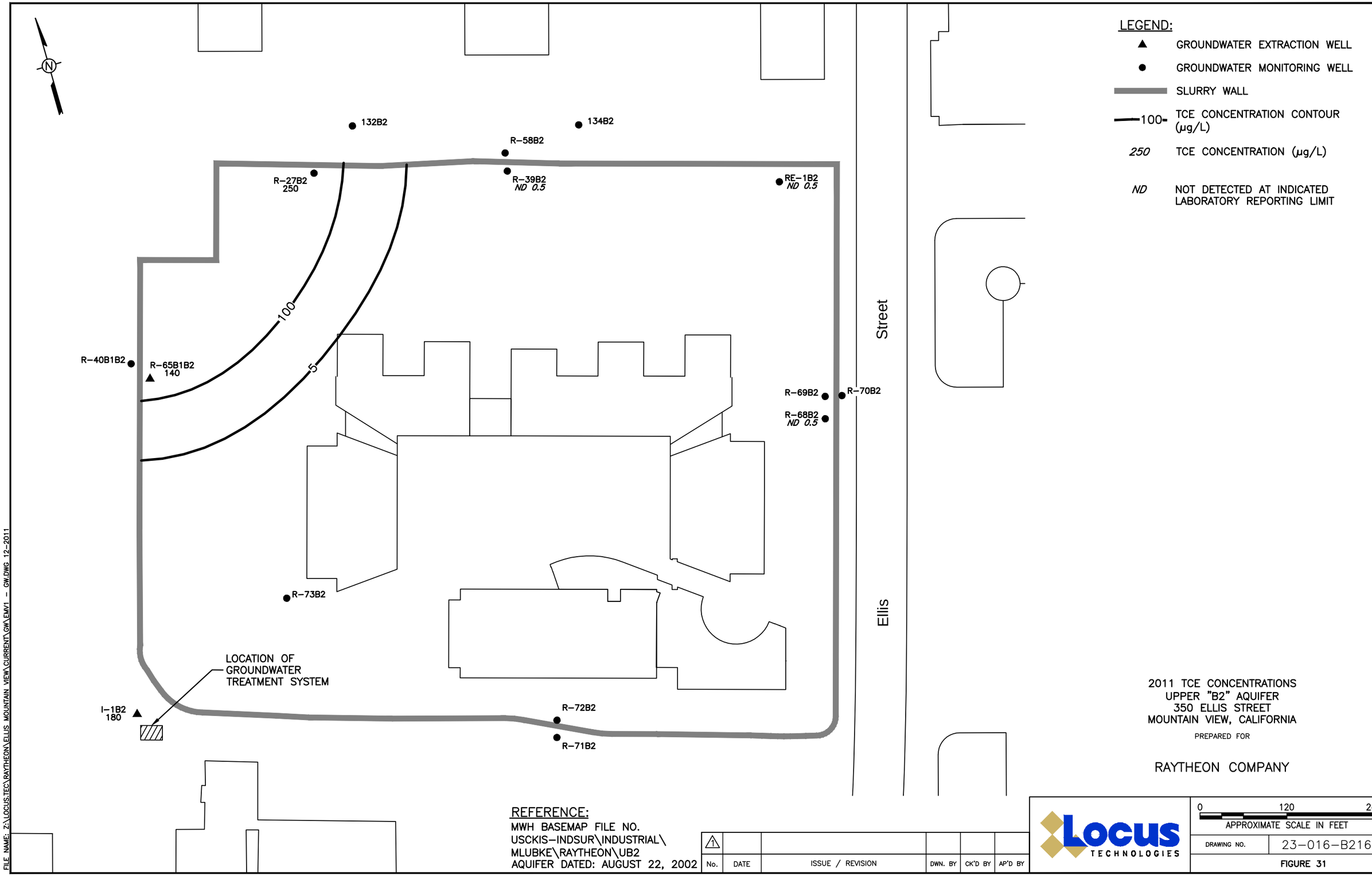
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B221

FIGURE 30

FILE NAME: Z:\LOCUS_TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - GW.DWG 12-2011



2011 TCE CONCENTRATIONS
UPPER "B2" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
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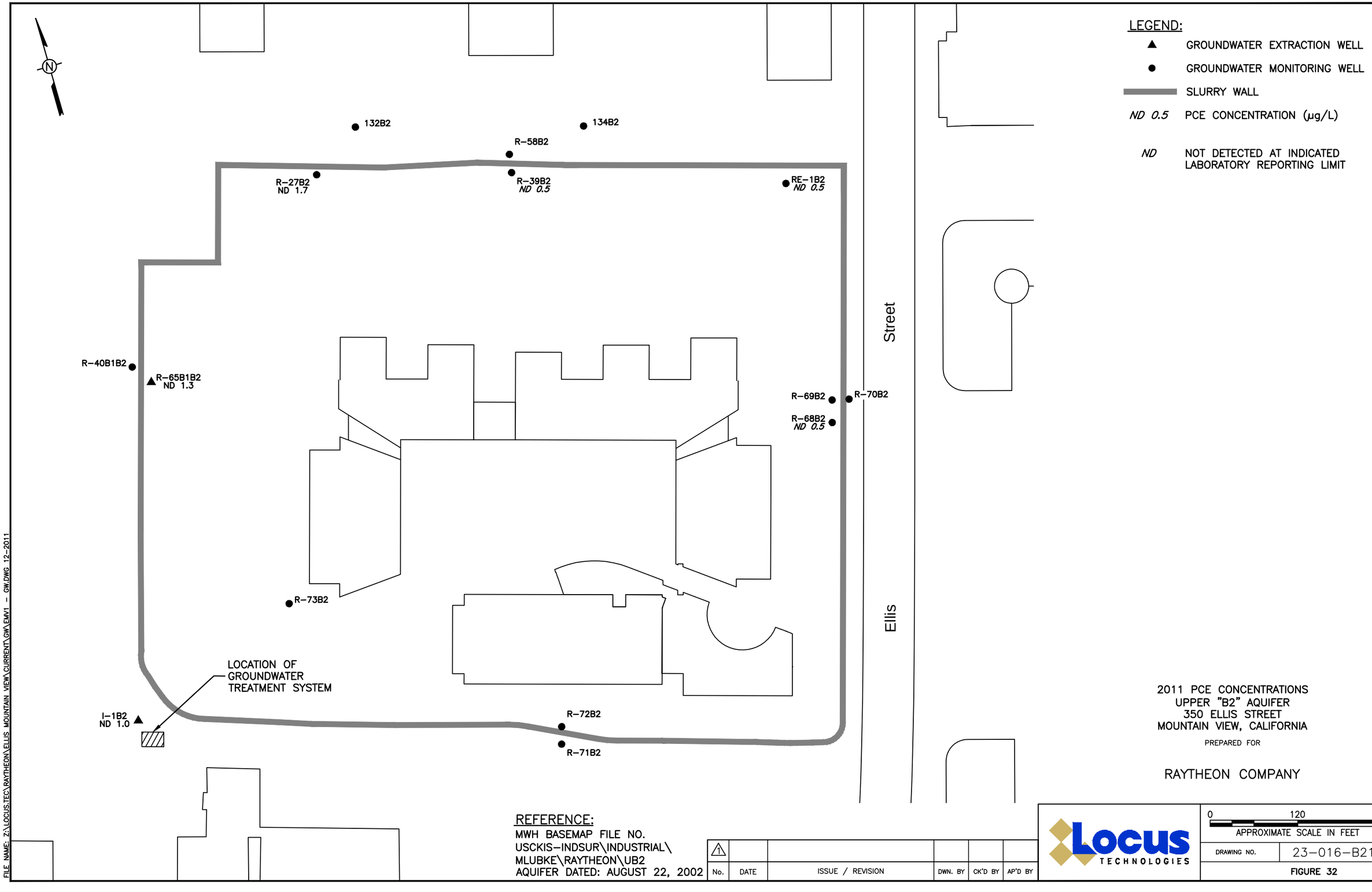
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B216

FIGURE 31

FILE NAME: Z:\LOCUS_TEC\RAYTHEON\ELLIS_MOUNTAIN_VIEW\CURRENT_GW\EMV1 - GW.DWG 12-2011



2011 PCE CONCENTRATIONS
UPPER "B2" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1					

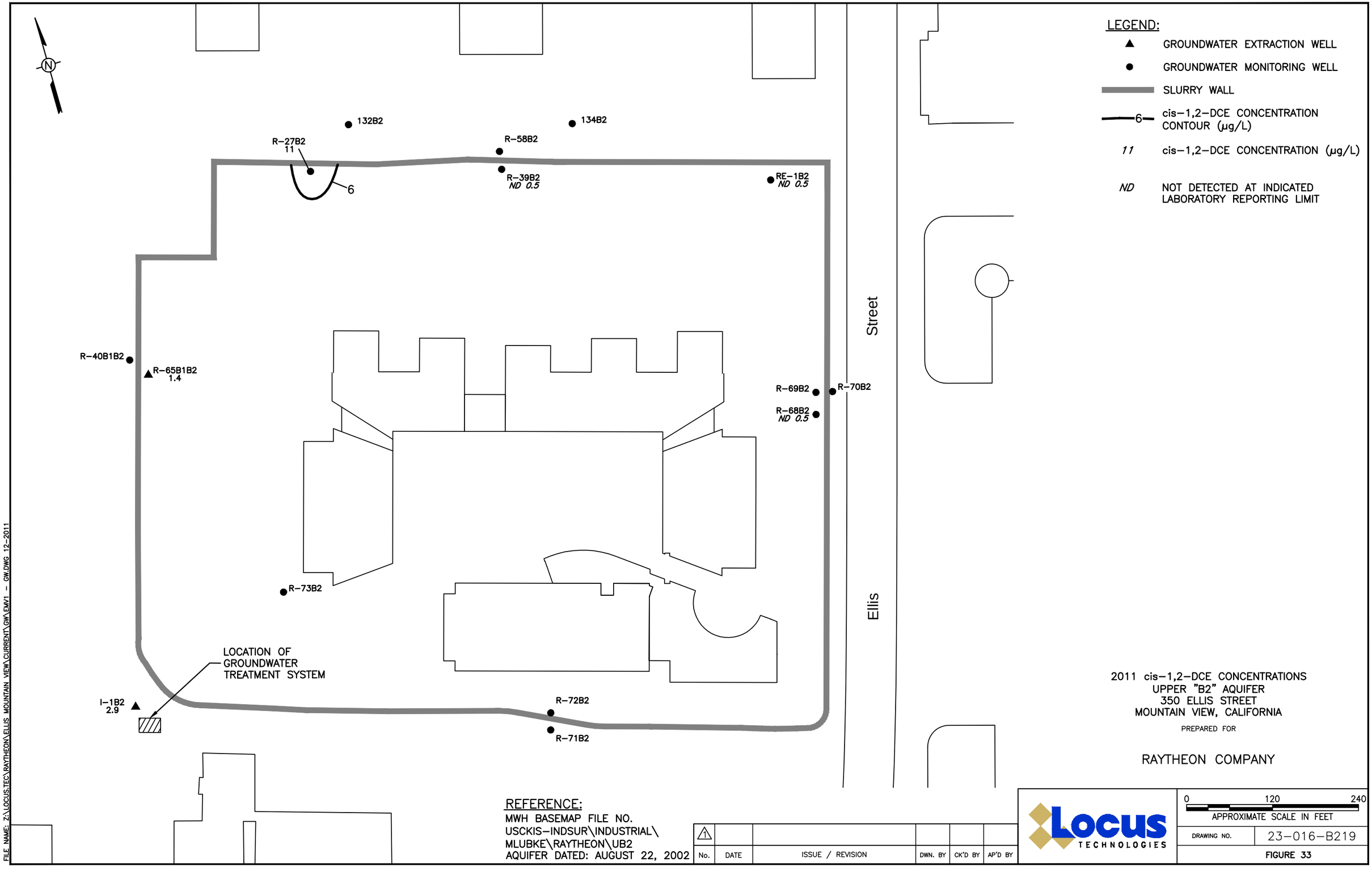
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B213

FIGURE 32

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - GW.DWG 12-2011



2011 cis–1,2–DCE CONCENTRATIONS
UPPER "B2" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS–INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1					

Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23–016–B219

FIGURE 33

FILE NAME: Z:\LOCUS_TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 – GW.DWG 12–2011

LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- *ND 0.5* VINYL CHLORIDE CONCENTRATION (µg/L)
- *ND* NOT DETECTED AT INDICATED LABORATORY REPORTING LIMIT

132B2

134B2

R-58B2

R-27B2
ND 1.7

R-39B2
ND 0.5

RE-1B2
ND 0.5

R-40B1B2

R-65B1B2
ND 1.3

R-69B2

R-70B2

R-68B2
ND 0.5

R-73B2

LOCATION OF GROUNDWATER TREATMENT SYSTEM

I-1B2
2.1

R-72B2

R-71B2

Ellis Street

Ellis

2011 VINYL CHLORIDE CONCENTRATIONS
UPPER "B2" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1					

Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B222

FIGURE 34

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2012\ISOCONS\EMV1 - GW.DWG 01-2012

APPENDIX A

2011 ANNUAL REPORT REMEDY PERFORMANCE CHECKLIST

2011 Annual Report Remedy Performance Checklist

I. GENERAL SITE INFORMATION	
Facility Name: *Raytheon Mountain View*	
Facility Address, City, State: 350 Ellis Street, Mountain View, California	
Checklist completion date: March 20, 2012	EPA Site ID: CAD09205097
Site Lead: ☐ Fund ☐ PRP ☐ State ☐ State Enforcement ☐ Federal Facility ■ Other, specify: U.S. EPA, Region IX	
Site Remedy Components (Include Other Reference Documents for More Information, as appropriate): Groundwater pump-and-treat system; Groundwater containment; Vertical barrier walls (slurry wall is 100 feet deep and extends into the B2-aquifer)	

II. CONTACTS

List important personnel associated with the Site: Name, title, phone number, e-mail address:

PRP / Facility Representative:

Gregory Taylor, Raytheon Company
Environmental Manager
(310) 647-2495
gstaylor@raytheon.com

PRP Contractor/ Consultant:

Elie Haddad, Haley & Aldrich
Vice President
(408) 453-8703
ehaddad@haleyaldrich.com

J. Wesley Hawthorne, Locus Technologies
Vice President
(415) 663-4702
hawthornej@locustec.com

O&M Contractor:

J. Wesley Hawthorne, Locus Technologies
Vice President
(415) 663-4702
hawthornej@locustec.com

Other:

2011 Annual Report Remedy Performance Checklist

III. O&M COSTS (OPTIONAL) - CONFIDENTIAL

Total O&M costs include (1) report preparation for agencies (RWQCB, EPA), (2) sampling, analysis, data review (groundwater level monitoring, water quality sampling), (3) groundwater treatment system O&M (routine tasks for operations and maintenance of the treatment system), and (4) utilities & fees.

What is your annual O&M cost total for the reporting year?
Breakout your annual O&M cost total into the following categories (use either dollars or %):

- Analytical (e.g., lab costs): _____
- Labor (e.g., site maintenance, sampling): _____
- Materials (e.g., treatment chemicals): _____
- Oversight (e.g., project management): _____
- Utilities (e.g., electric, gas, phone, water): _____
- Reporting (e.g., NPDES, progress): _____
- Other (e.g., capital improvements): _____

Describe unanticipated/unusually high or low O&M costs (go to section [fill in] to recommend optimization methods):

IV. ON-SITE DOCUMENTS AND RECORDS (Check all that apply)

■ O&M Manual ☐ O&M Maintenance Logs ■ O&M As-built drawings – *Part of O&M Manual*
☐ O&M reports
☐ Daily access/Security logs
■ Site-Specific Health & Safety Plan ■ Contingency/Emergency Response Plan
☐ O&M/OSHA Training Records ☐ Settlement Monument Records
☐ Gas Generation Records ■ Groundwater monitoring records ☐ Leachate extraction records
■ Discharge Compliance Records
■ Air discharge permit ■ Effluent discharge permit ☐ Waste disposal, POTW permit

Are these documents currently readily available? ■ Yes ☐ No If no, where are records kept?

O&M manual, Site H&S plan, discharge records and permits are kept onsite; O&M reports, maintenance logs and training records are available at Locus Technologies' office in Mountain View.

V. INSTITUTIONAL CONTROLS (as applicable)

List institutional controls called for (and from what enforcement document):

Status of their implementation:

Where are the ICs documented and/or reported?
Governmental controls (zoning, local permits, state codes);
Environmental agreements with property owner (proprietary controls);
Informational devices (fact sheets, public meetings)

ICs are being properly implemented and enforced? ■ Yes ☐ No, elaborate below
ICs are adequate for site protection? ■ Yes ☐ No, elaborate below

Additional remarks regarding ICs:

2011 Annual Report Remedy Performance Checklist

VI. SIGNIFICANT SITE EVENTS
Check all Significant Site events Since the Last Checklist that Affects or May Affect Remedy Performance

☐ Community Issues
☐ Vandalism
☐ Maintenance Issues
☐ Other:

Please elaborate on Significant Site Events:

VII. REDEVELOPMENT

Is redevelopment on property planned? ☐ Yes ■ No

If yes, what is planned? Please describe below.

Is redevelopment plan complete ☐ Yes, date:_____; ☐ No ? ■ Not Applicable

Redevelopment proposal in progress? ☐ Yes, elaborate below
■ No; If no, is a proposal anticipated? ☐ Yes ■ No

☐ Is the redevelopment proposal compatible with remedy performance? ☐ Yes ☐ No

Elaborate on redevelopment proposal and how it affects remedy performance:

VIII. GROUNDWATER REMEDY (reference isoconcentration, capture zone maps, trend analysis, and other documentation to support analysis)

Groundwater Quality Data

List the types of data that are available:	What is the source report?
Annual site-specific monitoring well data	Annual Report, Table 10
TCE isoconcentration maps	Annual Report, Figures 23, 27, 31
PCE isoconcentration maps	Annual Report, Figures 24, 28, 32
cis-1,2-DCE isoconcentration maps	Annual Report, Figures 25, 29, 33
Vinyl Chloride isoconcentration maps	Annual Report, Figures 26, 30, 34

■ Contaminant trend(s) tracked during O&M (i.e., temporal analysis of groundwater contaminant trends).
☐ Groundwater data tracked with software for temporal analyses.
☐ Reviewed MNA parameters to ensure health of substrate (e.g., DO, pH, temperature), if appropriate?

Groundwater Pump & Treat Extraction Well and Treatment System Data

List the types of data that are available:	What is the source report?
Monthly GWTS data, influent and effluent	NPDES reports and Annual report, Table 2

■ The system is functioning adequately.
■ The system has been shut down for significant periods of time in the past year. Please elaborate below.

During 2011, there was one event which caused unplanned down-time for the groundwater treatment system for approximately seven days from July 28 to August 5. The analytical results from July 19, 2011 NPDES sampling event indicated that vinyl chloride was detected in the effluent at concentrations exceeding NPDES permit limits. A full description of this event is provided in Section **Error! Reference source not found.** below. Other than this event, and the scheduled carbon change-outs, system maintenance, and unexpected shutdowns and associated well

and/or system repairs, the treatment system operated continuously during 2011.

Discharge Data

List the types of data that are available:	What is the source report?
Monthly data on TS effluent	NPDES reports and Annual report, Table 2

■ The system is in compliance with discharge permits.

There was one noncompliance event occurred during the third quarter 2011. The analytical results from July 19, 2011 NPDES sampling event indicated that vinyl chloride was detected in the effluent at concentrations exceeding NPDES permit limits. The groundwater treatment system was shutdown for seven days from July 28 to August 5, 2011. A full description of this incident is included in the 2011 Annual Report Section 4.2 for this facility. All other results during 2011 were within the NPDES permit requirements.

Slurry Wall Data

List the types of data that are available:	What is the source report?
Quarterly WL monitoring data from monitoring well pairs	Annual Report, Tables 8 and 9
Capture zone maps	Annual Report, Figures 7 – 10

Is slurry wall operating as designed? ■ Yes ☐ No

If not, what is being done to correct the situation?

Elaborate on technical data and/or other comments

Since 2000, when the 350 Ellis Street property was developed, an outward gradient has been observed along the northern slurry wall. However, these gradients do not have a significant impact on remediation because: 1) Raytheon installed two recovery wells in the "A" and "B1" aquifers immediately downgradient of the slurry wall; the wells provide an adequate capture of the area immediately downgradient of the slurry wall, and 2) the slurry wall is a low-permeability wall that allows only minimal chemical migration across its walls, even if the gradient is outward. That combined with the fact that chemicals tend to take the easier pathway and migrate towards recovery wells within the wall enclosure, rather than across the low-permeability wall, would minimize outward chemical migration. Therefore, the slurry wall and the pumping activities within its enclosure physically contain chemicals. If a small flux of chemicals migrates through the slurry wall, it is captured immediately downgradient of the wall.

IX. AIR MONITORING/VAPOR INTRUSION PATHWAY EVALUATION (Include in Annual Progress Report and reference document)

Walkthroughs/Surveys: Quarterly an inspection was conducted of the air purification units at the property. Carbon canisters were replaced in all units (rooms A106, A112, B104, and C110)

Air testing/monitoring conducted: None required in 2011.

Summary of Results:

Problems Encountered: No problems were encountered.

Recommendations/Next Steps: None.

Schedule: Currently, no further sampling is scheduled.

X. REMEDY PERFORMANCE ASSESSMENT

A. Groundwater Remedies

What are the remedial goals for groundwater? ■ Plume containment (prevent plume migration); ■ Plume restoration (attain ROD-specific cleanup levels in aquifer); ☐ Other goals, please explain:

Have you done a trend analysis? ■ Yes ☐ No; If Yes, what does it show?

Table 13 of the Annual Report provides a comparison of the average TCE concentration for each aquifer at different time periods. The concentrations have decreased significantly, but are approaching asymptotic levels.

(Is it inconclusive due to inadequate data? Are the concentrations increasing or decreasing?) Explain and provide source document reference

If plume containment is a remedial goal, check all that apply:
■ Plume migration is under control (explain basis below)
☐ Plume migration is not under control (explain basis below)
☐ Insufficient data to determine plume stability (explain below)
(Include attachments that substantiate your answers, e.g., reference plume, trend analysis, and capture zone maps in source document)

Elaborate on basis for determining that plume containment goal is being met or not being met:

The plume is not expanding and capture is adequate.

If plume restoration is a cleanup objective, check all that apply:
■ Progress is being made toward reaching cleanup levels (explain basis below)
☐ Progress is not being made toward reaching cleanup levels (explain basis below)
☐ Insufficient data to determine progress toward restoration goal (explain below)

Elaborate on basis for determining progress or lack of progress toward restoration goal:

As explained above, concentrations have decreased significantly since remedial measures were begun. Concentrations are approaching asymptotic levels, indicating that using the current remedy reaching MCLs will require many decades.

B. Vertical Migration

Have you done an assessment of vertical gradients? ■ Yes ☐ No; If Yes, what does it show? (Is it inconclusive due to inadequate data? Are the concentrations increasing or decreasing? Explain and provide source document reference.

Fifteen well pairs are used to monitor the vertical gradient direction across the "A/B1" and "B1/B2" Aquitards, and from the lower to upper "B2" aquifer. The differences in water elevations between the "B1" and "A" Aquifers are shown in Table 8 and on Figure 19 of the Annual Report. Upward gradients were consistently observed in eight of the ten well pairs that are used to monitor the "A/B1" Aquitard gradient directions. For each event, the gradient across the "B1/B2" Aquitard and between the Upper "B2" and Lower "B2" Aquifers were consistently upward. Onsite, the "A" Aquifer and "B1" Aquifer are entirely enclosed within the slurry wall, and the upward gradients across the "B1/B2" Aquitard (Table 9, Figure 21) and between the upper "B2" and lower "B2" Aquifers (Table 9, Figure 22) indicate that groundwater (and chemicals) will flow upward from the "B2" Aquifer into the "B1"

Aquifer, and not downwards from the "B1" Aquifer to the "B2" Aquifer. Therefore, the chemicals present in the "A" and "B1" Aquifers are contained onsite.

C. Source Control Remedies

What are the remedial goals for source control?

Elaborate on basis for determining progress or lack of progress toward these goals:

XI. PROJECTIONS

Administrative Issues

Dates of next monitoring and sampling events for next annual reporting period:
March 15 and September 20, 2012 – Semiannual water elevation measurement events.
May 24 and August 23, 2012 – Water elevation measurement events for the slurry wall and vertical well pairs.

October / November 2012– Annual groundwater monitoring for site-specific wells.

A. Groundwater Remedies - Projections for the upcoming year and long-term (Check all that apply)

Remedy Projections for **the upcoming year (2012)**
■ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in the number and/or types of analytes being analyzed. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:
☐ Other modification(s) anticipated:_____ Elaborate below. Target date:

Elaborate on Remedy Projections:

Remedy Projections for **the long-term** (Check all that apply)
■ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in the number and/or types of analytes being analyzed. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:

2011 Annual Report Remedy Performance Checklist

☐ Other modification(s) anticipated:_____ Elaborate below. Target date:

Elaborate on Remedy Projections:

B. Projections – Slurry Walls (Check all that apply)

Remedy Projections for **the upcoming year**
■ No significant changes projected.
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Other modification(s) anticipated:_____ Elaborate below. Target date:

Elaborate on Remedy Projections:

Remedy Projections for **the long-term**
■ No significant changes projected.
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Other modification(s) anticipated:_____ Elaborate below. Target date:

Elaborate on Remedy Projections:

C. Projections – Other Remedial Options Being Reviewed to Enhance Cleanup

Progress implementing recommendations from last report or Five-Year Review
Has optimization study been implemented or scheduled? ■ Yes; ☐ No; If Yes, please elaborate.

An optimization report was prepared and submitted to EPA in August 2008.

XII. ADMINISTRATIVE ISSUES
Check all that apply:

☐ Explanation of Significant Differences in progress ☐ ROD Amendment in progress
☐ Site in operational and functional ("shake down") period;
☐ Notice of Intent to Delete in progress ☐ Partial site deletion in progress ☐ TI Waivers
☐ Other administrative issues:

Date of Next EPA Five-Year Review: September 30, 2014

XII. RECOMMENDATIONS

Raytheon is currently working with EPA as part of the Groundwater Feasibility Study Workgroup.
Recommendations for this site will be made following the completion of the current feasibility study process.

APPENDIX B

RAY-1A PUMPING RATES AND SELECTED CAPTURE ZONE EVALUATIONS

TABLE B-1
WATER LEVELS AND PUMPING RATES OF SELECTED WELLS
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	RAY-1A Pumping Rate (GPM)	Groundwater Elevations (ft msl)										
		RAY-1A	24A	26A	100A	106A	R-10A	R-27A	R-55A	R-57A	R-59A	R-62A
3/24/2011	2.1	32.31	NM	NM	NM	NM	38.93	35.06	34.53	43.59	45.33	37.33
4/22/2011	4.1	32.98	34.57	37.78	34.69	33.92	38.26	34.08	33.92	43.45	44.97	37.05
5/6/2011	4.0	33.16	34.89	37.90	35.06	34.21	38.55	34.45	34.26	43.53	45.15	37.20
5/13/2011	4.0	32.93	34.57	37.76	34.63	33.92	38.31	34.05	33.89	43.46	44.99	37.05
5/20/2011	4.0	32.84	34.54	37.74	34.54	33.85	38.21	34.05	33.85	43.44	44.97	36.99
5/27/2011	4.0	32.87	34.44	37.74	34.48	33.77	38.09	33.82	33.73	43.33	44.88	36.99
6/3/2011	3.9	32.81	34.36	37.68	34.37	33.68	38.10	33.74	33.66	43.43	44.87	36.94
6/10/2011	5.8	32.67	34.46	37.75	34.52	33.76	38.14	33.86	33.75	43.50	44.91	36.98
6/17/2011	NM	NM	34.41	37.65	34.50	33.73	38.06	33.76	33.70	43.44	44.90	36.95
6/24/2011	5.9	33.28	34.39	37.70	34.54	33.75	38.03	33.76	33.71	43.41	44.86	37.00
7/1/2011	4.3	32.13	34.42	37.72	34.56	33.77	38.13	33.81	33.74	43.45	44.89	37.01
7/8/2011	4.9	32.38	34.34	37.70	34.53	33.69	38.01	34.42	33.68	43.41	44.84	37.01
8/12/2011	7.6	31.51	34.15	37.54	34.32	33.44	37.70	33.70	33.46	43.21	44.72	36.84
8/19/2011	8.0	31.43	34.03	37.47	34.18	33.33	37.59	33.51	33.32	40.19	44.70	36.73
8/26/2011	9.2	31.01	33.98	37.46	34.13	33.26	37.51	33.44	33.24	43.14	44.69	36.72
9/2/2011	9.2	30.98	33.92	37.40	34.03	33.19	37.46	33.38	33.18	42.11	44.66	36.68
9/15/2011	9.3	30.89	NM	NM	NM	NM	37.39	33.30	33.14	43.06	44.59	36.63
10/7/2011	10.0	30.44	33.81	37.42	34.03	33.09	37.36	33.25	33.10	43.07	44.65	36.67
11/4/2011	10.8	30.11	30.46	37.20	33.63	32.85	37.11	33.00	32.83	42.88	44.49	NM
11/11/2011	11.1	30.09	33.47	37.16	33.62	32.89	37.11	32.99	32.83	42.93	44.48	36.47
12/2/2011	11.7	29.75	30.74	37.14	33.60	32.77	36.96	32.86	32.74	42.83	44.45	36.39

Notes:
GPM - gallons per minute ft msl - feet above mean sea level NM - Not Measured

TABLE B-2
SELECTED RAY-1A CAPTURE ZONE WIDTH CALCULATIONS
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	Extraction Rate Q (gpm)	Transmissivity [1] (gpd/ft)	Hydraulic Gradient [2]	Distance from well to Capture Zone [3] X_o(ft)	Width of Capture Zone [4] Y_{well} (ft)
7/8/2011	4.9	3940	0.015	19	30
8/12/2011	7.6	3940	0.016	28	43
10/7/2011	10.0	3940	0.015	39	61
12/2/2011	11.7	3940	0.016	43	67

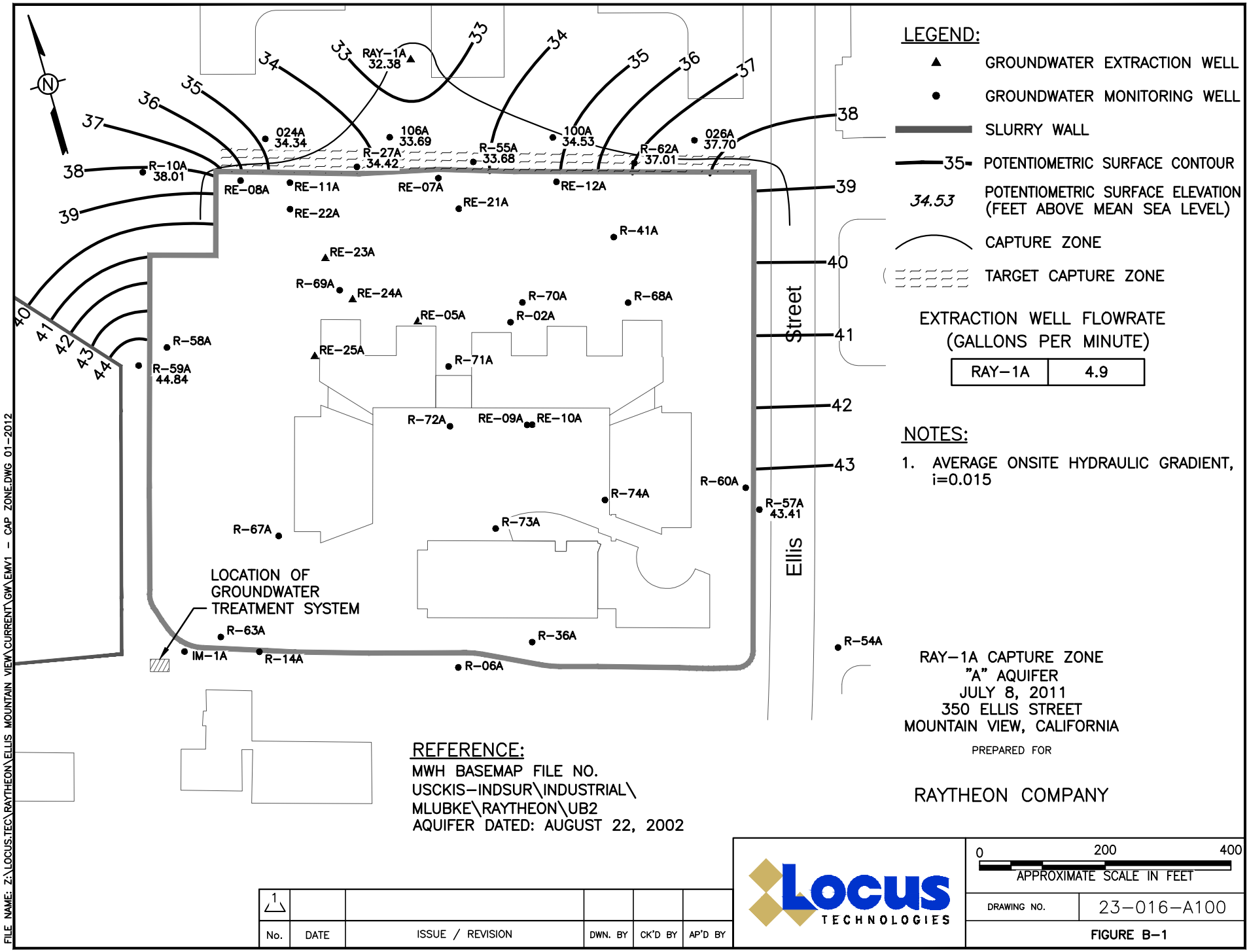
Notes:

1. The transmissivities used in the calculations were those calculated for the MEW aquifers in the 2-year evaluation report. (Note: Transmissivity, T=K*b)
2. The hydraulic gradient is calculated for each groundwater level event.
3. The distance is measured from the well to the downgradient end of the capture zone along the central line of the flow direction (calculated based on January 2008 EPA guidance on capture zone analysis).
4. The calculation is based on January 2008 EPA guidance on capture zone analysis. Y_{well} is the capture zone width at the location of well from the central line of the plume.

TABLE B-3
SELECTED RAY-1A WATER BALANCE RESULTS
FORMER RAYTHEON COMPANY FACILITY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	Upgradient Width of Incoming Groundwater Flux[1] (ft)	Transmissivity [2] (gpd/ft)	Hydraulic Gradient [3]	Estimated Pumping Rate [4] (gpm)	Actual Pumping Rate (gpm)
7/8/2011	80	3940	0.015	4.9	4.9
8/12/2011	135	3230	0.016	7.3	7.6
10/7/2011	165	3940	0.015	10.2	10.0
12/2/2011	210	3230	0.016	11.3	11.7

Notes:
1. The width of the controlled area is determined from the most recent water level contours and capture zone maps.
2. The transmissivities used in the calculations were those calculated for the MEW aquifers in the 2-year evaluation report.(Note: (Transmissivity, T=K*b)
3. The hydraulic gradient is calculated for each groundwater level event.
4. The estimated flow rate is calculated based on January 2008 EPA guidance on capture zone analysis, the estimated flow rate into capture zone is calculated using the equation : Q= K x (b x w) x i x factor . A factor of 1.5 - 2 is the "rule of thumb" value used to account for other contributions to a pumping well such as flux from a river or induced vertical flow from another groundwater unit.



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 35 POTENTIOMETRIC SURFACE CONTOUR
- 34.53 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- CAPTURE ZONE
- TARGET CAPTURE ZONE

EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)

RAY-1A	4.9

NOTES:

1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.015

REFERENCE:

MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\UB2 AQUIFER DATED: AUGUST 22, 2002

RAY-1A CAPTURE ZONE
"A" AQUIFER
JULY 8, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1					

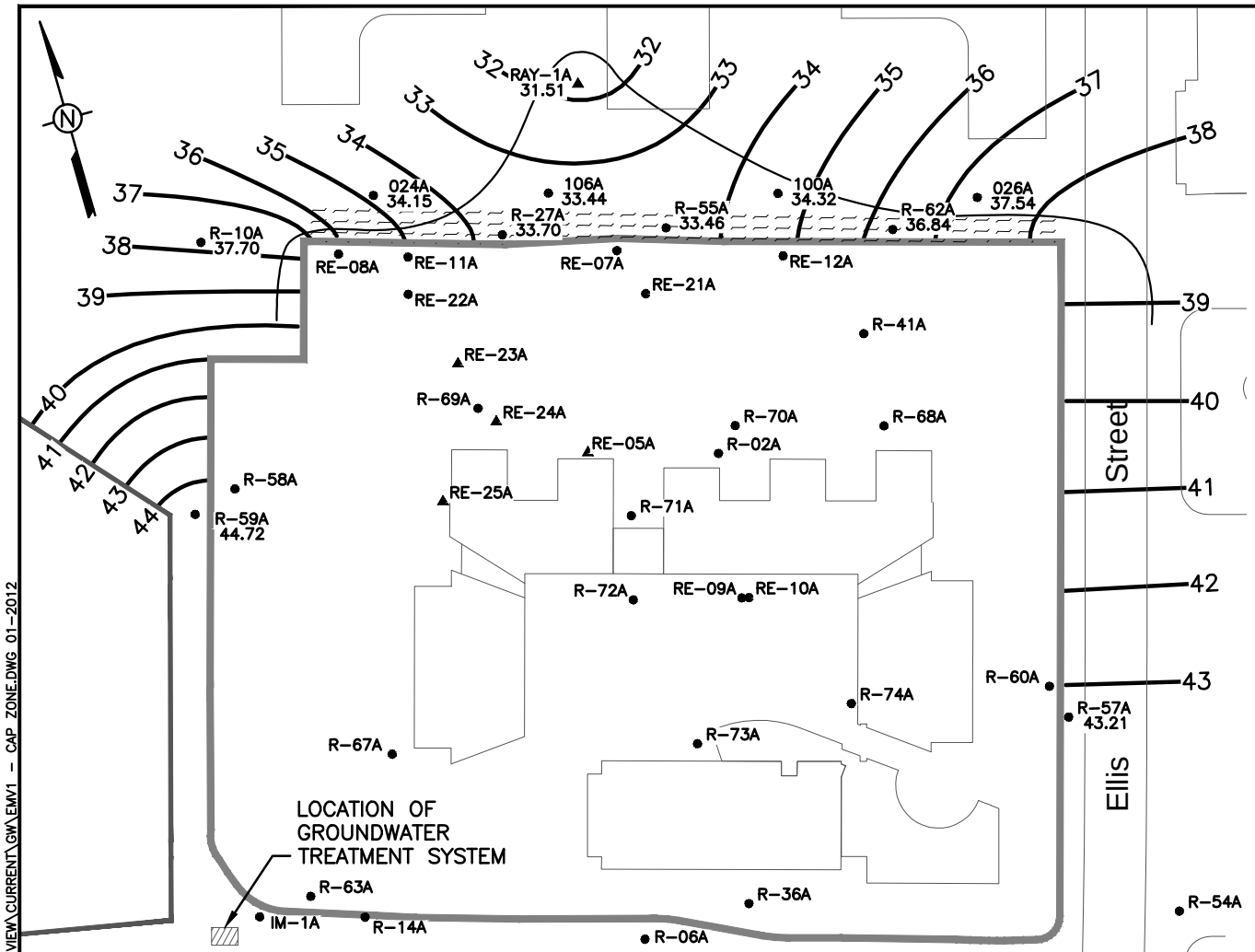
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-A100

FIGURE B-1

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - CAP ZONE.DWG 01-2012



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 38 POTENTIOMETRIC SURFACE CONTOUR
- 34.32 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- CAPTURE ZONE
- TARGET CAPTURE ZONE

EXTRACTION WELL FLOWRATE
(GALLONS PER MINUTE)

RAY-1A	7.6

NOTES:

1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.017

REFERENCE:

MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002

RAY-1A CAPTURE ZONE
"A" AQUIFER
AUGUST 12, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1					

Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-A101

FIGURE B-2

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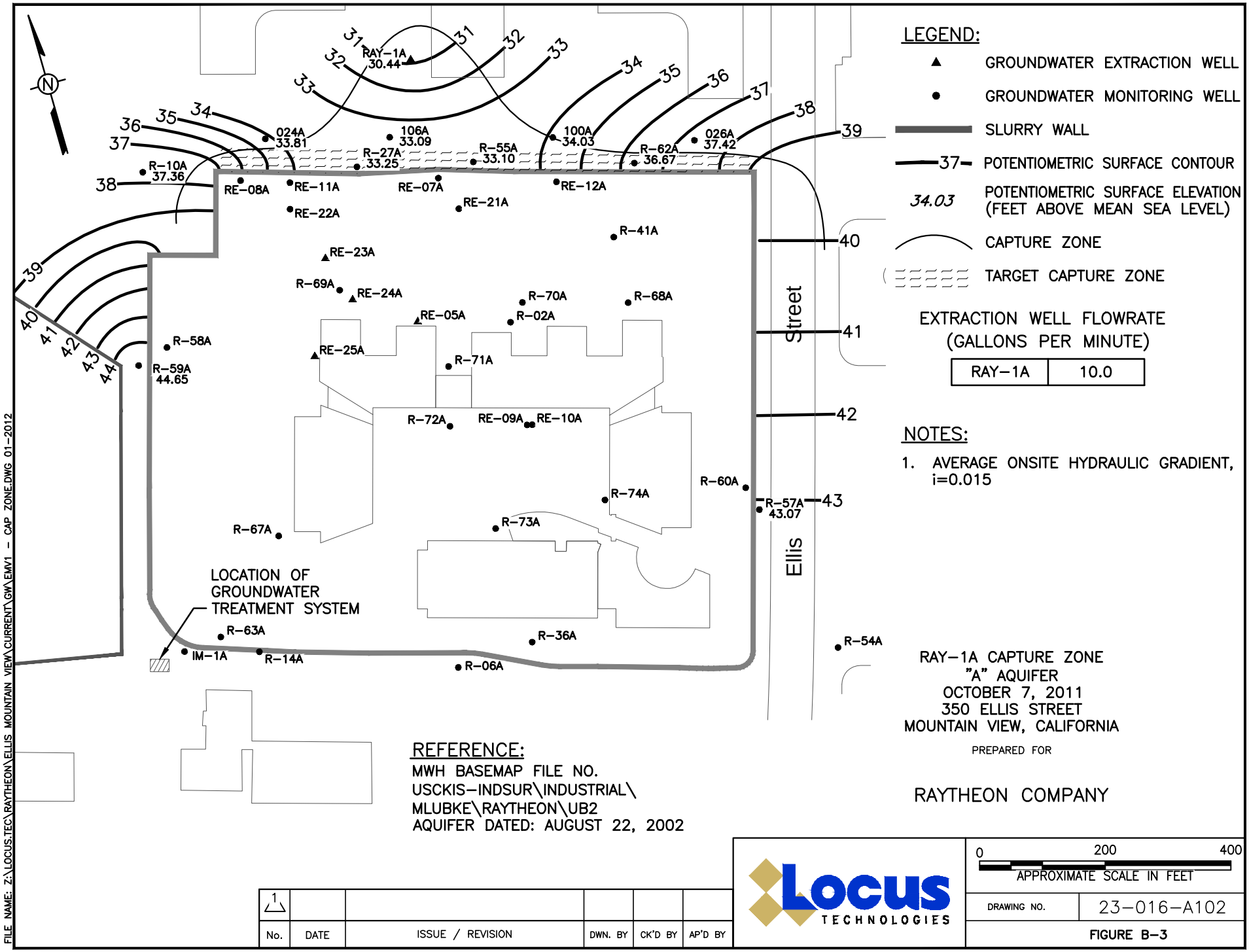
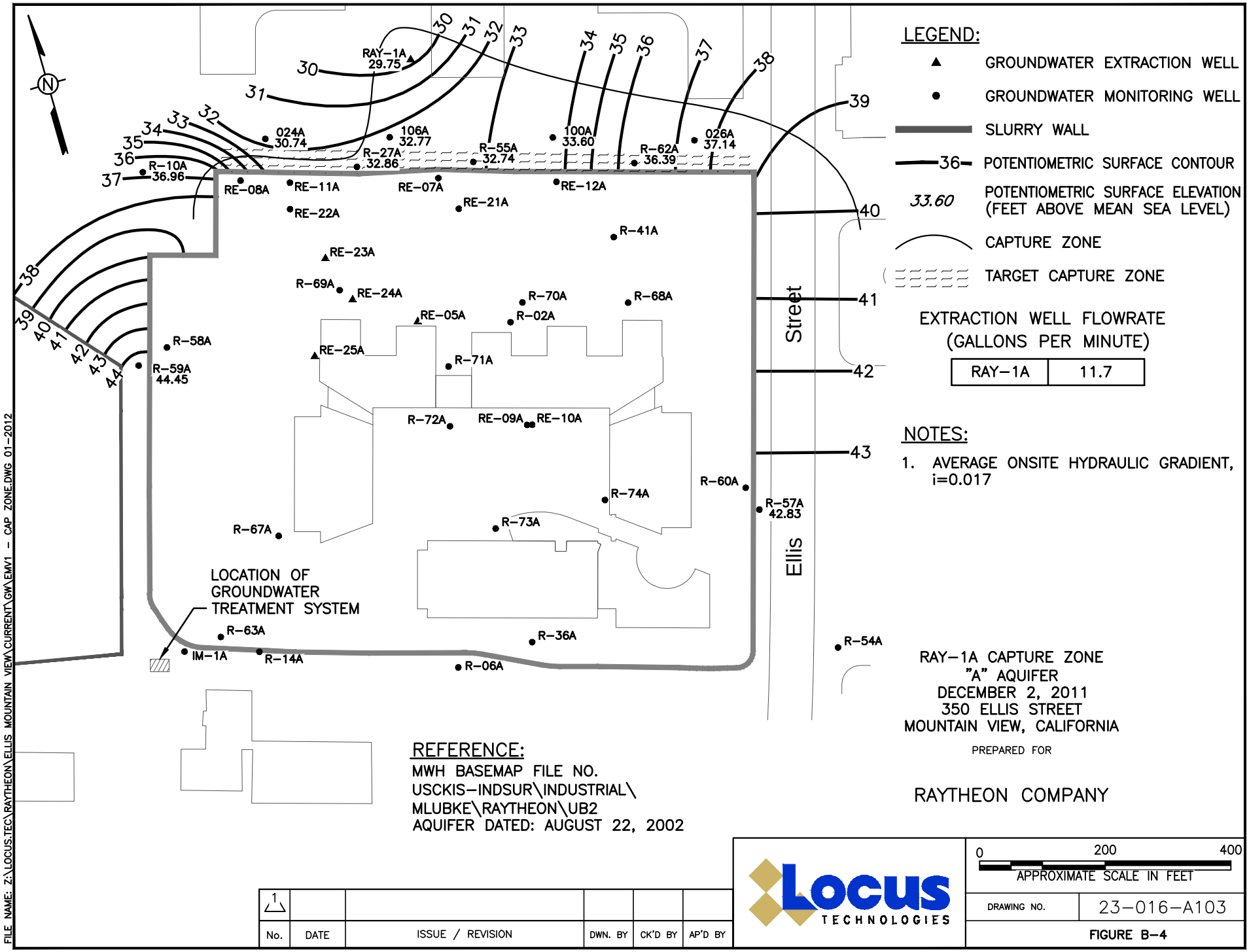

LEGEND:
GROUNDWATER EXTRACTION WELL
GROUNDWATER MONITORING WELL
SLURRY WALL
37 POTENTIOMETRIC SURFACE CONTOUR
34.03 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
CAPTURE ZONE
TARGET CAPTURE ZONE
EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)
RAY-1A 10.0
NOTES:
1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.015
RAY-1A 30.44
024A 33.81
106A 33.09
100A 34.03
026A 37.42
R-10A 37.36
R-27A 33.25
R-55A 33.10
R-62A 36.67
R-59A 44.65
R-57A 43.07
IM-1A
RE-08A
RE-11A
RE-07A
RE-12A
RE-22A
RE-21A
RE-23A
RE-24A
RE-05A
RE-25A
RE-09A
RE-10A
R-41A
R-69A
R-70A
R-68A
R-02A
R-58A
R-71A
R-72A
R-74A
R-60A
R-67A
R-73A
R-63A
R-14A
R-36A
R-06A
R-54A
Ellis Street
LOCATION OF GROUNDWATER TREATMENT SYSTEM
REFERENCE:
MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002
RAY-1A CAPTURE ZONE
"A" AQUIFER
OCTOBER 7, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA
PREPARED FOR
RAYTHEON COMPANY
0 200 400
APPROXIMATE SCALE IN FEET
DRAWING NO. 23-016-A102
FIGURE B-3
No. DATE ISSUE / REVISION DWN. BY CK'D BY AP'D BY
1
FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - CAP ZONE.DWG 01-2012


LEGEND:
GROUNDWATER EXTRACTION WELL
GROUNDWATER MONITORING WELL
SLURRY WALL
36 POTENTIOMETRIC SURFACE CONTOUR
33.60 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
CAPTURE ZONE
TARGET CAPTURE ZONE
EXTRACTION WELL FLOWRATE (GALLONS PER MINUTE)
RAY-1A 11.7
NOTES:
1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.017
RAY-1A 29.75
024A 30.74
106A 32.77
R-27A 32.86
R-55A 32.74
100A 33.60
R-62A 36.39
026A 37.14
R-10A 36.96
RE-08A
RE-11A
RE-07A
RE-12A
RE-22A
RE-21A
R-41A
RE-23A
R-69A
RE-24A
R-70A
R-68A
RE-05A
R-02A
R-58A
RE-25A
R-71A
R-59A 44.45
R-72A
RE-09A
RE-10A
R-60A
R-74A
R-57A 42.83
R-67A
R-73A
LOCATION OF GROUNDWATER TREATMENT SYSTEM
R-63A
IM-1A
R-14A
R-06A
R-36A
R-54A
Ellis Street
REFERENCE:
MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\UB2
AQUIFER DATED: AUGUST 22, 2002
RAY-1A CAPTURE ZONE
"A" AQUIFER
DECEMBER 2, 2011
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA
PREPARED FOR
RAYTHEON COMPANY
0 200 400
APPROXIMATE SCALE IN FEET
No. DATE ISSUE / REVISION DWN. BY CK'D BY AP'D BY
1
DRAWING NO. 23-016-A103
FIGURE B-4
FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\CURRENT\GW\EMV1 - CAP ZONE.DWG 01-2012

APPENDIX C

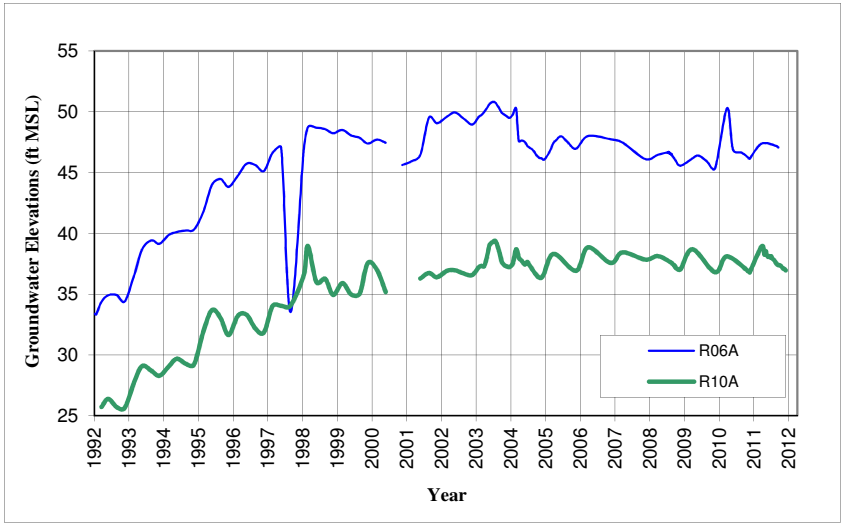
LABORATORY ANALYTICAL REPORTS

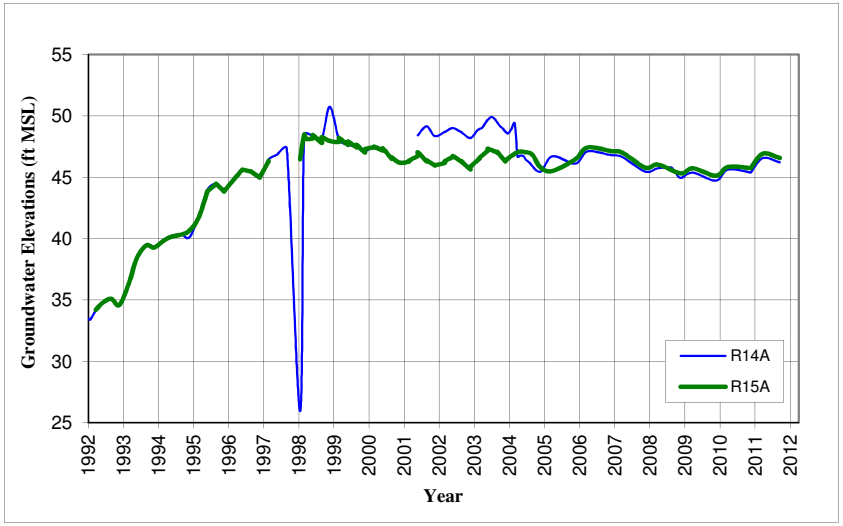
LABORATORY ANALYTICAL REPORTS ARE NOT INCLUDED IN THIS TRANSMITTAL BUT ARE AVAILABLE UPON REQUEST

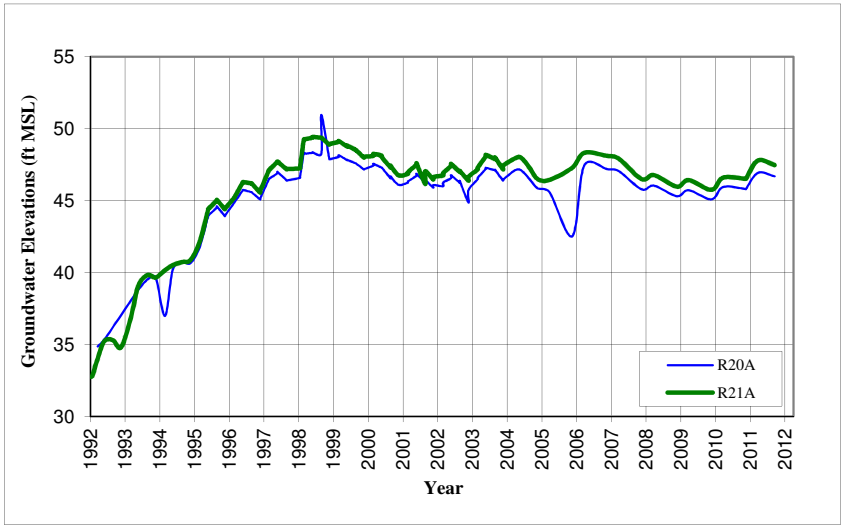
APPENDIX D

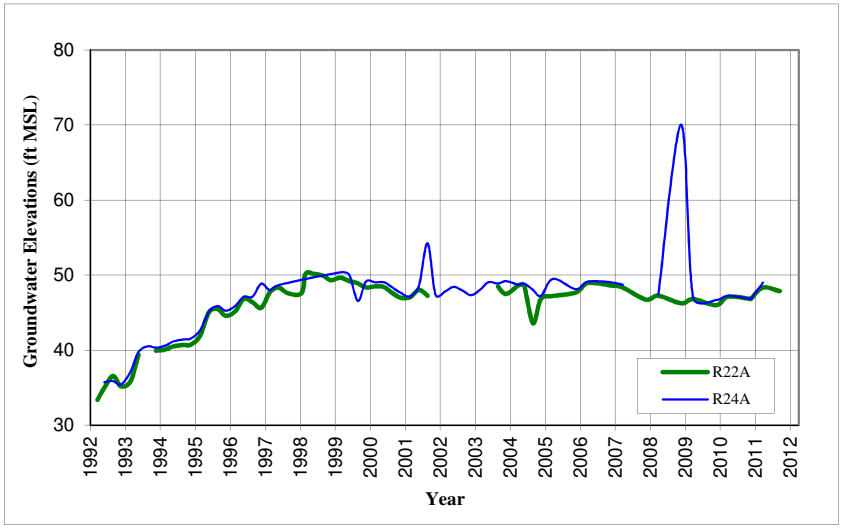
GROUNDWATER HYDROGRAPHS

APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "A" AQUIFER WELLS

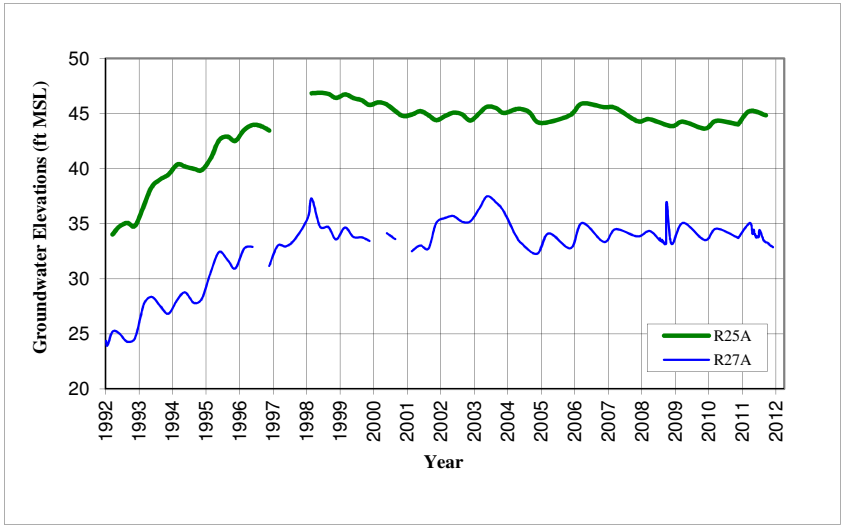


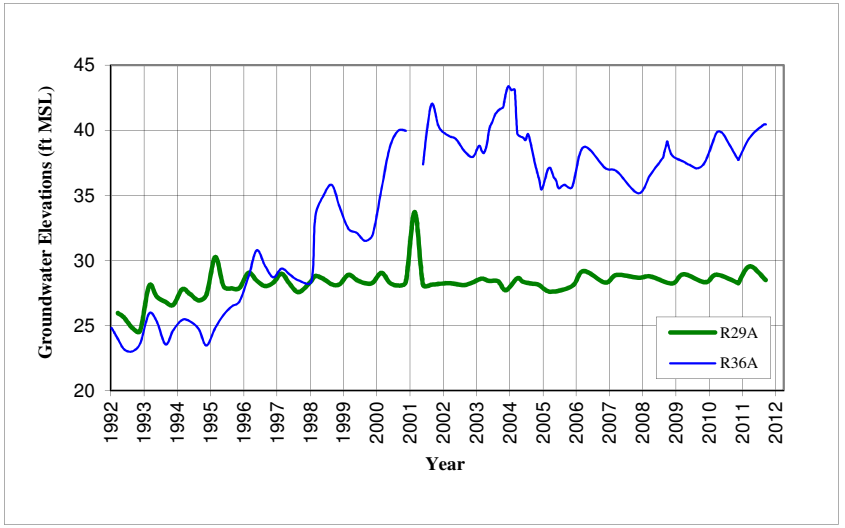


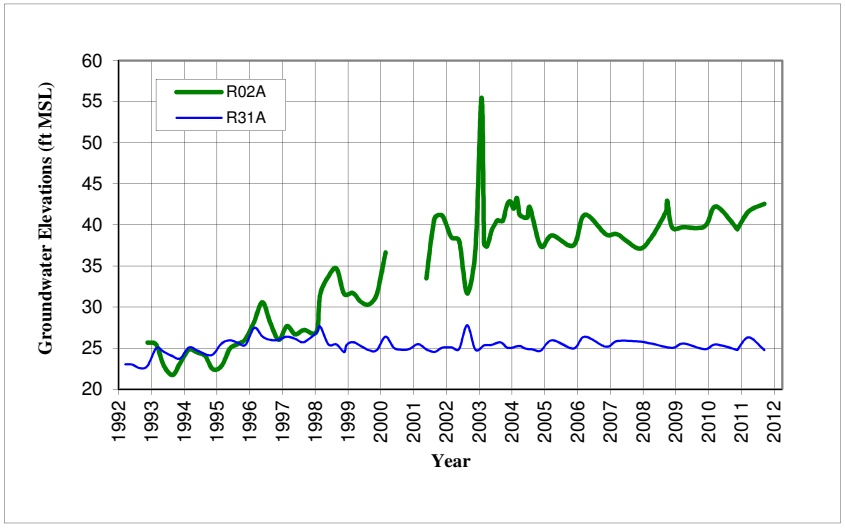


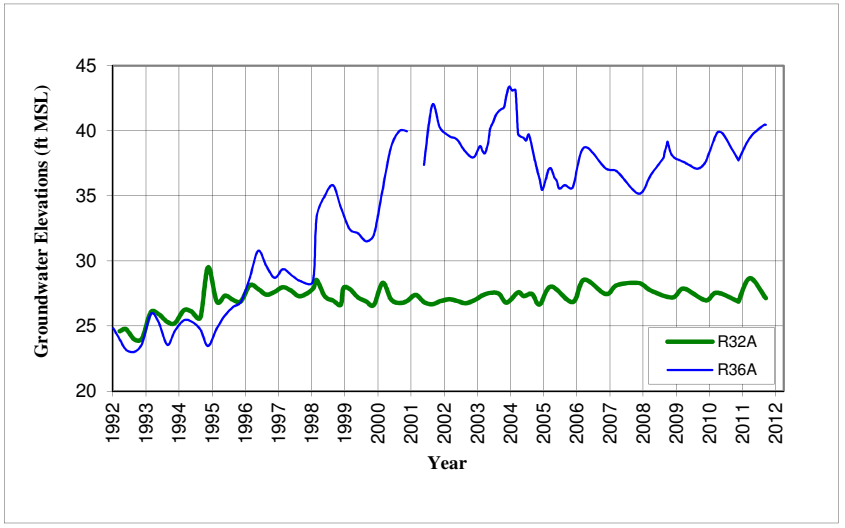


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "A" AQUIFER WELLS

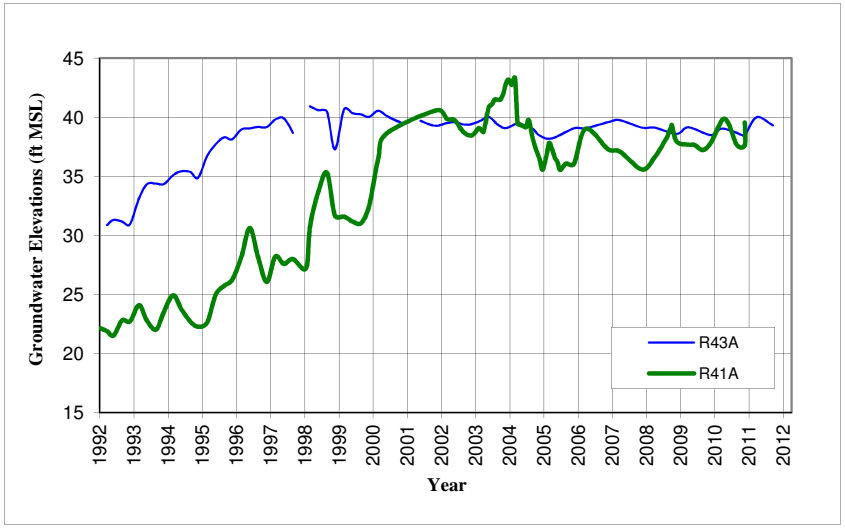


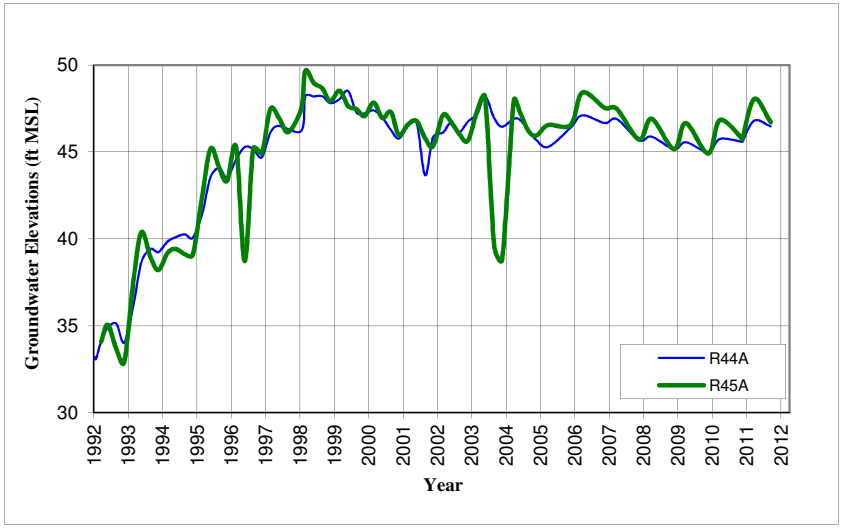


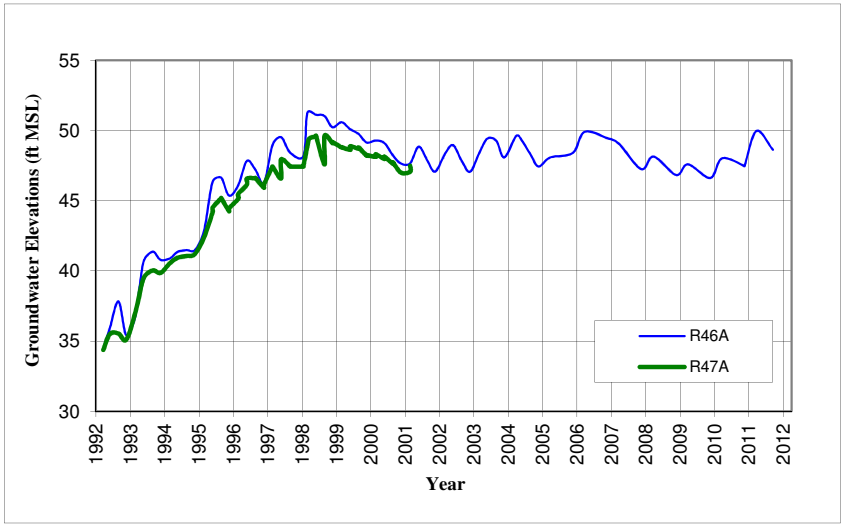


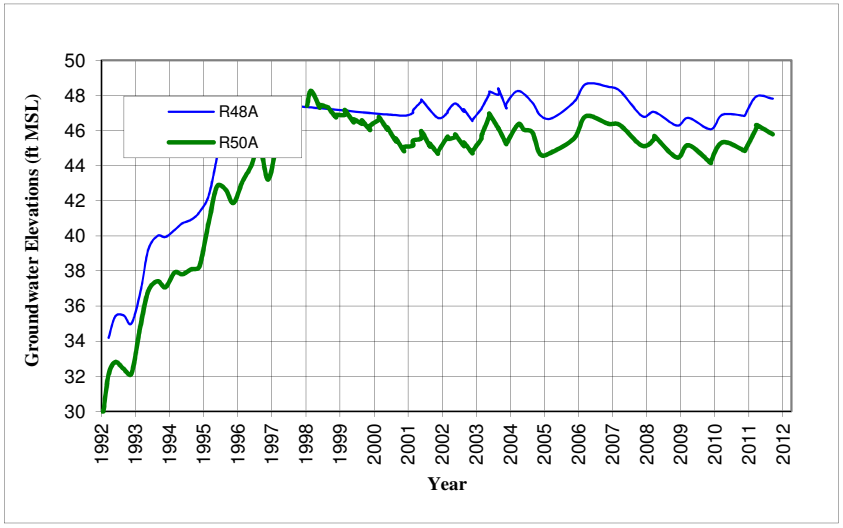


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "A" AQUIFER WELLS

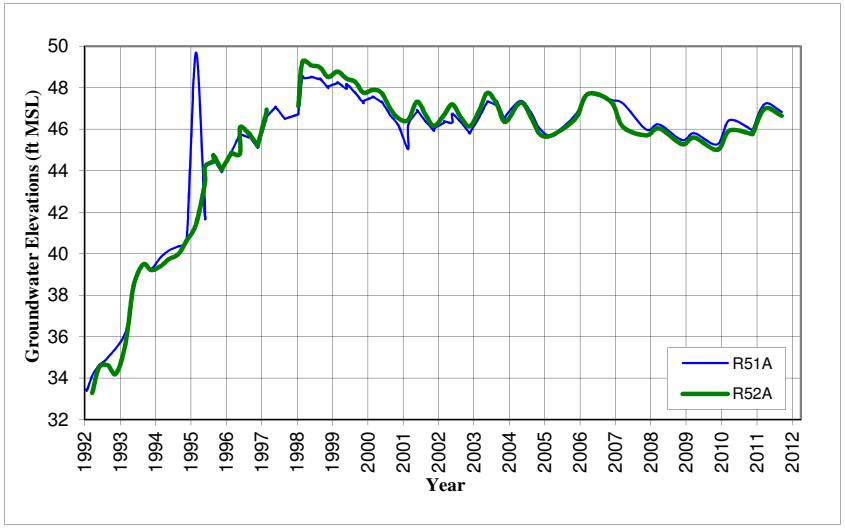


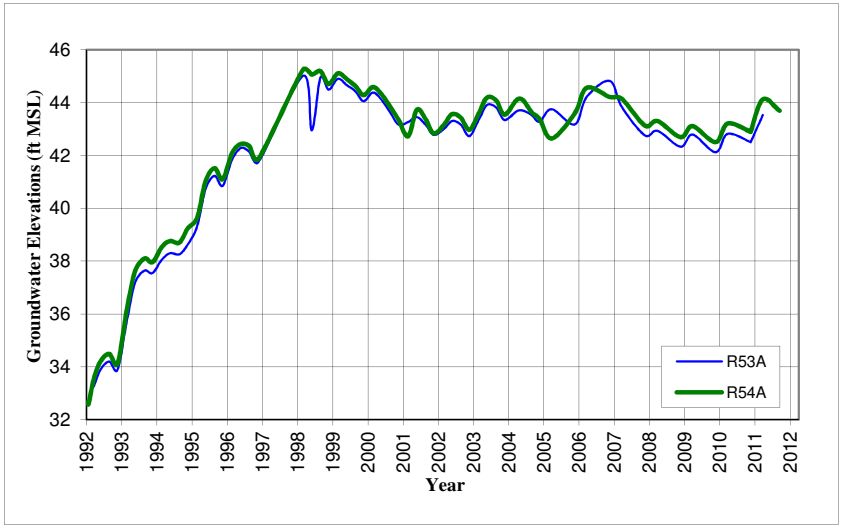


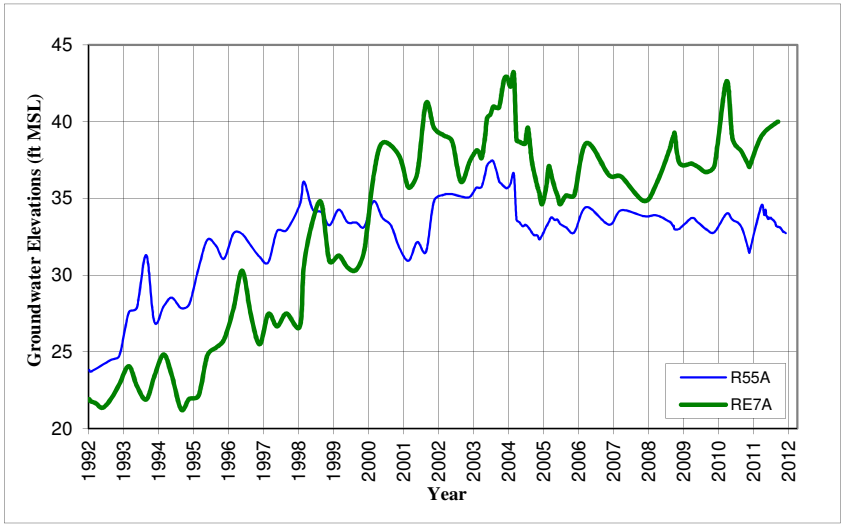


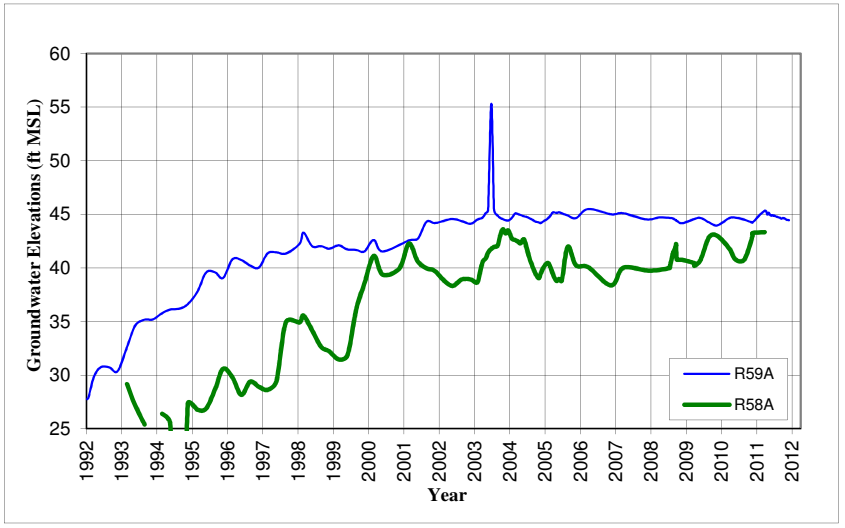


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "A" AQUIFER WELLS

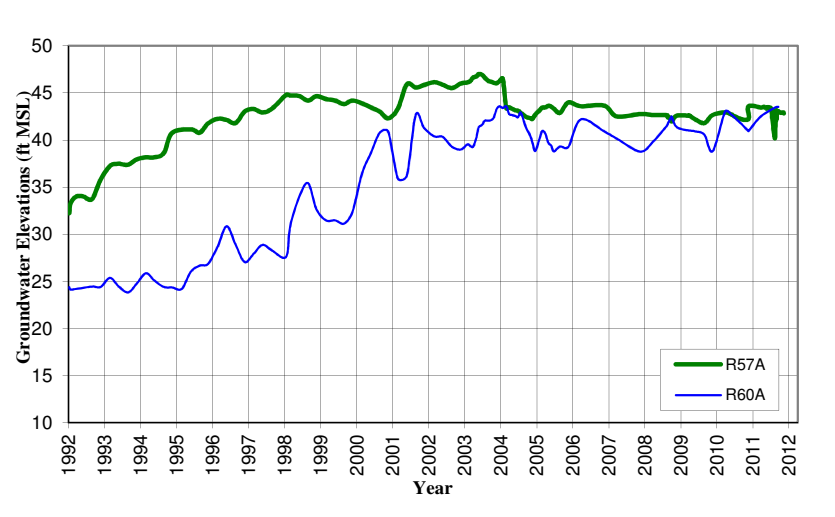


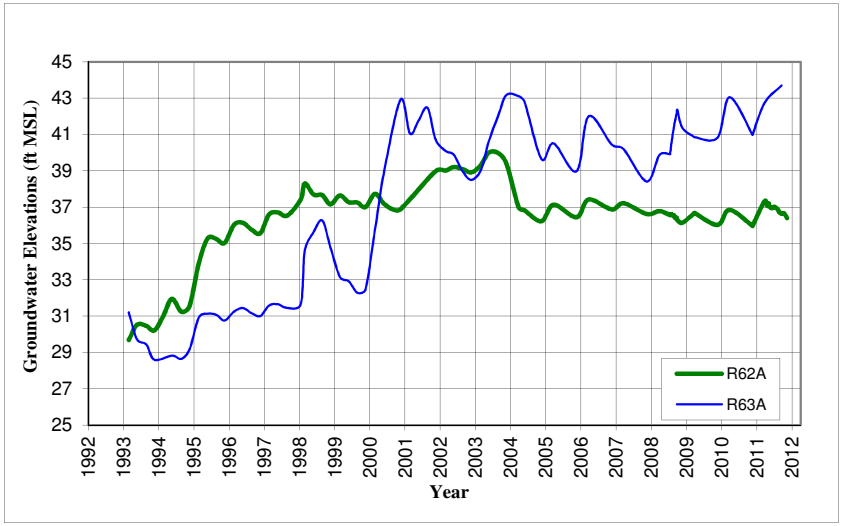


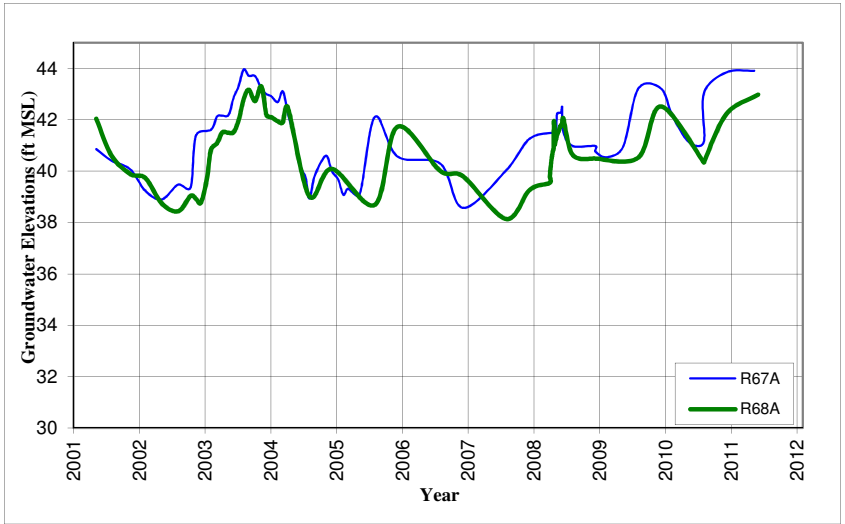


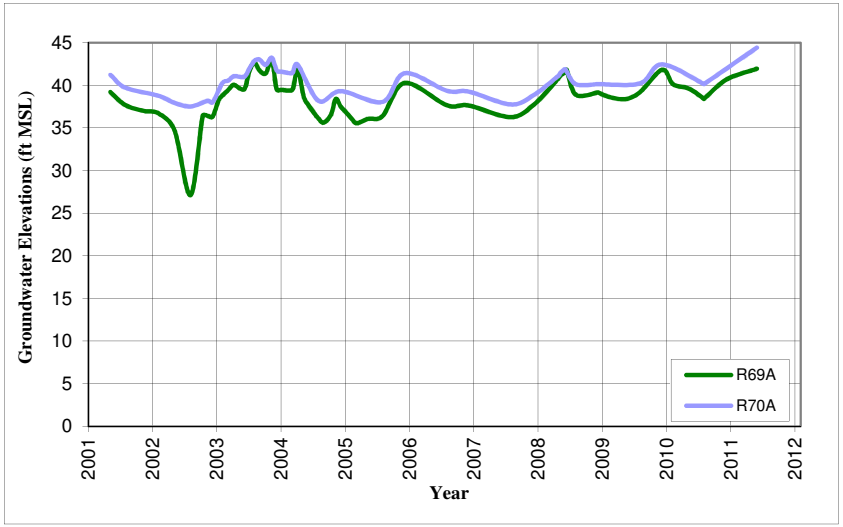


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "A" AQUIFER WELLS

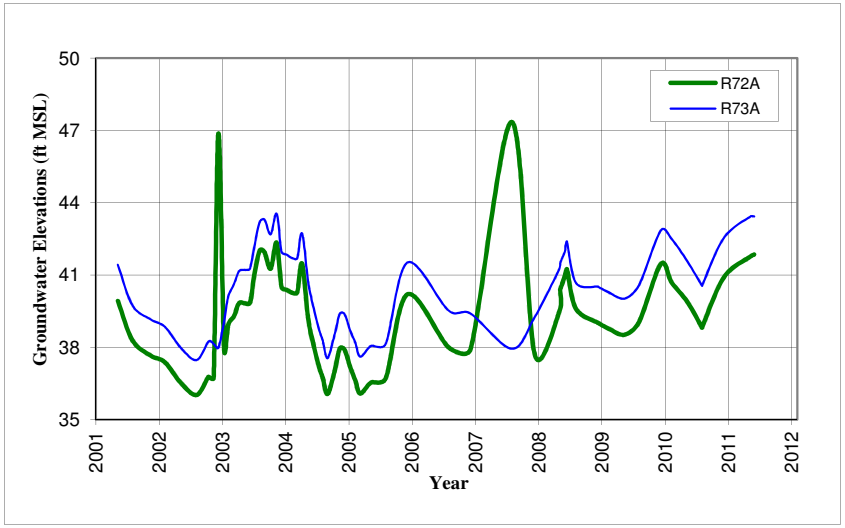


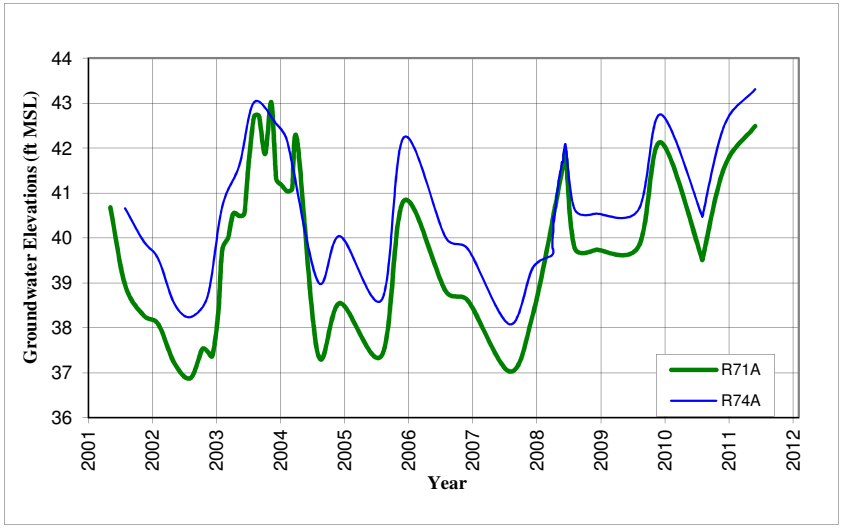


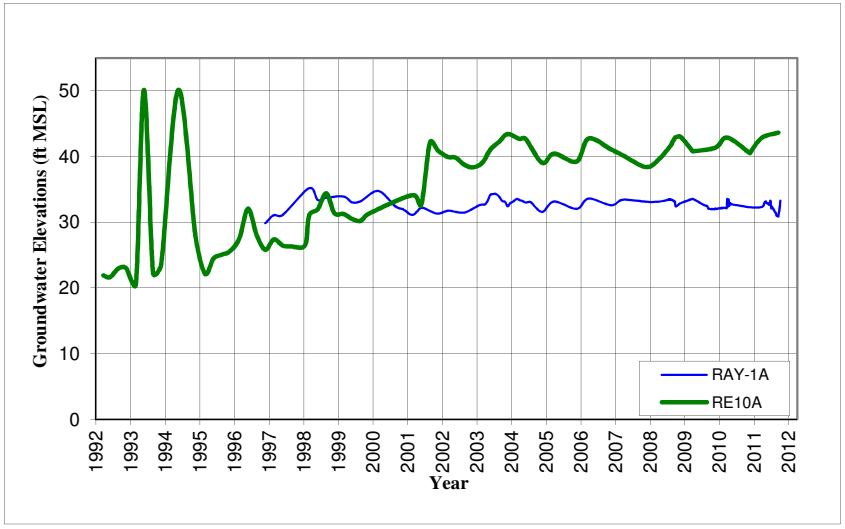


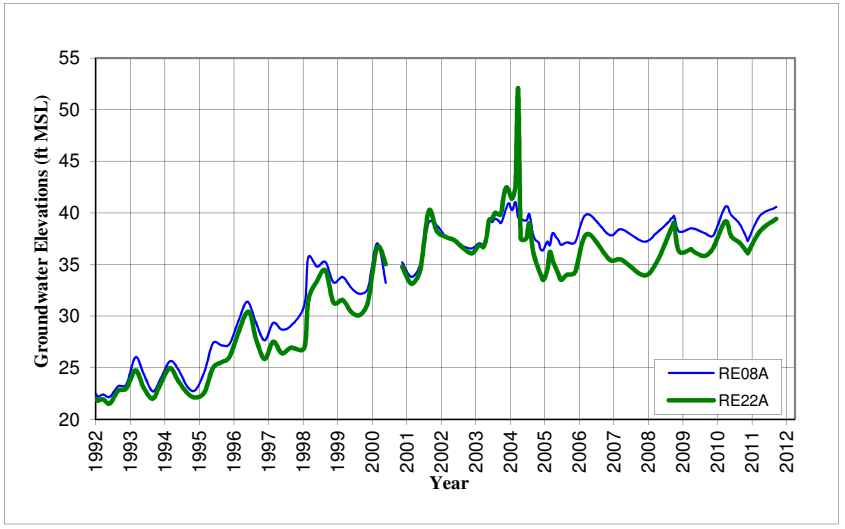


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "A" AQUIFER WELLS

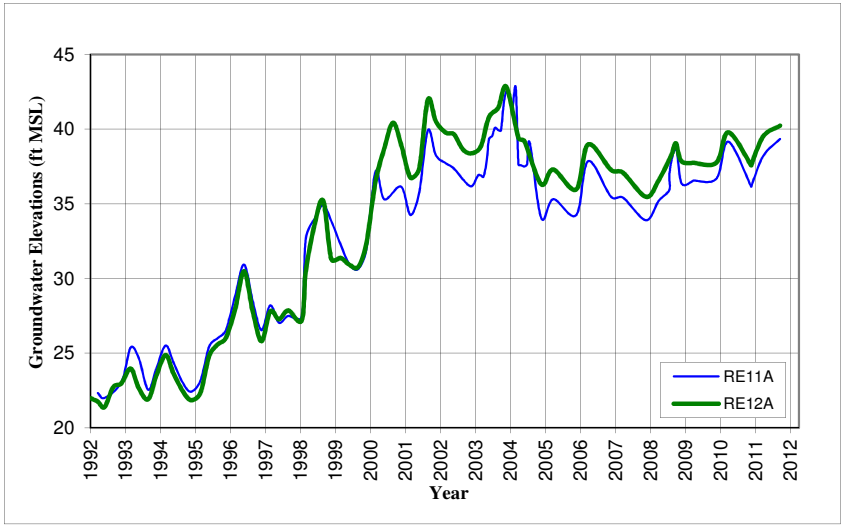


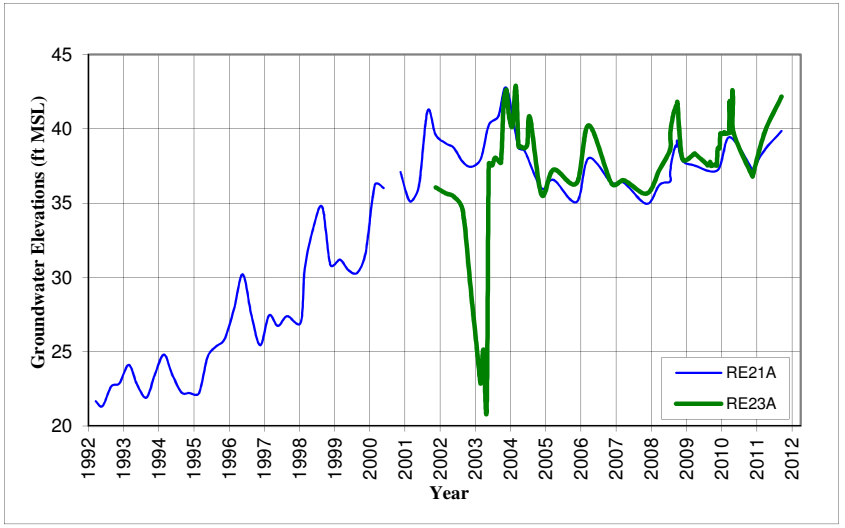


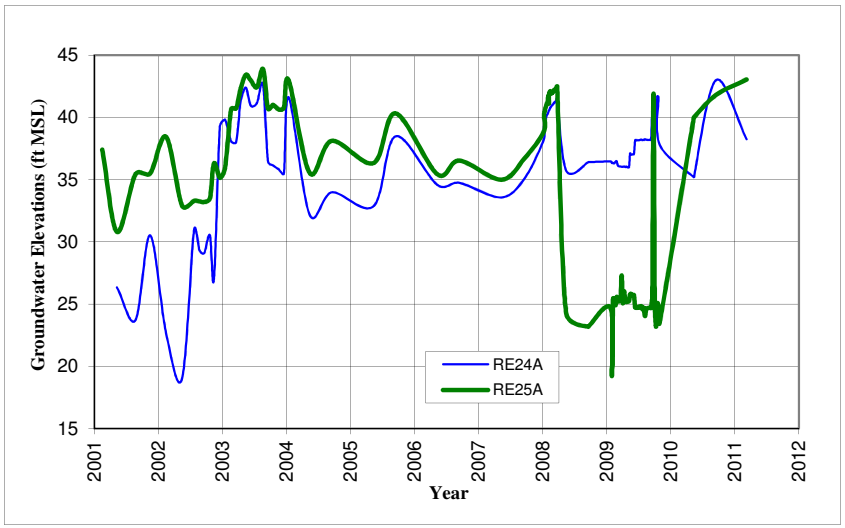


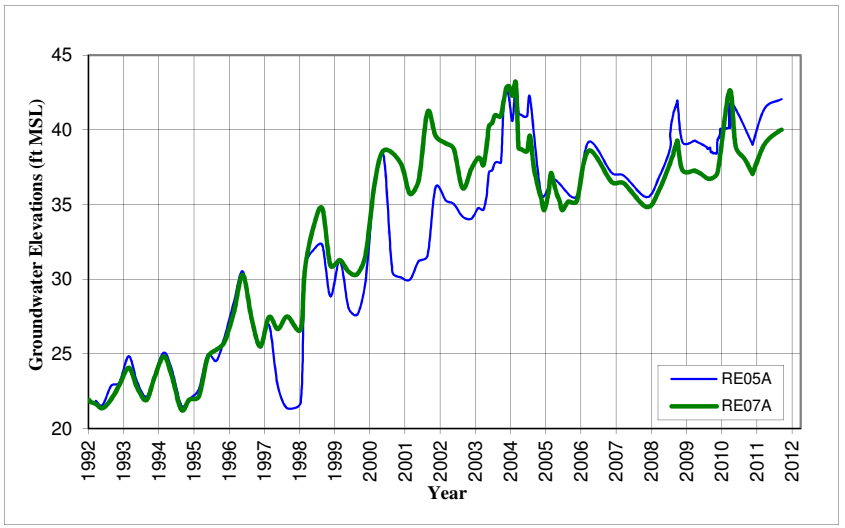


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "A" AQUIFER WELLS

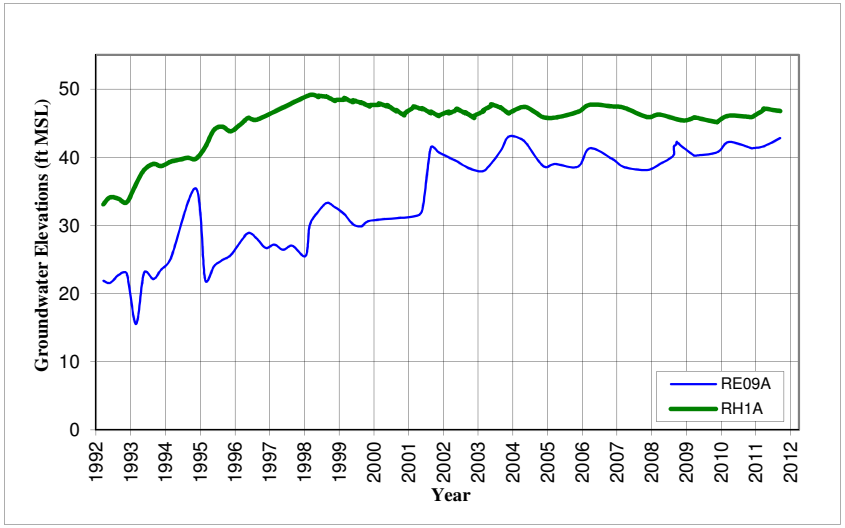




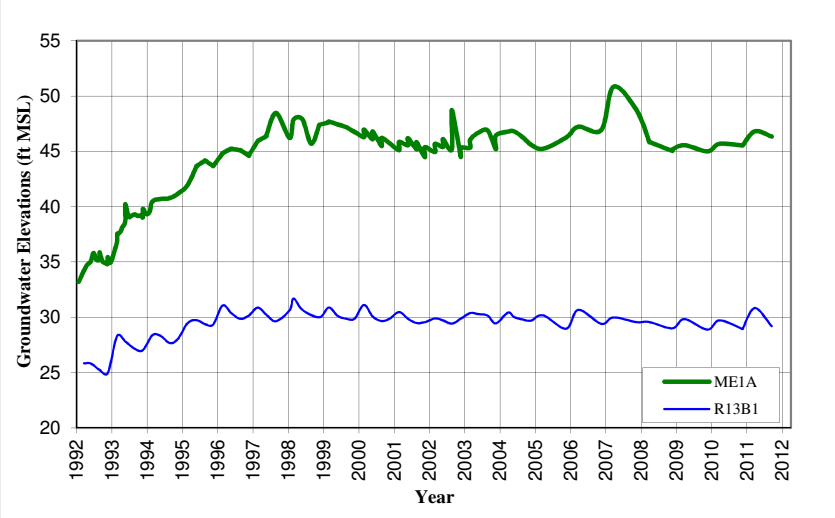


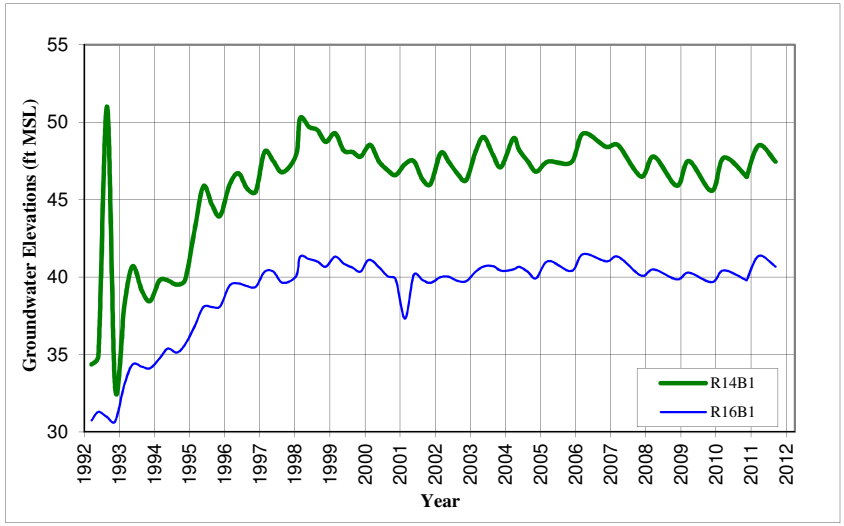


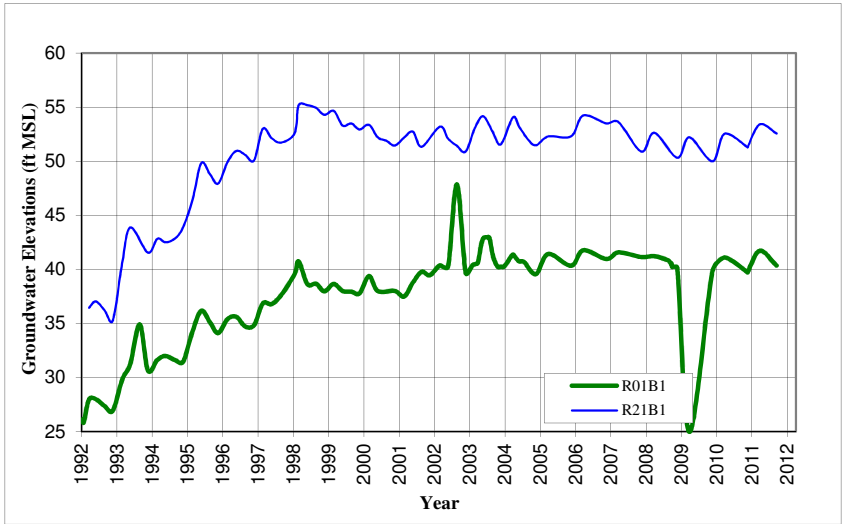
APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "A" AQUIFER WELLS

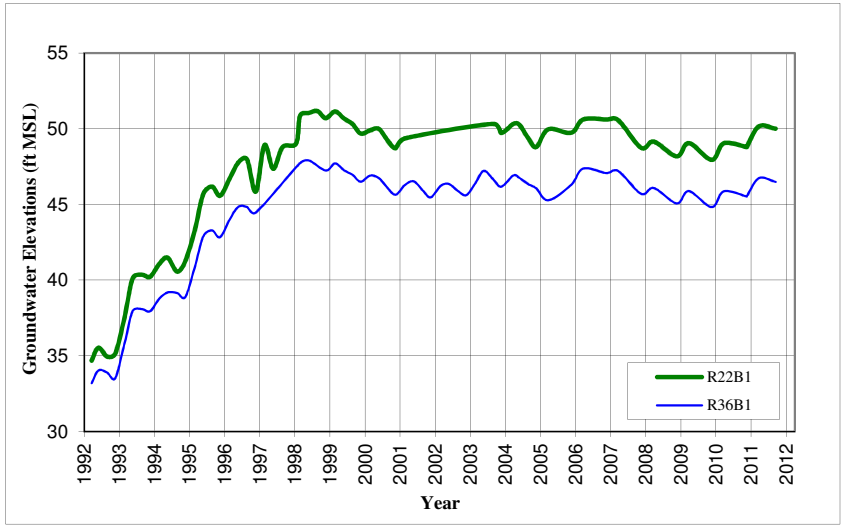


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "B1" AQUIFER WELLS

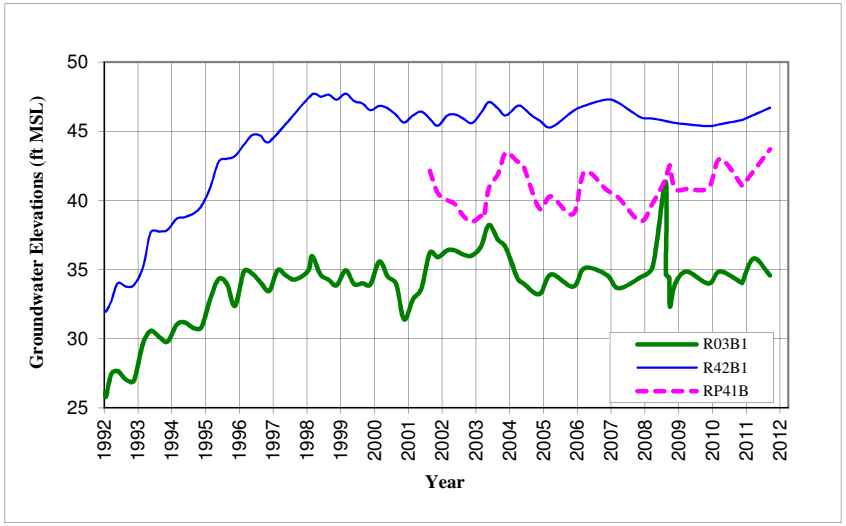


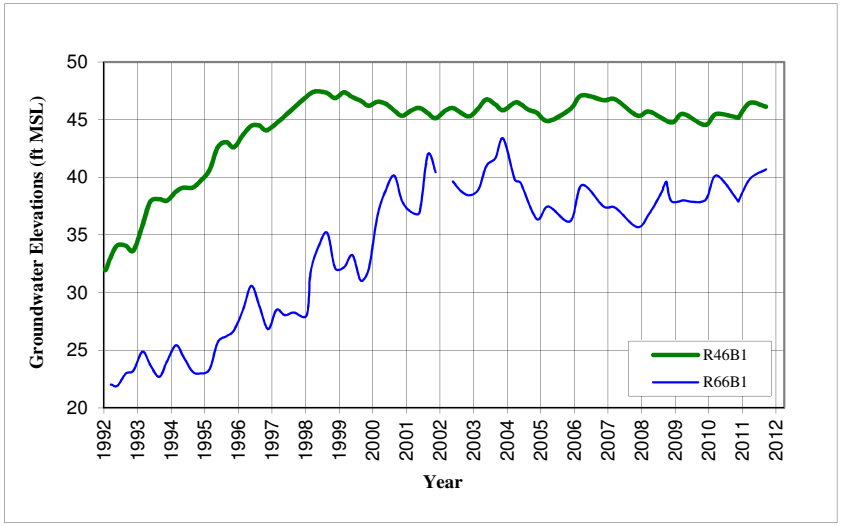


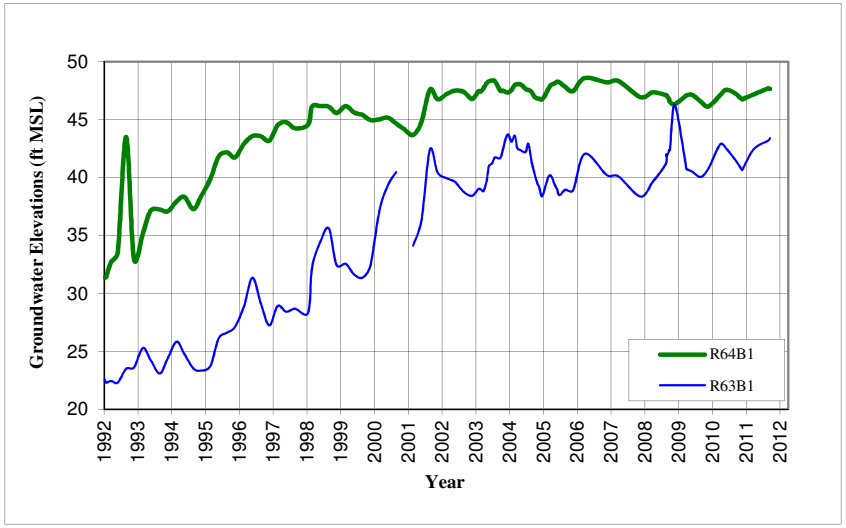


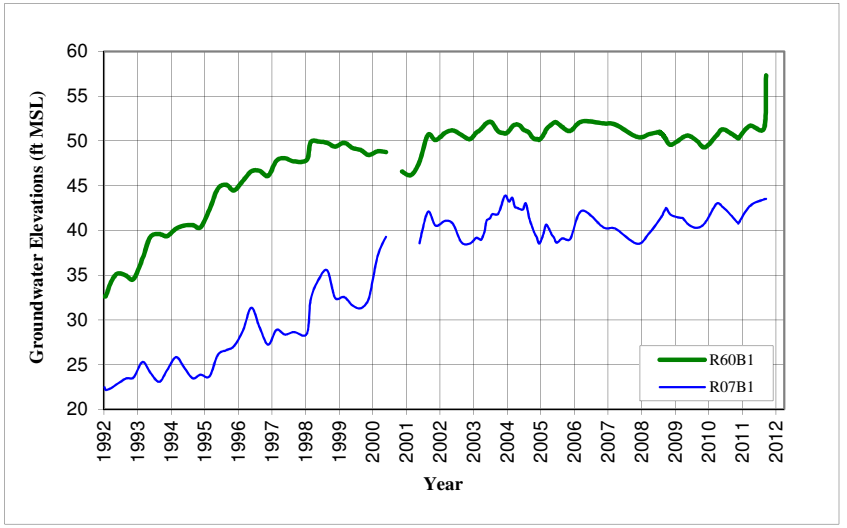


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "B1" AQUIFER WELLS

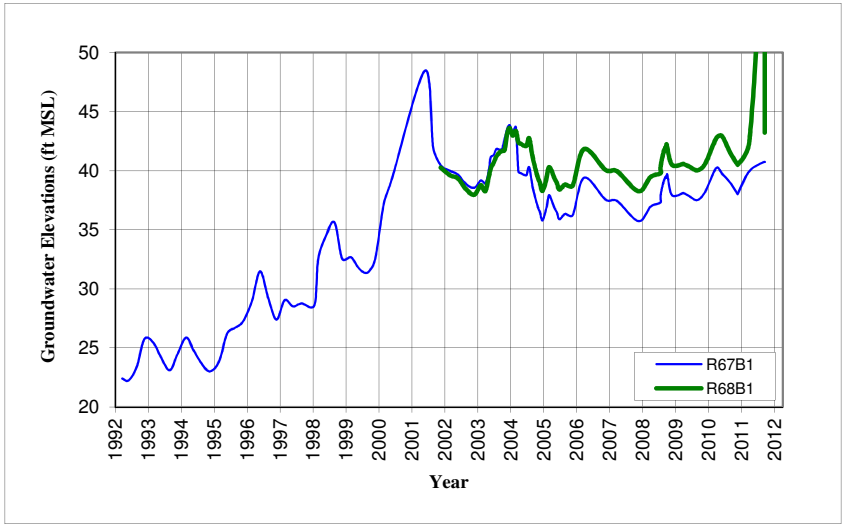


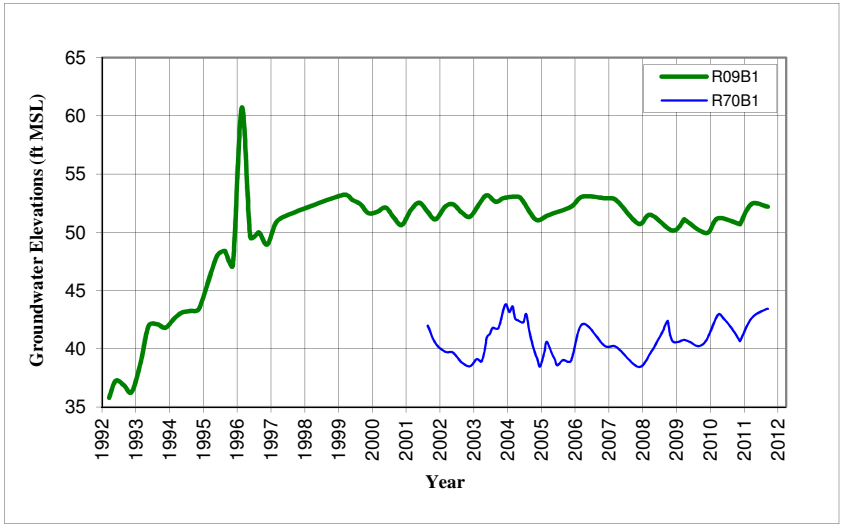


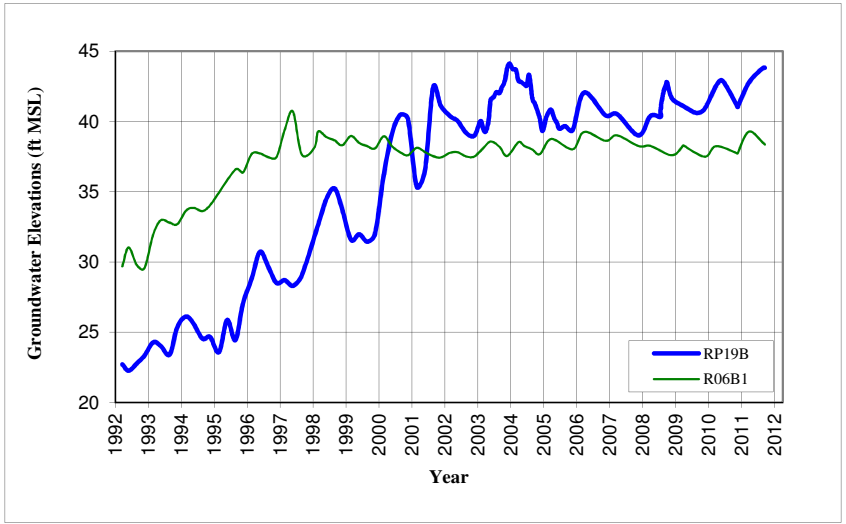


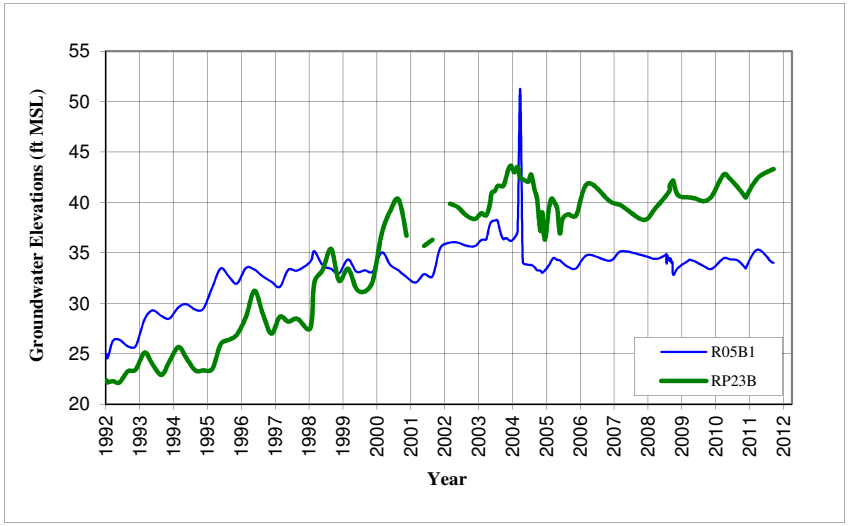


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "B1" AQUIFER WELLS

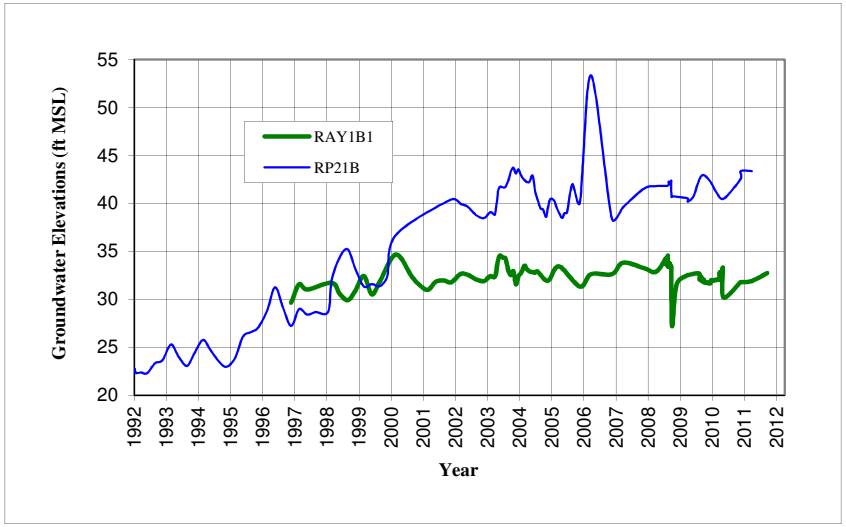


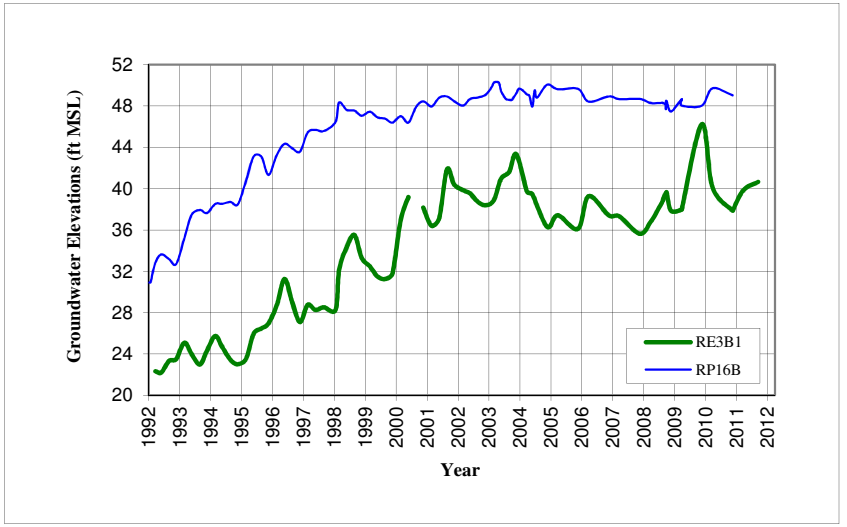


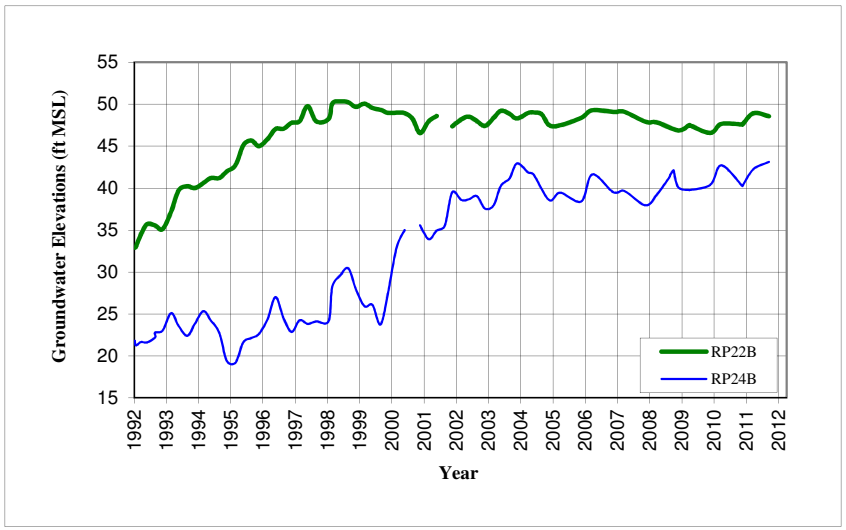


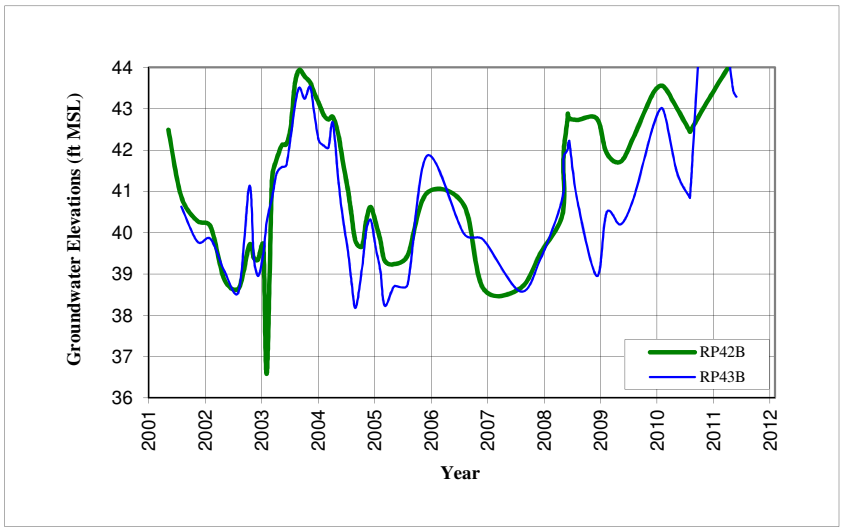


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "B1" AQUIFER WELLS

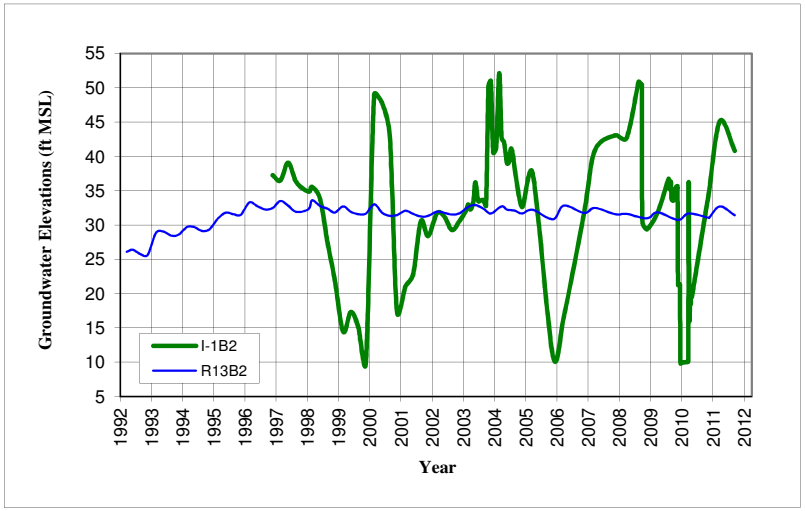


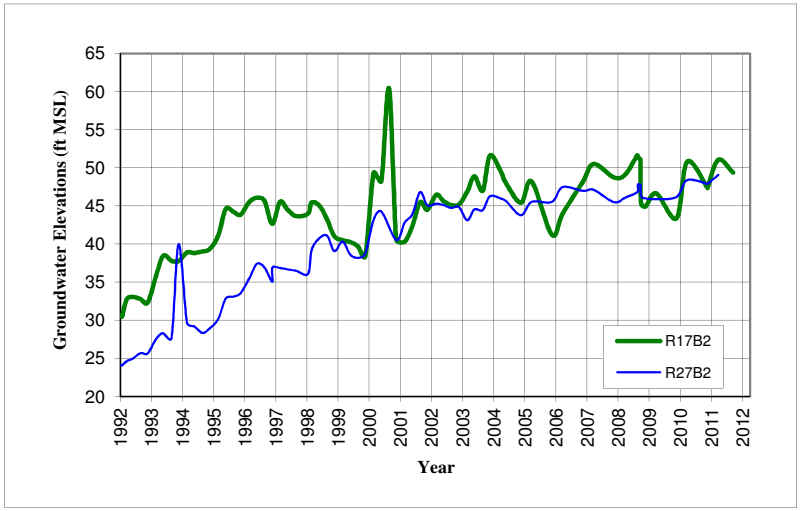


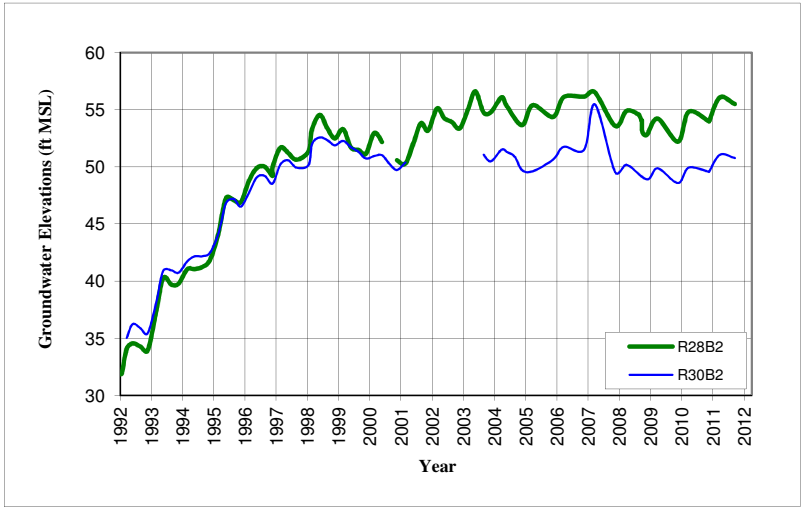


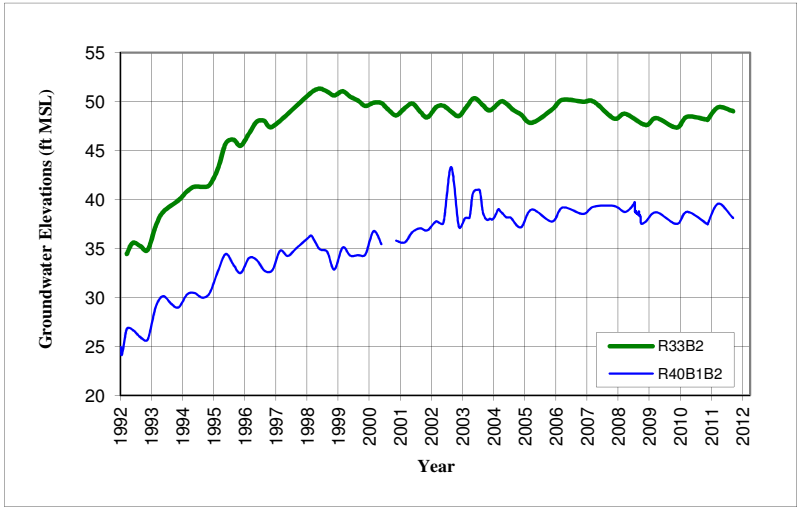


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B2" AQUIFER WELLS

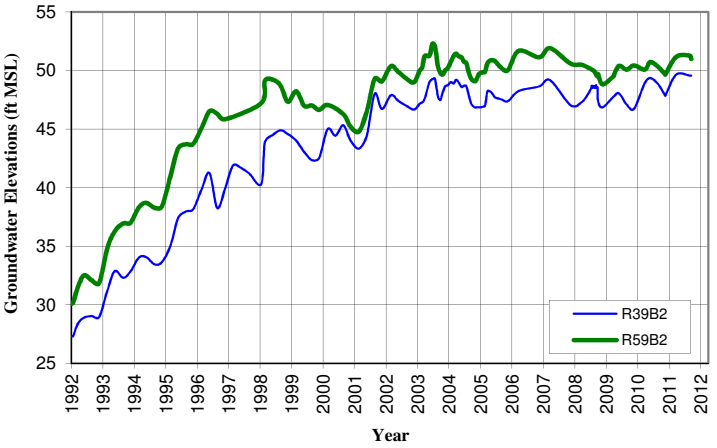


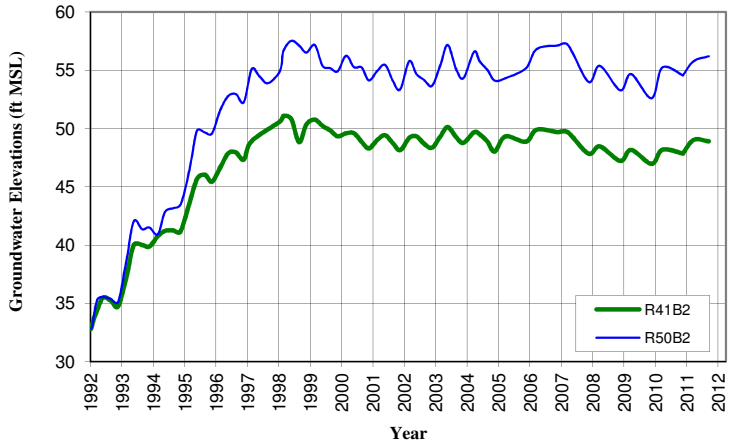


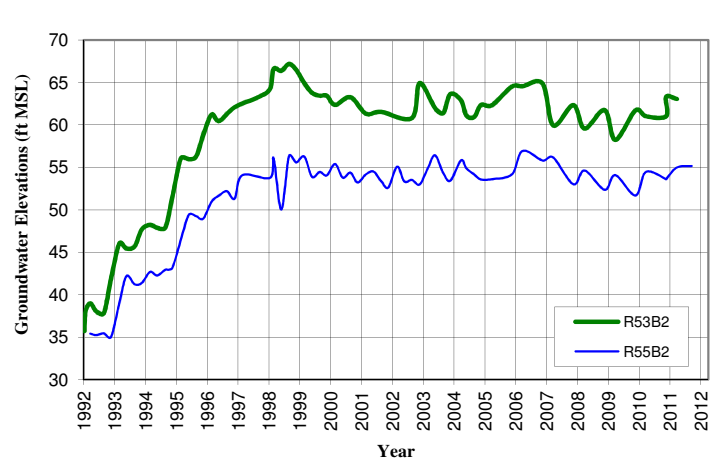


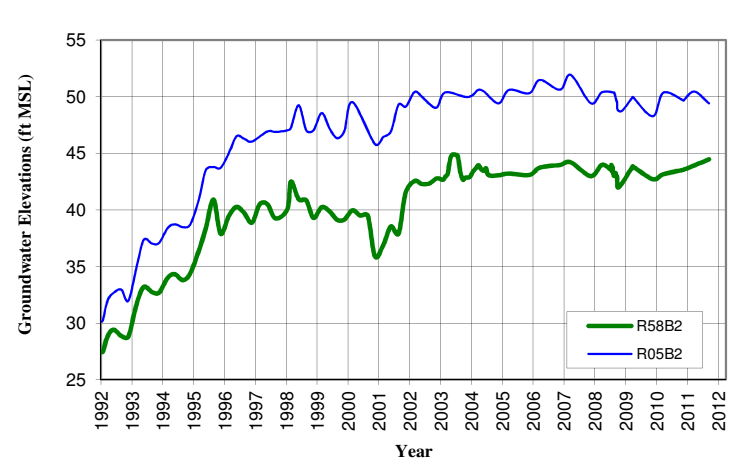


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B2" AQUIFER WELLS

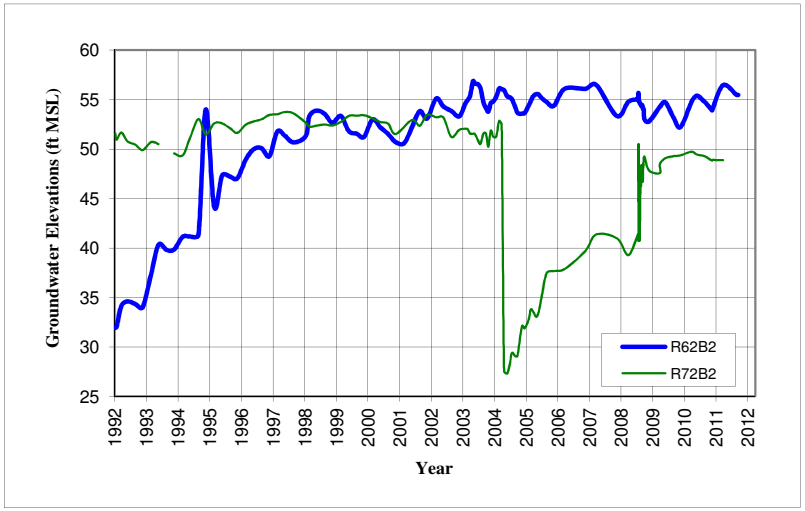


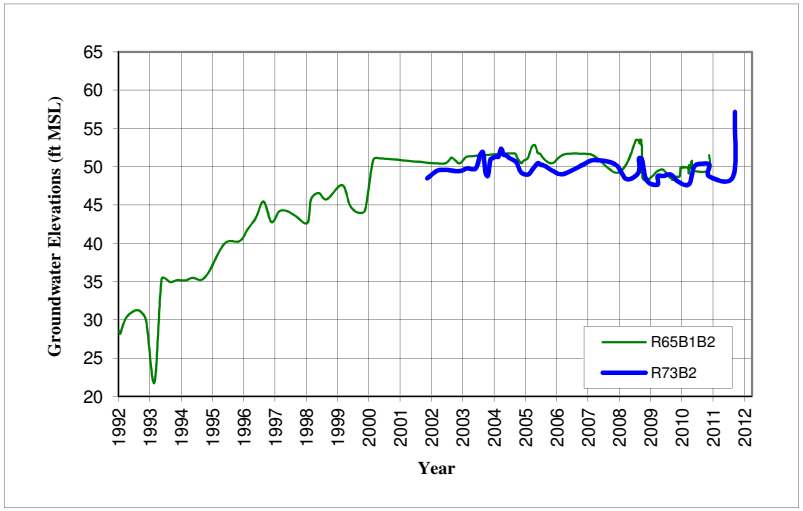


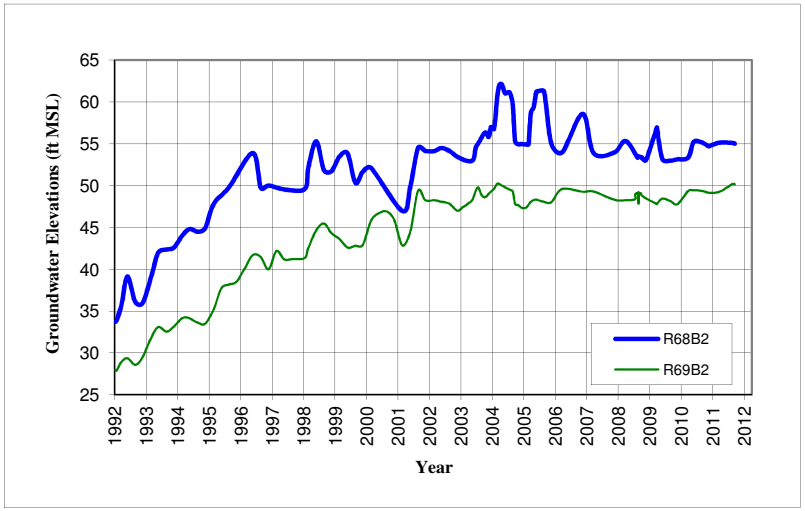


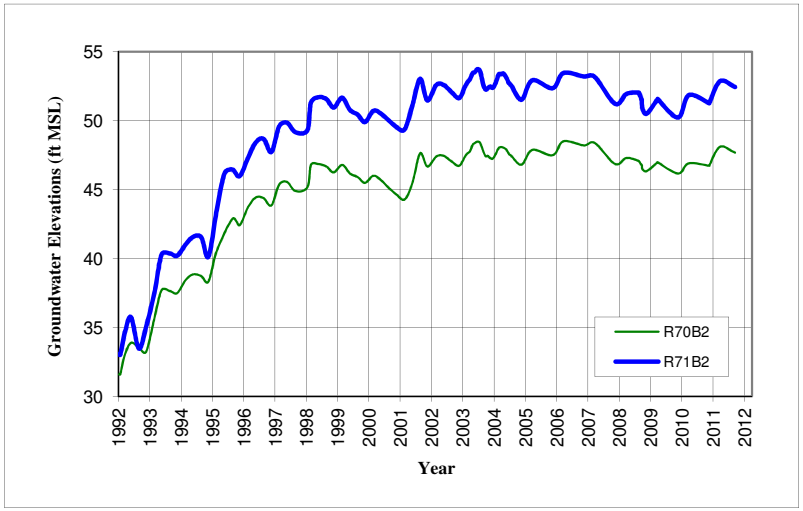


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B2" AQUIFER WELLS

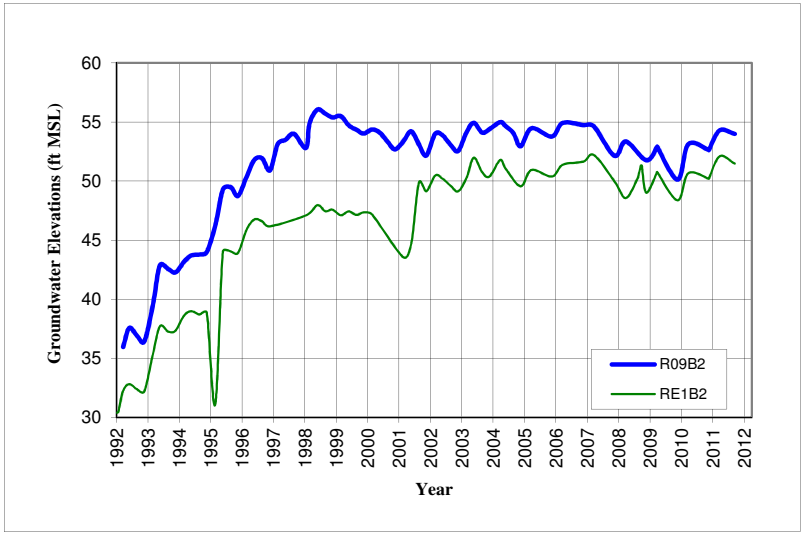




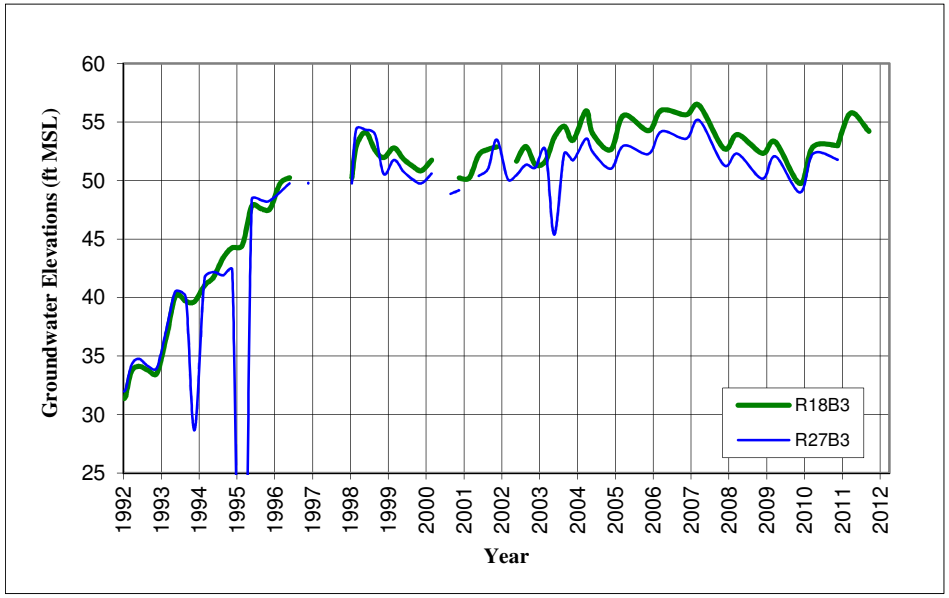


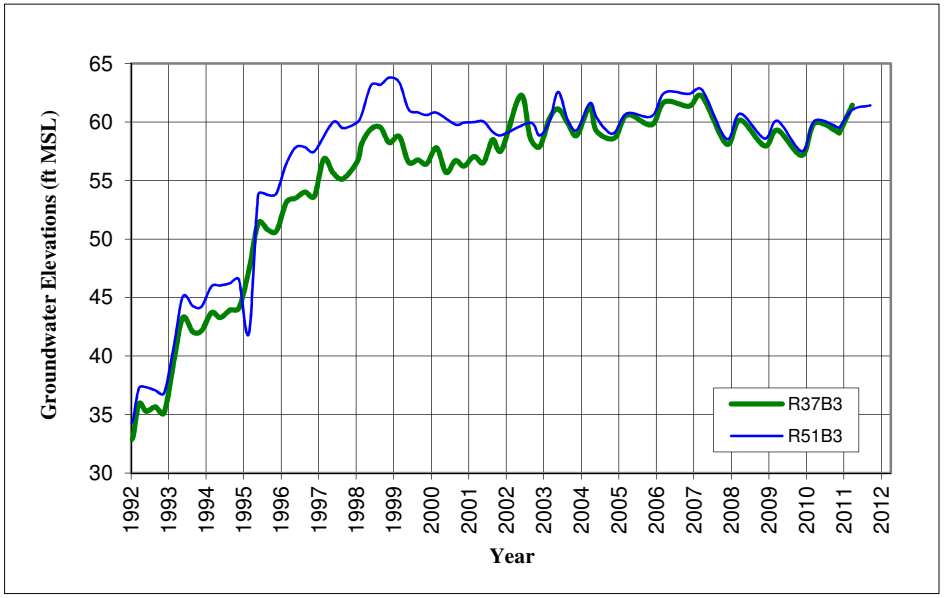


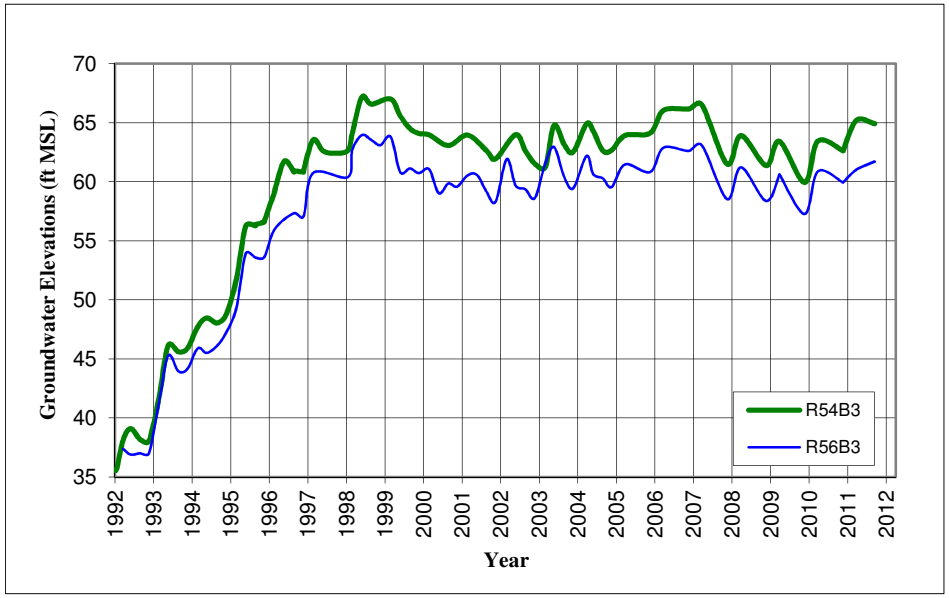
APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B2" AQUIFER WELLS

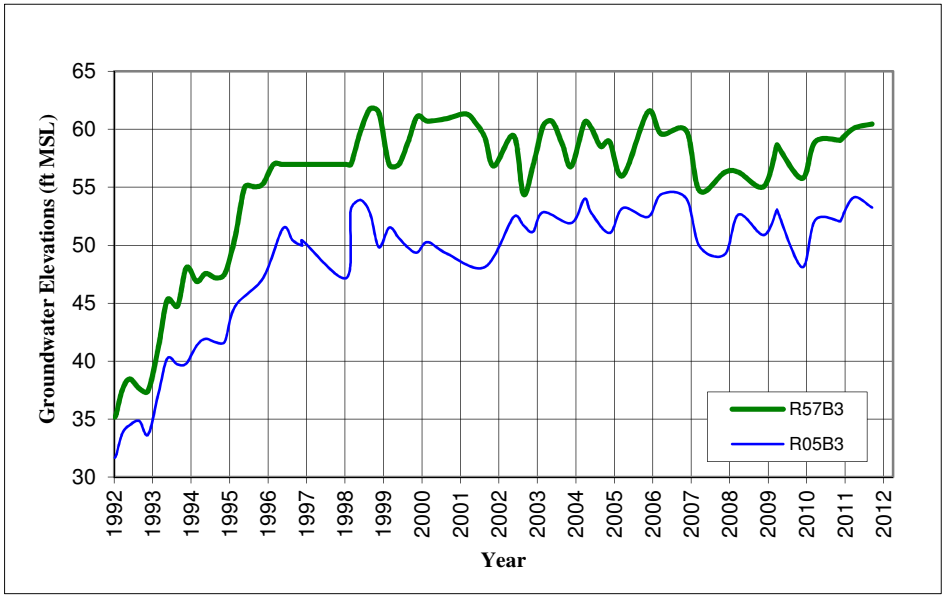


APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "B3" AQUIFER WELLS

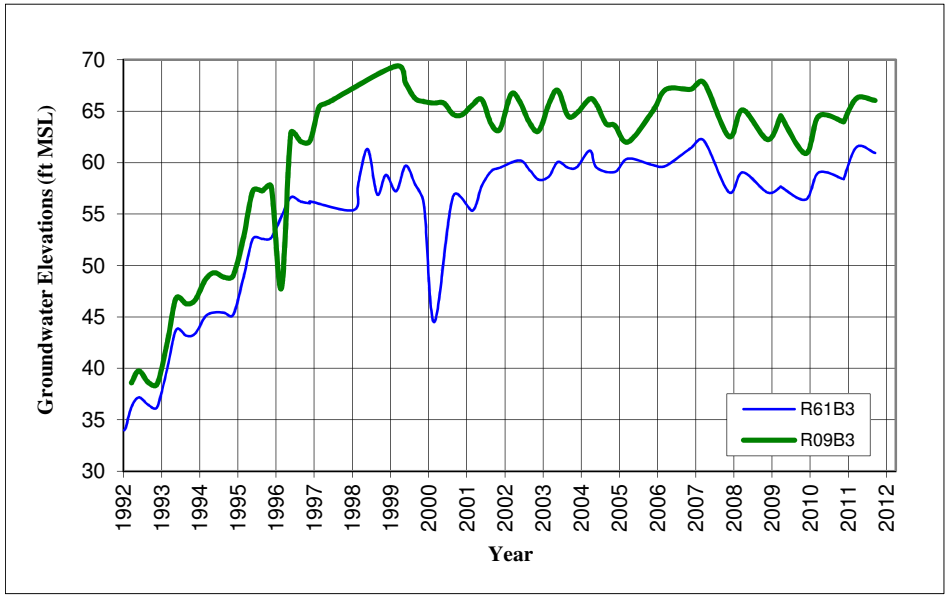








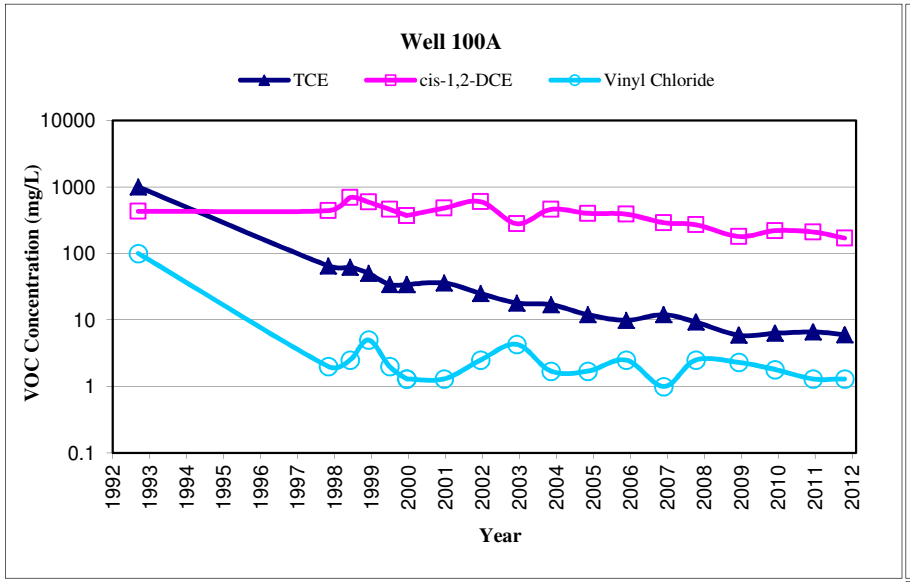
APPENDIX D
HISTORICAL GROUNDWATER ELEVATIONS IN "B3" AQUIFER WELLS

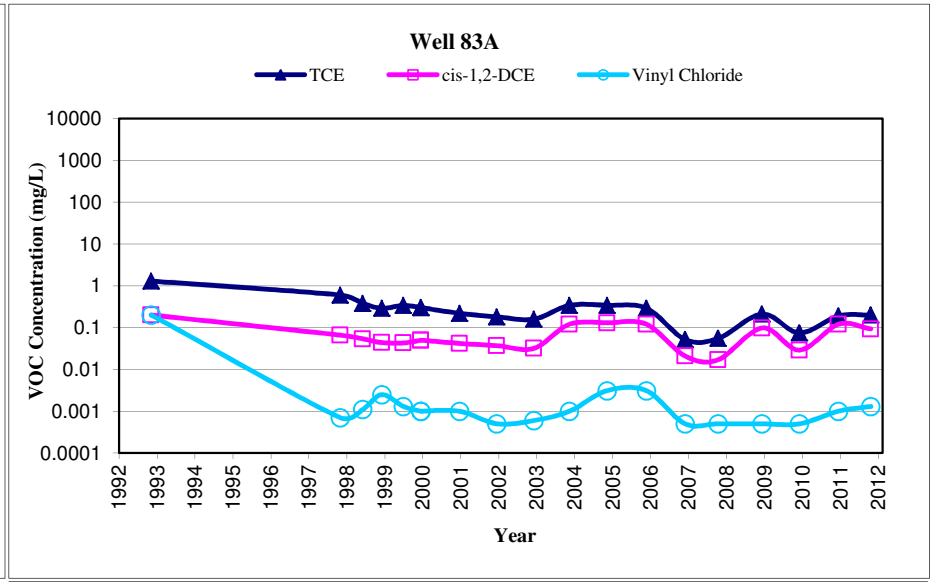


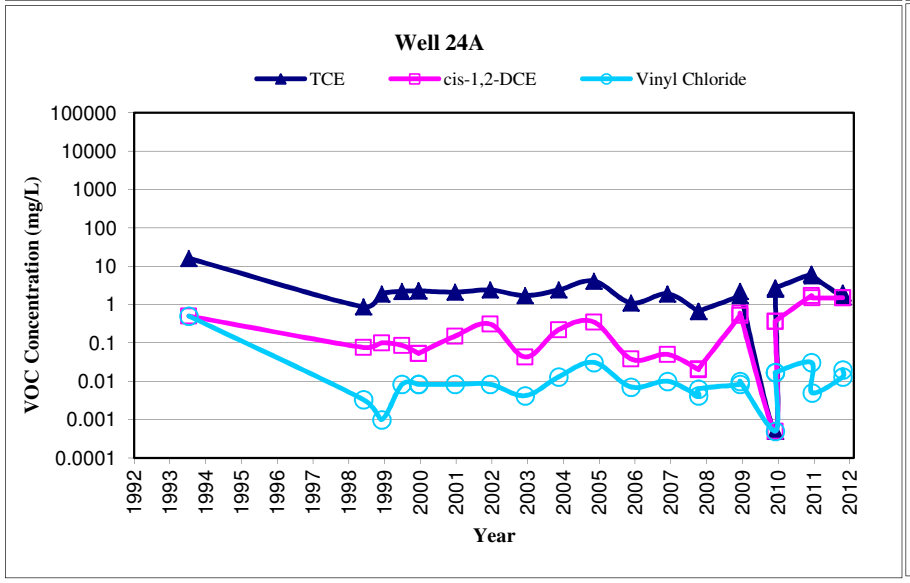
APPENDIX E

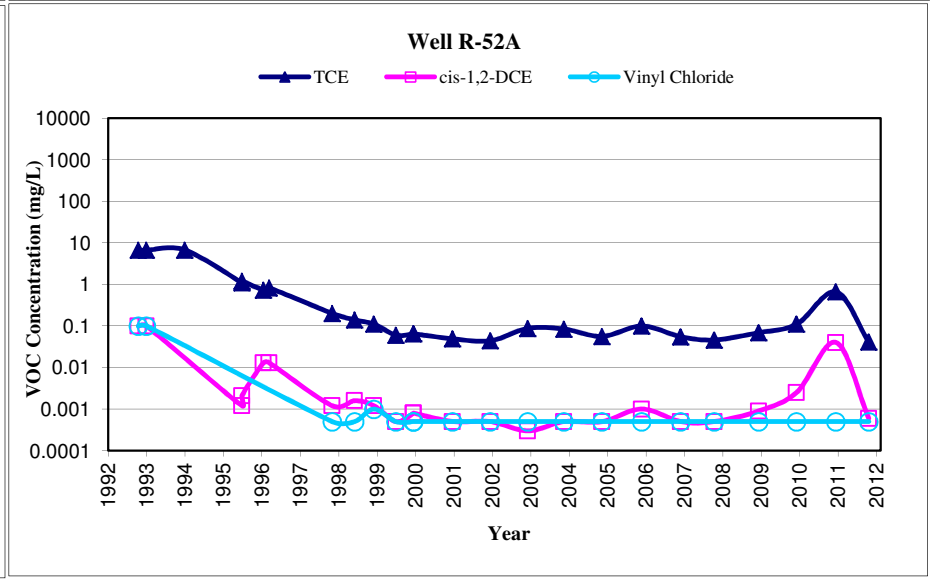
HISTORICAL GROUNDWATER QUALITY DATA AND PLOTS

APPENDIX E
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "A" AQUIFER WELLS

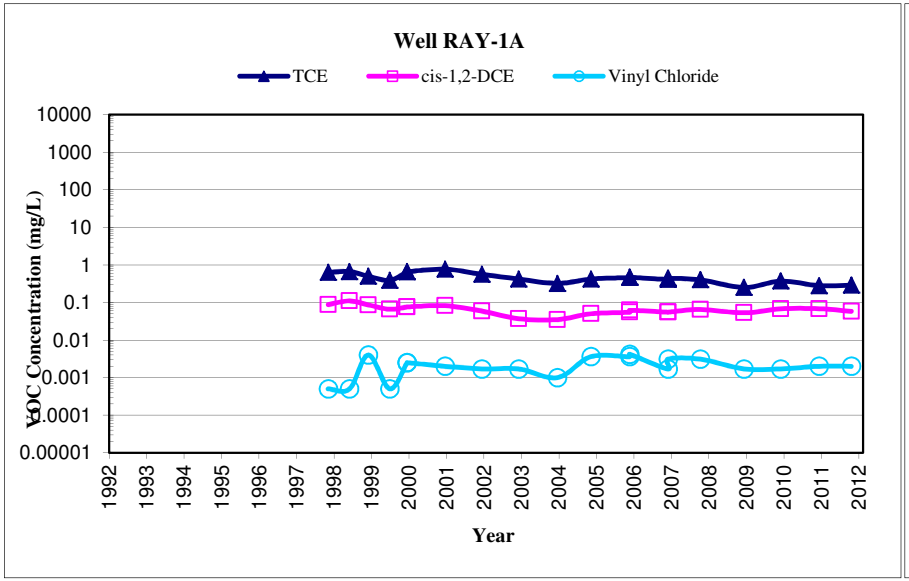


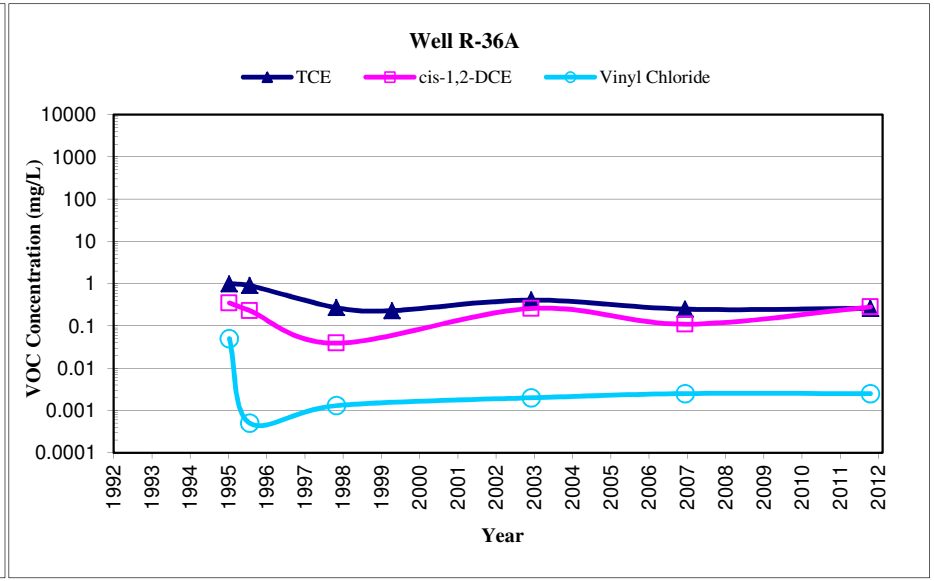


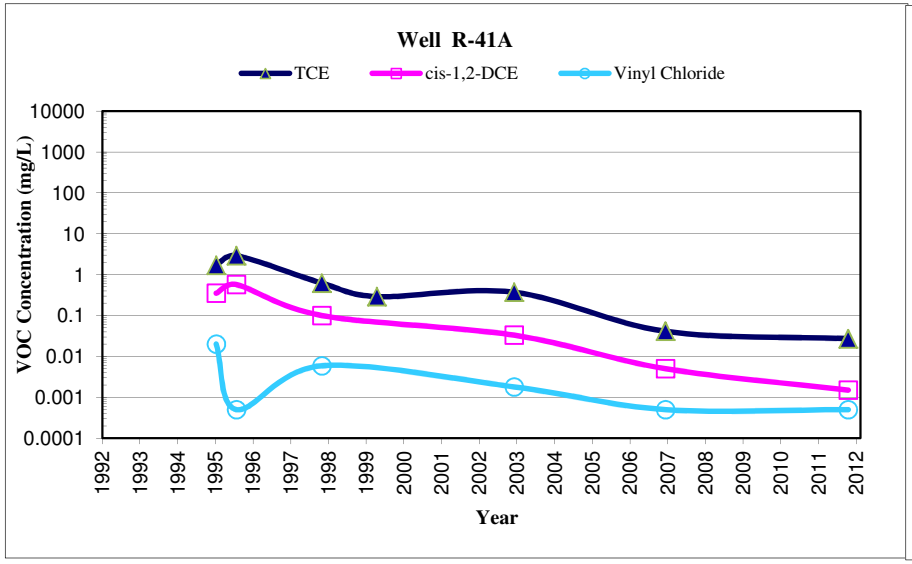


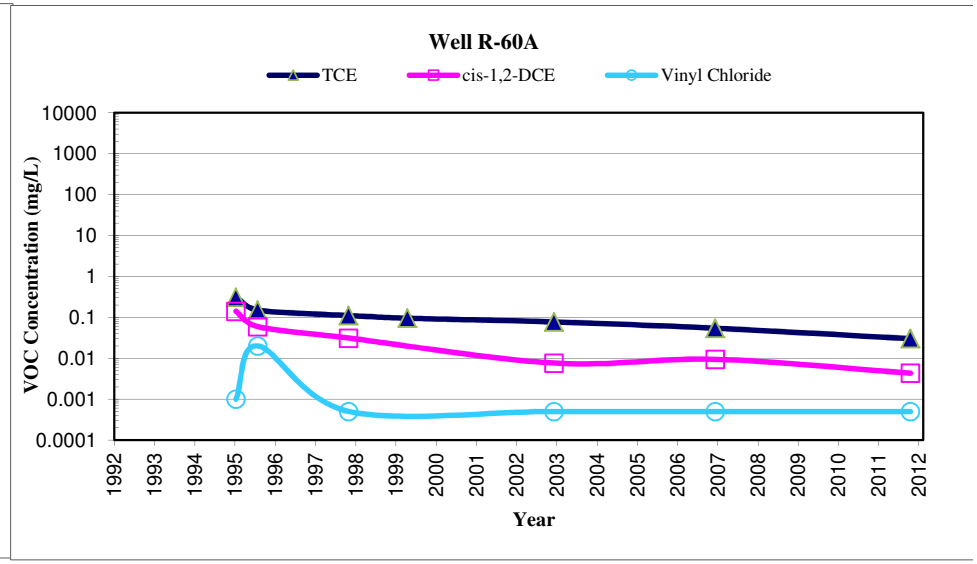


APPENDIX E
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "A" AQUIFER WELLS

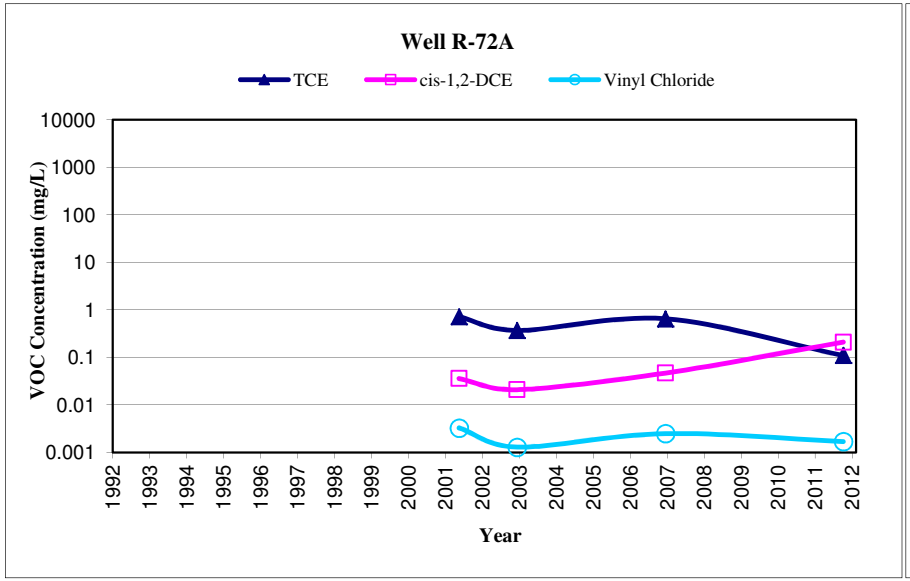


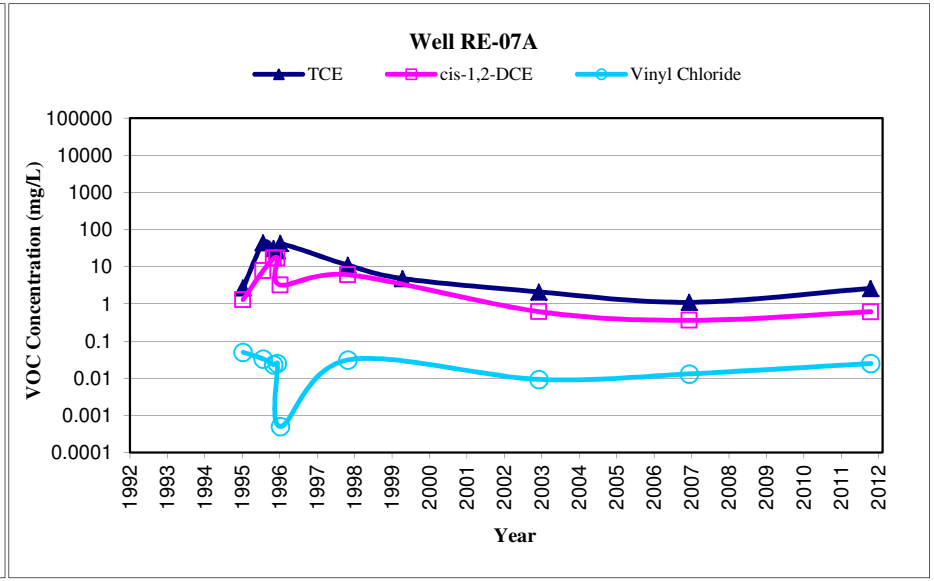


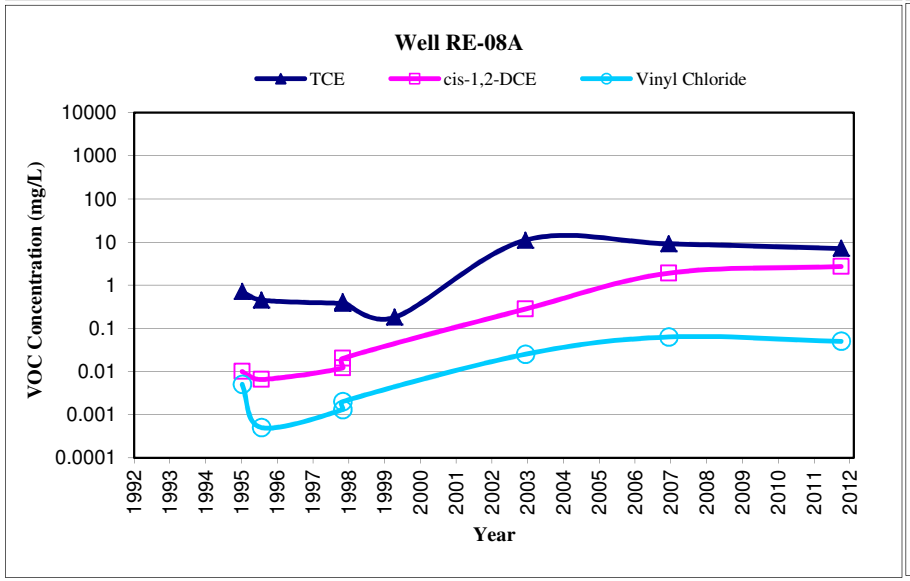


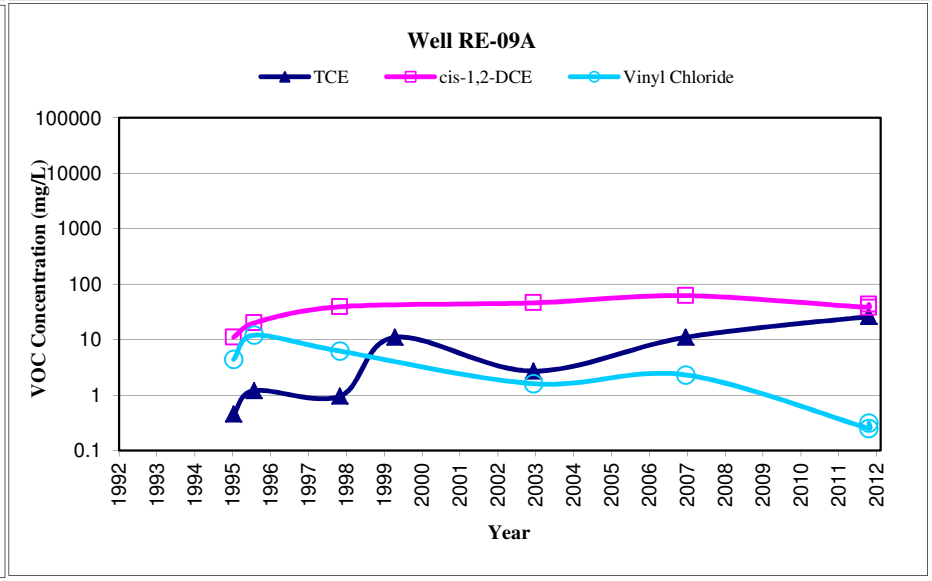


APPENDIX E
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "A" AQUIFER WELLS

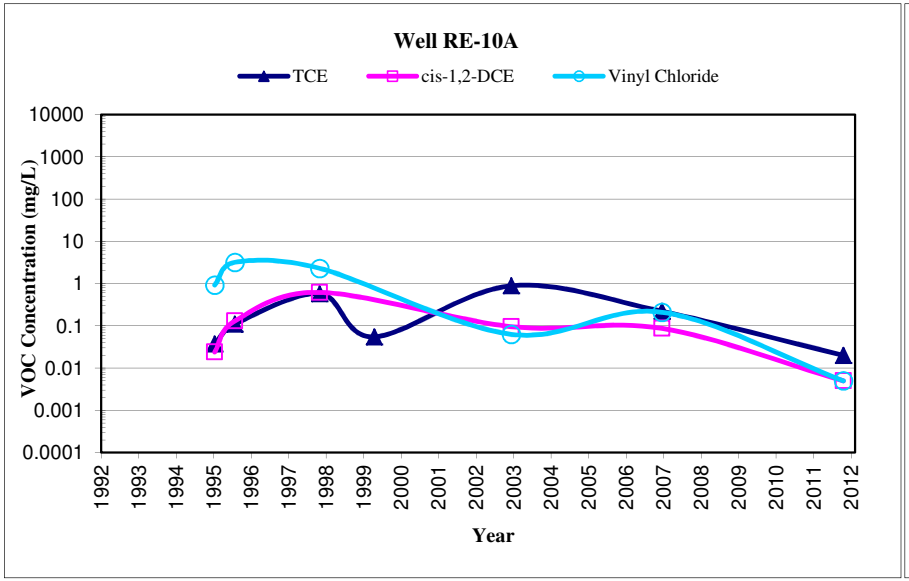


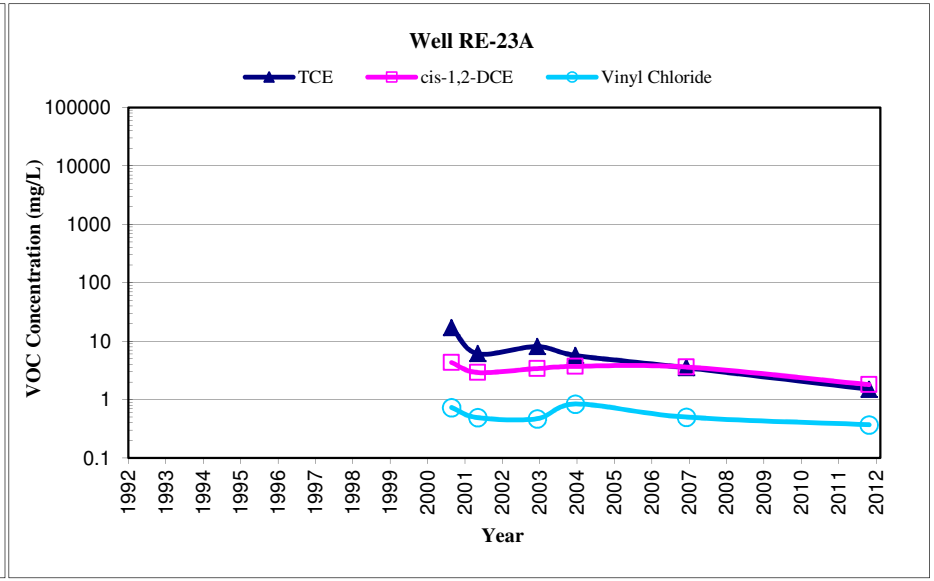


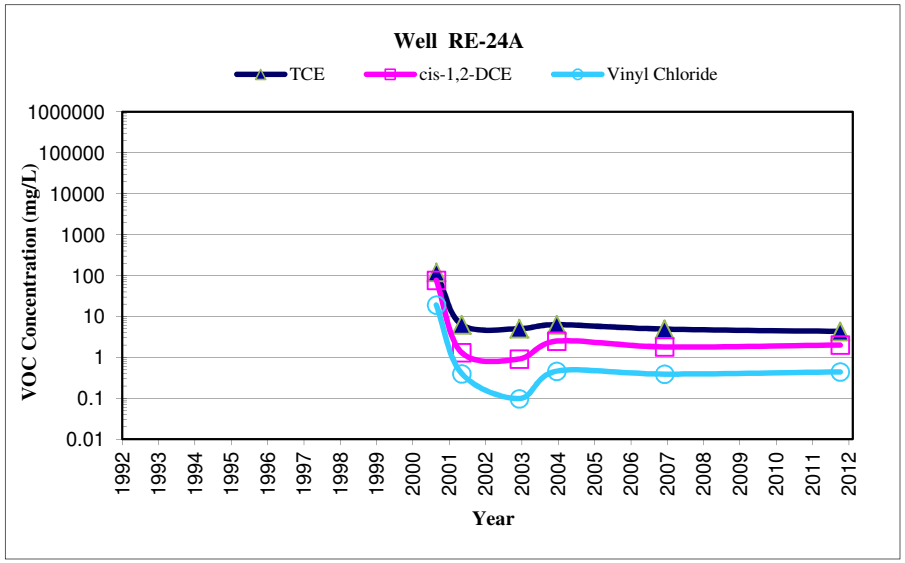


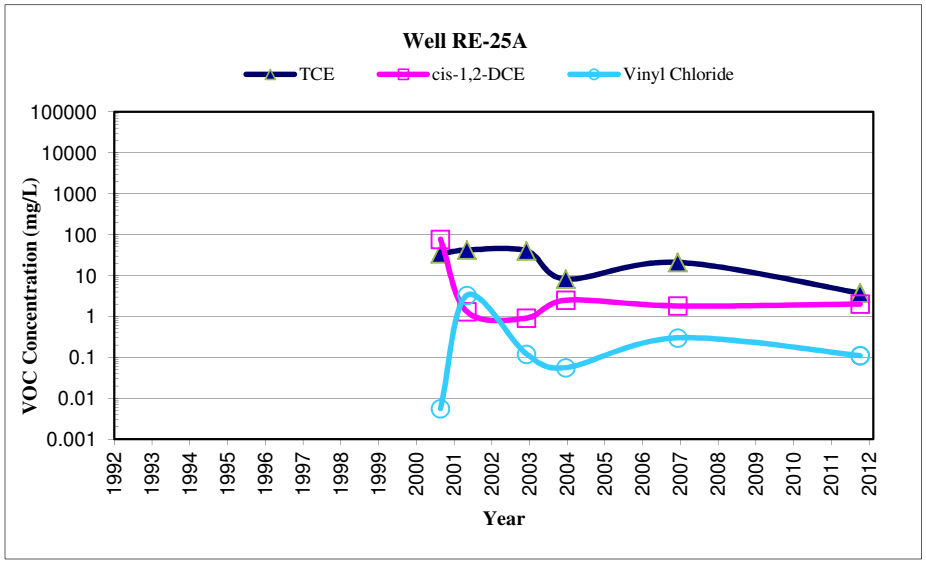


APPENDIX E
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "A" AQUIFER WELLS

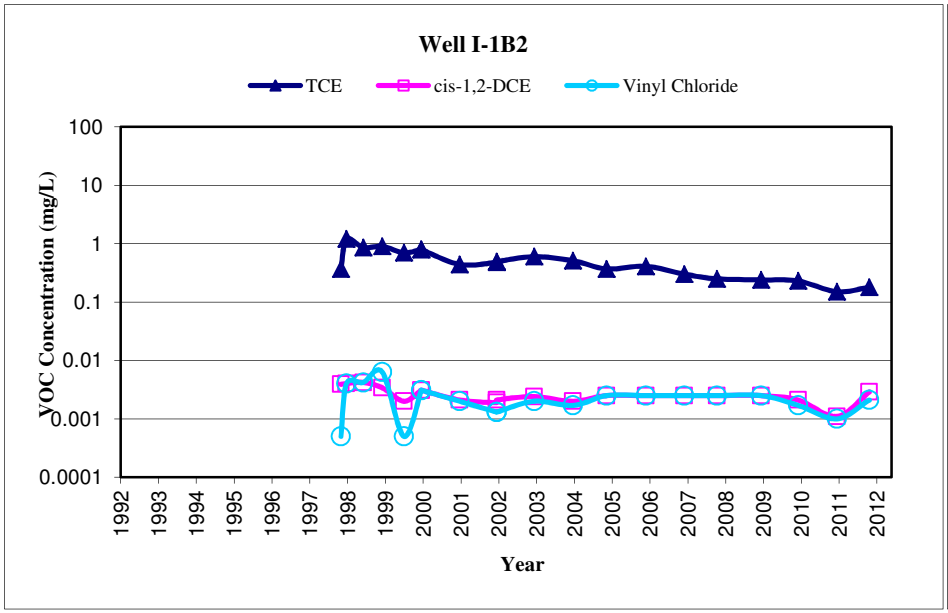


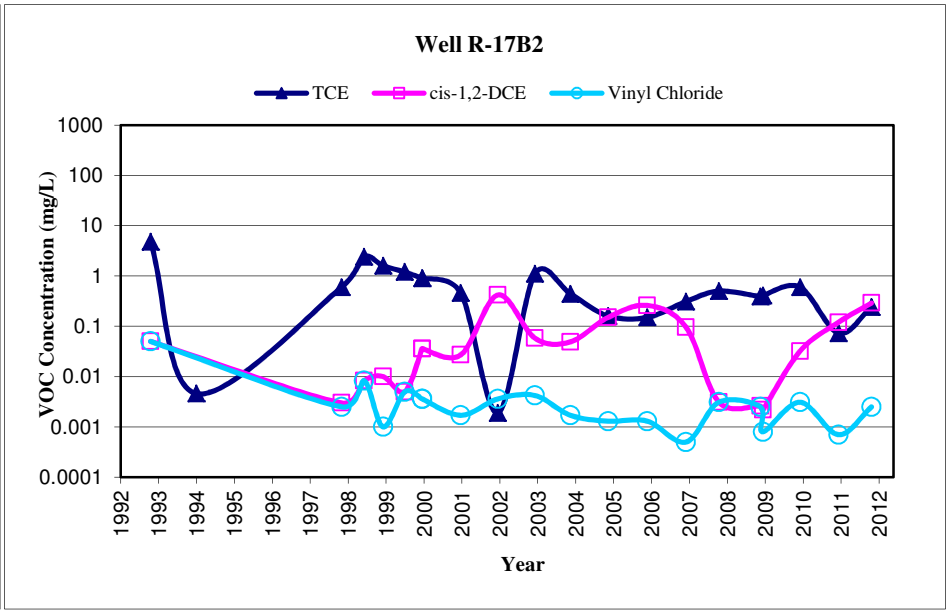


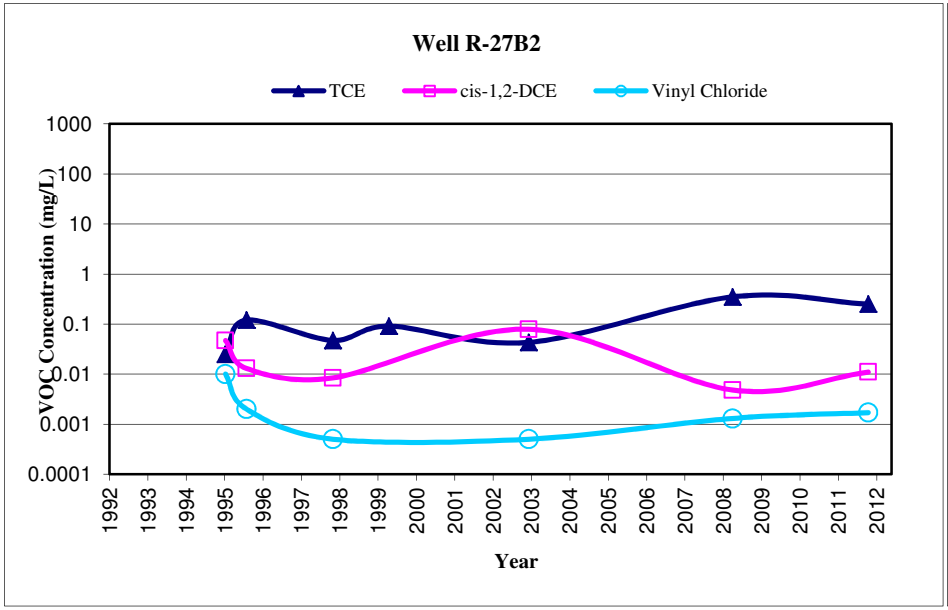


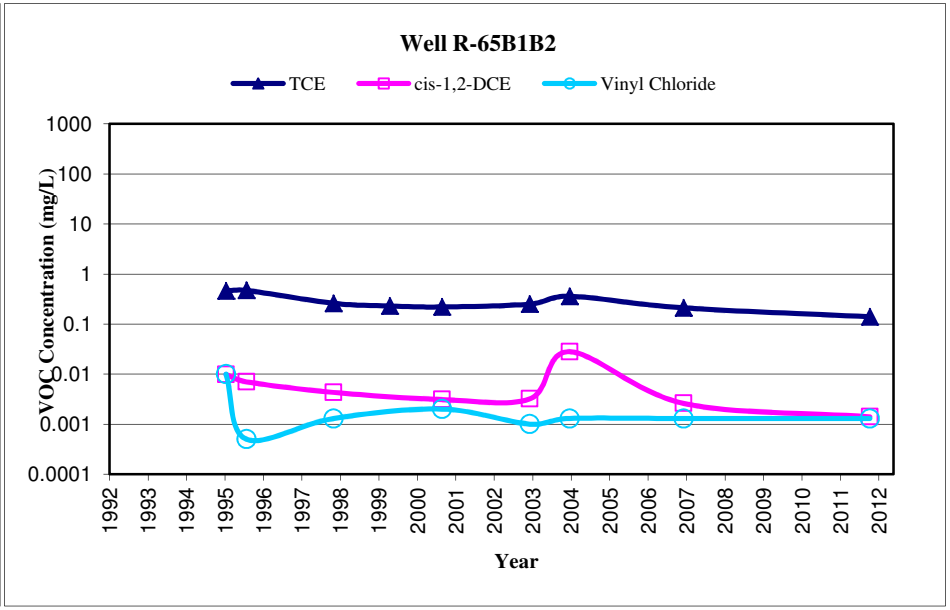


APPENDIX E
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "B2" AQUIFER WELLS

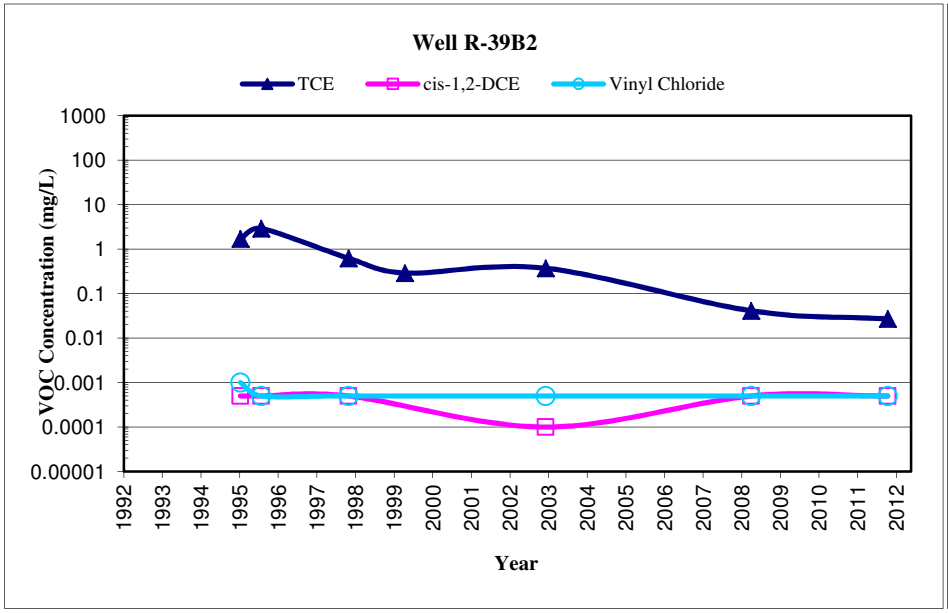


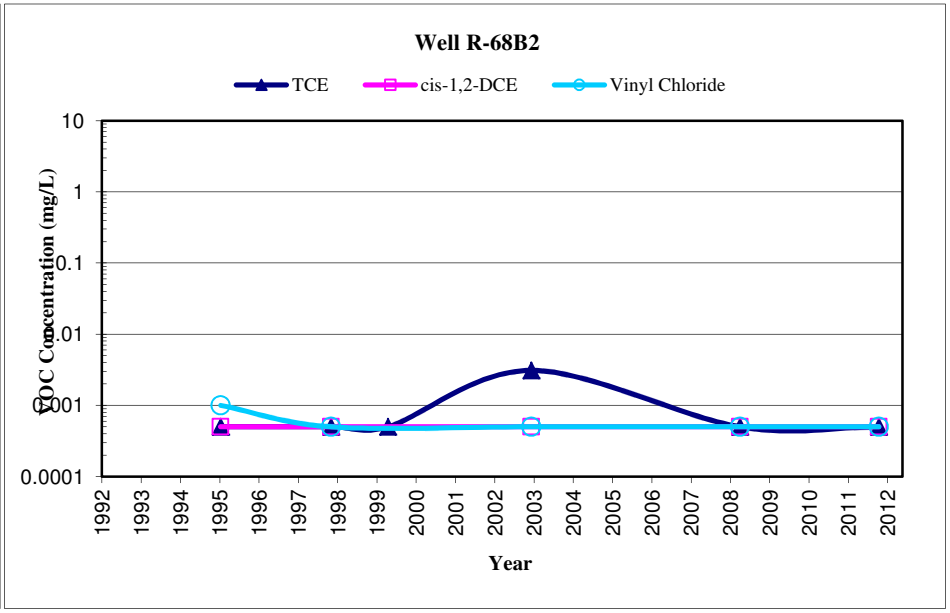


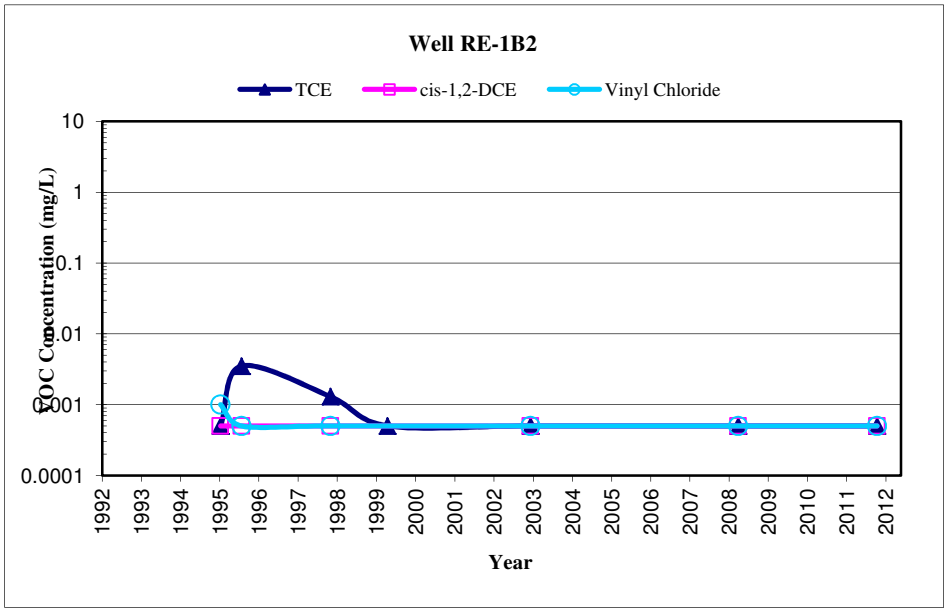




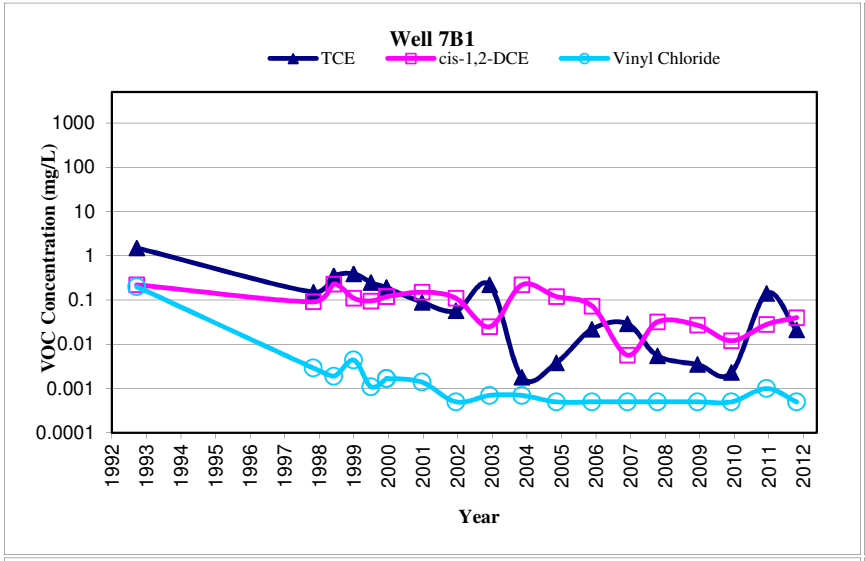
APPENDIX E
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "B2" AQUIFER WELLS

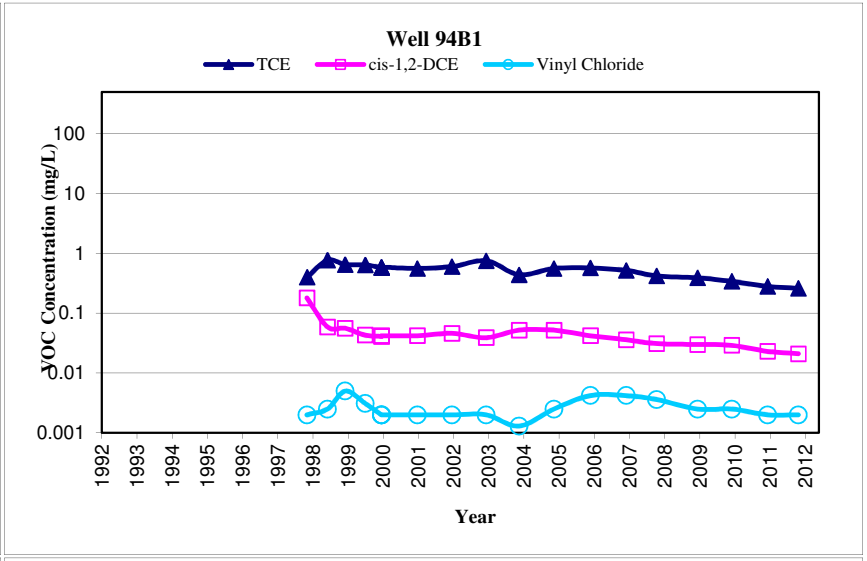


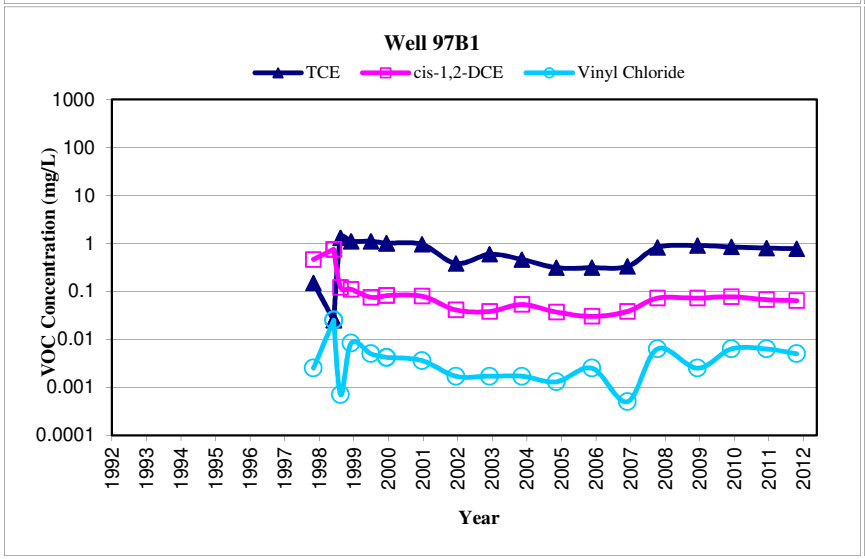


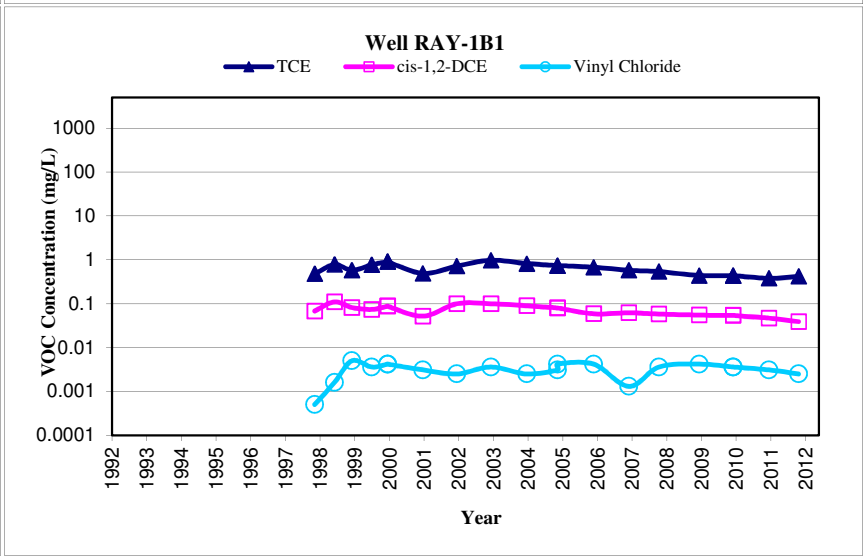


APPENDIX E
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "B1" AQUIFER WELLS

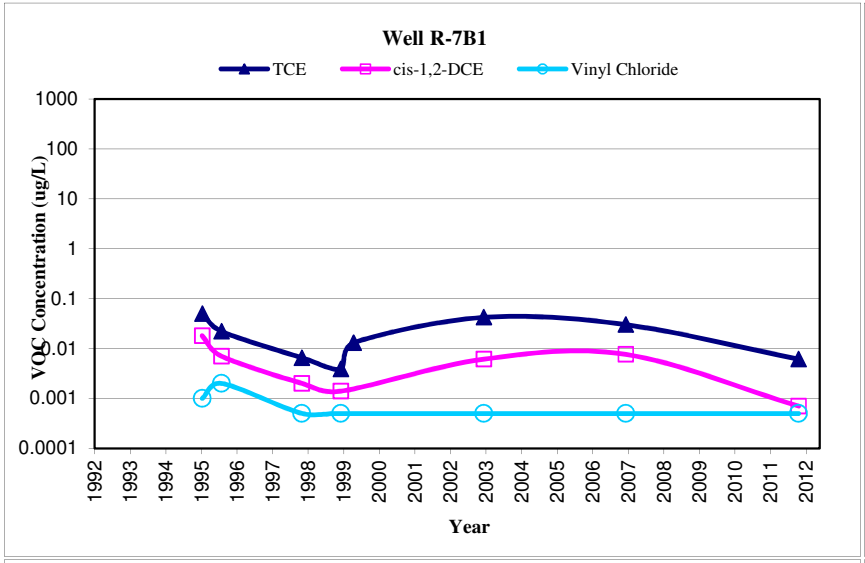


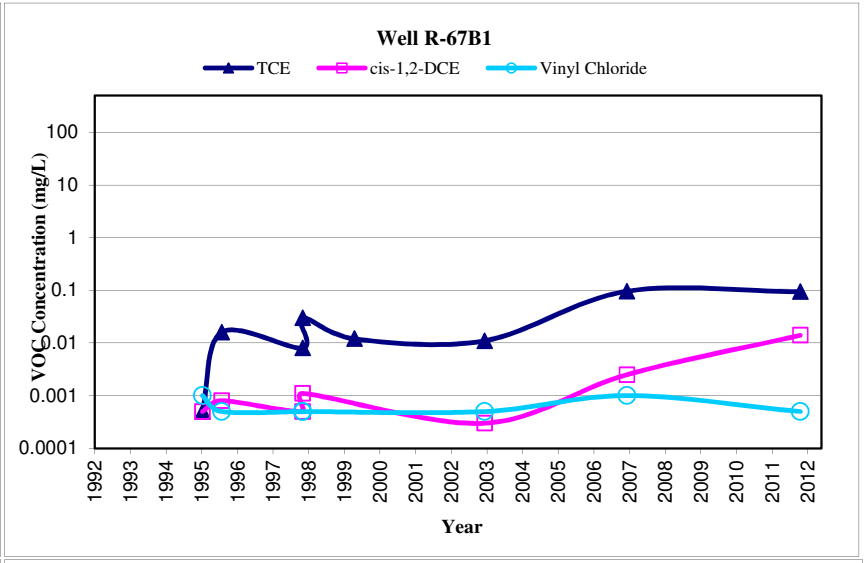


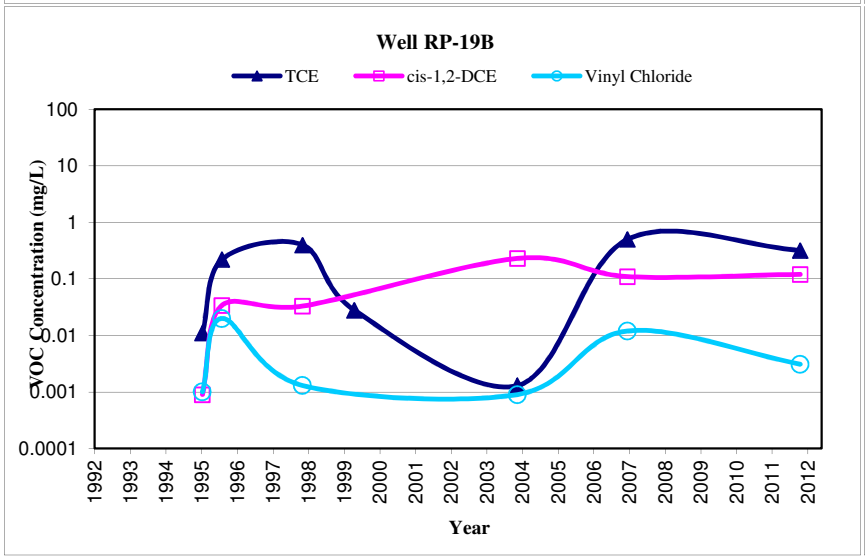


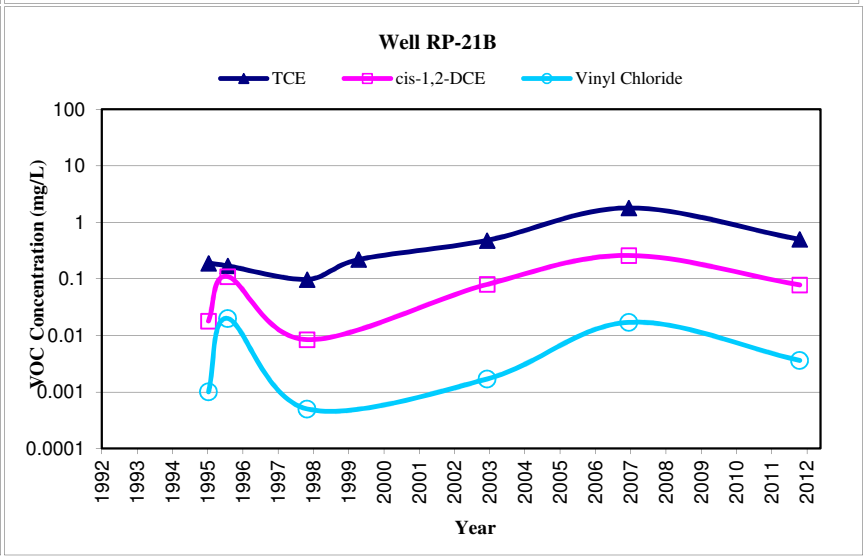


APPENDIX E
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "B1" AQUIFER WELLS

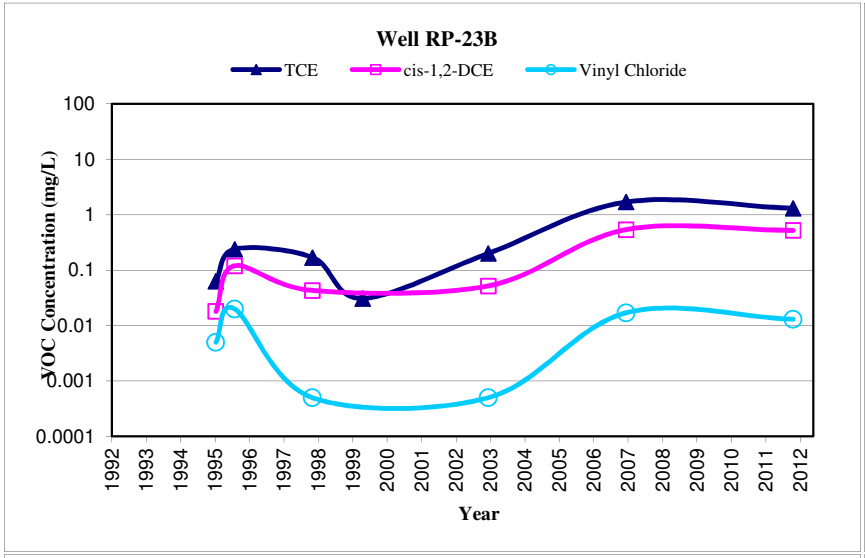


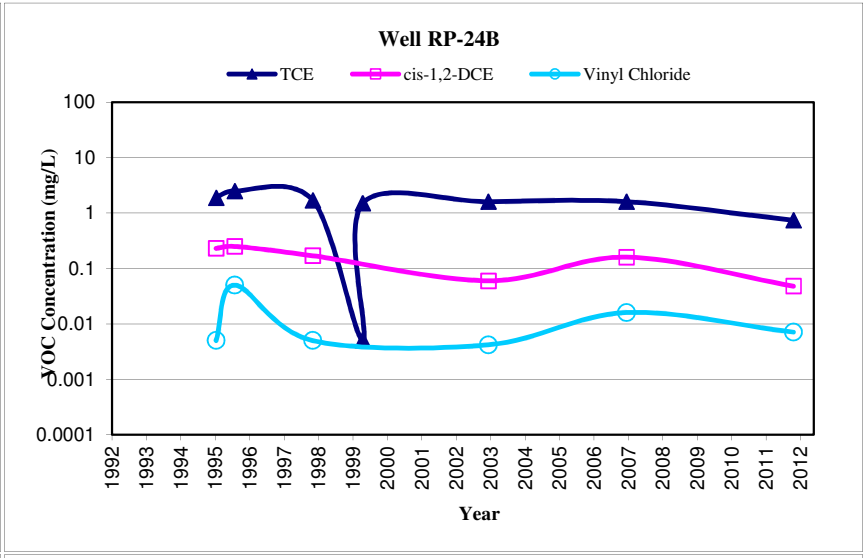


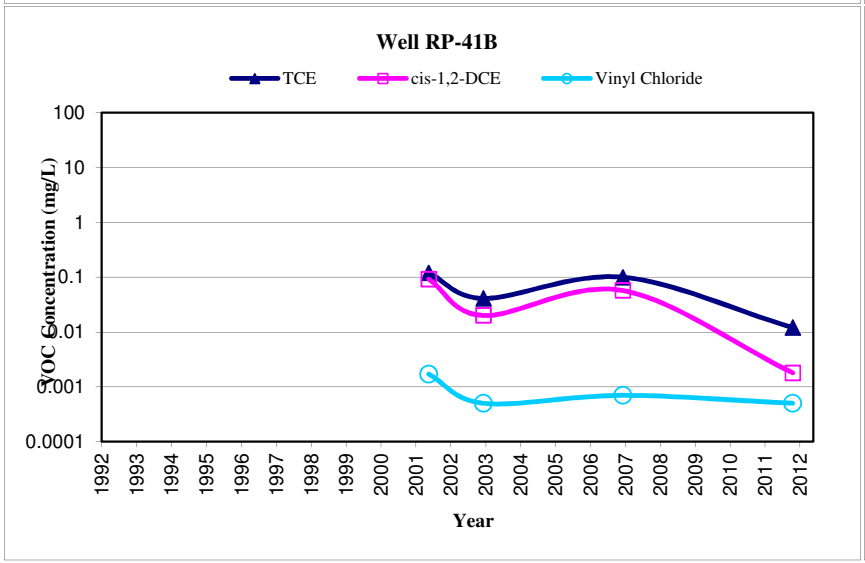


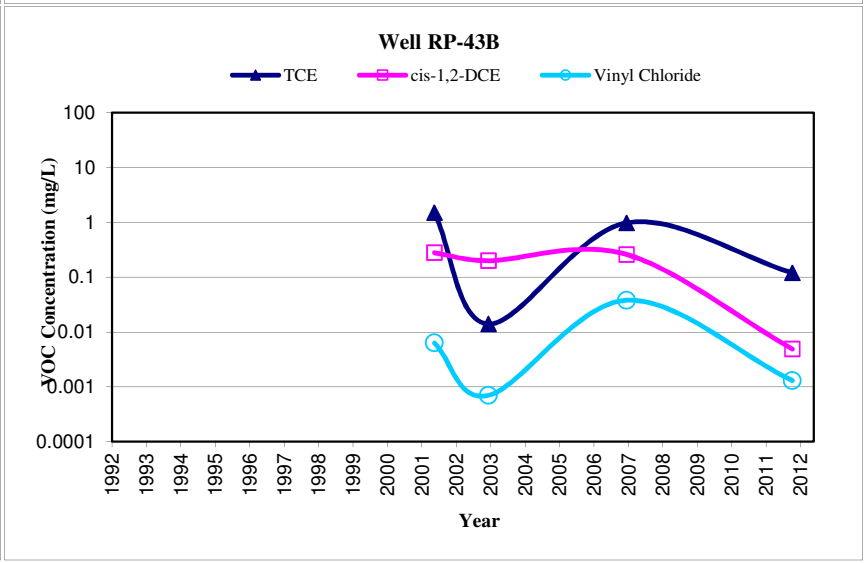


APPENDIX E
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "B1" AQUIFER WELLS









APPENDIX F

QUALITY ASSURANCE/ QUALITY CONTROL REPORT

Appendix E
Quality Assurance/Quality Control Report

Raytheon Company - Former Facilities
350 Ellis Street Site
Mountain View, California

This Quality Assurance/Quality Control Report has been prepared by Locus Technologies (Locus) on behalf of Raytheon Company for the groundwater treatment system samples collected during this reporting period at the Raytheon's former facility located at 350 Ellis Street in Mountain View, California. This QA/QC report demonstrates that the work performed at this site complied with the standards and protocols in accordance with the 1991 Unified Quality Assurance Project Plan for the Middlefield-Ellis-Whisman site in Mountain View, California (UQAPP).

In accordance with the UQAPP, one matrix spike/matrix spike duplicate (MS/MSD) and one method blank sample are to be analyzed for every 20 samples analyzed by the laboratory. In addition, one field duplicate is to be collected for every 20 samples collected and a laboratory prepared travel blank sample accompanies every shipment of samples.

Matrix Spike/Matrix Spike Duplicate and Blank Spike/Blank Spike Duplicate (BS/BSD) Samples

The MS/MSD and BS/BSD samples are used to assess accuracy and precision of the data. MS/MSD and/or BS/BSD samples were run for each of the analyses conducted. A precision goal of 20 percent relative percent difference (RPD) was used for VOC/SVOC analyses. The RPD values ranged from 0 to 19 and 0 to 11 percent for BSD and MSD samples, respectively (Table E-1), and are within the precision goals.

Percent recovery goals ranging from 63 to 146 percent for the volatile analysis were used for the MS/MSD samples. Laboratory QC limits were used for the analyses for which the UQAPP does not specify a percent recovery goal. The surrogate recoveries for the MS/MSD samples ranged from 88 to 131 percent; the quality assurance goal for MS/MSD samples ranges from 71 to 146 percent. For analyte recoveries for the MS/MSD samples, two were observed beyond the quality assurance goal. In terms of accuracy and precision for MS/MSD samples, the completeness is 98 percent (Table E-2).

The laboratory BS/BSD samples were analyzed using EPA Method 8260. Percent recovery goals for BS/BSD samples are not specified in the UQAPP; as such, the laboratory QC limits were used as the quality assurance goals. All BS/BSD sample percent recoveries were within the quality assurance goals, and are included in Table E-2. In terms of accuracy and precision, the completeness for both BS/BSD analyte recovery and surrogate recovery is 100 percent.

Travel Blank Samples

A total of 18 travel blank samples were analyzed for this annual reporting period. The travel blank surrogate recoveries ranged from 80 to 137 percent, and are within the quality assurance goal of 71 – 146 percent (Table E-3). The completeness of the travel blank data is 100 percent, and the data are valid.

Field Blank Samples

Five field blank samples were analyzed during this reporting period. The percent recoveries of the field blank surrogates ranged from 76 to 129 percent, and are within the quality assurance goal of 71 – 146 percent (Table E-3). The completeness of the field blank data is 100 percent, and the data are valid.

Method Blank Samples

The laboratory analyzed 49 method blank samples in this reporting period. The percent recoveries ranged from 76 to 132 percent for surrogates associated with EPA Method 8260, and are within the quality assurance goals of 71 – 146 percent (Table E-3). The method blank data have a completeness of 100 percent; the data are valid.

Field Samples

The laboratory analyzed a total of 83 field samples during this reporting period. The percent recoveries ranged from 80 to 140 percent for EPA Methods 8260. The field sample data have a completeness of 100 percent and are valid.

Field Duplicate Samples

Five field duplicate samples were collected and analyzed in 2011. The percent recoveries ranged from 81 to 130 percent for the EPA Method 8260 analysis, which are within the quality assurance goals (Table E-3). The duplicate sample data have a completeness of 100 percent and are valid.

TABLE E-1

2011 ANNUAL PROGRESS REPORT

QUALITY ASSURANCE REPORT

SUMMARY OF LABORATORY PRECISION DATA

RAYTHEON COMPANY - FORMER FACILITIES

350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Sample Type	Constituent	Precision			Completeness	
		Relative Percent Difference (%)			Quality Assurance Goal (%)[1]	Percent (%)	Quality Assurance Goal (%)
Blank Spike Duplicate	1,1-Dichloroethene *	0	-	19	20	100	90
	Trichloroethene	0	-	15			
	Chlorobenzene	0	-	11			
	Toluene	0	-	10			
	Benzene	0	-	4			
Matrix Spike Duplicate	1,1-Dichloroethene	0	-	7	20	96	90
	Trichloroethene	1	-	11			
	Chlorobenzene	1	-	9			
	Toluene	0			NA		
	Benzene	1			NA		

Notes:

[1] If QA goal is not specified in UQAPP for specified compound, or its associated analysis, the laboratory QC limit is used.

* Low recovery was observed for TCE in the MSD batch for the february sampling event; the parent sample was not a project sample, and the BS/BSD were within limits. Responses exceeding the instrument's linear range were observed for trichloroethene in the MS/MSD ; affected data was qualified with "b". No other analytical problems were encountered.

* Low recovery was observed for TCE in the MSD of R-52A ; the BS/BSD were within limits, and the associated RPD was within limits. Therefore the completeness for MSD samples is (43/45)*100 = 96.0 percent.

TABLE E-2
2011 ANNUAL PROGRESS REPORT
QUALITY ASSURANCE REPORT
SUMMARY OF LABORATORY ACCURACY DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Sample Type		Constituent	Accuracy		Completeness	
			Percent Recovery (%)	Quality Assurance Goal (%)	Percent (%)	Quality Assurance Goal (%)
Matrix Spike and Matrix Spike Duplicate [1]	Analyte	1,1-Dichloroethene	84 - 117	73 - 126	98	90-100
		Trichloroethene *	61 - 106	69 - 122		
		Chlorobenzene	93 - 108	80 - 120		
		Benzene	94 - 102	80 - 120		
		Toluene	96 - 100	80 - 120		
	Surrogate	1,2-Dichloroethane-d4	93 - 131	71 - 146		
		Toluene-d8	90 - 106	80 - 120		
		p-Bromofluorobenzene	88 - 119	80 - 120		
Blank Spike and Blank Spike Duplicate [2]	Analyte	1,1-Dichloroethene	72 - 123	68 - 138	100	90-100
		Benzene	88 - 105	80 - 122		
		Trichloroethene	84 - 119	78 - 122		
		Toluene	96 - 102	80 - 120		
		Chlorobenzene	91 - 118			
	Surrogate	Dibromofluoromethane	72 - 123	80 - 122		
		1,2-Dichloroethane-d4	75 - 134	71 - 146		
		Toluene-d8	86 - 106	80 - 120		
		Bromofluorobenzene	NA	NA		
		p-Bromofluorobenzene	86 - 119	80 - 120		

Notes:

[1] The percentages shown for the quality assurance goals are actually laboratory QC limits; when the UQAPP was written, these analyses were not required for treatment system samples,

[2] Quality assurance goals were not specified for BS/BSD samples in the UQAPP, as such the laboratory QC limits were used.

* Low recovery was observed for TCE in the MSD batch for the february sampling event; the parent sample was not a project sample, and the BS/BSD were within limits. Responses exceeding the instrument's linear range were observed for trichloroethene in the MS/MSD ; No other analytical problems were encountered. Therefore the completeness for MSD samples is (49/50)*100 = 98.0 percent.

TABLE E-3
2011 ANNUAL PROGRESS REPORT
QUALITY ASSURANCE REPORT
SUMMARY OF ACCURACY AND PRECISION DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Sample Type		Constituent	Accuracy		Precision		Completeness	
			Percent Recovery (%)	Quality Assurance Goal (%)[a]	Relative Percent Difference (%)	Quality Assurance Goal (%)	Percent (%)	Quality Assurance Goal (%)
Travel Blanks	Surrogate	Dibromofluoromethane	91 - 112	80 - 125	not applicable		100	90-100
		1,2-Dichloroethane-d4	80 - 137	71 - 146				
		Toluene-d8	88 - 112	80 - 120				
		p-Bromofluorobenzene	94 - 106					
Field Blanks	Surrogate	1,2-Dichloroethane-d4	76 - 129	71 - 146	not applicable		100	90-100
		Toluene-d8	88 - 110	80 - 120				
		p-Bromofluorobenzene	94 - 105					
Method Blanks	Surrogate	Dibromofluoromethane	83 - 116	80 - 127	not applicable		100	90-100
		1,2-Dichloroethane-d4	76 - 132	71 - 146				
		Toluene-d8	88 - 112	80 - 120				
		p-Bromofluorobenzene	90 - 119	80 - 127				
Field Samples	Surrogate	Dibromofluoromethane	86 - 127	80 - 127	not applicable		100	90-100
		1,2-Dichloroethane-d4	80 - 140	71 - 146				
		Toluene-d8	87 - 120	80 - 120				
		p-Bromofluorobenzene	87 - 118					
Field Duplicates	Surrogate	1,2-Dichloroethane-d4	81 - 130	71 - 146	not applicable		100	90-100
		Toluene-d8	89 - 110	80 - 120				
		p-Bromofluorobenzene	90 - 105					

Notes:

a. Quality assurance goals were only specified for MS/MSD laboratory samples in the UQAPP, as such laboratory QC limits are used.
b. The quality assurance goals stated are the actual laboratory QC limits; the methods were not required on treatment system samples at the time the UQAPP was written.