Weiss Associates
30 YEARS OF SERVICE 1980 — 2010

Environmental Science, Engineering and Management

2009 ANNUAL PROGRESS REPORT

for

Former Fairchild Buildings 13, 19 and 23
369/441 North Whisman Road
Middlefield-Ellis-Whisman Study Area
Mountain View, California

prepared for

Schlumberger Technology Corporation
225 Schlumberger Drive
Sugar Land, TX 77478

June 15, 2010

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submitted to

USEPA, Region 9, Superfund Division
75 Hawthorne Street
San Francisco, California 94105

prepared by

Weiss Associates
350 E. Middlefield Road
Mountain View, California 94043

Weiss Project No. 363-1900-2-04

Joyce Adams, P.G.
Sr. Project Geologist

Alison Petti, E.I.T.
Staff Engineer

Mary Cunningham
Staff Engineer

Weiss Associates work for Schlumberger Technology Corporation (STC) was conducted under my supervision. To the best of my knowledge, the data contained in this report are true and accurate and satisfy the scope of work for this project in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied, and are not responsible for the interpretation by others of the contents in this report.

PROFESSIONAL GEOLOGIST
TESS
BYLER
No.8131
STATE OF CALIFORNIA

June 15, 2010
Date

Tess Byler, P.G.
Sr. Project Geologist
(CA # 8131, expiration Nov. 2010)

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ACRONYMS AND ABBREVIATIONS

106 Order	Administrative Order for Remedial Design and Remedial Action
cis-1,2-DCE	cis-1,2-dichloroethene
ESD	explanation of significant differences
Fairchild	Fairchild Semiconductor Corporation
ft	feet
ft bgs	feet below ground surface
GAC	granular activated carbon
Geosyntec	Geosyntec Consultants
HLA	Harding Lawson Associates
K	hydraulic conductivity
µg/L	micrograms per liter
mg/kg	milligram per kilogram
MEW	Middlefield-Ellis-Whisman
MCLs	maximum contaminant levels
NASA	National Aeronautics and Space Administration
NPDES	National Pollutant Discharge Elimination System
O&M	operation and maintenance
PRP	potentially responsible parties
QA/QC	quality assurance and quality control
QAPP	Quality Assurance Project Plan
RAO	remedial action objective
RGRP	Regional Groundwater Remediation Program
RI/FS	remedial investigation and feasibility study
ROD	Record of Decision
RRWs	regional recovery wells
SCRWs	source control recovery wells
SVE	Soil Vapor Extraction
SOPs	Standard Operating Procedures
Water Board	California Regional Water Quality Control Board, San Francisco Bay Region
Weiss Associates	Weiss
the Site	369/441 Whisman Road, Mountain View, California
TCE	trichloroethene
USEPA	United States Environmental Protection Agency
VOCs	volatile organic compounds

SUMMARY

This 2009 Annual Progress Report for the former Fairchild Semiconductor Corporation (Fairchild) facilities located at 369/441 Whisman Road (former Buildings 13, 19 and 23) in Mountain View, California (the Site; Figures 1, 2, and 3) contains a summary of Site activities from January 1 through December 31, 2009, and monitoring data for the past five years. This report is submitted in accordance with Section XV of the 1990 Administrative Order for Remedial Design and Remedial Action (106 Order) issued by the United States Environmental Protection Agency (USEPA) and the USEPA's correspondence prescribing Annual Report contents (USEPA, 1990a and 2005).

The groundwater containment and treatment system at the Site removes volatile organic compounds (VOCs) from groundwater, and consists of:

- A slurry wall containment structure around former Building 19 that is approximately 40 feet (ft) deep and extends from ground surface to a minimum of two ft into the A/B1 aquitard beneath the Site;
- Groundwater treatment system (System 19) that removes VOCs using activated carbon under National Pollutant Discharge Elimination System (NPDES) Permit CAG912003, Order No. R2-2004-0055 during the first three quarters of 2009 and under Order No. R2-2009-0059 which became effective October 1, 2009;
- Fifteen source control recovery wells (SCRWs); and,
- 35 monitoring wells.

The treatment system also treats ground water plumbed to it from:

- Seven regional recovery wells (RRWs) that are part of the Regional Groundwater Remediation Program (RGRP).

Site activities conducted in compliance with the 106 Order during this reporting period included continued operation, monitoring and maintenance activities of the Building 19 groundwater remediation systems, quarterly slurry wall water level monitoring, semiannual groundwater level monitoring events in March and November, annual groundwater sampling in November 2009, and submitting information related to the USEPA's Second Five-Year Remedy Review for the Fairchild Sites May-June 2009, including USEPA Site inspection on May 5, 2009.

Groundwater Treatment: During 2009, System 19 treated approximately 37.6 million gallons of groundwater, and 175 pounds of VOCs removed from groundwater. From January 1 through December 31, 2009, the groundwater treatment system operated 97% of the time. During calendar year 2009, the extraction and treatment systems operated within all effluent limits established by the discharge permits. Extraction wells RW-1A, 71A, RW-12A, and RW-26A were shut down with approval from USEPA in August 2007[1] as part of the Fairchild slurry wall evaluation (Northgate, 2007, 2008a and 2008b) and remained off-line in 2009.

[1] USEPA approved temporary reductions in pumping rates and monitoring of these wells, email from Alana Lee, USEPA, to Maile Smith, Northgate, August 2, 2007.

Groundwater Capture Evaluation: Groundwater elevation and chemical monitoring results from 2009 demonstrate that the Site extraction wells continue to achieve adequate horizontal and vertical plume capture based on target captures and converging lines of evidence, including graphical flow net analysis and chemical concentration trends.

Technical Assessment: The groundwater extraction, treatment, and containment systems are functioning as intended. TCE concentrations generally stable in monitoring and extraction wells within the A1 and B1 groundwater zones. There are slight increases of VOCs in downgradient wells 160A, 110B1 and 173A since 2007; however, wells located closer to the slurry wall do not exhibit increases. The four extractions wells that have been off since 2007 are located within the slurry wall, and slight rebound was observed in RW-1A and RW-26A. Concentrations in wells RW-1(B1) and 110B1 although below historical maximums, have increased since 2007. Several wells in the Building 19 Area exhibit evidence of reductive dechlorination based on steady to decreased TCE concentrations, with noted increases in cis-1,2-DCE and vinyl chloride concentrations (71A, 115A, 134A, 148A, 149A, 154A, 146B2).

Planned Activities for 2010: Schlumberger Technology Corporation (STC) will continue operating the Fairchild groundwater treatment systems and monitor their performance during 2010. Groundwater extraction well rates will be optimized in 2010 in accordance with the Optimization Report, including turning back on some A-zone groundwater extraction wells (Geosyntec et al, 2008 and Geosyntec, 2010a). The 2010 Annual Progress Report will be submitted to the USEPA by June 15, 2011.

1. INTRODUCTION

This 2009 Annual Progress Report was prepared by Weiss Associates (Weiss) on behalf of Schlumberger Technology Corporation for the former Fairchild Semiconductor Corporation (Fairchild) facilities located at 369/441 North Whisman Road (former Buildings 13, 19, and 23) located in Mountain View, California (the Site) (Figures 1, 2 and 3). Geosyntec Consultants (Geosyntec) assisted with the preparation of this report.

This progress report contains a summary of Site activities and data from January 1 through December 31, 2009, and monitoring data from the past five years. This report is submitted in accordance with Section XV of the 1990 Administrative Order for Remedial Design and Remedial Action (106 Order) issued by the United States Environmental Protection Agency (USEPA), and the USEPA's correspondence prescribing Annual Report contents (USEPA, 1990a and USEPA, 2005).

1.1 Site Background

The Former Fairchild Building 19 Site is located at 369/441 North Whisman Road in Mountain View California (Figures 2 and 3). The former Building 19 functioned as a facility for processing silicon metal into electronic semiconductor devices for Fairchild Semiconductor Corporation from 1969 to 1987. The Site encompasses Fairchild's former Buildings 13 and 23. The Site formerly contained seven waste solvent storage tanks (10,000 gallon capacity) and one chemical storage tank (500 gallon capacity) formerly located east of the former Building 19. The tanks were used from about 1967-1978. Other identified potential sources were four acid neutralization sumps (500 gallon capacity located in the south exterior wall of former Building 19,two pH neutralization sumps on the west side of the building and two neutralization and waste solvent tanks on the north of former building 19. At Former Building 13, three concrete sumps (10,000 gallon capacity) used as part of a pH neutralization system (HLA, 1987). The primary constituent of concern at the Site is trichloroethene (TCE) in groundwater from historical releases from underground tanks/piping, sumps and/or surface spills (HLA, 1987 and Canonie, 1988).

Groundwater extraction and treatment has occurred at Building 19 since 1982. Construction details for Site monitoring and extraction wells are provided in Table 1. A soil-bentonite slurry wall was constructed around the site from the ground surface to the A/B aquitard in 1985. The slurry wall and groundwater extraction were designed to prevent migration of VOCs offsite.

Soil cleanup actions included *in-situ* vapor extraction with treatment by vapor-phase GAC, and excavation and treatment by aeration. In 1994, 6,000 cubic yards of soil were excavated to a depth of 6 (ft) and aerated at the 369 Whisman Road Site. A soil vapor extraction (SVE) system operated from 1996 to 1997 to remediate soil from 6 ft bgs to 18 inches above the water table. Soil samples collected after the SVE system was shut down indicated that the soils at the Site had reached the cleanup standards of 0.5 mg/kg and 1 mg/kg TCE inside and outside the slurry walls, respectively (Smith, 1996a, and Smith, 1997).

The Site was redeveloped in the 1990's, and was occupied by AOL/Netscape and/or HP/Mercury Interactive until about 2007. The previous and current addresses of Former Fairchild Building 19 are provided below:

Previous Address	Current Address	Current Occupants
Former Fairchild Buildings 13, 19 and 23 369/441 North Whisman Road	369 North Whisman Road 379 North Whisman Road 389 North Whisman Road 399 North Whisman Road ("The Quad")	Unoccupied

The Site is located within the Middlefield-Ellis-Whisman (MEW) area, an approximate ¼-square mile area bounded by Middlefield Road on the south, Ellis Street on the east, Whisman Road on the west, and Highway 101 on the north (Figure 2).

Remedial investigation/feasibility studies (RI/FS) for the MEW area were completed in 1988 (HLA, 1987, and Canonie, 1988), with the USEPA issuing a Record of Decision (ROD) in 1989. The ROD and two subsequent Explanations of Significant Differences (ESDs) specify the remedial actions for the MEW area (USEPA, 1989, 1990b, 1996). Remedial action is being conducted pursuant to the 106 Order, issued to nine respondents[2] in November 1990, and the MEW Consent Decree entered into by Raytheon Company and Intel Corporation in 1992, by which they agreed to design, construct, and implement the regional remedial action portion of the remedy selected in the ROD.

Remediation within the MEW area includes facility-specific activities by individual potentially responsible parties (PRPs), such as the former Building 19 Site, and a Regional Groundwater Remediation Program (RGRP) that addresses co-mingled VOCs that have migrated beyond the facility-specific areas and cannot be attributed to a single source. One facility-specific treatment system, System 19, is located on the 369 North Whisman Road property.

The land use at the Site is industrial/research/commercial, with surrounding residential development.

1.2 Local Hydrogeology

Subsurface geology consists of interbedded sediments ranging in grain size from silty clay to sandy gravel. The water – bearing zones defined at the MEW area are summarized below:

Groundwater Zones	Approximate Depth Interval Below Ground Surface (bgs)
A[a]	20 to 45 ft
B1[b]	50 to 75 ft
B2	75 to110 ft
B3	120 to 160 ft
C	200 to 240 ft
Deep Aquifer	>240 ft

[a] Navy and NASA refer to this zone as A1 zone north of Highway 101.

[b] Navy and NASA refer to this zone as A2 north of Highway 101.

> = greater than

[2] The nine 106 Order Respondents are Fairchild, Schlumberger Technology Corporation, National Semiconductor Corporation, NEC Electronics, Siltec Corporation, Sobrato Development Companies, General Instrument Corporation, Tracor X-Ray, and Union Carbide Chemicals and Plastics Company.

The upper groundwater zone is subdivided into two water-bearing zones, the A-zone and the B-zone, which are separated by the A/B aquitard. The B-zone aquifer has been further subdivided into three zones. From youngest to oldest (shallowest to deepest), these are the B1-, B2- and B3-zones, separated by aquitards, designated as the B1/B2 aquitard and the B2/B3 aquitard. The lower groundwater zones occur below the B/C aquitard, from about 200 ft bgs. The B/C aquitard is the major confining layer beneath the MEW area. Two lower groundwater zones have been defined: the C-zone and what has been termed the Deep Aquifer, below the C-zone (HLA, 1987; Intel, 1987).

Ranges of hydraulic conductivity (K), hydraulic gradient, and transmissivity of the upper aquifer zone i.e., above the B/C aquitard, calculated from pumping tests conducted at the MEW Area from 1986 through 2005 are presented in the table below (Canonie, 1986a, 1986b, 1987, and 1988; Geomatrix, 2004; HLA, 1986 and 1987; Locus, 1998; PRC, 1991; Navy, 2005; and Weiss, 1995 and 2005).

Water-Bearing Zone	Estimated Hydraulic Conductivity (ft/day)		Approximate Horizontal Gradient (ft/ft)	Saturated Thickness (ft)	Transmissivity (ft^2/day)	
	Low	High			Low	High
A-zone	6	480	0.004	15	44	4,400
B1-zone	20	260	0.003	25	150	2,600
B2-zone	0.4	5	0.002 to 0.005	35	2	230
B3-zone	0.5	5	0.001 to 0.002	40	5	130

Currently and historically, the lateral component of groundwater flow beneath the Site is generally towards the north during non-pumping and pumping conditions. The Site groundwater gradients and velocities have been locally altered near source control recovery wells (SCRWs), regional recovery wells (RRWs), and the Fairchild and Raytheon slurry walls. The vertical component of groundwater flow is generally upward from the B1- to the A-zone, but is locally downward in some areas of the Site (HLA, 1987). Groundwater extraction has likely exerted an influence on measured vertical gradients. Vertical gradients below the B1-zone are generally upward (Geosyntec et al, 2008).

1.3 Description of Remedy

As specified in the ROD, the remedy consists of groundwater extraction and treatment. The remedy is designed to protect local water supplies and to remediate or control groundwater that contains elevated concentrations of chemicals, including control of discharge of such groundwater to surface water.[3] Groundwater cleanup goals are 5 µg/L for TCE in shallow groundwater (A and B zones) and 0.8 µg/L for TCE in deep groundwater (C and Deep zones).[4] The ROD states that the chemical ratio of TCE to other chemicals found at the Site is such that achieving the cleanup goal for TCE will result in cleanup of the other Site chemicals to at least their respective federal MCLs.

[3] The objectives of the groundwater remedy design are described in the ROD and the Feasibility Study (Canonie, 1988).
[4] Groundwater cleanup goals are presented in the ROD.

In 1986, Fairchild installed subsurface slurry walls at three of its former facilities: (1) Buildings 1-4 at 515/545 Whisman Road and 313 Fairchild Drive, (2) Building 9 at 401 National Avenue, and (3) Building 19 at 369 Whisman Road. The slurry walls extend to approximately 40 ft bgs and are keyed a minimum of two ft into the A/B1 Aquitard. The groundwater cleanup standard of 5 µg/L of TCE for the shallow groundwater zones includes groundwater inside the slurry walls.

As specified in the ROD, cleanup has been addressed in two stages: initial actions and a long-term remedial phase (USEPA, 1989). Initial cleanup activities included tank removals, well sealing, soil removal and treatment, slurry wall construction, and local groundwater extraction and treatment. The Site is in the long term remedial phase that consists of extraction and treatment of groundwater by air stripping towers or liquid-phase granular activated carbon (GAC). Remedial activities are being conducted by individual MEW PRPs as well as the MEW RGRP.

All soil remediation at the MEW area was completed by 2001. The soil cleanup standards for the MEW area are 0.5 milligrams per kilogram (mg/kg) of TCE for all soils outside of slurry walls and 1 mg/kg TCE for soils inside slurry walls.

An additional plume definition program for the MEW area was completed in 1992, and between 1991 and 1995, preliminary and final design documents for soil and groundwater source control measures were developed and submitted to the USEPA (Canonie, 1993, 1994a, and 1994b). Fairchild first installed extraction wells and groundwater treatment systems (air strippers) at its former facilities in 1982-1986. The treatment systems were replaced with GAC systems in 2003 (RMT, 2003). The first Five-Year Remedy Review for the MEW area was completed in 2004 (USEPA, 2004). The second Five-Year Remedy Review was completed in 2009 (USEPA, 2009a).

1.4 Summary of 2009 Site Activities and Deliverables

Table 2 provides the 2009 monitoring and reporting schedule for the Site. Site activities conducted in compliance with the 106 Order (USEPA 1990a) during this reporting period include:

- Continuing groundwater extraction and treatment;
- Monitoring the groundwater treatment systems weekly for operation and flow rates;
- Submitting a Notice of Intent on January 21, to reauthorize the discharge and/or reuse of treated groundwater with VOCs under California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) Permit No. CAG912003;
- Sampling the treatment systems monthly January through September in compliance with National Pollutant Discharge Elimination System (NPDES) Permit CAG912003, Order No. R2-2004-0055;
- Sampling the treatment systems monthly October through December in compliance with the new general VOC permit Water Board Order No. R2-2009-0059 for Fairchild Treatment Systems 1 and 3. This permit was issued by the Water Board in August 2009 and is effective October 1, 2010 through September 2014;

- Submitting the quarterly Self-Monitoring Reports that present treatment system water quality results and extraction and treatment quantities to the Water Board by January 30, April 30, July 30 and October 30;
- Collecting quarterly groundwater elevation measurements in Site slurry wall well pairs on March 26, May 28, August 27, and November 19;
- Collecting semi-annual groundwater elevation measurements in Site monitoring and extraction wells on March 26 and November 19;
- Renewed the City of Mountain View Environmental Compliance Plan and permits to store hazardous materials at System 19 on May 30, 2009 (i.e., sulfuric acid used to neutralize carbon following carbon replacements);
- Responding to USEPA information requests for Second Five-Year Remedy Review April-June, and onsite inspection May 5;
- Distributing the 2008 Annual Progress Report to the USEPA and the MEW Distribution List parties on June 15;
- Well redevelopment in RW-1B2 August 24-28;
- Collecting annual groundwater samples from Site monitoring and extraction wells in November and December 2009;
- Annual settlement monitoring December 9 and 10;
- Assessing the progress of remedial actions during 2009; and,
- Planning remedial actions for 2010.

Section 2 of this report provides a summary of Site groundwater extraction and treatment and remedial activities conducted during this reporting period. Sections 3-7 document additional activities, problems encountered, technical assessment, conclusions, recommendations, and a summary of planned activities for 2010. Supporting data are presented in Figures 1 through 14, Tables 1 through 11, and Appendices A through D.

2. GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

2.1 Treatment System Description

The groundwater treatment and containment system consists of Fairchild Treatment System 19 located at 369 Whisman Road and the slurry wall enclosure around the Site (Figure 3). During 2009, the groundwater extraction and treatment system included the following:

- 13 source control recovery (i.e., groundwater extraction) wells;
- Seven regional recovery wells;
- 34 monitoring wells;
- Double-contained groundwater conveyance piping, well vaults;
- System 19 treatment compound;
- Three 5,000-pound GAC vessels in series; and,
- Electrical distribution and control panels, including programmable logic controller, supervisory control and data acquisition computer and an auto-dialer for alerts.

Target flow rates for extraction wells are provided in Table 3. Monthly average flow rates and monthly extraction total by well are provided in Tables 4 and 5, respectively.

The discharge of treated groundwater from the treatment system to the storm sewer is authorized by NPDES Permit CAG912003, Order No. R2-2009-0059 (R2-2004-0055 prior to October 1, 2009). As required by the Site discharge permit, extraction well and treatment system flow readings are recorded weekly and the Site treatment systems are sampled monthly. Results are reported quarterly to the Water Board. The treatment system operated within all limits established by the permit.

The analytical results of the monthly groundwater samples from System 19 are summarized in Table 6a and 6b. The laboratory analytical repots are provided in Appendix B, and quality assurance/quality control (QA/QC) evaluation for samples collected at the Site during 2009 is provided in Appendix C.

A total of approximately 37.6 million gallons of groundwater were treated and 175 pounds of VOCs were removed by the Site treatment system during this reporting period. A VOC mass removal summary is provided in Table 7. The cumulative groundwater and VOC mass removal for System 19 is shown in Figure 4.

2.1.1 System 19 Extraction Wells

System 19 treats groundwater extracted from five water-bearing zones at the Site (A, B1, B2, B3, and C/Deep aquifers). Several wells at the Site cycle on and off because flow rates are limited by the hydrogeologic properties of the materials in which they are screened.

During 2009, 10 of the 13 SCRWs and 2 RRWs connected to System 19 were operational:

System 19 Extraction Wells (SCRWs) – Operational	
65B3 (RRW)	RW-1B2
RW-2A	RW-2B1
RW-2B2	RW-10B1
RW-11A	RW-11B1
RW-23A	RW-24A
RW-29A	REG-4B1 (RRW)

Wells RW-1A, 71A, RW-12A, and RW-26A were shut down with approval from USEPA in August 2007 as a part of slurry wall evaluation, (Northgate; 2006, 2007a, 2007b and 2008a) and remained off-line in 2009. The Optimization Evaluation Report considered previous evaluations and recommended a revised pumping scenario based on groundwater modeling to achieve greater VOC mass removal (Geosyntec, et al, 2008). The following wells remained temporarily off-line in 2009:

System 19 Extraction Wells – Temporarily Offline	
RW-1A	RW-12A
RW-26A	71A

Extraction wells; DW3-244, DW3-334, and DW3-364 were shut down with approval of the USEPA on November 9, 2006, (USEPA, 2006) to reduce the possibility of inducing migration of VOCs from shallower aquifers or from shallower depths in the deep aquifer. Wells; DW3-219, DW3-505R, RW-1B1 are also off.

The groundwater extracted by RRWs; 65B3, REG-4B1, DW3-219, DW3-244, DW3-334, DW3-364, and DW3-505R is conveyed to System 19 for treatment. Further discussion of these regional wells is provided in the MEW RGRP 2009 Annual Progress Report (Geosyntec, 2010b).

2.1.2 Groundwater Monitoring Wells

There are currently 38 monitoring wells associated with the Building 19 Site (see Table 1). Twenty seven of the monitoring wells are in the A-zone, eight monitoring wells are located in the B1-zone, and three monitoring wells are in the B2-zone. Water levels are measured quarterly in eleven slurry wall well pairs (22 wells), semi-annually in other monitoring wells, and water quality samples are collected annually in 34 of the 38 monitoring wells.

2.2 Extraction and Treatment System Operation and Maintenance

From January 1 through December 31, 2009, the Site treatment system ran 97% of the time except during brief shut downs for maintenance. At System 19, a total of 17.5 tons of spent carbon was generated, and 0.08 tons of spent sediment filters were disposed as hazardous waste during 2009.

The following is a summary of routine and non-routine maintenance or operational activities performed at the Site during 2009:

2009 Dates	Component	Comments	Regulatory Notification
January 19 – 20	System, GAC Vessels	The treatment system was shut down for approximately 23 hours to replace carbon in the primary GAC vessel on January 19, and was restarted on January 20.	Not Required
February 14 – 17	System (RW-2A and, RW-12A)	The treatment system turned off periodically for approximately 11 hours between February 14, and February 17 due to vault flood alerts at RW-2A and RW-12A caused by a rain storm.	Not Required
March 04 – 05	RW-2A	The pump turned off on March 4, because of a motor saver problem and was manually restarted on March 05.	Not Required
March 17 – 18	System, GAC Vessels	The treatment system was shut down for approximately 30 hours to replace carbon in the primary GAC vessel on March 17 and was restarted on March 18.	Not Required
April 8	System	A brief power outage in the afternoon on April 8 caused the treatment system to go off-line and send out alerts. The alerts were cleared and the system was restarted within approximately two hours.	Not Required
April 13 – 14	System Phone Line	The treatment system phone line was not working on April 13. A consultant from AT&T came out to repair issue on April 14.	Not Required
May 1	System/ RW-23A	Treatment system went off-line for approximately 15 hours due to a vault flood alert at RW-23A on May 1. The water was pumped out of the vault and the vault has been sealed.	Not Required
May 5 – 6	GAC Vessels	Treatment system was off-line for approximately 28 hours between May 5 and 6 during a routine carbon change.	Not Required
June 6	RW-2A	RW-2A was discovered to be off-line on June 06 and was immediately restarted remotely. It did not call out an alarm. The well was off-line for approximately 32 hours.	Not Required
June 30	GAC Vessels	Treatment system was turned off-line for approximately 26 hours during a routine carbon change on June 30.	Not Required
June 30 – July 1	Treatment System	The treatment system was off-line due to a routine carbon change between June 30 and July 1, for approximately 26 hours.	Not Required
July 1	RW-2A	The well pump would not restart after carbon change due to a contact failure alert on July 1. The well was off-line for approximately one additional hour.	Not Required
August 9	Treatment System	The treatment system went off-line due to a power outage on August 9 for approximately 2 hours.	Not Required
August 9	RW-2B1	RW-2B1 would not restart after the power outage on August 9 due to a failed motor saver. The well was off-line for approximately one additional hour.	Not Required

2009 Dates	Component	Comments	Regulatory Notification
August 19 – 20	Treatment Systems	The treatment system was off-line due to a routine carbon change between August 19 and 20 for approximately 22 hours.	Not Required
August 28	Extraction Wells	The extraction wells at System 19 were off-line for approximately 6 hours during the redevelopment of RW-1B2 on August 28.	Not Required
August 28 – September 1	RW-1B2	RW-1B2 had three low flow alerts between August 28 and September 1 following its redevelopment on August 26. During each alert, the well was off-line for less than 24 hours.	Not Required
August 29	RW-24A	RW-24A was off-line due to a low flow alert on August 29 for approximately 7 hours.	Not Required
September 12 – 14	RW-1B2	RW-1B2 went off-line due to a low flow alert on September 12 and was off-line for approximately 48 hours.	Not Required
September 30	RW-11A	RW-11A went off-line due to a motor saver failure on September 30 and was off-line for approximately 9 hours.	Not Required
October 13 –14	Treatment System	The treatment system was off-line for approximately 30 hours for a routine carbon change.	Not Required
October 19	RW-1B2	RW-1B2 was off-line for approximately 11 hours due to a low flow alert.	Not Required
October 24 – 27	RW-2A	RW-2A was off-line for a total of approximately 60 hours due to a failing pump that was replaced on October 27.	Not Required
December 2 – 3	Treatment System	The treatment system was off-line for approximately 28 hours for a routine carbon change.	Not Required
December 3	Treatment System	The treatment system was off-line for approximately 8 hours due to a pad flood alert caused by a clogged filter in the sump.	Not Required
December 12	Treatment System	The treatment system was off-line for approximately 4 hours due to a vault flood alert at LDV-11 that was caused by an error with the float switch.	Not Required
December 24	Treatment System	The treatment system was off-line for less than 1 hour due to a pad flood alert caused by a clogged strainer in the sump and a problem with the float switch.	Not Required

The USEPA and Water Board are required to be notified of extraction well and system down-time events as follows:

1. USEPA: *The owner and/or operator of the RGRP/Fairchild treatment system will make a best effort to orally notify USEPA within 24 hours of a RRW or system shutdown that occurs for more than 72 hours.*

2. Water Board: *If the treatment system is shut down for more than 120 consecutive hours after the start up period (maintenance, repair, violations, etc.) the reason(s) for shut down, proposed corrective action(s), and estimated start-up date shall be orally reported to the Water Board within five days of shut down and a written submission shall also be provided within 15 days of shut down.*

As demonstrated by system downtime events for System 19 listed above, no notifications of well or system shut downs were required during 2009.

2.3 Groundwater Level Monitoring

During this reporting period, groundwater elevations were recorded in Site monitoring and extraction wells on March 26 and November 19, 2009. Water levels were measured in slurry wall well pairs quarterly from March through November 2009 (Figures 5-8; Table 8). Hydrographs of Site slurry wall well pair water levels are provided in Figures 5 through 8. Potentiometric Surface Maps for Building 19 are provided in Figures 9-14 and are based on facility-specific and regional data as presented in the MEW RGRP Annual Report (Geosyntec, 2010b).

2.4 Groundwater Quality Monitoring

The 2009 Annual Groundwater Quality Sampling Event at the Site was conducted in November and December 2009. A summary of chemical analytic results for the previous five years (2005 through 2009) is provided in Table 9. Appendix B contains the analytic reports and chain-of-custody documents for samples collected in 2009, and Appendix C contains the QA/QC evaluation report and summary tables. VOC versus time graphs for select monitoring wells are included in Appendix D. TCE isoconcentration contour maps are provided on Figures 9-14, and are based on concentrations in all Site wells sampled in 2009 as presented in the MEW RGRP Annual Progress Report (Geosyntec, 2010b).

The data presented in Table 9 and Appendix D show that, for the wells sampled in 2009, TCE concentrations in groundwater in most Site wells are well below historical maximums and indicate steady to declining concentration trends. TCE increased in a few wells measured in 2009 as compared to 2008; however, they are well below historical concentrations. Cis-1,2-dichloroethene (Cis-1,2-DCE) concentrations in some Site wells appear to be increasing, which suggests natural attenuation of TCE.

2.5 Hydraulic Control and Capture Zone Analysis

2.5.1 Methodology

Capture zone analysis is the process of evaluating field observations of hydraulic heads and groundwater chemistry to estimate the capture zone achieved by the groundwater extraction system, and then comparing the estimated capture to a “Target Capture Zone” to determine if capture is sufficient (USEPA, 2008).

Capture from the Building 19 extraction wells was estimated for March and November 2009 by graphical flow net evaluation of groundwater flow streamlines drawn perpendicular to groundwater contours to derive time-dependent estimated capture zones snapshots. The graphical analysis was guided by calculated distances to the stagnation point and capture zone width based on the analytical solution of Javandel and Tsang (1986). Because the calculation method assumes a homogeneous, isotropic, two-dimensional groundwater flow zone and is dependent on a regionally estimated value of transmissivity, the calculated distances were considered to be of secondary importance compared to the measured water level data and the resulting potentiometric surface.

The following six steps were used for the Buildings 19 capture evaluation:

Step 1: Review Site data, Site conceptual model, and remedy objectives.

Step 2: Define Site-specific Target Capture Zones.

Step 3: Generate potentiometric surface maps based on interpolation of measured water levels.

Step 4: Perform capture zone width calculations.

Step 5: Evaluate concentration trends for wells outside of the target capture zone.

Step 6: Estimate capture based on steps 1-5, compare to target capture zones(s), assess uncertainties and data gaps.

2.5.2 Comparison to Target Captures

The target hydraulic capture areas for the SCRWs outside the Site slurry wall are the modeled capture zones depicted in the final remedial design document for the MEW area South of Highway 101 (Canonie, 1994a, and Smith, 1996b). There are no target captures for wells RW-2A and RW-2B1 because they were not selected in the Site remedial design as SCRWs. Fairchild later added these wells as SCRWs.

The target capture and March/November 2009 estimated hydraulic capture based on graphical flow net evaluation for the SCRWs in each aquifer, A/A1, B1/A2 and B2, are depicted in Figures 9 through 14. The capture zone width calculations for March and November 2009 presented in Tables 10 and 11 are based on Site estimates of K, thickness and 2009 extraction pumping rates from March and November 2009.

As shown on Figures 9 and 10, the estimated capture zones depict complete capture within the slurry wall in the A/A1-zone. Similarly, Figures 11 through 14 show the estimated capture zones encompass the entire target capture area in both the B1 and B2-zones.

2.5.3 Horizontal and Vertical Gradients

Figures 5 through 8 illustrate head differences between slurry wall well pairs at the Site grouped by upgradient, crossgradient, downgradient and vertical gradient well pairs. These well pairs are used to evaluate either the direction of horizontal gradient across the slurry wall by comparing water levels in wells located inside the slurry wall with water levels in adjacent wells outside the slurry wall, or the direction of vertical gradient across the A/B aquitard by comparing water levels in wells located in the A-zone with water levels in the B1-zone wells. Well locations are presented in Figure 3. Groundwater elevations were recorded quarterly in March, May, August, and November 2009 in monitoring wells (slurry wall well pairs); 142A/143A, 154A/155A, 140A/101A, 141A/139A, 115A/134A, 17A/159A, 93B1/101A, 98B1/15A, 110B1/134A, 117B1/12A, and RW-1B1/159A.

Results of the well pair analysis at the Building 19 slurry wall indicate the following:

Horizontal Gradients: During this reporting period, inward gradients were consistently observed at well pairs 142A/143A, 140A/101A, and 141A/139A on the upgradient and crossgradient sides of the slurry wall. Groundwater elevations in the downgradient (northern side of the slurry wall) in wells 155A, 159A, and 134A (inside slurry wall), were higher than in wells 154A, 17A, and 115A (outside slurry wall), respectively, indicating an outward gradient throughout 2009.

Vertical Gradients: Both upward and downward gradients were observed. Upward gradients from the B1 to A aquifer were consistently observed at well pairs 93B1/101A and 98B1/15A. Groundwater elevation in wells 134A, 12A, and 159A was consistently higher than in wells 110 B1, 117B1, and RW-1(B1), respectively throughout 2009 indicating a downward gradient in these well pairs.

The horizontal and vertical gradients recorded during this reporting period are generally consistent with historical observations.

2.5.4 Capture Assessment

A summary of the 2009 capture evaluation is provided below:

Step	2009 Status
Step 1: Review Site Data, Site Conceptual Model, Remedy Objectives	Completed, Site data Site conceptual model and remedy objectives determined to be adequate to asses capture.
Step 2: Define "Target Capture Zone(s)"	Target Capture area is defined based on modeled capture developed during remedial design, as shown on Figures 9 through 14. No target capture was defined for wells RW-2A and RW-2B1 since they were added after remedial design.
Step 3a: Water Level Maps	Potentiometric surface contours are provided in Figures 9 through 14. Water levels at extraction wells were measured through piezometers constructed in the filter packs and therefore were considered reliable for use in constructing potentiometric surface maps. Water levels inside and outside the slurry wall enclosures were contoured separately. Graphical flow net analysis was used to estimate captures in addition to calculated capture zone widths.
Step 3b: Water Level Pairs	Table 8 and Figures 5 through 8 present data for the slurry wall well pairs. Currently an outward hydraulic gradient exists at the western (cross gradient) and northern (downgradient) sections of Building 19 slurry wall (17A/159A, 115A/134A, and 154A/155A). Both upward and downward hydraulic gradients are observed across the A/B1 aquitard. Upward gradients continue to be observed at most times at 98B1/15A, and 93B1/101A.
Step 4: Perform Capture Zone Width Calculations	Calculated capture zone widths are provided in Table 10 and 11. Graphical flow net analysis was performed based on potentiometric surfaces, with consideration given to calculated capture zone widths based on estimated hydraulic parameters. The estimated hydraulic capture zone widths encompass the target capture areas in the A-zone, B1-zone and B2-zone.
Step 5: Concentration Trends	In 2009, long term trends are generally stable to decreasing based on time concentration plots in Appendix D. Some downgradient wells indicate slight TCE increases (i.e. 110B1A, 160A, and 173A); however, the changes are within fluctuations within the past five years, and are below historical maximums.
Step 6: Estimated Capture Zones and Compare to Target Capture Zones	Vertical and horizontal VOC plume capture in 2009 is considered adequate based on converging lines of evidence, including graphical flow net analysis, and relatively stable 5 µg/L isoconcentration contours since 1992 in the A/A1 and B1/A2 groundwater zones.

3. OTHER ACTIVITIES

3.1 Optimization Evaluation for Groundwater

There were no optimization activities during 2009 because the USEPA has not yet completed review of the Optimization Evaluation Report for the Fairchild Sites in the MEW Area that was submitted to USEPA September 3, 2008 (Geosyntec, et al, 2008). The optimization evaluation considered previous efficiency and slurry wall evaluations at the Site (Northgate, 2007, 2008a, 2008b) and recommended implementing an optimization program for the Fairchild Sites.

3.2 Air/ Vapor Intrusion

The final *Revised Supplemental Feasibility Study for Vapor Intrusion* was issued on June 29, 2009 (Haley & Aldrich 2009). The USEPA issued a Proposed Plan to Address Vapor Intrusion in June 2009, and a public meeting was held July 23, 2009 (USEPA, 2009b). The USEPA plans to issue a ROD amendment for vapor intrusion in 2010.

3.3 Second Five-Year Remedy Review

The USEPA issued a Second Five-Year Remedy Review in September 2009 (USEPA, 2009a).

3.4 Well Redevelopment

Extraction well rates in well RW-1B2 have declined from 0.5 gpm in 2003 to 0.004 gpm in 2007. The well was redeveloped In August 2009 in an effort to establish a better hydraulic connection with the water-bearing zone and improve well yield. Well redevelopment significantly improved rates; the well increased from 0.004 gpm to about 0.4 gpm, and the pump stopped cycling.

3.5 Soil Settlement Survey

An annual settlement survey was performed on December 9-10, 2009. The purpose of these annual measurements is to evaluate any potential adverse effects on the Site facilities, and whether long-term remedial groundwater extraction could affect soil settlement in the MEW study area. A qualified Geotechnical Engineer reviewed the historical settlement and water level elevation data and concluded that the measured values of ground elevation change do not appear to be related to groundwater extraction. Additional information on the settlement survey can be found in the RGRP 2008 Annual Progress Report (Geosyntec, 2010b).

4. PROBLEMS ENCOUNTERED

Section 2.5 provides a summary of all non-routine O&M events that occurred at the Building 19 Treatment System. No other problems related to the groundwater treatment or containment system at Building 19 were encountered.

5. TECHNICAL ASSESSMENT

The following assessment of the groundwater remedy performance was made based on data collected through 2009.

The remedy is functioning as intended. The groundwater remedy continues to function as intended. The 2009 Annual Remedy Performance Checklist for the Site, and for other former Fairchild facilities is included in Appendix A.

The capture zone is adequate. Groundwater elevation, calculated capture zones, and chemical monitoring results from 2009 demonstrate that the SCRWs and RRWs at this Site continue to achieve adequate capture compared to target capture based on converging lines of evidence, including graphical flow net analysis and chemical concentration trends. The concentration trends in downgradient wells indicate supporting evidence for adequate plume control within the Building 19 slurry wall enclosure.

Chemical concentrations are generally steady to decreasing over time. Table 9 and VOC versus time graphs (Appendix D) indicate that TCE concentrations are steady or declining in most wells. There are slight increases of VOCs in downgradient wells 160A, 110B1 and possibly 173A since 2007; however, wells located closer to the slurry wall do not exhibit increases. The four extractions wells that have been off since 2007 are located within the slurry wall, and slight rebound was observed in RW-1A and RW-26A. Concentrations in wells RW-1(B1) and 110B1 although below historical maximums, have increased since 2007. Several wells in the Building 19 Area exhibit evidence of reductive dechlorination based on steady to decreased TCE concentrations, with noted increases in cis-1,2-DCE and vinyl chloride concentrations (71A, 115A, 134A, 148A, 149A, 154A, 146B2).

Vertical gradients are variable. Upward gradients from the B1 to A aquifer were consistently observed at well pairs; 93B1/101A and 98B1/15A. However, the groundwater elevation in wells 12A and 159A was consistently higher than in wells 117B1 and RW-1(B1), respectively throughout 2009 indicating a downward gradient in these well pairs.

Slurry wall gradients are variable. During this reporting period, inward gradients were consistently observed in well pairs along the southern (upgradient) and eastern (cross gradient) slurry walls. Slurry wall pairs along the northern (downgradient) slurry wall indicated an outward gradient throughout 2009.

6. CONCLUSIONS AND RECOMMENDATIONS

The Buildings 19 remedy is functioning as intended. Capture snapshots from March and November 2009 meet or exceed target capture areas based on converging lines of evidence, including graphical flow net analysis, capture zone width calculations and concentration trends.

Approximately 37.6 million gallons of groundwater were treated and 175 pounds of VOCs were removed by the groundwater treatment system during 2009. From January 1 through December 31, 2009, the groundwater treatment system operated 97% of the time.

Recommendations from the 2008 Optimization Evaluation for the Fairchild Sites should be implemented after receipt of comments or approval from the USEPA.

7. UPCOMING WORK IN 2010 AND PLANNED FUTURE ACTIVITIES

Activities planned for 2010 include the following:

- Continuing groundwater extraction, treatment, and monitoring in accordance with the Site monitoring and reporting schedule;
- Optimization of extraction well rates; and,
- Continued coordination USEPA's ROD amendment for vapor intrusion.

The effectiveness and progress of groundwater restoration activities during 2010 will continue to be evaluated by continuing operation, maintenance and monitoring of the Site extraction system, measuring water levels, and analyzing water samples in accordance with the Site monitoring and reporting schedule. All Site-specific data, including optimization activities, will be documented in the 2010 Annual Progress Report, which will be submitted to the USEPA by June 15, 2011.

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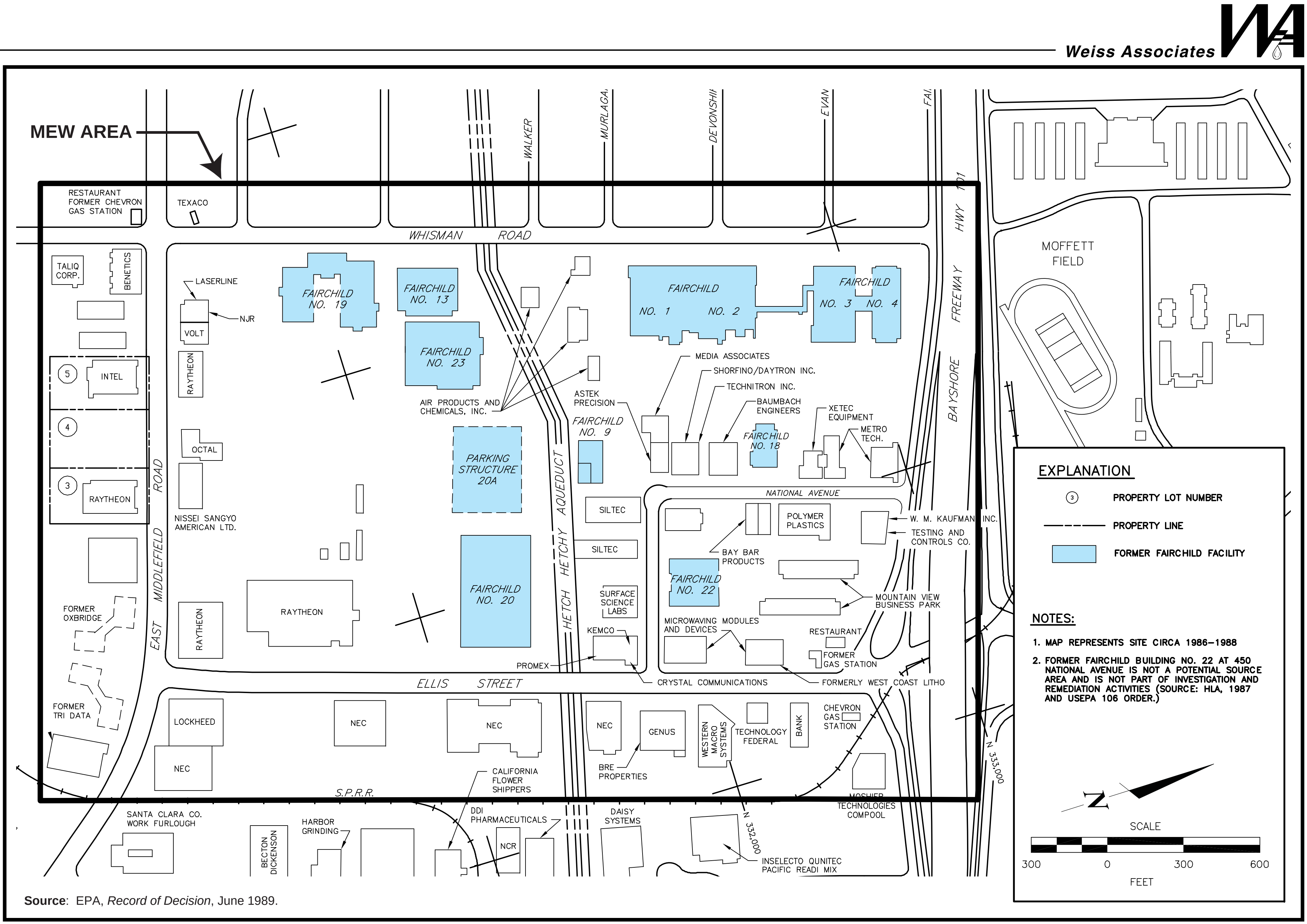
FIGURES

Weiss Associates

Figure 1. Site Location, MEW Area, Mountain View, California



Source: EPA, *Record of Decision*, June 1989.

Figure 2. Previous Building Configurations, Former Fairchild Facilities, MEW Area, Mountain View, California

Figure 3

Former Fairchild Buildings 19, 13, and 23
Site Map and Well Network
Mountain View, California

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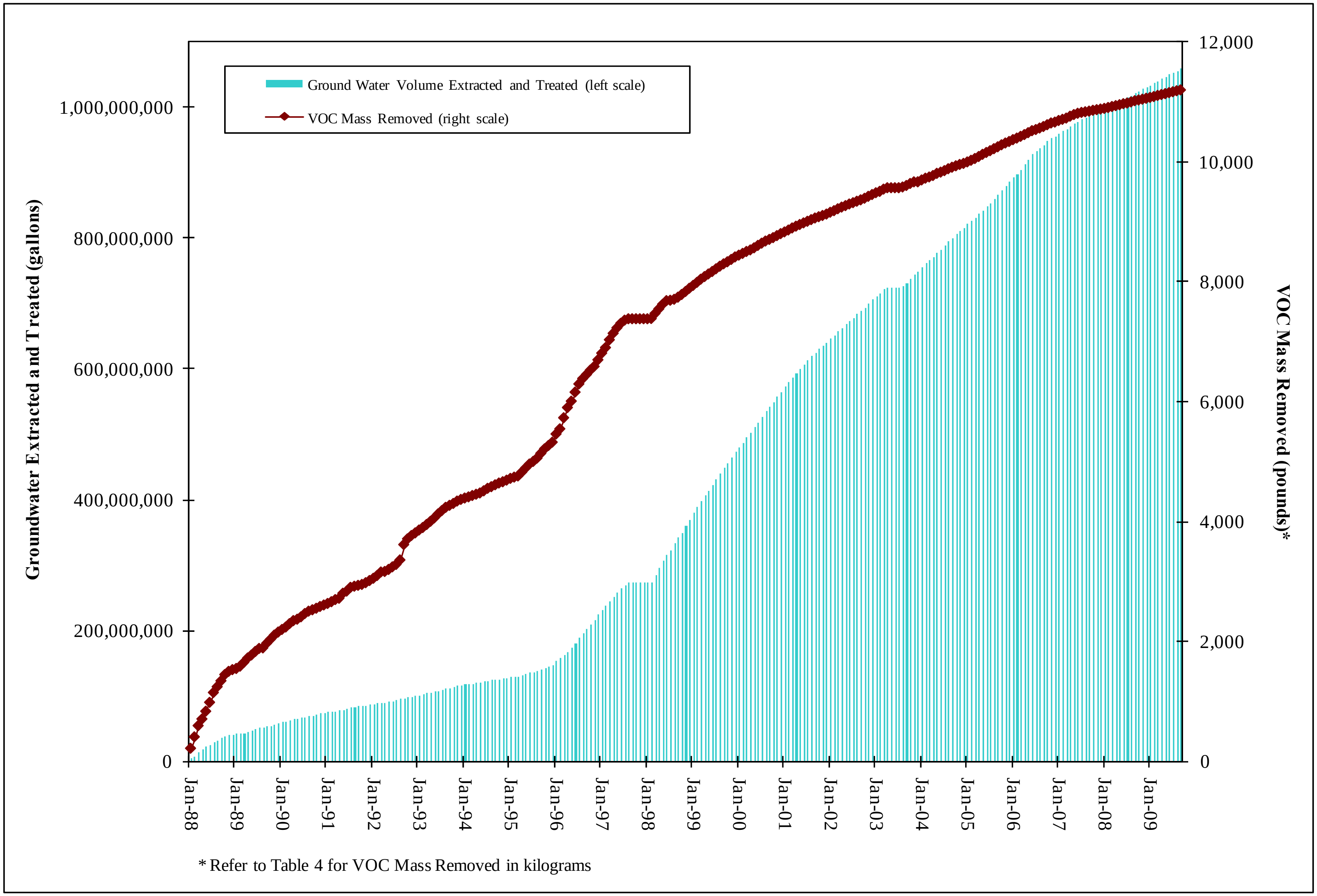
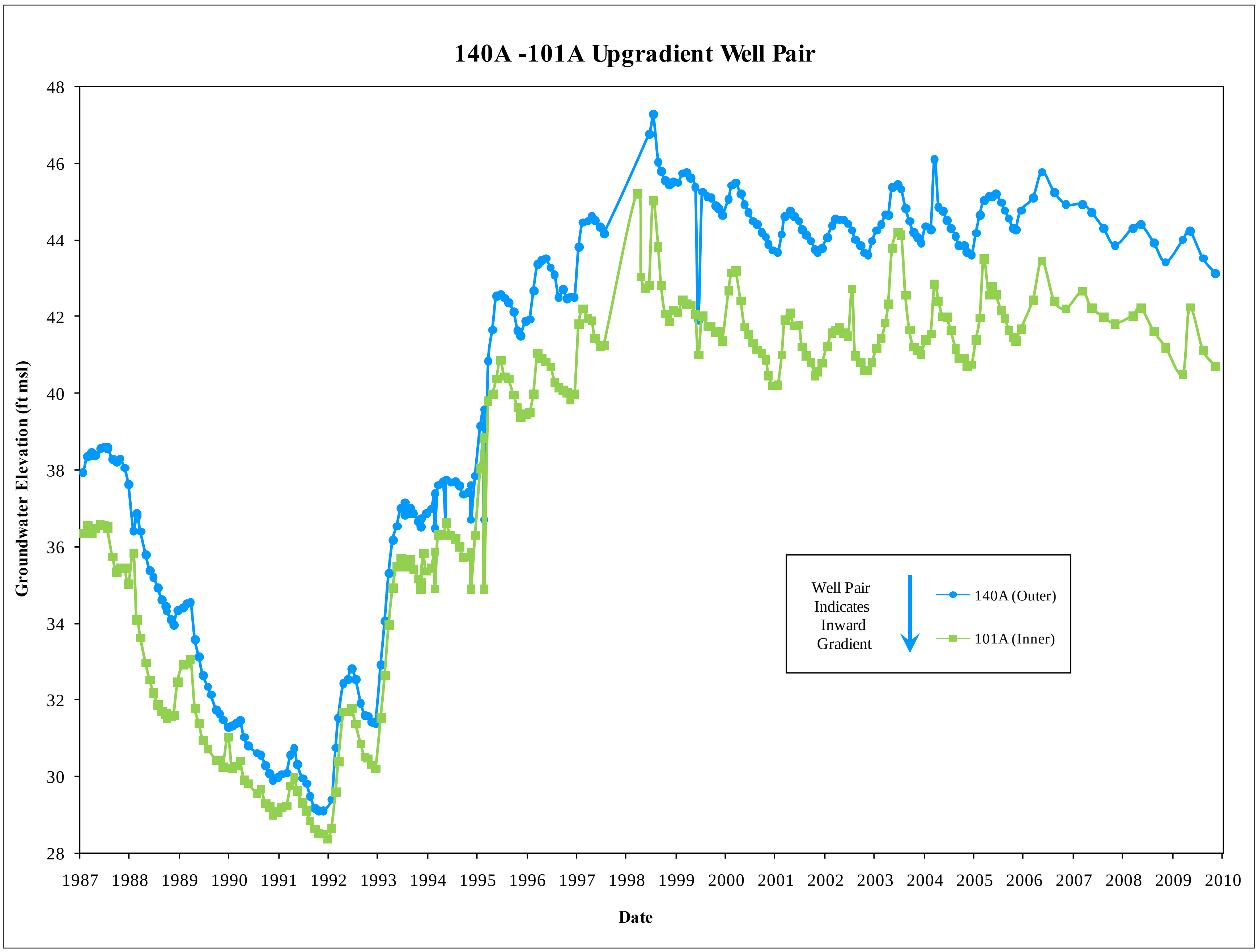


Figure 4. Cumulative Groundwater Extracted and VOC Mass Removed, System 19, 369 Whisman Road, Mountain View, California



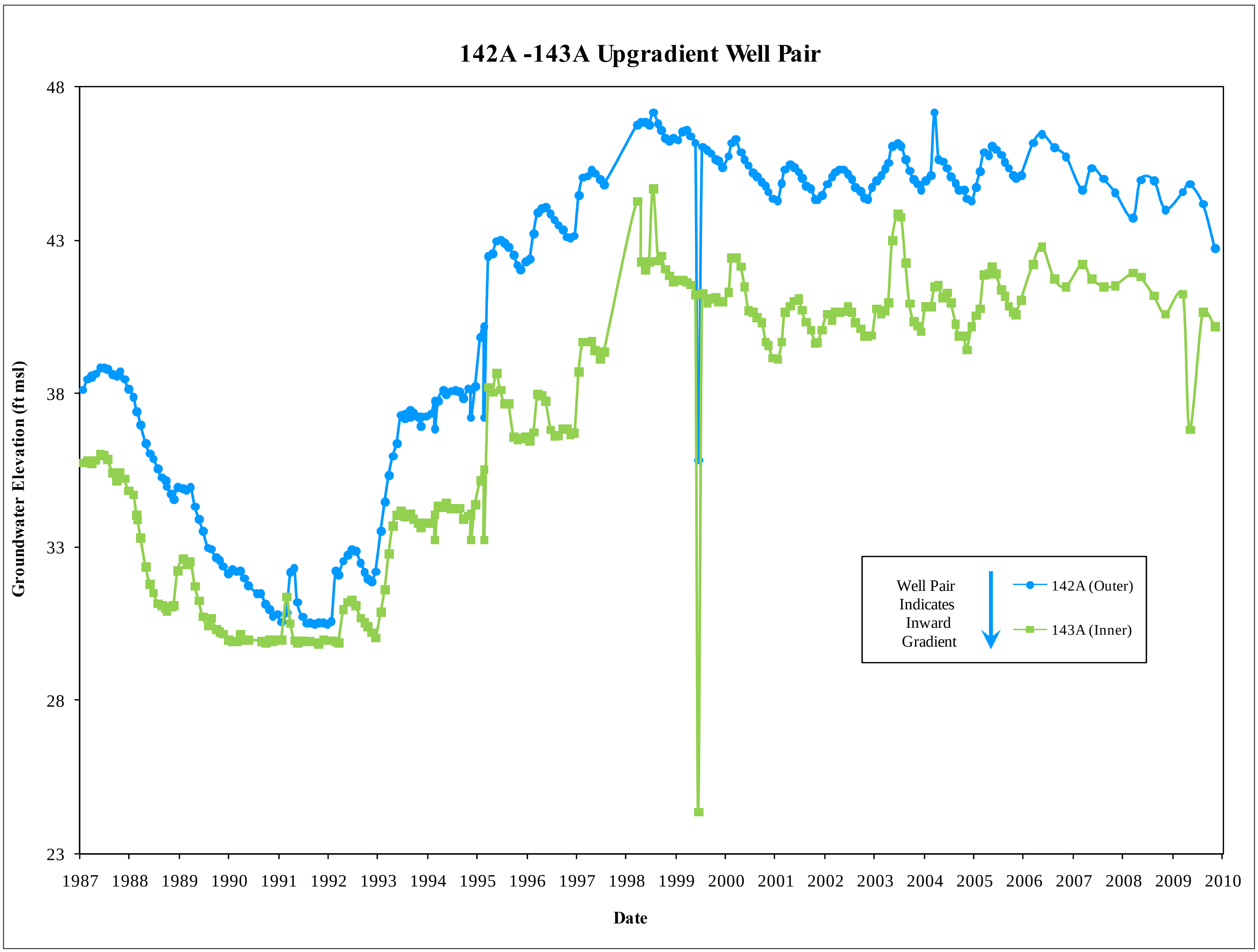
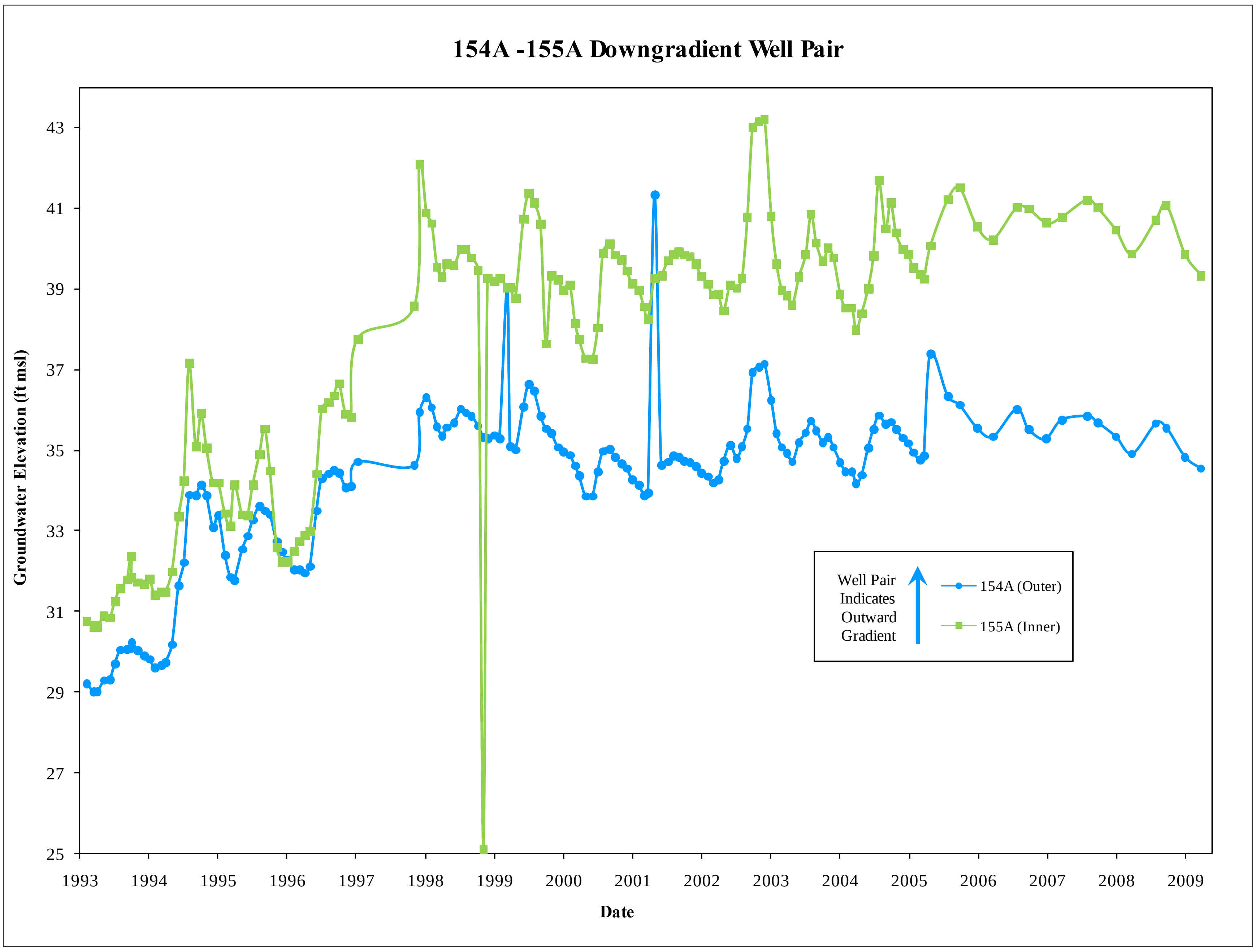


Figure 5. Hydrographs – Groundwater Elevation Measurements, Slurry Wall Well Pairs – Upgradient Wells, Building 19, MEW Fairchild Site, Mountain View, California



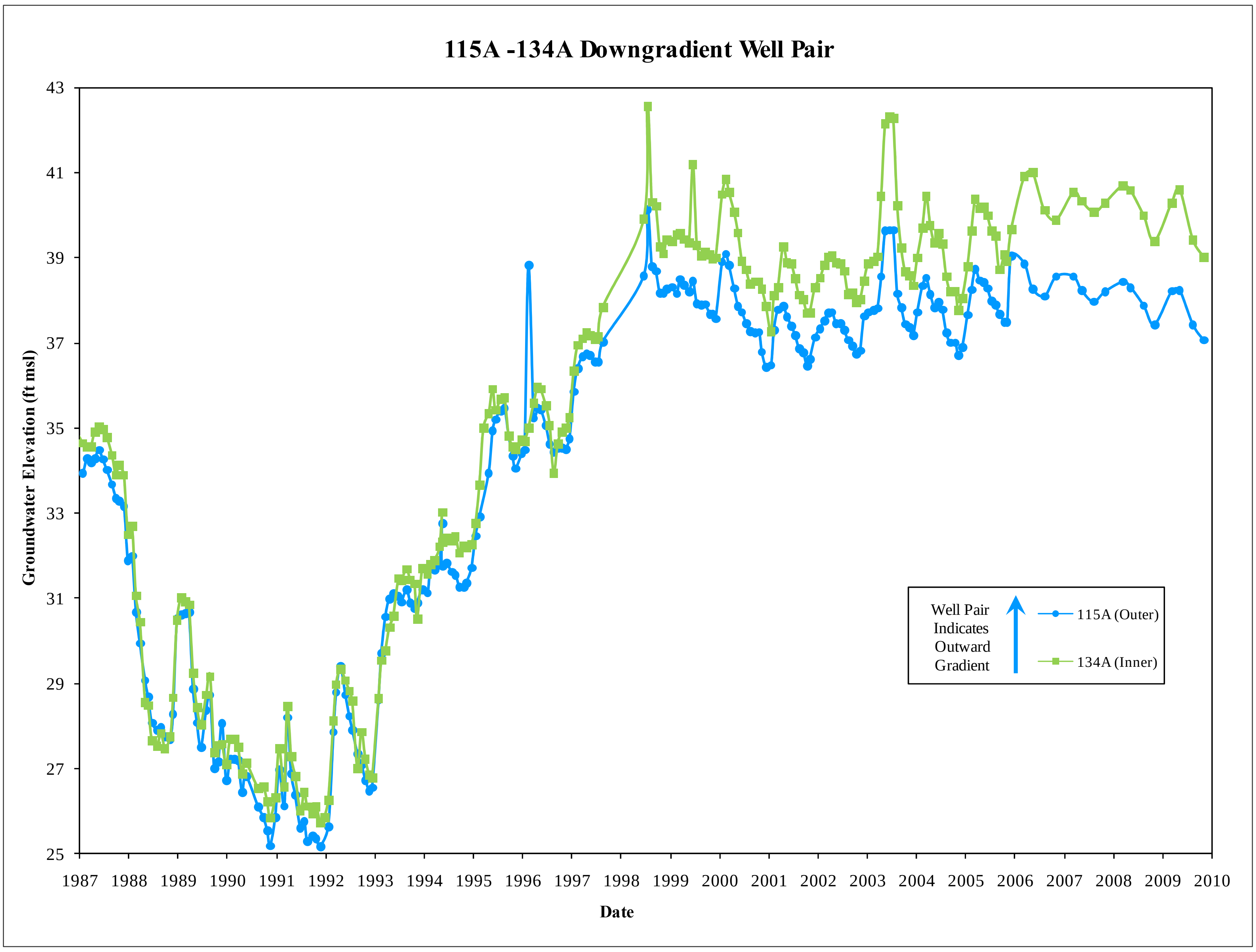
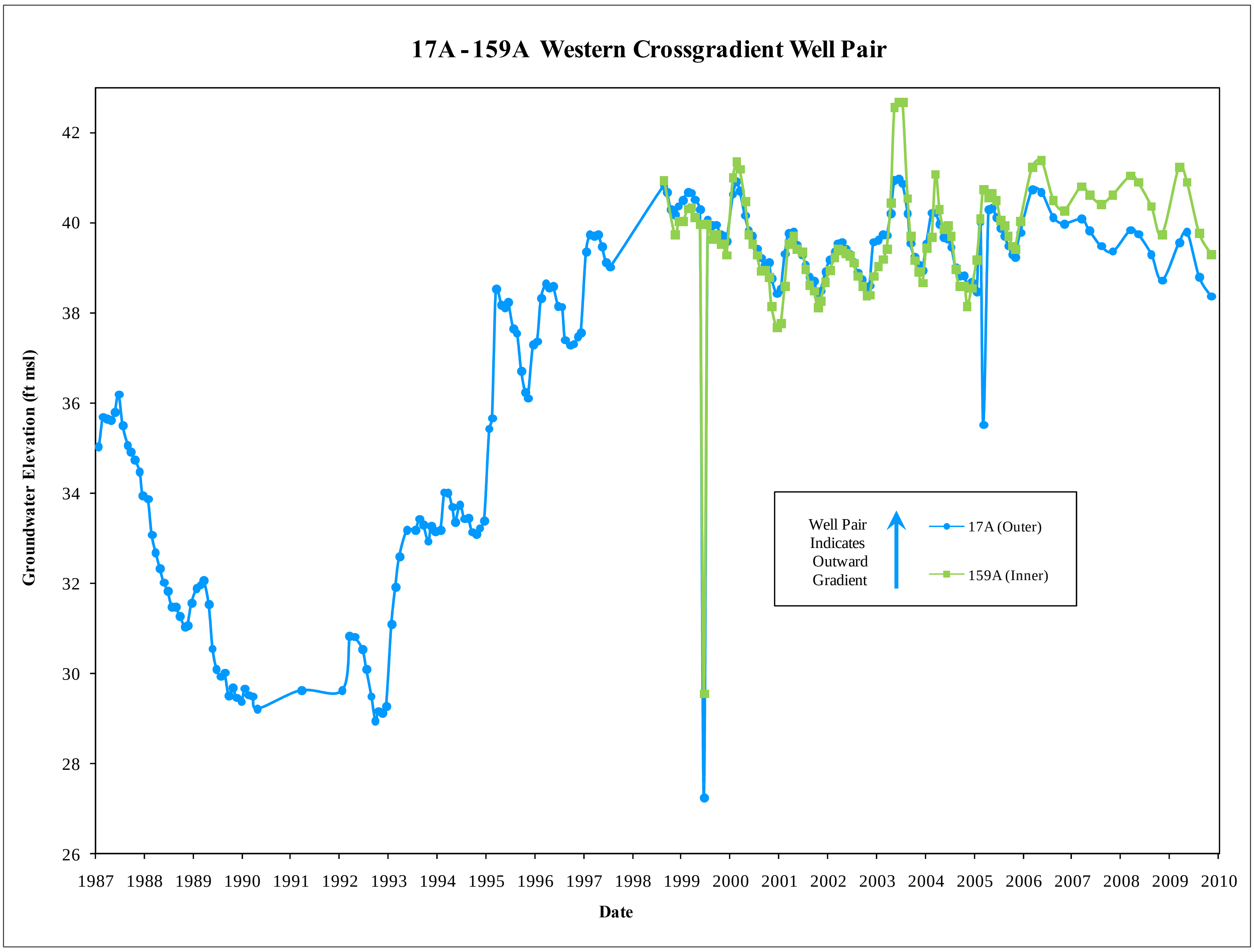


Figure 6. Hydrographs – Groundwater Elevation Measurements, Slurry Wall Well Pairs – Downgradient Wells, Building 19, MEW Fairchild Site, Mountain View, California



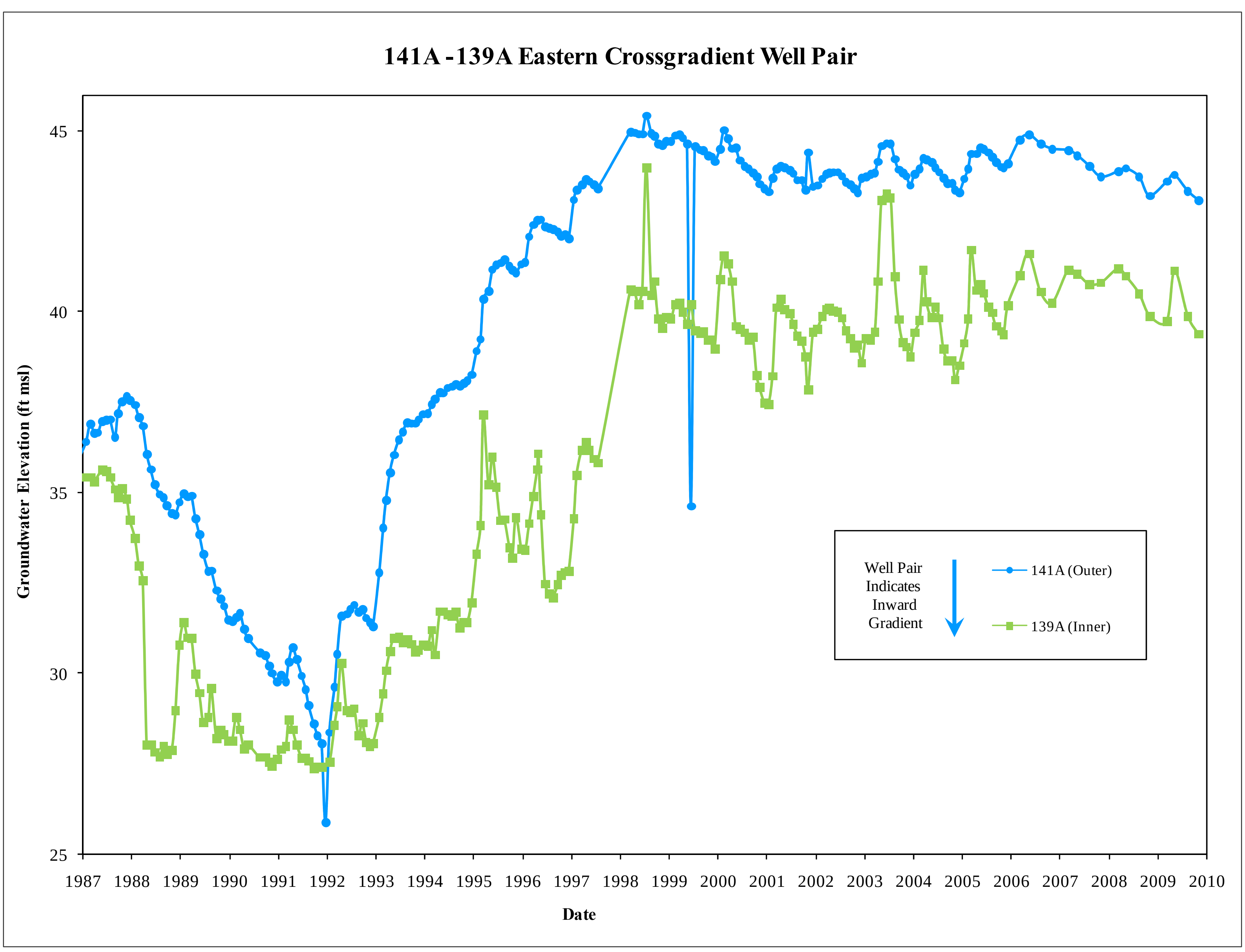
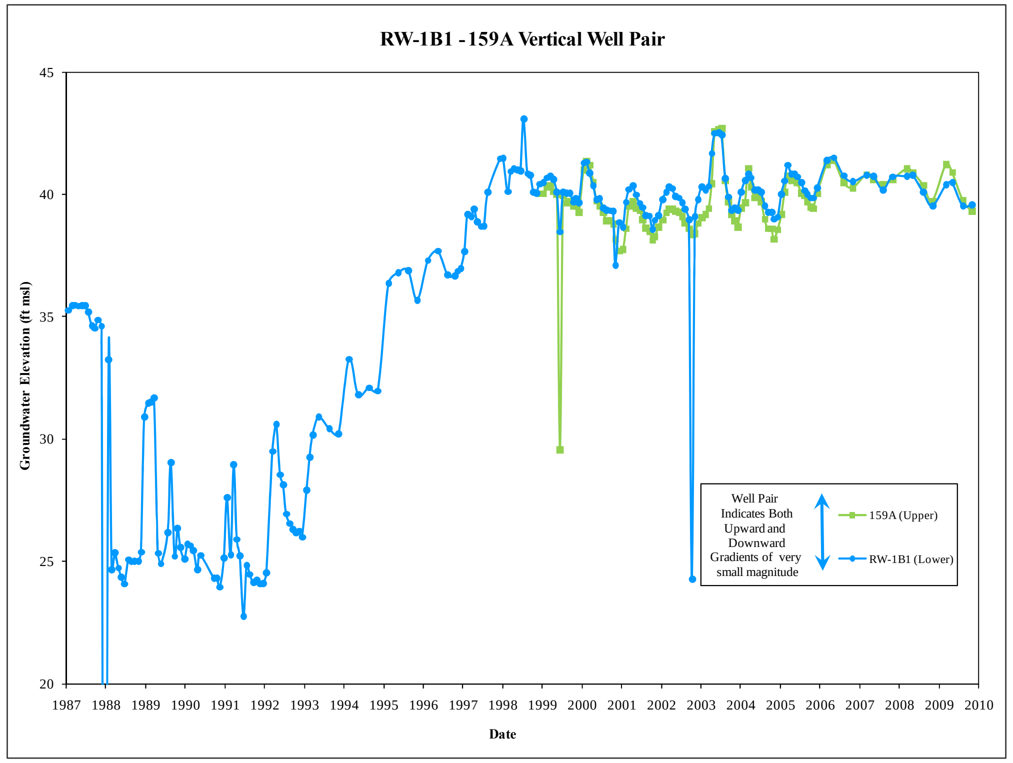
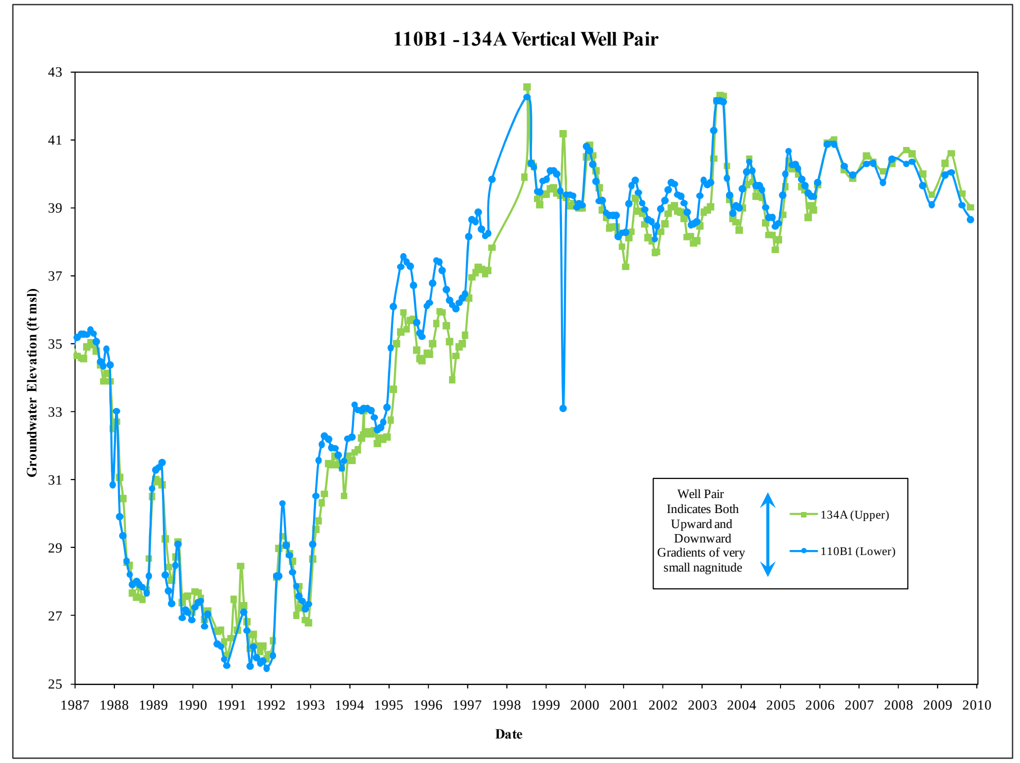
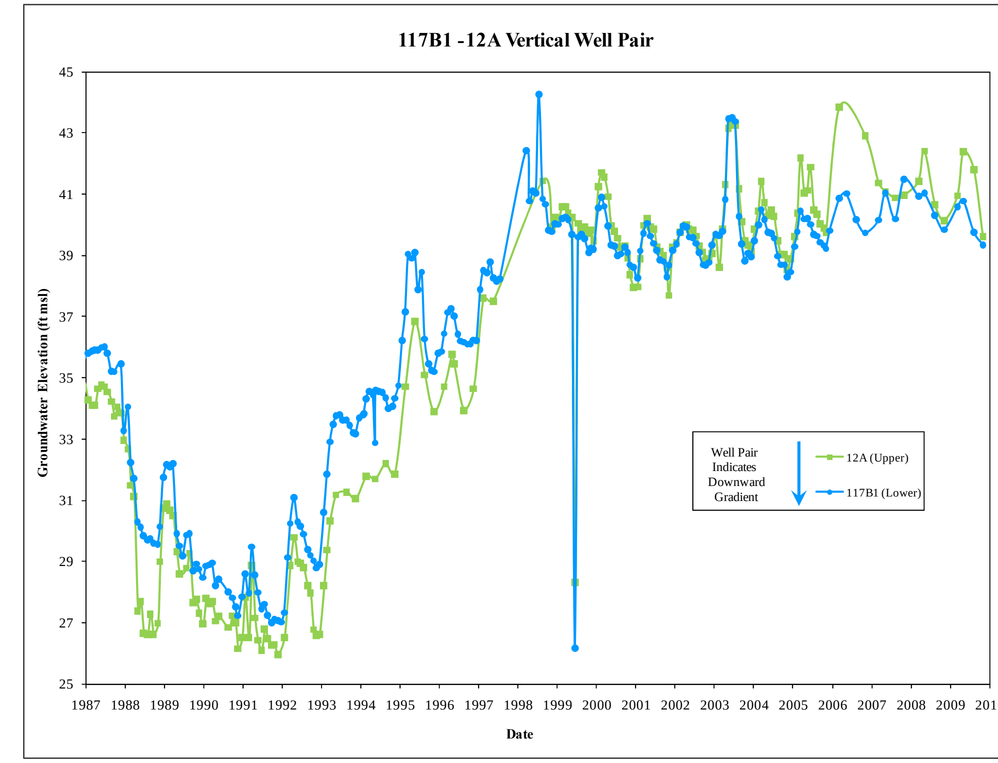


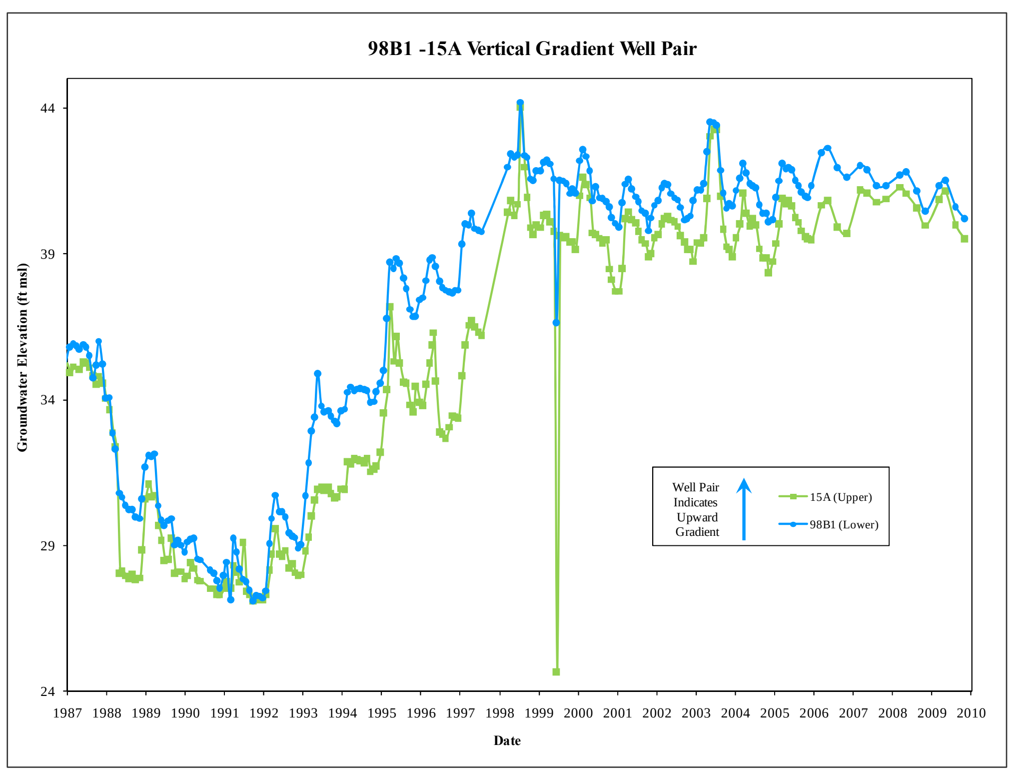
Figure 7. Hydrographs – Groundwater Elevation Measurements, Slurry Wall Well Pairs – Crossgradient Wells, Building 19, MEW Fairchild Site, Mountain View, California

Weiss Associates









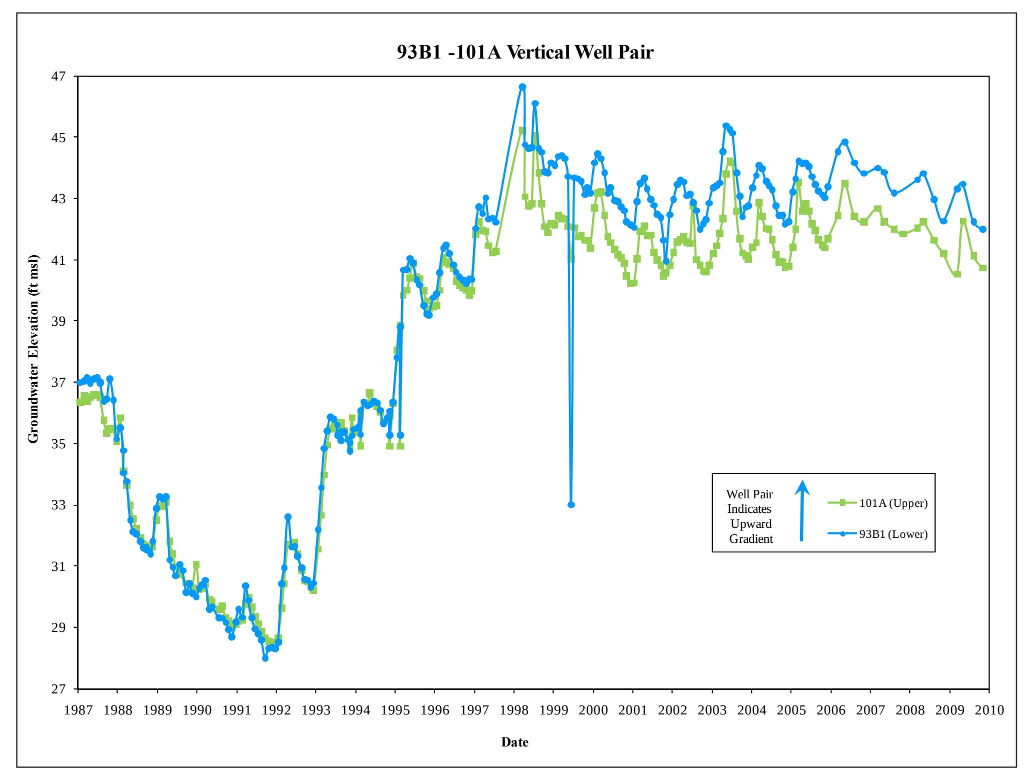
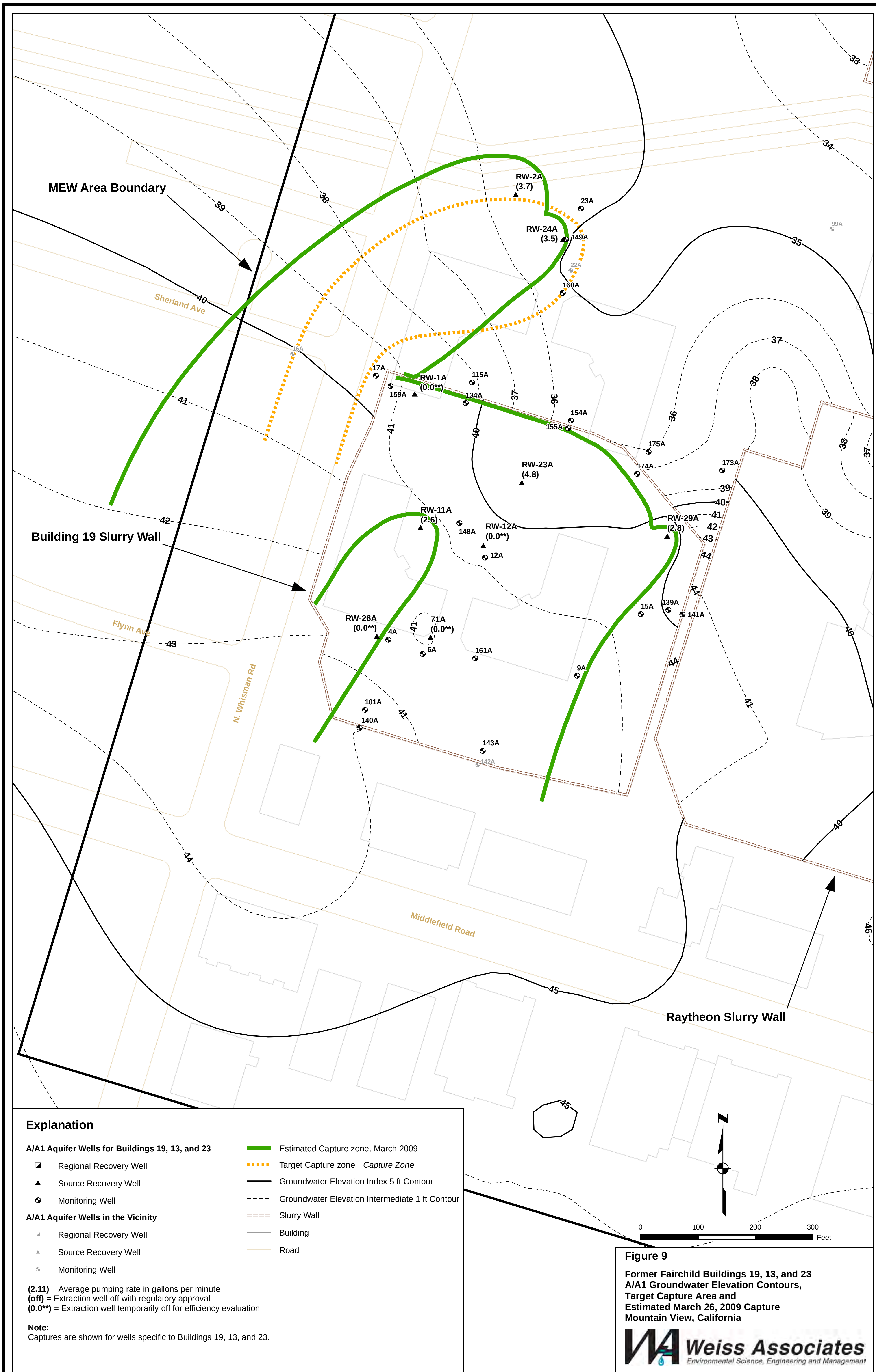


Figure 8. Hydrographs – Groundwater Elevation Measurements, Slurry Wall Well Pairs – Vertical Gradient Wells, Building 19, MEW Fairchild Site, Mountain View, California



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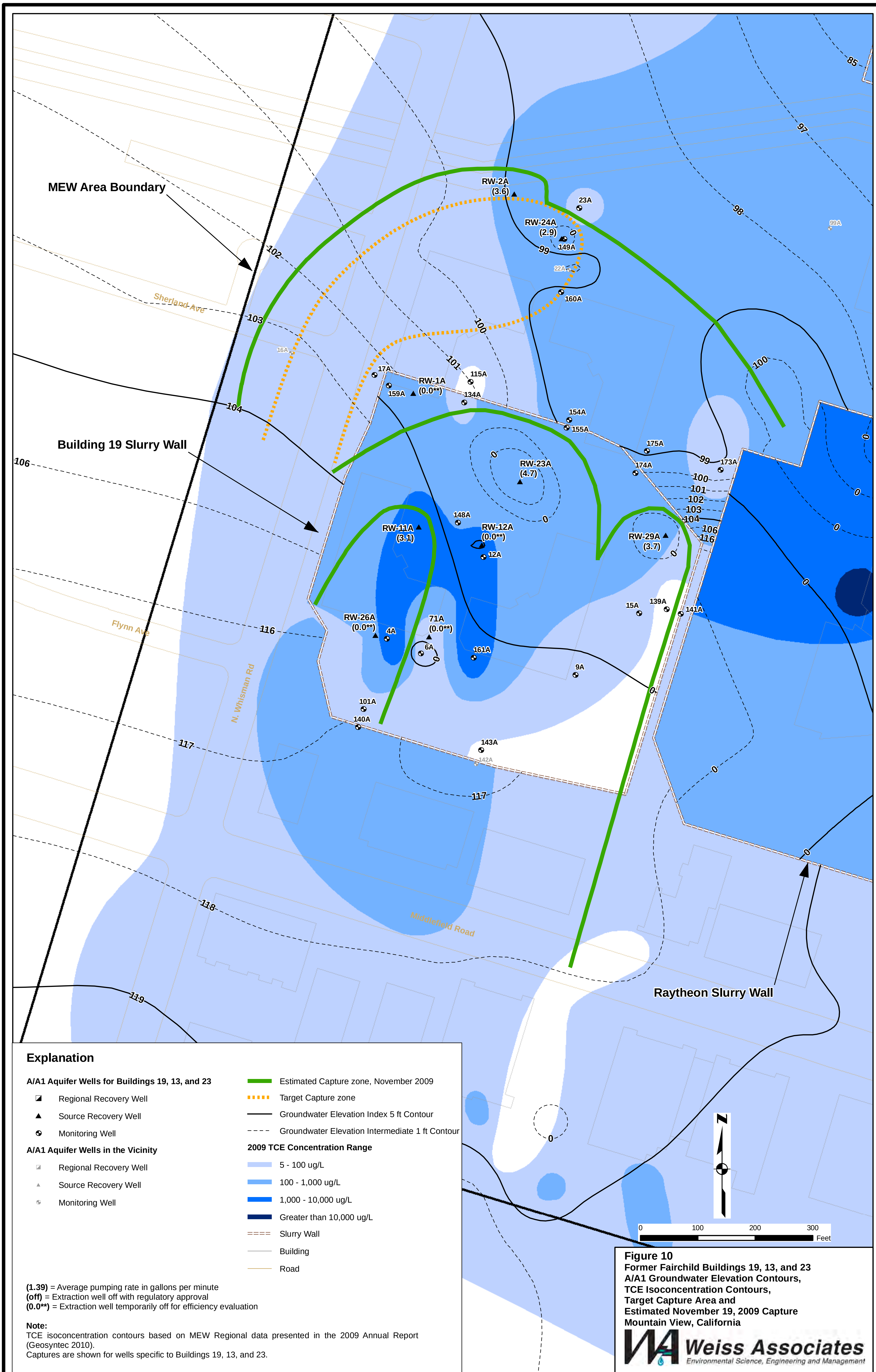

Figure 10
Former Fairchild Buildings 19, 13, and 23
A/A1 Groundwater Elevation Contours,
TCE Isoconcentration Contours,
Target Capture Area and
Estimated November 19, 2009 Capture
Mountain View, California

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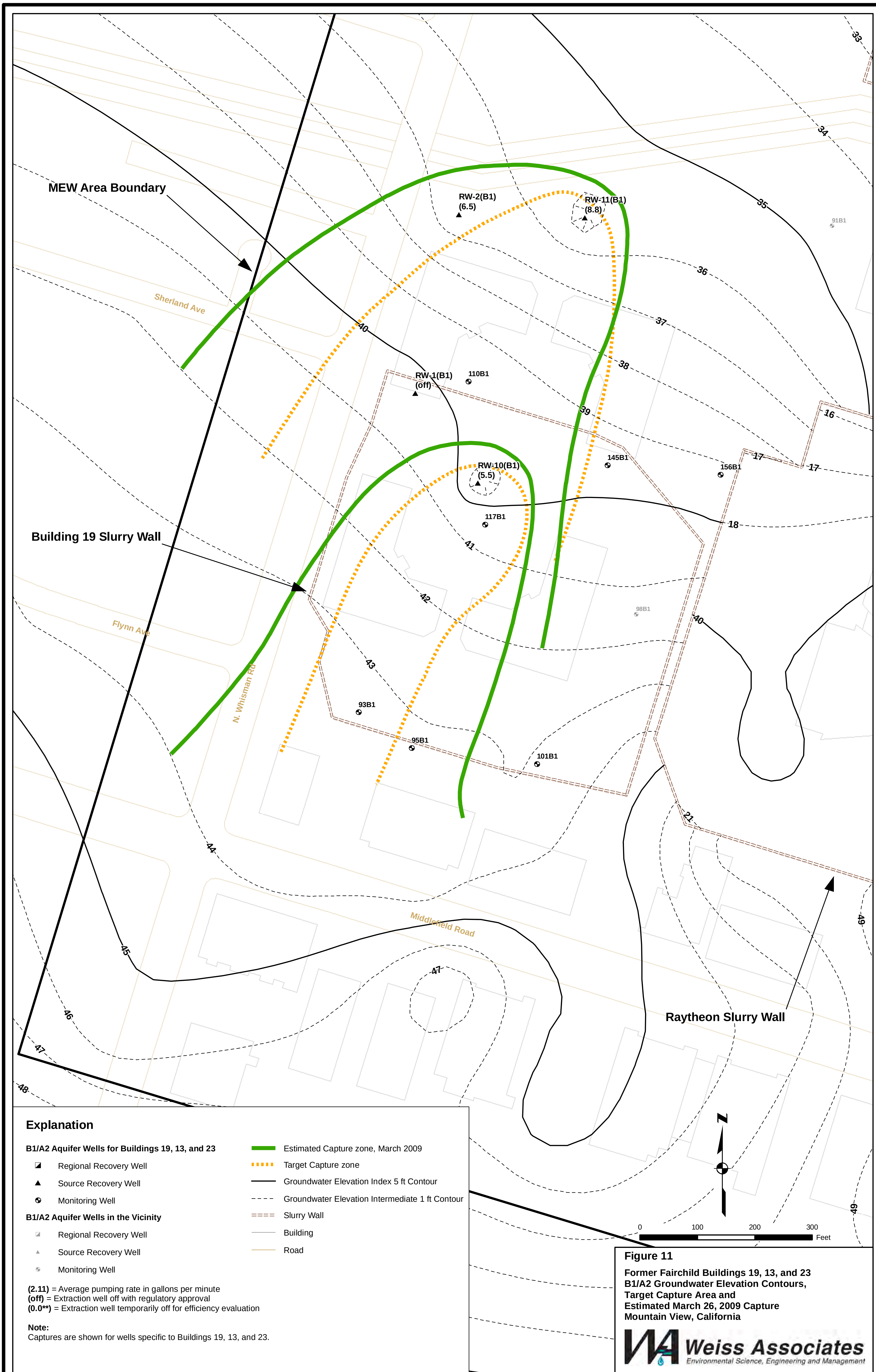

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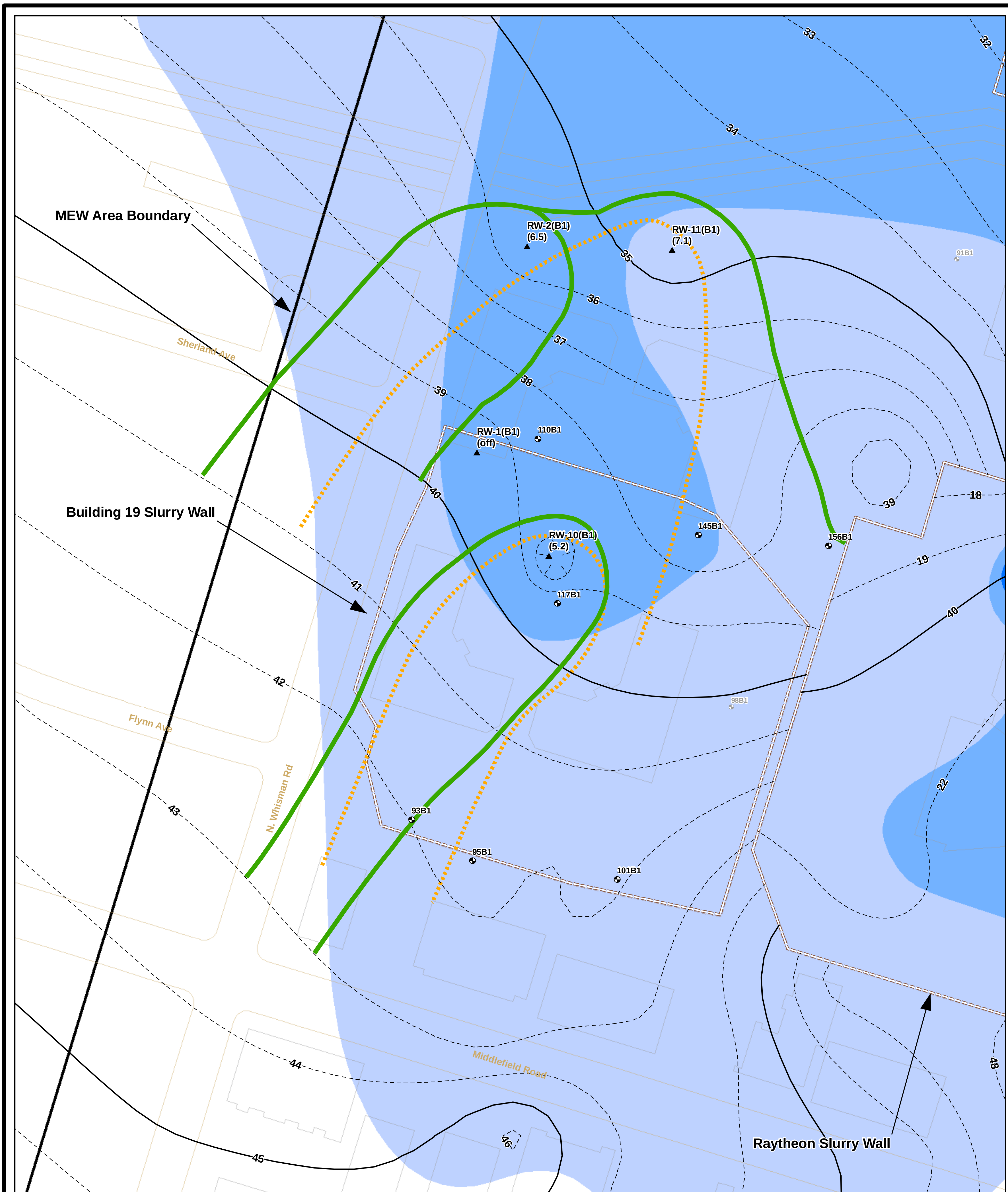

Explanation

B1/A2 Aquifer Wells for Buildings 19, 13, and 23

- Regional Recovery Well
- Source Recovery Well
- Monitoring Well

B1/A2 Aquifer Wells in the Vicinity

- Regional Recovery Well
- Source Recovery Well
- Monitoring Well

- Estimated Capture zone, November 2009
- Target Capture zone
- Groundwater Elevation Index 5 ft Contour
- Groundwater Elevation Intermediate 1 ft Contour

2009 TCE Concentration Range

- 5 - 100 ug/L
- 100 - 1,000 ug/L
- 1,000 - 10,000 ug/L
- Greater than 10,000 ug/L
- Slurry Wall
- Building
- Road

(1.39) = Average pumping rate in gallons per minute
(off) = Extraction well off with regulatory approval
(0.0)** = Extraction well temporarily off for efficiency evaluation

Note:
TCE isoconcentration contours based on MEW Regional data presented in the 2009 Annual Report (Geosyntec 2010).
Captures are shown for wells specific to Buildings 19, 13, and 23.

Figure 12
Former Fairchild Buildings 19, 13, and 23
B1/A2 Groundwater Elevation Contours,
TCE Isoconcentration Contours,
Target Capture Area and
Estimated November 19, 2009 Capture
Mountain View, California

Weiss Associates
Environmental Science, Engineering and Management

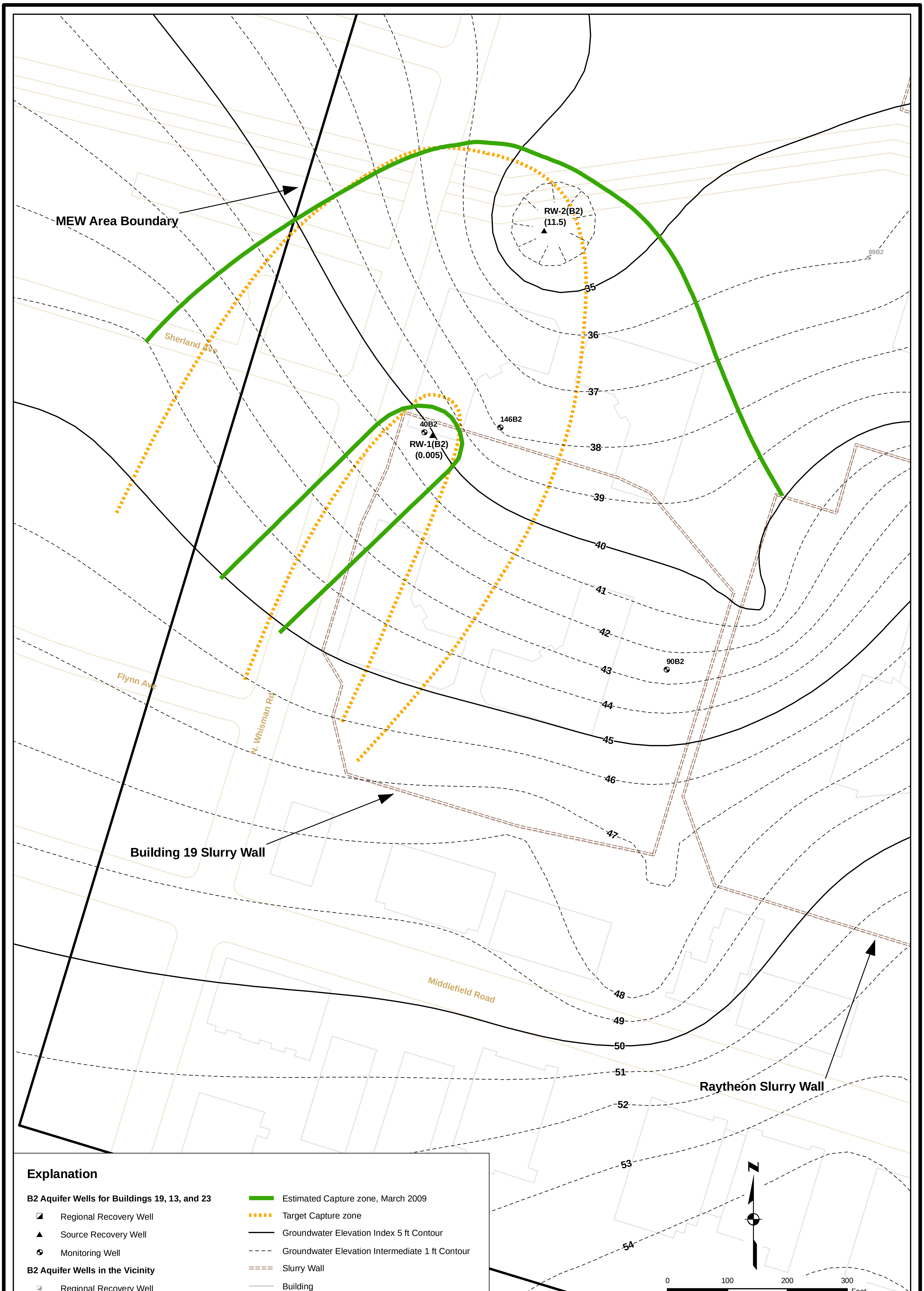

Figure 13

Former Fairchild Buildings 19, 13, and 23
B2 Groundwater Elevation Contours,
Target Capture Area and
Estimated March 26, 2009 Capture
Mountain View, California

Weiss Associates
Environmental Science, Engineering and Management

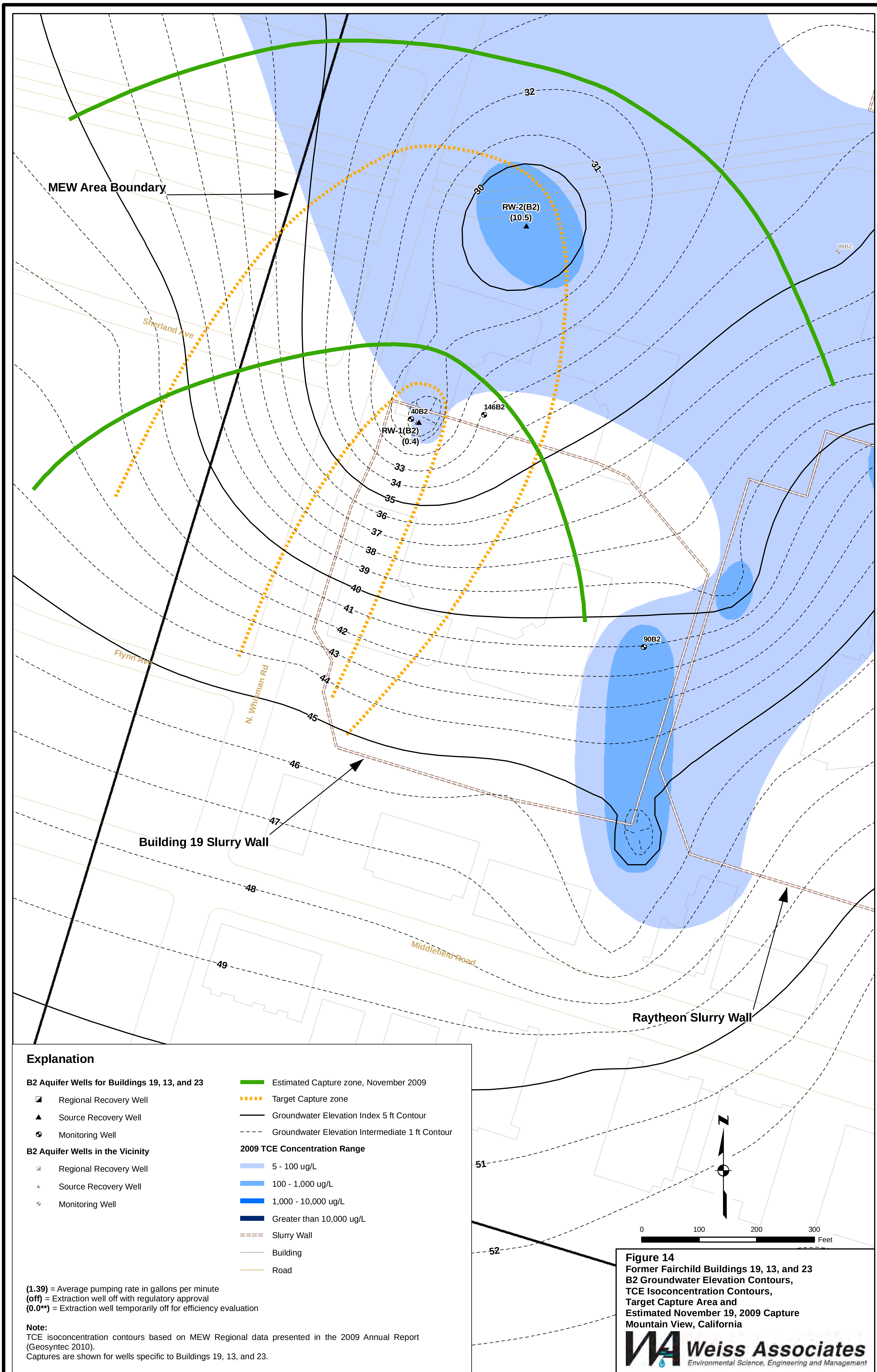

Figure 14
Former Fairchild Buildings 19, 13, and 23
B2 Groundwater Elevation Contours,
TCE Isoconcentration Contours,
Target Capture Area and
Estimated November 19, 2009 Capture
Mountain View, California

TABLES

Table 1. Extraction and Monitoring Well Details, Former Fairchild Building 19, 369-441 Whisman Road Mountain View California

Well Details	Date Installed	Zone	TOC Elevation (ft amsl)	Diameter (inches)	Total Well Depth (ft btoc)	Top of Screened Interval (ft btoc)	Bottom of Screened Interval (ft btoc)	Top of Sand Pack (ft btoc)	Bottom of Sand Pack (ft btoc)	Well Type
101A	07/07/86	A	55.14	4	34	19	34	14	36	Mon
115A	09/09/86	A	53.48	4	30	20	30	18	32	Mon
12A	02/18/82	A	55.11	2	35	15	35	15	35	Mon
134A	10/13/86	A	53.44	4	30	20	30	18	32	Mon
139A	10/10/86	A	53.21	4	31	16	31	11	34	Mon
140A	10/10/86	A	56.99	4	33	18	33	16	35	Mon
141A	10/10/86	A	53.25	4	26	16	26	11	28	Mon
142A	10/10/86	A	57.97	4	27	22	27	20	29	Mon
143A	11/11/86	A	57.40	4	27	22	27	20	29	Mon
148A	09/09/91	A	56.54	4	32.5	22.5	32.5	19.5	33	Mon
149A	10/10/91	A	48.86	4	32.5	12.5	32.5	11.5	35	Mon
15A	02/02/82	A	54.06	2	40	15	40	15	40	Mon
154A	07/07/93	A	53.90	4	29	19	29	15	30	Mon
155A	07/07/93	A	54.17	4	29	19	29	15	30	Mon
159A	11/05/97	A	54.62	4	30	20	30	17	33	Mon
16A	04/04/82	A	53.30	2	32	22	32	10	22	Mon
160A	11/10/97	A	53.86	4	33.5	18.5	33.5	15.5	35.5	Mon
161A	11/05/97	A	56.15	4	30.5	20.5	30.5	17.5	33	Mon
17A	02/02/82	A	53.40	2	35	20	35	15	35	Mon
173A	10/31/02	A	50.87	4	29	19	29	16	30	Mon
174A	10/31/02	A	53.70	4	28	18	28	15	30	Mon
175A	10/31/02	A	53.86	4	29	19	29	16	30	Mon
22A	02/02/82	A	52.87	2	30	14	30	12	30	Mon
23A	02/02/82	A	50.56	2	30	14	30	14	30	Mon
4A	02/02/82	A	54.69	2	35	20	35	15	35	Mon
6A	02/02/82	A	54.74	2	39	20	39	17	39	Mon
71A	05/30/84	A	56.08	12	36	26	31	13	37.5	Ext
9A	02/02/82	A	55.82	2	40	15	40	10	40	Mon
RW-1A	06/06/85	A	57.71	6	35	20	40	10	40	Ext
RW-2A	10/10/85	A	49.99	6	34	19	34	15	36	Ext
RW-11A	07/05/85	A	55.83	6	35	25	35	10	37	Ext
RW-12A	07/03/85	A	55.76	6	35	25	35	10	37	Ext
RW-23A	12/14/94	A	54.3	6	34.5	24.5	34.5	21.5	35	Ext
RW-24A	12/20/94	A	47.84	6	32	22	32	19	33	Ext
RW-26A	10/01/97	A	53.51	6	32	22	32	15	34	Ext
RW-29A	10/30/02	A	52.07	6	35	20	35	17	35	Ext
101B1	07/07/86	B1	54.92	4	65	50	65	46	67	Mon
110B1	09/09/86	B1	53.68	4	59	49	59	47	61	Mon
117B1	10/10/86	B1	53.80	4	63	53	63	51	65	Mon
145B1	01/06/94	B1	54.00	6	65	53	63	50	65	Mon
156B1	10/30/02	B1	50.91	4	54	49	54	37	55	Mon
93B1	07/07/86	B1	55.27	4	67	52	67	45	69	Mon
95B1	07/07/86	B1	56.95	4	65	50	65	46.5	67	Mon
98B1	07/07/86	B1	54.10	4	66	57	66	46	68	Mon
RW-1B(1)	06/06/85	B1	53.83	2	72	52	72	42	73	Ext
RW-2B(1)	02/25/86	B1	47.9	6	56	46	56	45	59	Ext
RW-10B(1)	12/30/94	B1	55.33	6	65	55	65	52	66	Ext
RW-11B(1)	01/12/95	B1	48.45	2	61	51	61	48	63	Ext
146B2	03/09/95	B2	53.58	6	96	85	95	82	97	Mon
40B2	07/07/85	B2	54.59	4	92	87	92	83.5	93	Mon
90B2	06/06/86	B2	54.18	4	104	94	104	87	106	Mon
RW-1B(2)	06/06/85	B2	53.49	2	94	87	92	84	97	Ext
RW-2B(2)	10/01/85	B2	49.99	6	96	76	96	72	98	Ext

Notes and Abbreviations:

Wells in **Bold** are required wells for the Building 19 Site. Other wells are located in the vicinity, as shown in Figure 3, and are shown for completeness.

Equipment Type = submersible pump (Sub), bladder pump (Bld), bailer (Blr)

ft amsl = feet above mean sea level

ft btoc = feet below top-of-casing

TOC = top-of-casing

Well Type = extraction well (Ext), monitoring well (Mon), piezometer (Pz)

Zone = A, B1, B2, or C water-bearing zone

Table 2. 2009 Monitoring and Reporting Schedule, Former Fairchild Building 19, 369/441 Whisman Road, Mountain View, California

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
101A			S		S			S			#, S	
115A[10]			S		S			S			1, S	
12A			S		S			S			#, S	
134A[10]			S		S			S			1, S	
139A			S		S			S			#, S	
140A[6]			S		S			S			S	
141A[6]			S		S			S			S	
142A[9]			S		S			S			1, S	
143A			S		S			S			#, S	
148A			W								#, W	
149A			W								1, W	
15A			S		S			S			#, S	
154A[10]			S		S			S			1, W	
155A[10]			S		S			S			1, W	
159A			S		S			S			#, S	
16A[9]			W								1, W	
160A			W								1, W	
161A			W								#, W	
17A[10]			S		S			S			1, W	
173A[10]			W								1, W	
174A[10]			W								1, W	
175A[10]			W								1, W	
22A[9]			W								1, W	
23A			W								1, W	
4A[8]			W								1, W	
6A			W								#, W	
71A			W								1, W	
9A			W								#, W	
RW-1A[10]			W								1, W	
RW-2A[10]			W								1, W	
RW-11A[10]			W								1, W	
RW-12A[10]			W								1, W	
RW-23A[10]			W								1, W	
RW-24A[10]			W								1, W	
RW-26A[10]			W								1, W	
RW-29A[10]			W								1, W	
101B1			S		S			S			1, S	
110B1			W								1, W	
117B1			S		S			S			1, S	
145B1[10]			W								1, W	
156B1[10]			W								1, W	
93B1[6]			S		S			S			S	
95B1[10]			W								1, W	
98B1[9]			S		S			S			1, S	
RW-1B1[9]			S		S			S			1, S	
RW-2B1[9]			W								1, W	
RW-10B1			W								1, W	
RW-11B1			W								1, W	
146B2			W								1, W	
40B2			W								1, W	
90B2			W								1, W	
RW-1B2			W								1, W	
RW-2B2			W								1, W	
Sys19 Influent		1			1			1			1	
Sys19 Midpoint 1[7]	1	1	1	1	1	1	1	1	1	1	1	1
Sys19 Midpoint 2[7]	1	1	1	1	1	1	1	1	1	1	1	1
Sys19 Effluent	1	1	1	1	1	1	1	1	1	1, 3,4,5	1	1
Stevens Creek[11, 12]												

Table 2. 2009 Monitoring and Reporting Schedule, Former Fairchild Building 19, 369/441 Whisman Road, Mountain View, California

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Reporting												
Quarterly NPDES Report[13]	1/30/2009			4/30/2009			7/30/2009			10/30/2009		
Annual Progress Report[14]						6/15/2009						

Notes and Abbreviations:

Standard observations were recorded whenever a sample was collected for chemical analysis, as required by NPDES Permit CAG912003, Order No. R2-2004-0055 during the first three quarters of 2009 and Order No. R2-2009-0059 which became effective October 1, 2009.

MEW= Middlefield Ellis Whisman

RGRP= Regional Groundwater Recovery Program

VOCs = volatile organic compounds

S = Slurry wall water levels measured on March 26, May 21, August 27, and November 19, 2009

W = Water levels measured on March 26 and November 19, 2009

= Wells sampled every five years and last sampled during 2007 sampling event.

1 = USEPA Method 8260 for Halogenated VOCs using 8010 MS parameters

2 = USEPA Method 8270C for 1,4-dioxane or SVOCs

3 = 96-hour static bioassay for rainbow trout

4 = turbidity

5 = USEPA Method 200 series for Sb, As, Be, Cd, Cr, Cu, Pb, Ni, Se, Tl, Zi; USEPA Method SM 4500-CN for cyanide; USEPA Method 1631 for Hg; USEPA method SM 3500 for hexavalent chromium (every three years).

6 = Only water levels measurements taken in 2009. No sampling is required.

7 = Analysis not required for regulatory compliace but being done by system management for carbon changeout purposes.

8 = Sampling of well is not required. Voluntary sampling was performed for slurry wall and plume monitoring.

9 = Part of the MEW RGRP S101 sampling event, but are located at the Building 19 Site. Data for these discussed in RGRP report unless pertinent to this report.

10 = Well has been sampled annually using USEPA Method 8260 for Halogenated VOCs (using 8010 MS parameters) since 2008 as part of the slurry wall evaluation.

11 = In cases of effluent exceedence, receiving water must be sampled upstream/downstream of treatment system within 24 hours for the exceeded compound(s) and dissolved oxygen level.

12 = In cases of Cadmium, Chromium (total), Copper, Lead, Silver, or Zinc trigger exceedences, receiving water must be sampled upstream/downstream of treatment system for hardness and salinity on the same day as one of the three required resamples is taken (Per NPDES Permit CAG912003, Order No. R2-2009-0059, effective October 1, 2009).

13 = Reports were submitted to the Water Board under NPDES Permit CAG912003, Order No. R2-2004-0055. New Permit Order No. R2-2009-0059 became effective October 1, 2009.

14 = The 2008 Annual Progress Report is distributed to the USEPA and MEW Distribution List parties.

Table 3. Extraction Well Target Flow Rates, Former Fairchild Building 19, 369-441 Whisman Road, Mountain View, California.

Extraction Wells[a]	Target Flow Rate (gpm)	Average Flow Rate (2009)
----------System 19----------		
71A	off[a]	---
RW-1A	off[a]	---
RW-1(B1)	off[b]	---
RW-1(B2)	0.50	0.13
RW-2A	4.00	3.68
RW-2(B1)	5.40	6.67
RW-2(B2)	11.40	11.38
RW-10(B1)	5.00	5.59
RW-11A	3.00	2.73
RW-11(B1)	8.30	8.35
RW-12A	off[a]	---
RW-23A	4.00	4.81
RW-24A	3.70	3.31
RW-26A	off[a]	---
RW-29A	3.00	3.60
DW3-219 (RGRP)	off[b]	---
DW3-334 (RGRP)	off[b]	---
DW3-505R (RGRP)	off[b]	---
DW3-244	off[b]	---
DW3-364	off[b]	---
65B3 (RGRP)	6.50	6.42
REG-4B(1) (RGRP)	6.10	5.63

Notes & Abbreviations:

a) The following extraction wells have been turned off based on conditional approval to implement the recommendations in the Slurry Wall System Efficiency Report, email from Alana Lee, USEPA, to L. Maile Smith, Northgate Environmental Management, Inc., August 2, 2007: System 19 Extraction Wells:71A, RW-1A, RW-12A, RW-26A.

b) Wells turned off with full EPA approval: System 19: RW-1(B1), DW3-219, DW3-334, DW3-505R, DW3-244, DW3-364. Extraction wells; DW3-244, DW3-334, and DW3-364 were shut down with approval of the USEPA on November 9, 2006. DW3-219 and DW3-505R were turned off with approval from USEPA in 2002, however, DW3-219 operated again from August 2005 to June 2006 due to increased TCE concentrations. RW-1(B1) was turned off in 2001 with USEPA approval.

Target Flow rates as assigned in August 2007

--- = no data

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Table 4. Monthly Average Flow Rates (gallons per minute), January through December 2009, System 19, 369/441 Whisman Road, Mountain View, California

Well ID	January	February	March	April	May	June	July	August	September	October	November	December
65B3	6.42	6.59	6.48	6.65	6.19	6.59	6.41	6.24	6.49	6.26	6.56	6.11
71A[2]	---	---	---	---	---	---	---	---	---	---	---	---
DW3-219[3]	---	---	---	---	---	---	---	---	---	---	---	---
DW3-244[3]	---	---	---	---	---	---	---	---	---	---	---	---
DW3-334[3]	---	---	---	---	---	---	---	---	---	---	---	---
DW3-364[3]	---	---	---	---	---	---	---	---	---	---	---	---
REG-4B1	6.10	5.99	5.66	5.40	5.54	6.13	5.69	5.54	5.86	5.06	5.10	5.46
RW-1A[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-1B2	0.004	0.005	0.005	0.005	0.004	0.005	0.005	0.04	0.35	0.40	0.37	0.40
RW-2A	2.88	3.83	3.69	3.86	3.64	3.40	4.03	3.92	4.04	3.38	3.89	3.58
RW-2B1	6.43	6.66	6.57	6.76	6.32	6.79	6.72	6.60	6.94	6.65	6.93	6.59
RW-2B2	11.87	11.92	11.68	11.95	10.63	11.76	11.46	11.24	11.41	10.90	11.21	10.46
RW-10B1	5.37	6.69	4.76	5.68	5.41	5.82	5.73	5.66	5.83	5.46	5.59	5.26
RW-11A	2.44	2.55	2.52	2.61	2.35	2.67	2.65	2.57	2.64	3.15	3.40	3.15
RW-11B1	8.69	9.09	8.88	9.17	8.52	8.52	8.27	7.95	8.29	7.81	7.90	7.17
RW-12A[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-23A	4.49	4.74	4.84	5.00	4.45	4.79	4.93	4.76	5.04	4.83	5.05	4.80
RW-24A	2.86	3.60	3.63	3.64	3.40	3.63	3.51	3.39	3.16	3.12	3.04	2.73
RW-26A[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-29A	2.39	2.86	2.75	2.81	3.00	4.24	4.72	4.39	4.30	3.89	3.91	3.77
DW3-505R[3]	---	---	---	---	---	---	---	---	---	---	---	---
RW-1B1[3]	---	---	---	---	---	---	---	---	---	---	---	---
Total[1]	70.16	73.04	71.65	73.21	68.99	73.31	71.35	71.12	73.77	69.50	73.53	67.80

Notes and Abbreviations:

1. Total flow rate values are calculated from the system effluent meter, therefore the sum of the wells is not equal to the total value reported.
2. Well is off with conditional approval from EPA for implementation of slurry wall evaluation recommendations.
3. Well has been turned off permanently based on USEPA approval.

USEPA = United States Environmental Protection Agency

--- = not operational

Table 5. Monthly Extraction Totals (gallons), January through December 2009, System 19, 369/441Whisman Road, Mountain View, California

Well ID	January	February	March	April	May	June	July	August	September	October	Novem ber	December
65B3	258,937	265,642	326,371	268,313	258,308	322,425	267,700	305,298	261,615	252,297	330,508	255,038
71A	0	0	0	0	0	0	0	0	0	0	0	0
DW3-219	0	0	0	0	0	0	0	0	0	0	0	0
DW3-244	0	0	0	0	0	0	0	0	0	0	0	0
DW3-334	0	0	0	0	0	0	0	0	0	0	0	0
DW3-364	0	0	0	0	0	0	0	0	0	0	0	0
REG-4B1	246,033	241,342	285,492	217,767	231,524	300,204	237,817	271,455	236,129	203,940	256,812	228,018
RW-1A	0	0	0	0	0	0	0	0	0	0	0	0
RW-1B2	181	183	230	187	187	231	193	1,864	14,022	16,101	18,586	16,733
RW-2A	115,983	154,541	186,093	155,465	151,816	166,660	168,145	191,957	162,905	136,160	196,158	149,682
RW-2B1	259,429	268,643	331,031	272,746	263,949	332,330	280,821	323,101	279,676	268,012	349,050	275,148
RW-2B2	478,616	480,648	588,765	481,749	443,767	575,916	478,414	550,097	459,924	439,387	564,794	436,842
RW-10B1	216,417	269,760	240,041	229,159	226,105	284,853	239,474	277,206	235,133	220,235	281,940	219,715
RW-11A	98,416	102,878	126,825	105,364	98,265	130,890	110,559	125,937	106,424	127,155	171,118	131,470
RW-11B1	350,278	366,320	447,643	369,905	355,907	417,131	345,303	389,408	334,282	314,800	398,290	299,460
RW-12A	65	0	0	0	0	0	0	0	0	0	61	0
RW-23A	181,127	190,929	243,905	201,791	186,029	234,611	205,694	233,220	203,106	194,552	254,504	200,515
RW-24A	115,170	145,152	182,985	146,661	141,946	177,531	146,375	165,904	127,306	125,789	153,155	114,032
RW-26A	0	0	0	0	0	0	0	0	0	0	0	0
RW-29A	96,181	115,116	138,524	113,308	125,392	207,700	197,024	214,902	173,417	156,751	197,102	157,323
Total[1]	2,828,800	2,945,050	3,611,200	2,951,800	2,881,200	3,589,050	2,979,550	3,481,800	2,974,400	2,802,199	3,706,001	2,831,200

Notes and Abbreviations:

1. Total values are calculated from the system effluent meter, therefore the sum of the wells is not equal to the total value reported.

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Table 6a. Chemical Analytic Results Summary, Fairchild System No. 19, 369 Whisman Road, Mountain View, California

Sample Sa Location	mple Date	Lab Analytical Method	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Vinyl Chloride	Freon 113	Chloroform	Total VOCs
			<---					(μg/L)					--->
Influent	02/18/09	C&T/8260B	<0.5	<0.5	<0.5	110	4.2	5.0	470	<0.5	17	<1.0	606
	05/21/09	C&T/8260B	<0.5	<0.5	<0.5	110	5.2	4.9	470	<0.5	13	<1.0	603
	08/21/09	C&T/8260B	<2.5	<2.5	<2.5	100	4.1	4.2	450	<2.5	12	<5.0	570
	11/23/09	C&T/8260B	<3.1	<3.1	<3.1	78	<3.1	3.9	380	<3.1	<13.0	<6.3	462
Midpoint 1	01/12/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	02/09/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	03/09/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	04/15/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	ND
	05/11/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	06/08/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	07/13/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	08/10/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<1.0	0.8
	9/14/2009[1]	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	10/8/2009[1]	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.0	<2.0	<1.0	1.0
	11/10/2009[1]	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	12/14/2009[1]	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
Midpoint 2	02/09/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	03/09/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	04/15/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	ND
	05/11/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	06/08/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	07/13/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	08/10/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.1	ND
	09/14/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	10/08/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	11/10/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	12/14/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
Effluent[2]	01/20/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	02/18/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	03/24/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	04/15/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	05/21/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	06/15/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	07/16/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	8/21/2009[1]	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.1	ND

Table 6a. Chemical Analytic Results Summary, Fairchild System No. 19, 369 Whisman Road, Mountain View, California

Sample Sa Location	mple Date	Lab Analytical Method	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	Vinyl Chloride	Freon 113	Chloroform	Total VOCs
			<------	------	------	------	------	(µg/L)	------	------	------	------	------>
Effluent[2]	9/16/2009[1]	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	10/21/2009[1]	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	11/23/2009[1]	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	12/16/2009[1]	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	ND
Travel Blank[3]	04/15/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	05/11/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	05/21/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	06/15/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	07/13/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	07/16/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.1	ND
	08/10/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND
	08/21/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.1	ND
	09/14/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	09/16/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	10/08/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	10/21/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	11/10/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	11/23/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	12/14/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND
	12/16/09	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	ND

Notes and Abbreviations:

1 = Duplicate sample collected. Duplicate sample results confirmed the primary sample results.
2 = Chemical concentrations in effluent stream were below the NPDES effluent limitations for the entire quarter.
3 = A travel blank was collected for the June 8 sample and was placed on hold at the laboratory because there were no analytic issues.
< # = analyte not detected above the reported detection limit of "#" µg/L
µg/L = micrograms per liter
8260B = USEPA Method 8260 for halogenated VOCs
DCA = dichloroethane
DCE = dichloroethene
Midpoint 1 = sample collected between the primary and secondary carbon vessels
Midpoint 2 = sample collected between the secondary and tertiary carbon vessels
ND = no analytes detected above reporting limits
TCA = trichloroethane
TCE = trichloroethene
VOCs = volatile organic compounds

Table 6b. Inorganic Data Summary, Fairchild System No. 19, 369 Whisman Road, Mountain View, California

Sample Location	Sample Date	pH	Temp (°C)	Turbidity[1] (NTU)	Priority Pollutant Metals Sb	As	Be	Cd	Cr[2]	Cu	Pb (<---(µg/L)--->)	Ni	Se	Ag	Tl	Zn	Low-Level Mercury (ng/L)	Cyanide (µg/L)	Hardness (mg/L as $CaCO_3$)	Salinity (ppt)	Rainbow Trout Acute Toxicity[1] (% survival)
Influent	39862	7.25	18.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	39935	7.22	22.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08/21/09	7.21	21.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11/23/09	7.10	19.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Midpoint 1	01/12/09	7.17	20.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	02/09/09	7.18	18.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03/09/09	7.30	18.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04/15/09	7.31	19.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05/11/09	7.35	18.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06/08/09	7.27	19.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07/13/09	7.37	20.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08/10/09	7.29	21.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09/14/09	7.47	20.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/08/09	7.46	20.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11/10/09	7.21	19.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12/14/09	7.32	19.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Midpoint 2	02/09/09	7.38	18.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03/09/09	7.20	18.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04/15/09	7.32	18.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05/11/09	7.50	18.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06/08/09	7.19	20.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07/13/09	7.39	20.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08/10/09	7.30	21.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09/14/09	7.93	20.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/08/09	7.40	20.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11/10/09	7.25	19.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12/14/09	7.30	18.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Effluent	01/20/09	8.10	NR	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	02/18/09	7.30	18.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03/24/09	7.37	18.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	04/15/09	7.35	18.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05/21/09	7.35	21.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	06/15/09	7.33	19.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	07/16/09	7.42	19.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	08/21/09	7.29	22.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	09/16/09	7.54	21.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/09	7.50	19.8	0.15	<0.5	<2.0	<0.5	<0.25	<0.5	2.6	0.7	15	2.6	<0.25	<1.0	2.8	<0.05	<10.0[3]	428.0	0.4	100.0
	11/23/09	7.10	20.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12/16/09	7.60	19.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<1.0	---	---	---
NPDES Trigger Levels:				5	6	10	4	1.1	11	4.7	3.2	27	5	2.2	1.7	86	25	2.9			
Effluent Limitations:		6.5 to 8.5	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	70

Notes:

1 = Rainbow trout acute toxicity, 96-hr static, percent survival

2 = An additional sample was analyzed for Hexavalent Chromium on October 21, 2009 using EPA method 7196A. The result was non-detect with a detection limit of 10 micrograms per liter.

3 = The treatment system effluent was analyzed for cyanide in October, but due to a laboratory error in reporting limit it was sampled again in December and analyzed at the reporting limit specified in the NPDES general permit.

ALL PARAMETERS ARE WITHIN EFFLUENT LIMITS PRESCRIBED IN NPDES PERMIT ORDER NO. R2-2009-0059, NPDES PERMIT NO. CAG912003.

System effluent is analyzed for turbidity, hardness, salinity and fish toxicity in October. The system effluent is analyzed for metals, low level mercury, and cyanide every third October. Additional information on analytic methods used can be found in attachment A, Table A-2.

Table 6b. Inorganic Data Summary, Fairchild System No. 19, 369 Whisman Road, Mountain View, California

Sample Location	Sample Date	pH	Temp (°C)	Turbidity[1] (NTU)	Sb	As	Be	Cd	Cr[2]	Cu	Pb	Ni	Se	Ag	Tl	Zn	Low-Level Mercury (ng/L)	Cyanide (μg/L)	Hardness (mg/L as $CaCO_3$)	Salinity (ppt)	Rainbow Trout Acute Toxicity[1] (% survival)
					Priority Pollutant Metals <------(μg/L)------>																

Abbreviations:

--- = not applicable, not required
μg/L = micrograms per liter
< # = analyte not detected above the reported detection limit of "#" μg/L
Ag = silver
As = arsenic
Be = berillium
$CaCO_3$ = calcium carbonate
Cd = cadmium
Cr = chromium
Cu = copper
LOD = limit of detection
LOQ = limit of quantitation
MDL = method detection limit
mg/L = milligrams per liter
Midpoint 1 = sample collected between the primary and secondary carbon vessels
Midpoint 2 = sample collected between the secondary and tertiary carbon vessels
MRL = method reporting limit
NE = not established
ng/L = nanograms per liter
Ni = nickel
NTU = nephelometric turbidity unit
Pb = lead
ppt = parts per trillion
Sb = antimony
Se = selenium
Tl = thallium
VOCs = volatile organic compounds
Zn = zinc

Table 7. VOC Mass Removal Summary, January through December 2009, System 19, 369/441 Whisman Road, Mountain View, California

TOTAL GROUNDWATER EXTRACTED (gallons):	
January	2,828,800
February	2,945,050
March	3,611,200
April	2,951,800
May	2,881,200
June	3,589,050
July	2,979,550
August	3,481,800
September	2,974,400
October	2,802,199
November	3,706,001
December	2,831,200
CUMULATIVE GROUNWATER EXTRACTED IN 2009 (gallons):	**37,582,250**

TOTAL INFLUENT VOC CONCENTRATION (mg/L):	
January	0.61
February	0.61
March	0.61
April	0.60
May	0.60
June	0.60
July	0.57
August	0.57
September	0.57
October	0.46
November	0.46
December	0.46
Unit Conversion ((L H_2O/gal H_2O)*(kg VOC/mg VOC)*(2.2 pounds/kg)):	**8.33E-06**

TOTAL VOC MASS REMOVED (pounds):	
January	14.28
February	14.86
March	18.22
April	14.82
May	14.47
June	18.02
July	14.14
August	16.53
September	14.12
October	10.78
November	14.26
December	10.89
CUMULATIVE MASS REMOVED IN 2009 (pounds):	**175.40**

Notes and Abbreviations:

1 = System Influent samples are collected the second month of each quarter. These concentrations are used for the entire quarter. calculated using the concentration of the previous influent sample.

gal = gallons

kg = kilograms

mg/L = milligrams per liter

VOC = volatile organic compound

Weiss Associates

Table 8. Groundwater Elevations, Slurry Wall Pairs, January 2006 through December 2009, Former Fairchild Building 19.

Date	Well ID Outer/B1 Well	Groundwater Elevation (ft msl)	Well ID Inner/A Well	Groundwater Elevation (ft msl)	Difference (ft)	Inward/Outward Gradient from Slurry Wall or Upward/Downward
Southern Wall - Upgradient Well Pairs						
3/23/2006	142A	46.19	143A	42.24	3.95	Inward
5/25/2006	142A	46.49	143A	42.81	3.68	Inward
8/24/2006	142A	46.05	143A	41.77	4.28	Inward
11/16/2006	142A	45.74	143A	41.51	4.23	Inward
3/22/2007	142A	44.65	143A	42.23	2.42	Inward
5/24/2007	142A	45.38	143A	41.77	3.61	Inward
8/23/2007	142A	45.03	143A	41.49	3.54	Inward
11/15/2007	142A	44.56	143A	41.54	3.02	Inward
3/27/2008	142A	43.74	143A	41.96	1.78	Inward
5/22/2008	142A	44.98	143A	41.82	3.16	Inward
8/28/2008	142A	44.95	143A	41.22	3.73	Inward
11/20/2008	142A	44.02	143A	40.62	3.4	Inward
3/26/2009	142A	44.59	143A	41.27	3.32	Inward
5/21/2009	142A	44.85	143A	36.85	8	Inward
8/27/2009	142A	44.2	143A	40.67	3.53	Inward
11/19/2009	142A	42.75	143A	40.21	2.54	Inward
3/23/2006	140A	45.12	101A	42.46	2.66	Inward
5/25/2006	140A	45.79	101A	43.48	2.31	Inward
8/24/2006	140A	45.26	101A	42.42	2.84	Inward
11/16/2006	140A	44.94	101A	42.23	2.71	Inward
3/22/2007	140A	44.95	101A	42.68	2.27	Inward
5/24/2007	140A	44.75	101A	42.25	2.5	Inward
8/23/2007	140A	44.32	101A	42	2.32	Inward
11/15/2007	140A	43.88	101A	41.84	2.04	Inward
3/27/2008	140A	44.33	101A	42.04	2.29	Inward
5/22/2008	140A	44.43	101A	42.24	2.19	Inward
8/28/2008	140A	43.94	101A	41.64	2.3	Inward
11/20/2008	140A	43.44	101A	41.2	2.24	Inward
3/26/2009	140A	44.03	101A	40.52	3.51	Inward
5/21/2009	140A	44.25	101A	42.26	1.99	Inward
8/27/2009	140A	43.54	101A	41.14	2.4	Inward
11/19/2009	140A	43.14	101A	40.73	2.41	Inward
Western Wall - Crossgradient Well Pairs						
3/23/2006	17A	40.74	159A	41.23	-0.49	Outward
5/25/2006	17A	40.68	159A	41.38	-0.7	Outward
8/24/2006	17A	40.12	159A	40.49	-0.37	Outward
11/16/2006	17A	39.97	159A	40.27	-0.3	Outward
3/22/2007	17A	40.08	159A	40.81	-0.73	Outward
5/24/2007	17A	39.83	159A	40.62	-0.79	Outward
8/23/2007	17A	39.49	159A	40.41	-0.92	Outward
11/15/2007	17A	39.37	159A	40.61	-1.24	Outward
3/27/2008	17A	39.84	159A	41.04	-1.2	Outward
5/22/2008	17A	39.75	159A	40.9	-1.15	Outward

Table 8. Groundwater Elevations, Slurry Wall Pairs, January 2006 through December 2009, Former Fairchild Building 19.

Date	Well ID Outer/B1 Well	Groundwater Elevation (ft msl)	Well ID Inner/A Well	Groundwater Elevation (ft msl)	Difference (ft)	Inward/Outward Gradient from Slurry Wall or Upward/Downward
8/28/2008	17A	39.3	159A	40.37	-1.07	Outward
11/20/2008	17A	38.72	159A	39.73	-1.01	Outward
3/26/2009	17A	39.56	159A	41.23	-1.67	Outward
5/21/2009	17A	39.79	159A	40.9	-1.11	Outward
8/27/2009	17A	38.8	159A	39.77	-0.97	Outward
11/19/2009	17A	38.37	159A	39.3	-0.93	Outward
Northern Wall - Downgradient Well Pairs						
3/23/2006	154A	36.34	155A	41.22	-4.88	Outward
5/25/2006	154A	36.14	155A	41.52	-5.38	Outward
8/24/2006	154A	35.57	155A	40.55	-4.98	Outward
11/16/2006	154A	35.35	155A	40.23	-4.88	Outward
3/22/2007	154A	36.02	155A	41.03	-5.01	Outward
5/24/2007	154A	35.53	155A	40.99	-5.46	Outward
8/23/2007	154A	35.29	155A	40.64	-5.35	Outward
11/15/2007	154A	35.75	155A	40.77	-5.02	Outward
3/27/2008	154A	35.86	155A	41.21	-5.35	Outward
5/22/2008	154A	35.7	155A	41.02	-5.32	Outward
8/28/2008	154A	35.35	155A	40.47	-5.12	Outward
11/20/2008	154A	34.92	155A	39.88	-4.96	Outward
3/26/2009	154A	35.68	155A	40.71	-5.03	Outward
5/21/2009	154A	35.57	155A	41.08	-5.51	Outward
8/27/2009	154A	34.85	155A	39.87	-5.02	Outward
11/19/2009	154A	34.56	155A	39.34	-4.78	Outward
3/23/2006	115A	39.04	134A	40.91	-1.87	Outward
5/25/2006	115A	38.86	134A	41	-2.14	Outward
8/24/2006	115A	38.27	134A	40.12	-1.85	Outward
11/16/2006	115A	38.1	134A	39.88	-1.78	Outward
3/22/2007	115A	38.57	134A	40.53	-1.96	Outward
5/24/2007	115A	38.23	134A	40.34	-2.11	Outward
8/23/2007	115A	37.97	134A	40.07	-2.1	Outward
11/15/2007	115A	38.2	134A	40.29	-2.09	Outward
3/27/2008	115A	38.44	134A	40.7	-2.26	Outward
5/22/2008	115A	38.31	134A	40.59	-2.28	Outward
8/28/2008	115A	37.88	134A	39.99	-2.11	Outward
11/20/2008	115A	37.42	134A	39.39	-1.97	Outward
3/26/2009	115A	38.22	134A	40.3	-2.08	Outward
5/21/2009	115A	38.23	134A	40.61	-2.38	Outward
8/27/2009	115A	37.43	134A	39.42	-1.99	Outward
11/19/2009	115A	37.07	134A	39.01	-1.94	Outward
Eastern Wall - Crossgradient Well Pairs						
3/23/2006	141A	44.76	139A	41.02	3.74	Inward
5/25/2006	141A	44.92	139A	41.62	3.3	Inward
8/24/2006	141A	44.67	139A	40.57	4.1	Inward
11/16/2006	141A	44.52	139A	40.26	4.26	Inward

Table 8. Groundwater Elevations, Slurry Wall Pairs, January 2006 through December 2009, Former Fairchild Building 19.

Date	Well ID Outer/B1 Well	Groundwater Elevation (ft msl)	Well ID Inner/A Well	Groundwater Elevation (ft msl)	Difference (ft)	Inward/Outward Gradient from Slurry Wall or Upward/Downward
3/22/2007	141A	44.47	139A	41.16	3.31	Inward
5/24/2007	141A	44.33	139A	41.06	3.27	Inward
8/23/2007	141A	44.05	139A	40.77	3.28	Inward
11/15/2007	141A	43.75	139A	40.83	2.92	Inward
3/27/2008	141A	43.89	139A	41.2	2.69	Inward
5/22/2008	141A	43.99	139A	41.01	2.98	Inward
8/28/2008	141A	43.75	139A	40.51	3.24	Inward
11/20/2008	141A	43.23	139A	39.9	3.33	Inward
3/26/2009	141A	43.63	139A	39.76	3.87	Inward
5/21/2009	141A	43.81	139A	41.15	2.66	Inward
8/27/2009	141A	43.35	139A	39.91	3.44	Inward
11/19/2009	141A	43.1	139A	39.41	3.69	Inward
A-B1 Aquitard - Vertical Gradient Well Pairs						
3/23/2006	98B1	42.47	15A	41.26	1.21	Upward
5/25/2006	98B1	42.63	15A	41.61	1.02	Upward
8/24/2006	98B1	41.96	15A	40.69	1.27	Upward
11/16/2006	98B1	41.64	15A	40.42	1.22	Upward
3/22/2007	98B1	42.02	15A	41.2	0.82	Upward
5/24/2007	98B1	41.88	15A	41.08	0.8	Upward
8/23/2007	98B1	41.33	15A	40.77	0.56	Upward
11/15/2007	98B1	41.35	15A	40.88	0.47	Upward
3/27/2008	98B1	41.71	15A	41.28	0.43	Upward
5/22/2008	98B1	41.8	15A	41.06	0.74	Upward
8/28/2008	98B1	41.15	15A	40.58	0.57	Upward
11/20/2008	98B1	40.46	15A	39.97	0.49	Upward
3/26/2009	98B1	41.35	15A	40.87	0.48	Upward
5/21/2009	98B1	41.51	15A	41.15	0.36	Upward
8/27/2009	98B1	40.6	15A	39.99	0.61	Upward
11/19/2009	98B1	40.2	15A	39.51	0.69	Upward
3/23/2006	110B1	40.87	134A	40.91	-0.04	Downward
5/25/2006	110B1	40.88	134A	41	-0.12	Downward
8/24/2006	110B1	40.23	134A	40.12	0.11	Upward
11/16/2006	110B1	39.97	134A	39.88	0.09	Upward
3/22/2007	110B1	40.29	134A	40.53	-0.24	Downward
5/24/2007	110B1	40.3	134A	40.34	-0.04	Downward
8/23/2007	110B1	39.75	134A	40.07	-0.32	Downward
11/15/2007	110B1	40.44	134A	40.29	0.15	Upward
3/27/2008	110B1	40.29	134A	40.7	-0.41	Downward
5/22/2008	110B1	40.36	134A	40.59	-0.23	Downward
8/28/2008	110B1	39.65	134A	39.99	-0.34	Downward
11/20/2008	110B1	39.1	134A	39.39	-0.29	Downward
3/26/2009	110B1	39.96	134A	40.3	-0.34	Downward
5/21/2009	110B1	40.04	134A	40.61	-0.57	Downward
8/27/2009	110B1	39.08	134A	39.42	-0.34	Downward

Table 8. Groundwater Elevations, Slurry Wall Pairs, January 2006 through December 2009, Former Fairchild Building 19.

Date	Well ID Outer/B1 Well	Groundwater Elevation (ft msl)	Well ID Inner/A Well	Groundwater Elevation (ft msl)	Difference (ft)	Inward/Outward Gradient from Slurry Wall or Upward/Downward
11/19/2009	110B1	38.66	134A	39.01	-0.35	Downward
3/23/2006	117B1	40.86	12A	41.68	-0.82	Downward
5/25/2006	117B1	41.02	12A	41.9	-0.88	Downward
8/24/2006	117B1	40.18	12A	40.93	-0.75	Downward
11/16/2006	117B1	39.74	12A	40.72	-0.98	Downward
3/22/2007	117B1	40.16	12A	41.37	-1.21	Downward
5/24/2007	117B1	41.03	12A	41.09	-0.06	Downward
8/23/2007	117B1	40.19	12A	40.88	-0.69	Downward
11/15/2007	117B1	41.48	12A	40.96	0.52	Upward
3/27/2008	117B1	40.94	12A	41.42	-0.48	Downward
5/22/2008	117B1	41.03	12A	42.41	-1.38	Downward
8/28/2008	117B1	40.32	12A	40.66	-0.34	Downward
11/20/2008	117B1	39.84	12A	40.13	-0.29	Downward
3/26/2009	117B1	40.59	12A	40.95	-0.36	Downward
5/21/2009	117B1	40.78	12A	42.4	-1.62	Downward
8/27/2009	117B1	39.75	12A	41.79	-2.04	Downward
11/19/2009	117B1	39.35	12A	39.61	-0.26	Downward
3/23/2006	RW-1(B1)	41.38	159A	41.23	0.15	Upward
5/25/2006	RW-1(B1)	41.5	159A	41.38	0.12	Upward
8/24/2006	RW-1(B1)	40.76	159A	40.49	0.27	Upward
11/16/2006	RW-1(B1)	40.52	159A	40.27	0.25	Upward
3/22/2007	RW-1(B1)	40.79	159A	40.81	-0.02	Downward
5/24/2007	RW-1(B1)	40.74	159A	40.62	0.12	Upward
8/23/2007	RW-1(B1)	40.19	159A	40.41	-0.22	Downward
11/15/2007	RW-1(B1)	40.72	159A	40.61	0.11	Upward
3/27/2008	RW-1(B1)	40.74	159A	41.04	-0.3	Downward
5/22/2008	RW-1(B1)	40.78	159A	40.9	-0.12	Downward
8/28/2008	RW-1(B1)	40.08	159A	40.37	-0.29	Downward
11/20/2008	RW-1(B1)	39.53	159A	39.73	-0.2	Downward
3/26/2009	RW-1(B1)	40.39	159A	41.23	-0.84	Downward
5/21/2009	RW-1(B1)	40.47	159A	40.9	-0.43	Downward
8/27/2009	RW-1(B1)	39.53	159A	39.77	-0.24	Downward
11/19/2009	RW-1(B1)	39.58	159A	39.3	0.28	Upward
3/23/2006	93B1	44.54	101A	42.46	2.08	Upward
5/25/2006	93B1	44.84	101A	43.48	1.36	Upward
8/24/2006	93B1	44.16	101A	42.42	1.74	Upward
11/16/2006	93B1	43.82	101A	42.23	1.59	Upward
3/22/2007	93B1	43.99	101A	42.68	1.31	Upward
5/24/2007	93B1	43.85	101A	42.25	1.6	Upward
8/23/2007	93B1	43.18	101A	42	1.18	Upward
3/27/2008	93B1	43.61	101A	42.04	1.57	Upward
5/22/2008	93B1	43.82	101A	42.24	1.58	Upward
8/28/2008	93B1	42.97	101A	41.64	1.33	Upward
11/20/2008	93B1	42.26	101A	41.2	1.06	Upward

Table 8. Groundwater Elevations, Slurry Wall Pairs, January 2006 through December 2009, Former Fairchild Building 19.

Date	Well ID Outer/B1 Well	Groundwater Elevation (ft msl)	Well ID Inner/A Well	Groundwater Elevation (ft msl)	Difference (ft)	Inward/Outward Gradient from Slurry Wall or Upward/Downward
3/26/2009	93B1	43.31	101A	40.52	2.79	Upward
5/21/2009	93B1	43.47	101A	42.26	1.21	Upward
8/27/2009	93B1	42.24	101A	41.14	1.1	Upward
11/19/2009	93B1	41.99	101A	40.73	1.26	Upward

Notes and Abbreviations:

ft = feet

ft amsl = feet above mean sea level

Well ID = well identifier used in MEW database

Table 9. Groundwater Sampling Results Summary, January 2005 through December 2009, Former Fairchild Buildings 13 and 19 and 23, 369/441 Whisman Road, Mountain View, California

Sample Location	Sample Date	Lab/Analytical Method	Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	Total VOC's	1,4-Dioxane
			< micrograms per liter (µg/L) >													
4A	11/12/07	CT/8260	<140	**390**	<71	**490**	**1,900**	<71	<130	<2900	<71	<71	**16,000**	**180**	**18,960**	---
4A	11/18/08	CT/8260	<83	**100**	<42	**180**	**390**	<42	**110**	<1700	<42	<42	**6,000**	<42	**6,780**	---
4A	11/06/09	CT/8260	<83	**350**	<42	**470**	**6,800**	<42	<170	<1700	<42	<42	**11,000**	**240**	**18,860**	---
6A	11/12/07	CT/8260	<6.3	**4.5**	<3.1	**17**	**17**	<3.1	<3.1	<130	<3.1	<3.1	**380**	<3.1	**419**	---
9A	11/12/07	CT/8260	<5.0	**6.4**	<2.5	**6.4**	**290**	<2.5	<2.5	<100	<2.5	<2.5	**16**	**15**	**334**	---
12A	11/12/07	CT/8260	<25	<13	<13	<13	**390**	**14**	<13	<500	<13	<13	**1,500**	<13	**1,904**	---
15A	11/09/07	CT/8260	<1.0	**3.2**	<0.5	**2.2**	**23**	<0.5	**1.1**	<20	<0.5	<0.5	**92**	<0.5	**122**	---
16A	11/21/07	CT/8260	<1.0	<0.5	<0.5	<0.5	**2.2**	<0.5	**0.8**	<20	<0.5	<0.5	**56**	<0.5	**59**	---
16A	11/06/08	CT/8260	**0.77**	<0.50	<0.50	<0.50	**3**	<0.50	**0.82**	<0.50	<0.50	<0.50	**47**	<0.50	**52**	---
16A	11/02/09	CT/8260	<1.0	<0.5	<0.5	<0.5	**2.9**	<0.5	<2.0	<20	<0.5	<0.5	**64**	<0.5	**67**	---
17A	12/11/08	CT/8260	<1.0	<0.5	<0.5	<0.5	**4.9**	<0.5	**1.4**	<20	<0.5	<0.5	**82**	<0.5	**88**	---
17A	11/02/09	CT/8260	<1.4	<0.7	<0.7	<0.7	**3.8**	<0.7	<2.9	<29	<0.7	<0.7	**87**	<0.7	**91**	---
22A	11/10/05	CT/8260	<3.3	<1.7	<1.7	<1.7	**10**	<1.7	**110**	<67	<1.7	**1.9**	**130**	<1.7	**252**	---
22A	11/17/06	CT/8260	<1.0	**1.8**	<0.5	**3**	**17**	**0.5**	**140**	<20	<0.5	**3.6**	**160**	<0.5	**326**	---
22A	11/11/08	CT/8260	<1.4	**1.6**	<0.7	**2.2**	**17**	<0.7	**160**	<29	<0.7	**2.7**	**150**	<0.7	**334**	---
22A	11/23/09	CT/8260	<1.4	**1.6**	<0.7	**1.7**	**20**	**1**	**110**	<29	<0.7	**2.4**	**100**	<0.7	**237**	---
23A	11/10/05	CT/8260	<1	**6.8**	<0.5	**11**	**78**	<0.5	**9.3**	<20	<0.5	<0.5	**99**	<0.5	**204**	---
23A	11/07/06	CT/8260	<1.4	**5**	<0.7	**8.8**	**53**	<0.7	**6.7**	<29	<0.7	<0.7	**110**	<0.7	**184**	---
23A	11/02/07	CT/8260	<1.0	**4.6**	<0.5	**7.1**	**45**	**0.6**	**5.8**	<20	<0.5	<0.5	**99**	<0.5	**162**	---
23A	11/06/08	CT/8260	<0.50	**6.6**	<0.50	**10**	**54**	<0.50	**5.1**	<0.50	<0.50	<0.50	**96**	<0.50	**172**	---
23A	11/16/09	CT/8260	<1.0	**1.2**	<0.5	**1.7**	**13**	<0.5	**3.3**	<20	<0.5	<0.5	**30**	<0.5	**49**	---
71A	08/08/07	CT/8260	<14	<7.1	<7.1	<7.1	**130**	<7.1	**15**	<290	<7.1	<7.1	**900**	<7.1	**1,045**	---
71A	11/13/07	CT/8260	<17	<8.3	<8.3	**11**	**1,100**	**37**	**9.6**	<330	<8.3	<8.3	**400**	**220**	**1,778**	---
71A	12/04/08	CT/8260	<25	<13	<13	**17**	**2,500**	**75**	<13	<500	<13	<13	**34**	**910**	**3,536**	---
71A	11/23/09	CT/8260	<25	<13	<13	**15**	**2,300**	**68**	<50	<500	<13	<13	**20**	**610**	**3,013**	---

Table 9. Groundwater Sampling Results Summary, January 2005 through December 2009, Former Fairchild Buildings 13 and 19 and 23, 369/441 Whisman Road, Mountain View, California

Sample Location	Sample Date	Lab/Analytical Method	Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	Total VOC's	1,4-Dioxane
			< ----						micrograms per liter (µg/L)							---- >
101A	11/09/07	CT/8260	<1.0	0.5	<0.5	<0.5	16	<0.5	2	<20	<0.5	<0.5	88	0.9	107	---
115A	12/11/08	CT/8260	<1.0	4.5	<0.5	1.6	19	<0.5	3.8	<20	<0.5	<0.5	4.4	<0.5	33	---
115A	11/02/09	CT/8260	<1.0	5.9	<0.5	2.5	43	<0.5	4.7	<20	<0.5	<0.5	4.3	0.7	61	---
134A	11/12/07	CT/8260	<1.0	2.9	<0.5	3	3.5	<0.5	20	<20	<0.5	11	54	<0.5	94	---
134A	12/11/08	CT/8260	<1.0	3.2	<0.5	3.7	5.5	<0.5	27	<20	<0.5	13	52	<0.5	104	---
134A	11/03/09	CT/8260	<1.0	3.1	<0.5	4.7	9	<0.5	25	<20	<0.5	11	57	<0.5	110	---
139A	11/09/07	CT/8260	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<0.5	ND	---
142A	11/09/05	CT/8260	<2.5	<1.3	<1.3	<1.3	12	<1.3	1.7	<50	4.2	<1.3	190	<1.3	208	---
142A	11/03/06	CT/8260	<1.4	<0.7	<0.7	<0.7	9.2	<0.7	1.8	<29	4.8	<0.7	190	<0.7	206	---
142A	11/09/07	CT/8260	<2.5	<1.3	<1.3	<1.3	7.5	<1.3	2.5	<50	11	<1.3	160	<1.3	181	---
142A	11/14/08	CT/8260	<1.3	<0.6	<0.6	<0.6	6	<0.6	1.2	<25	12	<0.6	130	<0.6	149	---
142A	11/11/09	CT/8260	<1.0	<0.5	<0.5	<0.5	8.1	<0.5	<2.0	<20	14	<0.5	100	<0.5	122	---
143A	11/09/07	CT/8260	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	10	<20	0.6	<0.5	4.9	<0.5	16	---
148A	11/12/07	CT/8260	<17	<8.3	<8.3	<8.3	54	<8.3	34	<330	<8.3	<8.3	940	<8.3	1,028	---
149A	11/10/05	CT/8260	<1.7	1	<0.8	1.6	96	3.5	7.3	<33	<0.8	1.6	110	<0.8	221	---
149A	11/07/06	CT/8260	<7.1	<3.6	<3.6	4.7	480	3.6	<3.6	<140	<3.6	<3.6	74	4.8	567	---
149A	11/06/08	CT/8260	<0.50	3.4	<0.50	5.6	340	2.7	6.3	<0.50	<0.50	<0.50	100	3.5	462	---
149A	11/16/09	CT/8260	<13	10	<6.3	13	1,200	10	<25	<250	<6.3	<6.3	42	8.8	1,284	---
154A	12/11/08	CT/8260	<2.0	3.1	<1.0	4.7	79	1.5	19	<40	<1.0	7.6	270	1.5	386	---
154A	11/06/09	CT/8260	<2.5	4	<1.3	4.1	92	1.9	13	<50	<1.3	6.8	250	2.2	374	---
155A	11/12/07	CT/8260	<8.3	9.3	<4.2	6.3	24	<4.2	17	<170	<4.2	13	490	<4.2	560	---
155A	12/11/08	CT/8260	<2.5	8	<1.3	7.5	23	<1.3	6.8	<50	1.4	11	400	<1.3	458	---
155A	11/06/09	CT/8260	<3.3	5.9	<1.7	6.3	18	<1.7	<6.7	<67	<1.7	7	260	<1.7	297	---
159A	11/12/07	CT/8260	<3.3	<1.7	<1.7	<1.7	5.3	<1.7	2.1	<67	<1.7	<1.7	180	<1.7	187	---

Table 9. Groundwater Sampling Results Summary, January 2005 through December 2009, Former Fairchild Buildings 13 and 19 and 23, 369/441 Whisman Road, Mountain View, California

Sample Location	Sample Date	Lab/Analytical Method	Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	Total VOC's	1,4-Dioxane
			< micrograms per liter (µg/L) >													
160A	11/10/05	CT/8260	<3.3	<1.7	<1.7	<1.7	20	<1.7	10	<67	<1.7	<1.7	150	<1.7	180	---
160A	11/07/06	CT/8260	<2.0	<1.0	<1.0	1.5	40	<1.0	8.3	<40	<1.0	1.6	170	<1.0	221	---
160A	11/08/07	CT/8260	<3.3	<1.7	<1.7	<1.7	50	3	13	<67	<1.7	3.9	180	<1.7	250	---
160A	11/06/08	CT/8260	<0.50	4.7	<0.50	<0.50	210	3.3	83	<0.50	<0.50	5.7	390	1.1	698	---
160A	11/17/09	CT/8260	<6.3	15	<3.1	17	380	5.8	450	<130	<3.1	9.4	500	<3.1	1,377	---
161A	11/12/07	CT/8260	<130	<63	<63	<63	11,000	1,400	170	<2500	<63	<63	5,600	<63	18,170	---
173A	12/11/08	CT/8260	<1.0	2.1	<0.5	1.1	38	<0.5	<0.5	<20	<0.5	<0.5	41	2.5	85	---
173A	11/12/09	CT/8260	<1.0	2.6	<0.5	1.6	45	<0.5	<2.0	<20	<0.5	<0.5	43	2.4	95	---
174A	11/08/07	CT/8260	<5.0	8	<2.5	7.4	21	<2.5	5.9	<100	3.1	8.3	280	<2.5	334	---
174A	12/11/08	CT/8260	<1.0	1.7	<0.5	2	4	<0.5	2.6	<20	3.2	3.4	140	<0.5	157	---
174A	11/03/09	CT/8260	<2.0	1.8	<1.0	2.1	4	<1.0	<4.0	<40	2.8	2.8	130	<1.0	144	---
175A	12/11/08	CT/8260	<1.7	11	<0.8	4.8	20	<0.8	9.2	<33	1.2	8.5	170	<0.8	225	---
175A	11/16/09	CT/8260	<2.0	13	<1.0	6.6	26	<1.0	9.1	<40	1.1	9.2	150	<1.0	215	---
RW-1A	08/08/07	CT/8260	<1.4	<0.7	<0.7	<0.7	3.6	0.7	1	<29	<0.7	<0.7	100	<0.7	105	---
RW-1A	11/13/07	CT/8260	<2.0	<1.0	<1.0	<1.0	15	19	<1.0	<40	<1.0	<1.0	110	<1.0	144	---
RW-1A	11/15/08	CT/8260	<1.0	0.6	<0.5	1.1	6.9	1.3	2.5	<20	<0.5	1.4	130	<0.5	144	---
RW-1A	11/03/09	CT/8260	<1.0	0.7	<0.5	1.7	3.9	0.7	2.9	<20	<0.5	1.6	140	<0.5	152	---
RW-2A	11/10/05	CT/8260	<5	<2.5	<2.5	3.4	56	3.3	29	<100	<2.5	6.4	230	<2.5	328	---
RW-2A	11/07/06	CT/8260	<2.5	1.5	<1.3	4.1	74	<1.3	16	<50	<1.3	4	220	<1.3	320	---
RW-2A	11/13/07	CT/8260	<6.3	7	<3.1	10	310	<3.1	32	<130	<3.1	9.6	520	<3.1	889	---
RW-2A	11/06/08	CT/8260	0.54	2.1	<0.50	3.4	83	1	11	<0.50	<0.50	3.9	170	<0.50	275	---
RW-2A	11/12/09	CT/8260	<1.0	2.3	<0.5	3.3	89	1	11	<20	<0.5	4.4	180	<0.5	291	---
RW-11A	08/08/07	CT/8260	<71	<36	<36	<36	1,300	<36	150	<1400	<36	<36	4,600	130	6,180	---
RW-11A	11/14/07	CT/8260	<20	22	<10	34	1,100	26	180	<400	<10	39	4,600	120	6,121	---
RW-11A	11/04/08	CT/8260	<50	<25	<25	39	850	<25	180	<1000	<25	28	3,100	120	4,317	---
RW-11A	11/02/09	CT/8260	<3.3	20	<1.7	35	770	8.5	180	<67	<1.7	28	3,300	50	4,392	---
RW-11A (DUP)	11/02/09	CT/8260	<3.3	20	<1.7	27	760	30	190	<67	<1.7	30	3,200	48	4,305	---

Table 9. Groundwater Sampling Results Summary, January 2005 through December 2009, Former Fairchild Buildings 13 and 19 and 23, 369/441 Whisman Road, Mountain View, California

Sample Location	Sample Date	Lab/Analytical Method	Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	Total VOC's	1,4-Dioxane
			< ---- micrograms per liter (µg/L) ---- >													
RW-12A	08/08/07	CT/8260	<25	<13	<13	<13	**1,100**	**18**	**17**	<500	<13	<13	**1,700**	**29**	**2,864**	---
RW-12A	11/13/07	CT/8260	<25	<13	<13	<13	**1,300**	**31**	<13	<500	<13	<13	**1,800**	**69**	**3,200**	---
RW-12A	11/17/08	CT/8260	<20	<10	<10	<10	**1,100**	**37**	**15**	<400	<10	<10	**1,400**	**62**	**2,614**	---
RW-12A	11/23/09	CT/8260	<20	<10	<10	<10	**2,100**	**37**	<40	<400	<10	<10	**1,900**	**110**	**4,147**	---
RW-23A	08/08/07	CT/8260	<10	**8.5**	<5.0	**7**	**64**	<5.0	**13**	<200	<5.0	**5.2**	**570**	<5.0	**668**	---
RW-23A	11/14/07	CT/8260	<10	**7.8**	<5.0	<5.0	**50**	<5.0	**23**	<200	<5.0	**5.6**	**580**	<5.0	**666**	---
RW-23A	11/04/08	CT/8260	<7.1	**8.1**	<3.6	**6.2**	**54**	<3.6	**12**	<140	<3.6	**5.4**	**560**	<3.6	**646**	---
RW-23A	11/06/09	CT/8260	<2.5	**12**	<1.3	**5.2**	**66**	**1.4**	**9.3**	<50	**2**	**4.9**	**520**	<1.3	**621**	---
RW-24A	11/10/05	CT/8260	<8.3	**6.8**	<4.2	**9.4**	**360**	**11**	**46**	<170	<4.2	**9.4**	**450**	<4.2	**893**	---
RW-24A	11/07/06	CT/8260	<8.3	**6.4**	<4.2	**13**	**550**	**5.7**	**52**	<170	<4.2	**11**	**490**	<4.2	**1,128**	---
RW-24A	11/13/07	CT/8260	<8.3	**8.9**	<4.2	**13**	**760**	**7.8**	**59**	<170	<4.2	**18**	**680**	<4.2	**1,547**	---
RW-24A	11/06/08	CT/8260	<0.50	**6.4**	<0.50	**11**	**460**	**5**	**25**	<0.50	<0.50	**8.8**	**440**	**6**	**962**	---
RW-24A	11/12/09	CT/8260	<5.0	**7.7**	<2.5	**11**	**550**	**26**	**31**	<100	<2.5	**7.7**	**410**	**9.8**	**1,053**	---
RW-26A	08/08/07	CT/8260	<2.5	<1.3	<1.3	**2.1**	**10**	<1.3	**3.6**	<50	<1.3	<1.3	**160**	<1.3	**176**	---
RW-26A	11/13/07	CT/8260	<3.3	**3.9**	<1.7	**7.4**	**120**	**2.8**	**4**	<67	<1.7	**2.4**	**190**	<1.7	**331**	---
RW-26A	11/15/08	CT/8260	<1.0	**3.3**	<0.5	**6**	**130**	**1.6**	**3.1**	<20	<0.5	**0.9**	**110**	<0.5	**255**	---
RW-26A	11/23/09	CT/8260	<2.0	**3.4**	<1.0	**9.4**	**83**	**1.1**	**5.4**	<40	<1.0	**2.4**	**180**	<1.0	**285**	---
RW-29A	08/09/07	CT/8260	<3.3	<1.7	<1.7	<1.7	**5.8**	<1.7	**1.4**	<67	**1.8**	**2.1**	**230**	<1.7	**241**	---
RW-29A	11/14/07	CT/8260	<3.3	<1.7	<1.7	<1.7	**3.8**	<1.7	**2**	<67	<1.7	**3.9**	**230**	<1.7	**240**	---
RW-29A	11/04/08	CT/8260	<3.3	<1.7	<1.7	**2.1**	**3.6**	<1.7	**2**	<67	**1.8**	**3.8**	**240**	<1.7	**253**	---
RW-29A	11/02/09	CT/8260	<2.0	**1.5**	<1.0	**1.8**	**5.3**	**1.3**	<4.0	<40	**2**	**3.9**	**210**	<1.0	**226**	---
95B1	11/09/05	CT/8260	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	**13**	<0.5	**13**	---
95B1	11/03/06	CT/8260	<1.0	<0.5	<0.5	<0.5	**0.5**	<0.5	<0.5	<20	<0.5	<0.5	**12**	<0.5	**13**	---
95B1	11/02/07	CT/8260	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	**13**	<0.5	**13**	---
95B1	11/05/08	CT/8260	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	**5.8**	<0.5	**6**	---
95B1	11/03/09	CT/8260	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<20	<0.5	<0.5	**7.4**	<0.5	**7**	---
98B1	11/09/05	CT/8260	<1	**1.4**	<0.5	**1**	**51**	<0.5	<0.5	<20	<0.5	<0.5	**85**	<0.5	**138**	---

Table 9. Groundwater Sampling Results Summary, January 2005 through December 2009, Former Fairchild Buildings 13 and 19 and 23, 369/441 Whisman Road, Mountain View, California

Sample Location	Sample Date	Lab/Analytical Method	Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	Total VOC's	1,4-Dioxane
			< micrograms per liter (µg/L) >													
98B1	11/07/06	CT/8260	<1.0	1.2	<0.5	1.3	43	<0.5	<0.5	<20	<0.5	<0.5	89	<0.5	135	---
98B1	11/08/07	CT/8260	<1.0	1.2	<0.5	0.9	42	<0.5	<0.5	<20	<0.5	<0.5	72	<0.5	116	---
98B1	11/11/08	CT/8260	<1.0	1.2	<0.5	1	43	<0.5	0.6	<20	<0.5	<0.5	81	<0.5	127	---
98B1	11/11/09	CT/8260	<1.0	1	<0.5	1	38	<0.5	<2.0	<20	<0.5	<0.5	49	<0.5	89	---
101B1	11/09/05	CT/8260	<1	1.9	<0.5	1.7	59	<0.5	<0.5	<20	<0.5	0.6	59	<0.5	122	---
101B1	11/03/06	CT/8260	<1.0	1.6	<0.5	2.4	51	<0.5	<0.5	<20	<0.5	0.8	76	<0.5	132	---
101B1	11/09/07	CT/8260	<1.0	1.6	<0.5	1.6	50	<0.5	0.8	<20	<0.5	0.7	69	<0.5	124	---
101B1	11/18/08	CT/8260	<1.0	1.2	<0.5	1.2	38	<0.5	<0.5	<20	<0.5	<0.5	53	<0.5	93	---
101B1	11/03/09	CT/8260	<1.0	1.2	<0.5	1.2	41	<0.5	<2.0	<20	<0.5	<0.5	51	<0.5	94	---
110B1	11/10/05	CT/8260	<7.1	<3.6	<3.6	<3.6	5.8	<3.6	120	<140	<3.6	52	290	<3.6	468	---
110B1	11/07/06	CT/8260	<2.0	<1.0	<1.0	1.6	7.2	<1.0	13	<40	<1.0	5.5	140	<1.0	167	---
110B1	11/08/07	CT/8260	<4.0	<2.0	<2.0	2.6	10	<2.0	44	<80	<2.0	28	210	<2.0	295	---
110B1	11/05/08	CT/8260	<3.3	<1.7	<1.7	2.1	17	<1.7	30	<67	<1.7	13	290	<1.7	352	---
110B1	11/03/09	CT/8260	<5.0	<2.5	<2.5	<2.5	28	<2.5	24	<100	<2.5	7.7	440	<2.5	500	---
117B1	11/09/05	CT/8260	<63	<31	<31	<31	38	<31	<31	<1300	<31	<31	3,200	<31	3,238	---
117B1	11/03/06	CT/8260	<1.4	<0.7	<0.7	<0.7	3.8	<0.7	<0.7	<29	<0.7	<0.7	92	<0.7	96	---
117B1	11/08/07	CT/8260	<25	<13	<13	<13	40	<13	<13	<500	<13	<13	2,000	<13	2,040	---
117B1	11/18/08	CT/8260	<2.5	<1.3	<1.3	<1.3	200	5.2	1.3	<50	<1.3	<1.3	200	<1.3	407	---
117B1	11/06/09	CT/8260	<1.3	<0.6	<0.6	<0.6	110	1.3	<2.5	<25	<0.6	<0.6	110	0.9	222	---
145B1	11/09/05	CT/8260	<1	0.6	<0.5	<0.5	36	0.9	<0.5	<20	<0.5	<0.5	1.2	6.8	46	---
145B1	11/15/06	CT/8260	<1.0	0.8	<0.5	0.7	35	1.6	<0.5	<20	<0.5	<0.5	91	0.8	130	---
145B1	11/08/07	CT/8260	<1.4	0.7	<0.7	<0.7	30	1.4	<0.7	<29	<0.7	<0.7	100	<0.7	132	---
145B1	11/05/08	CT/8260	<1.0	<0.5	<0.5	<0.5	3.1	<0.5	<0.5	<20	<0.5	<0.5	1.2	2.9	7	---
145B1	11/02/09	CT/8260	<1.0	0.8	<0.5	1.1	32	1.5	<2.0	<20	<0.5	<0.5	120	0.8	156	---
156B1	12/11/08	CT/8260	<1.0	2.9	<0.5	1.9	49	0.7	1.5	<20	<0.5	0.5	81	<0.5	138	---
156B1	11/12/09	CT/8260	<1.0	1.6	<0.5	<0.5	21	<0.5	<2.0	<20	<0.5	<0.5	48	<0.5	71	---
RW-1(B1)	12/05/05	CT/8260	<1	2.4	<0.5	4.2	22	<0.5	34	<20	<0.5	19	110	<0.5	192	---
RW-1(B1)	11/17/06	CT/8260	<1.0	<0.5	<0.5	0.6	17	<0.5	<0.5	<20	<0.5	<0.5	4.3	<0.5	22	---

Table 9. Groundwater Sampling Results Summary, January 2005 through December 2009, Former Fairchild Buildings 13 and 19 and 23, 369/441 Whisman Road, Mountain View, California

Sample Location	Sample Date	Lab/Analytical Method	Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	Total VOC's	1,4-Dioxane
			<						micrograms per liter (µg/L)							>
RW-1(B1)	11/08/07	CT/8260	<1.0	<0.5	<0.5	<0.5	6.9	<0.5	<0.5	<20	<0.5	<0.5	1.7	<0.5	9	---
RW-1(B1)	11/15/08	CT/8260	<1.0	1.8	<0.5	0.7	60	0.5	<0.5	<20	<0.5	<0.5	14	0.5	78	---
RW-1(B1)	11/24/09	CT/8260	<1.0	2.6	<0.5	8	5.4	<0.5	120	<20	<0.5	98	110	<0.5	344	---
RW-2(B1)	11/10/05	CT/8260	<8.3	<4.2	<4.2	<4.2	23	<4.2	86	<170	<4.2	38	330	<4.2	477	---
RW-2(B1)	11/15/06	CT/8260	<3.3	1.7	<1.7	3.2	26	<1.7	69	<67	<1.7	37	320	<1.7	457	---
RW-2(B1)	11/14/07	CT/8260	<5.0	<2.5	<2.5	5	34	<2.5	100	<100	<2.5	56	360	<2.5	555	---
RW-2(B1)	11/11/08	CT/8260	<3.3	1.7	<1.7	3.3	31	<1.7	69	<67	<1.7	31	330	<1.7	466	---
RW-2(B1)	11/23/09	CT/8260	<3.3	<1.7	<1.7	3	29	<1.7	56	<67	<1.7	27	220	<1.7	335	---
RW-10(B1)	11/10/05	CT/8260	<20	<10	<10	<10	230	31	49	<400	<10	<10	850	<10	1,160	---
RW-10(B1)	11/07/06	CT/8260	<10	<5.0	<5.0	<5.0	540	21	18	<200	<5.0	<5.0	830	<5.0	1,409	---
RW-10(B1)	08/09/07	CT/8260	<14	<7.1	<7.1	<7.1	210	<7.1	8.9	<290	<7.1	<7.1	790	<7.1	1,009	---
RW-10(B1)	11/20/07	CT/8260	<13	<6.3	<6.3	<6.3	500	11	9.1	<250	<6.3	<6.3	980	<6.3	1,500	---
RW-10(B1)	11/04/08	CT/8260	<17	<8.3	<8.3	<8.3	320	9.7	9	<330	<8.3	<8.3	1,000	<8.3	1,339	---
RW-10(B1)	11/02/09	CT/8260	<5.0	<2.5	<2.5	<2.5	300	17	<10	<100	<2.5	<2.5	870	<2.5	1,187	---
RW-11(B1)	11/10/05	CT/8260	<2	<1	<1	<1	50	3.4	3.8	<40	<1	<1	130	<1	187	---
RW-11(B1)	11/07/06	CT/8260	<2.0	<1.0	<1.0	<1.0	58	1.5	<1.0	<40	<1.0	<1.0	120	<1.0	180	---
RW-11(B1)	11/02/07	CT/8260	<2.0	1	<1.0	<1.0	51	2.2	<1.0	<40	<1.0	<1.0	120	<1.0	174	---
RW-11(B1)	11/04/08	CT/8260	<2.0	<1.0	<1.0	<1.0	43	1.3	<1.0	<40	<1.0	<1.0	120	<1.0	164	---
RW-11(B1)	11/12/09	CT/8260	<1.0	1.3	<0.5	0.9	57	1.6	<2.0	<20	<0.5	0.6	91	<0.5	152	---
40B2	11/09/05	CT/8260	<1	<0.5	<0.5	<0.5	65	<0.5	5.6	<20	<0.5	<0.5	20	<0.5	91	---
40B2	11/07/06	CT/8260	<1.0	0.5	<0.5	<0.5	27	1.4	0.6	<20	<0.5	<0.5	3.9	<0.5	33	---
40B2	11/06/08	CT/8260	<2.5	<2.5	<2.5	<2.5	68	<2.5	<2.5	<2.5	<2.5	<2.5	12	<2.5	80	---
40B2	12/11/08	CT/8260	<1.0	<0.5	<0.5	<0.5	48	<0.5	4	<20	<0.5	<0.5	10	<0.5	62	---
40B2	11/03/09	CT/8260	<1.0	<0.5	<0.5	<0.5	11	0.5	<2.0	<20	<0.5	<0.5	2	<0.5	14	---
90B2	11/09/05	CT/8260	<1	<0.5	<0.5	1.1	43	0.8	<0.5	<20	<0.5	<0.5	160	<0.5	205	---
90B2	11/07/06	CT/8260	<2.0	<1.0	<1.0	<1.0	36	<1.0	<1.0	<40	<1.0	<1.0	210	<1.0	246	---
90B2	11/08/07	CT/8260	<3.3	<1.7	<1.7	<1.7	34	<1.7	<1.7	<67	<1.7	<1.7	230	<1.7	264	---
90B2	11/18/08	CT/8260	<1.0	<0.5	<0.5	1.2	49	0.9	<0.5	<20	<0.5	<0.5	170	<0.5	221	---
90B2	11/03/09	CT/8260	<2.5	<1.3	<1.3	<1.3	22	<1.3	<5.0	<50	<1.3	<1.3	150	<1.3	172	---

Table 9. Groundwater Sampling Results Summary, January 2005 through December 2009, Former Fairchild Buildings 13 and 19 and 23, 369/441 Whisman Road, Mountain View, California

Sample Location	Sample Date	Lab/Analytical Method	Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	Total VOC's	1,4-Dioxane
			< micrograms per liter (µg/L) >													
146B2	11/10/05	CT/8260	<2	<1	<1	<1	**120**	**1.1**	<1	<40	<1	<1	**22**	<1	**143**	---
146B2	11/07/06	CT/8260	<1.0	<0.5	<0.5	<0.5	**140**	<0.5	<0.5	<20	<0.5	<0.5	**12**	<0.5	**152**	---
146B2	11/08/07	CT/8260	<2.0	<1.0	<1.0	<1.0	**110**	**3.8**	<1.0	<40	<1.0	<1.0	**7.2**	<1.0	**121**	---
146B2	11/05/08	CT/8260	<1.0	<0.5	<0.5	<0.5	**74**	<0.5	<0.5	<20	<0.5	<0.5	**6**	<0.5	**80**	---
146B2	11/02/09	CT/8260	<1.0	<0.5	<0.5	<0.5	**93**	<0.5	<2.0	<20	<0.5	<0.5	**4.4**	<0.5	**97**	---
RW-1(B2)	11/10/05	CT/8260	<2	<1	<1	<1	**30**	<1	**5**	<40	<1	<1	**89**	<1	**124**	---
RW-1(B2)	11/17/06	CT/8260	<1.0	<0.5	<0.5	**0.7**	**41**	<0.5	**4.8**	<20	<0.5	<0.5	**120**	<0.5	**167**	---
RW-1(B2)	08/09/07	CT/8260	<1.4	<0.7	<0.7	<0.7	**37**	**1**	**1.1**	<29	<0.7	<0.7	**82**	<0.7	**121**	---
RW-1(B2)	11/13/07	CT/8260	<1.0	<0.5	<0.5	<0.5	**39**	<0.5	**2.1**	<20	<0.5	<0.5	**82**	<0.5	**123**	---
RW-1(B2)	11/15/08	CT/8260	<1.0	<0.5	<0.5	<0.5	**27**	<0.5	**0.7**	<20	<0.5	<0.5	**110**	<0.5	**138**	---
RW-1(B2)	11/03/09	CT/8260	<1.4	<0.7	<0.7	<0.7	**35**	<0.7	<2.9	<29	<0.7	<0.7	**83**	<0.7	**118**	---
RW-2(B2)	11/10/05	CT/8260	<20	<10	<10	<10	<10	<10	<10	<400	<10	<10	**770**	<10	**770**	---
RW-2(B2)	11/07/06	CT/8260	<13	<6.3	<6.3	<6.3	**11**	<6.3	<6.3	<250	<6.3	<6.3	**800**	<6.3	**811**	---
RW-2(B2)	11/13/07	CT/8260	<20	<10	<10	<10	**39**	<10	<10	<400	<10	<10	**1,000**	<10	**1,039**	---
RW-2(B2)	11/06/08	CT/8260	<0.50	<0.50	<0.50	**4.8**	**13**	**2.2**	**3.4**	<0.50	<0.50	<0.50	**890**	<0.50	**913**	---
RW-2(B2)	11/12/09	CT/8260	<1.0	<0.5	<0.5	**5.7**	**13**	**2.8**	**4.7**	<20	<0.5	**0.7**	**830**	<0.5	**857**	---

Notes and Abbreviations:
--- = sample not analyazed for particular analyte
< # = analyte not detected above the reported detection limit of "#" ug/L
8260 = USEPA Method 8260B for halogenated VOCs, for Method 8010 list of analytes
8270 = USEPA Method 8270C-SIM for SVOCs
CT = Curtis and Tompkins, Berkeley, California
DCA = Dichloroethane
DCE = Dichloroethene
DUP = duplicate sample
ND = no analytes detected above the laboratory detection limit
PCE = Tetrachloroethene
TCA = Trichloroethane
TCE = Trichloroethene
VOCs = volatile organic compounds

Table 10. Capture Zone Calculations and Analysis, March 2009, Former Fairchild Building 19, Mountain View, California

Extraction Well:		RW-2A	RW-11A	RW-23A	RW-24A	RW-29A	RW-2B1	RW-10B1	RW-11B1	RW-1B2	RW-2B2
b		15	15	15	15	15	25	25	25	35	35
i		0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.004	0.004
K		7.9	7.9	7.9	7.9	7.9	44.6	44.6	44.6	2.4	2.4
T		119	119	119	119	119	1116	1116	1116	86	86
w		625	625	625	625	625	200	200	300	400	600
estimated well loss (ft, from Walton, 1962):	$s_w = CQ^2$	0.003	0.001	0.005	0.003	0.002	0.009	0.007	0.017	0.000	0.029
extraction rate (gpm):		3.80	2.63	5.06	3.69	2.83	6.86	5.74	9.31	0.00	12.06
stagnation point (ft):	$X_0 = -Q / 2\pi Ti$	-245	-169	-326	-238	-183	-63	-53	-85	0	-1078
capture zone width (at extraction well; ft):	$Y_{well} = \pm Q / 4Ti$	385	266	512	374	287	99	83	134	1	1,693
capture zone width (maximum; ft):	$Y_{max} = \pm Q / 2Ti$	770	532	1,024	748	574	197	165	268	1	3,387

LINE OF EVIDENCE	CAPTURE?	COMMENTS
Water Levels *Potentiometric Surface Maps*	*Adequate*	*RW-1A, RW-12A, 71A and RW-26A have been off since 2007. Potentiometric surface maps indicate complete capture in all groundwater zones compared to Targe capture.*
Calculations *Capture Zone Widths*	*Adequate*	*The calculated stagnations points are smaller or larger than than target captures for extraction wells. The calculated widths are balanced by the observed water levels and chemical concentration data, with primary emphais on measured water levels and the resulting potentiometric surface to assess capture.*
Concentration Trends *Downgradient Monitoring Wells*	*Adequate*	*There are slight increases of VOCs in downgradient wells 160A, 110B1 and possibly 173A since 2007; however, wells located closer to the slurry wall do not exhibit increases. The four extractions wells that have been off since 2007 are located within the slurry wall, and slight rebound was observed in RW-1A and RW-26A. Concentrations in wells RW-1(B1) and 110B1 although below historical maximums, have increased since 2007.*

Notes and Abbreviations:

b = aquifer or saturated thickness (ft)

C = turbulent well loss coefficient from Walton, 1962 (sec^2/ft^5); the following are coefficients and their corresponding well condition:

5 = properly designed and developed, 5 to 10 = mild deterioration, 10 to 40 = severe deterioration (40 used in the calculation)

factor = accounts for other contributions to the extraction well (a factor of 1.5 was used in the calculation)

i = regional hydraulic gradient (ft/ft)

K = hydraulic conductivity (ft/day)

Q = extraction flow rate (gallons per minute; gpm)

s_w = drawdown due to well loss

T = transmissivity (ft^2/day)

w = plume width (ft) (for wells RW-2A, RW-11A, RW-23A, RW-24A and RW-29A, the width of the Site slurry wall, 625 ft, is used in the calculation; other wells use the modeled capture zone width)

X_0 = stagnation point (ft)

Y_{max} = maximum capture zone width (ft)

Y_{well} = capture zone width in-line w/ extraction well (ft)

Assumptions:

- homogeneous, isotropic, confined aquifer of infinite extent
- uniform regional horizontal hydraulic gradient
- no net recharge (or net recharge is accounted for in regional hydraulic gradient)
- no other sources of water introduced into aquifer due to extraction
- uniform aquifer thickness
- fully penetrating extraction well
- steady-state flow
- negligible vertical gradient

Table 11. Capture Zone Calculations and Analysis, November 2009, Former Fairchild Building 19, Mountain View, California.

Extraction Well:		RW-2A	RW-11A	RW-23A	RW-24A	RW-29A	RW-2B1	RW-10B1	RW-11B1	RW-1B2	RW-2B2
b		15	15	15	15	15	25	25	25	35	35
i		0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.004	0.004
K		7.9	7.9	7.9	7.9	7.9	44.6	44.6	44.6	2.4	2.4
T		119	119	119	119	119	1116	1116	1116	86	86
w		625	625	625	625	625	200	200	300	400	600
estimated well loss (ft, from Waltom, 1962):	$s_w = CQ^2$	0.003	0.002	0.004	0.002	0.003	0.008	0.005	0.010	0.000	0.022
extraction rate (gpm):		3.64	3.09	4.68	2.85	3.71	6.47	5.16	7.14	0.34	10.47
stagnation point (ft):	$X_0 = -Q / 2\pi Ti$	-235	-199	-302	-184	-239	-59	-47	-65	-30	-936
capture zone width (at extraction well; ft):	$Y_{well} = \pm Q / 4Ti$	369	313	474	289	376	93	74	103	47	1,470
capture zone width (maximum; ft):	$Y_{max} = \pm Q / 2Ti$	737	626	948	578	752	186	148	205	95	2,940

LINE OF EVIDENCE	CAPTURE?	COMMENTS
<u>Water Levels</u> *Potentiometric Surface Maps*	*Adequate*	*RW-1A, RW-12A, 71A and RW-26A have been off since 2007. Potentiometric surface maps indicate complete capture in all groundwater zones compared to Targe capture.*
<u>Calculations</u> *Capture Zone Widths*	*Adequate*	*The calculated stagnations points are smaller or larger than than target captures for extraction wells. The calculated widths are balanced by the observed water levels and chemical concentration data, with primary emphais on measured water levels and the resulting potentiometric surface to assess capture.*
<u>Concentration Trends</u> *Downgradient Monitoring Wells*	*Adequate*	*There are slight increases of VOCs in downgradient wells 160A, 110B1 and possibly 173A since 2007; however, wells located closer to the slurry wall do not exhibit increases. The four extractions wells that have been off since 2007 are located within the slurry wall, and slight rebound was observed in RW-1A and RW-26A. Concentrations in wells RW-1(B1) and 110B1 although below historical maximums, have increased since 2007.*

Notes and Abbreviations:

b = aquifer or saturated thickness (ft)
C = turbulent well loss coefficient from Walton, 1962 (sec^2/ft^5); the following are coefficients and their corresponding well condition:
5 = properly designed and developed, 5 to 10 = mild deterioration, 10 to 40 = severe deterioration (40 used in the calculation)
factor = accounts for other contributions to the extraction well (a factor of 1.5 was used in the calculation)
i = regional hydraulic gradient (ft/ft)
K = hydraulic conductivity (ft/day)
Q = extraction flow rate (gallons per minute; gpm)
s_w = drawdown due to well loss
T = transmissivity (ft^2/day)
w = plume width (ft) (for wells RW-2A, RW-11A, RW-23A, RW-24A and RW-29A, the width of the Site slurry wall, 625 ft, is used in the calculation; other wells use the modeled capture zone width)
X_0 = stagnation point (ft)
Y_{max} = maximum capture zone width (ft)
Y_{well} = capture zone width in-line w/ extraction well (ft)

Assumptions:

- homogeneous, isotropic, confined aquifer of infinite extent
- uniform regional horizontal hydraulic gradient
- no net recharge (or net recharge is accounted for in regional hydraulic gradient)
- no other sources of water introduced into aquifer due to extraction
- uniform aquifer thickness
- fully penetrating extraction well
- steady-state flow
- negligible vertical gradient

APPENDIX A

2009 ANNUAL REPORT REMEDY PERFORMANCE CHECKLIST

2009 Annual Report Remedy Performance Checklist

I. GENERAL SITE INFORMATION	
Facility Name: **Former Fairchild Facilities, Middlefield-Ellis-Whisman Study Area (MEW Site)**	
Facility Address, City, State: **515/545 North Whisman Road and 313 Fairchild Drive (former Bldgs. 1-4)** **369 and 441 North Whisman Road (former Bldgs. 13 and 19 and 23)** **401 National Avenue (former Bldg. 9)** **644 National Avenue (former Bldg. 18)** **464 Ellis Street (former Bldg. 20 and 20A)**	
Checklist completion date: **June 15, 2010**	EPA Site ID: **System-1: CAR000164285** **System-3: CAD095989778** **System-19: CAR000164228**
Site Lead: ☐ Fund ■ PRP ☐ State ☐ State Enforcement ☐ Federal Facility ☐ Other: EPA Region IX	

Site Remedy Components (Include Other Reference Documents for More Information, as appropriate):

1. **Three slurry wall enclosures around former Buildings 1-4, Building 9, and Building 19. The slurry walls extend to a depth of about 40 feet below ground surface and are keyed a minimum of two feet into the A2/B1 aquitard.**
2. **Three treatment systems as detailed below:**

System 1:

- **Three 5,000-pound GAC vessels in series, treatment pad, controls, double-contained groundwater conveyance piping, vaults, electrical distribution, controls and other appurtenances.**
- **Thirteen source control recovery wells (Four wells operated during 2009).**
- **One regional recovery wells (One well operated during 2009).**

System 3:

- **Three 5,000-pound GAC vessels in series, treatment pad, controls, double-contained groundwater conveyance piping, vaults, electrical distribution, controls and other appurtenances.**
- **Seven source control recovery wells (Five wells operated during 2009).**
- **Three regional recovery wells (Two wells operated during 2009).**

System 19:

- **Three 5,000-pound GAC vessels in series, treatment pad, controls, double-contained groundwater conveyance piping, vaults, electrical distribution, controls and other appurtenances.**
- **Fifteen source control recovery wells (Ten operated during 2009).**
- **Seven regional recovery wells (Two operated during 2009).**

II. CONTACTS

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

	Name/Title	Phone	E-mail
RP/Facility Representative	**Du'Bois (Joe) Ferguson Schlumberger Technology Corporation**	**281-285-3692**	dferguson3@sugar-land.oilfield.slb.com
RP Consultant	**John Gallinatti Geosyntec Consultants**	**510-285-2750**	jgallinatti@geosyntec.com
RP Consultant	**Tess Byler Weiss Associates**	**650-968-7000**	tb@weiss.com

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III. O&M COSTS (OPTIONAL)

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 ■ 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?

Documents and records are available at treatment systems and/or on-site office located at 350 E. Middlefield Road Mountain View, CA.

V. INSTITUTIONAL CONTROLS (as applicable)

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

Signs and other security measures are in place at extraction and treatment points.

Status of their implementation:

Posted signage (Health & Safety and emergency contact information). Bay Alarm Security System at the site.

Where are the ICs documented and/or reported?

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:

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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: **Second Five-Year Remedy Review by USPEA September 2009.** **Proposed Plan July 2, 2009 and Public Meeting July 23, 2009 on Vapor Intrusion.**

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: **Planned and ongoing redevelopment in the residential area over the western edge of the MEW A/A1 and B1/A2 zone plume. Planned redevelopment of apartments on Whisman Road; ongoing redevelopment of residential area on Fairchild Drive, west of Whisman Road.** **Building 18, the 644 National Avenue property has been bought by Carr America National Avenue LLC; redevelopment plans include new buildings and a parking structure.** **The existing treatment systems and their components (conveyance piping, extraction wells, and monitoring wells) will be maintained or modified as appropriate to accommodate redevelopment.**

2009 Annual Report Remedy Performance Checklist

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?
Potentiometric surface maps, hydrographs	**2009 Annual Fairchild Building Reports (Weiss, 2010)**
Capture zone maps, isoconcentration maps	**2009 Annual Regional Report (Geosyntec, 2010)**

■ 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?
O&M logs	**NPDES Self-Monitoring Reports**
System Influent & Effluent water samples	**2009 Annual Fairchild Building Reports**
VOC mass and groundwater removal graphs, VOC concentration trends	

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

Discharge Data

List the types of data that are available:	What is the source report?
System performance data such as average flow rates, totalized flow, influent/effluent chemical data, GAC removal efficiencies	**NPDES Self-Monitoring Reports**

■ The system is in compliance with discharge permits.

Slurry Wall Data

List the types of data that are available:	What is the source report?
Water level elevations in select well pairs	**2009 Annual Reports**
Analysis of inward and upward hydraulic gradients	

Is slurry wall operating as designed? ■ Yes ☐ No

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

The slurry walls are operating as designed and are effective at impeding flow and preventing VOCs inside the wall from migrating downgradient. However, the ROD specifies that the slurry walls, "maintain inward and upward gradients." Historically, this has not been observed in all well pairs, even under maximum historical pumping scenarios. Since 2007, pumping ceased in the lower concentration/higher pumping rate extraction wells within the slurry walls. Gradients have generally maintained trends consistent with those prior to reduced groundwater extraction rates, although in some cases the magnitude of the gradient has changed.

The chemical concentration data and potentiometric surface contours from 2009 continue to demonstrate that the slurry walls are an effective means of impeding VOC migration outside of the slurry walls.

Elaborate on technical data and/or other comments

2009 Annual Report Remedy Performance Checklist

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

Walk-throughs/Surveys: Yes

In the Fall of 2009, indoor air samples were collected at ten commercial buildings in the MEW area pursuant to requests from the owners of the buildings. Samples were collected at the following buildings located at the Former Fairchild Buildings:

- **515 N. Whisman Road; and,**
- **545 N. Whisman Road.**

Reference Documents:
Haley and Aldrich, 2010. ***Air Sampling Activities Conducted Fall 2009 at the Middlefield-Ellis-Whisman Vapor Intrusion Study Area, Mountain View, California, March 19.***

Haley and Aldrich 2009. ***Revised Supplemental Feasibility Study for Vapor Intrusion Middlefield-Ellis-Whisman Vapor Intrusion Study Area, Mountain View, California*** **June 29.**

Summary of Results: **The sampling results indicated no short-term or long-term potential health risk concerns from the vapor intrusion pathway under current conditions (Haley and Aldrich 2010).**

Problems Encountered: **None**

Recommendations/Next Steps: **None**

Schedule: **All work is coordinated with the USEPA.**

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:

The groundwater remedy is hydraulic remediation by extraction and treatment. The Treatment System is reliable and consistent in its operation and mass removal ability, with greater than 95% up-time. The capture zones from the extraction wells provide sufficient overlap to achieve hydraulic control over the plume based on flow net evaluation and converging lines of evidence, including stable lateral extent of TCE exceeding 5 µg/L. Remediation is also demonstrated because concentrations within the TCE plume have continued to decrease in all zones. Groundwater with TCE concentrations exceeding 5 µg/L does not discharge to surface water.

Have you done a trend analysis? ■ 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

Concentrations within the core of the TCE plume have continued to decrease in all zones, while the lateral extent of TCE exceeding 5 µg/L has been stable. See Annual Reports for trends in monitoring wells (Weiss 2010).

While the lateral extent of TCE concentrations exceeding 5 µg/L has not grown since 1992 and concentrations within TCE plume have generally decreased by an order of magnitude or more, the perimeter extent of TCE concentrations has largely stabilized. Optimization of the remedy may therefore be warranted (Geosyntec et al, 2008).

If plume containment is a remedial goal, check all that apply:

2009 Annual Report Remedy Performance Checklist

■ 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**:**

Plume containment goal is met, slurry walls provide physical containment of sources on 369 N. Whisman Road, 401 National Avenue, 515/545 N. Whisman Road and 313 Fairchild Drive.

Groundwater elevation and chemical monitoring results from 2009 demonstrate that the Fairchild extraction wells continue to achieve adequate horizontal and vertical capture based on converging lines of evidence, including graphical flow net analysis and chemical concentration trends. VOC concentrations in groundwater continue to remain well below historical maximums, and generally show long-term decreasing trends.

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:

The objective is to remediate and control the plume. The groundwater extraction, treatment, and containment systems are functioning as intended and meet the Remedial Action Objectives for the Site. While concentrations within TCE plume have generally decreased by an order of magnitude or more, treatment system influent concentrations have declined and the perimeter extent of TCE concentrations has largely stabilized. Optimization of the remedy may therefore be warranted.

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

In general, vertical gradients across the B and deeper water-bearing zones are upward. Upward vertical gradients are typical from the B- to A-zone, but downward vertical gradients are observed at a few locations.

Source document reference: 2009 Annual Fairchild Building Reports (Weiss, 2010)

2009 Annual Regional Report (Geosyntec, 2010)

C. Source Control Remedies

What are the remedial goals for source control?

Capture of former source areas is the goal for source control. Cleanup standards are Maximum Contaminant Level (MCLs) in upper groundwater zones; the TCE MCL is 5 μg/L.

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

Capture zone analysis in the 2009 Annual Progress Report indicate plume containment of target capture areas.

2009 Annual Report Remedy Performance Checklist

XI. PROJECTIONS

Administrative Issues
Dates of next monitoring and sampling events for next annual reporting period: Nov/Dec 2009

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

Remedy Projections for **the upcoming year (2009)**

☐ 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: **Optimization** Elaborate below. Target date: **2010**

During First Quarter 2010, several extraction wells were tested and new pumps were installed to support optimization of the groundwater pumping regime at Fairchild Treatment Systems 1, 3, and 19 under the jurisdiction of USEPA Region 9. Optimization of extraction rates began during the week of March 29, and extraction rates will continue to be optimized during the Second Quarter of 2010. Optimization activities will be documented in the 2010 Annual Progress Reports to USEPA for the former Fairchild Buildings 1-4, and 19.

Elaborate on Remedy Projections:

The RPs for the Former Fairchild Facilities anticipate implementing remediation optimization strategies, pending receipt of and response to EPA comments on the September 3, 2008 Optimization Evaluation Report.

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:
■ Other modification(s) anticipated: **Groundwater Feasibility Study** Elaborate below. Target date: **TBD**

Elaborate on Remedy Projections:

Minor changes to the EPA's January 15, 2009 Draft Process Framework for a site-wide Groundwater Feasibility Study were proposed January 30, 2009. The PRPs are prepared to implement the modified Framework as soon as the Draft Framework is finalized by EPA .

2009 Annual Report Remedy Performance Checklist

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: **Optimization** Elaborate below. Target date: **TBD**
Elaborate on Remedy Projections: **The slurry walls are part of the groundwater remedy. The recommendations of the Optimization Evaluation Report will be implemented upon receipt of, and response to, comments from EPA. In the interim, the system continued to operate per the August 2007 groundwater extraction scheme.**
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: **Groundwater Feasibility Study** Elaborate below. Target date: TBD
Elaborate on Remedy Projections: **See above. The slurry walls are part of the groundwater remedy.**
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 Evaluation Report was submitted September 2008.**

2009 Annual Report Remedy Performance Checklist

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:

Proposed Plan to address vapor intrusion pathway issued in 2009, with ROD amendment to follow.

Date of Next EPA Five-Year Review: **September 30, 2009**

XII. RECOMMENDATIONS

- **Initiate Second Five-Year Review Follow-up items for Fairchild.**
- **Implement optimization strategies for Fairchild systems.**
- **Follow revised groundwater feasibility study framework.**
- **Potentially responsible parties (PRPs) requested in the 2008 Annual Progress Report for Former Fairchild Building 20 that USEPA not require further facility-specific reporting for Building 20 beginning in 2009. However, this request has not yet been acknowledged by the USEPA. The PRPs are requesting again to discontinue additional facility-specific reporting for Former Fairchild Building 20. The rationale for this request is:**
  1. **No potential source areas were identified at former Fairchild Building 20 property during Site investigations.**
  2. **Analytical results for the monitoring wells sampled in 2008 continue to indicate that VOC concentrations in groundwater are generally stable to declining. This is also reported in the Regional Annual report.**
  3. **Building 20 does not have an associated groundwater treatment system.**
  4. **There is no facility-specific capture to evaluate.**

In summary, the groundwater monitoring data are evaluated in the Regional report, and the Building 20 report is redundant with other reports at the MEW Site since all information is covered under Raytheon Facility Specific and Regional reporting.

APPENDIX B

ANALYTIC REPORTS AND CHAIN-OF-CUSTODY DOCUMENTS
JANUARY THROUGH DECEMBER 2009

(THIS APPENDIX IS BEING SUBMITTED ON CD TO THE USEPA ONLY AND IS AVAILABLE UPON REQUEST)

Weiss Associates

APPENDIX C

QA/QC REPORT, SUMMARY TABLES, AND CRITERIA SELECTED

2009 QA/QC SUMMARY

The analytical laboratory data and accompanying quality assurance/quality control (QA/QC) information used in the 2009 Annual Reports for Former Fairchild Buildings 1, 2, 3, 4, 9, 13, 18, 19, 20, 20A and 23 at the Middlefield-Ellis Whisman (MEW) Area were reviewed for precision, accuracy reproducibility and completeness in accordance with the approved MEW 1991 Quality Assurance Plan.[6] In addition this data quality review is based on November 2009 Standard Operating Procedures (SOPs) for data verification and validation, and validation procedures for metals, VOCs and semi-volatile organic chemicals. The SOPs are based on the 1991 MEW "Unified" Quality Assurance Project Plan, but functionally adhere to the most recent United States Environmental Protection Agency (USEPA) data validation guidelines.

This data quality review summarizes the Level 2 and 10% Level 4 Data Quality Review for samples collected by Weiss Associates during the 2009 Annual Sampling event in accordance with the MEW Quality Assurance Project Plan (QAPP).

The analytical results for each sampling point were compared with the historical record to confirm they are representative. To assess reliability of field sampling procedures and materials, the following field QA/QC samples were collected or prepared for each sampling event by MEW parties:

- Quality Control Samples (Field Duplicate, Matrix Spike, Matrix Spike Duplicate) - Field Duplicate samples are blind duplicates that provide data to assess precision of the contract laboratory. Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples measure the accuracy and precision of the analytical methods. Field Duplicates are specified to be collected at a frequency of 5% of the field samples collected. MS/MSD samples are specified at a frequency of 5% of field samples collected. Note that only samples collected by Weiss Associates were evaluated for MS/MSD procedures.
- Rinseate Sample/Equipment Blank - Samples consisting of reagent water collected from a final rinse of sampling equipment after the decontamination procedure has been performed. The purpose of rinseate samples is to determine whether the sampling equipment is causing cross contamination of samples. Following equipment decontamination, deionized/organic-free water will be used as a final rinse and collected in appropriate bottles. Rinseate samples were specified at a frequency of 5% of the field samples collected.
- Field Blank - Samples consisting of source water used for decontamination of equipment. Field blanks will be collected at a frequency of 1 per source or lot of water being used for rinsing and submitted to the laboratory for all required analyses. Field blanks are specified at a frequency of 5% of the field samples collected.

[6] 1991, Quality Assurance Project Plan Middlefield-Ellis-Whisman Site, Mountain View, California, prepared by Canonie Environmental, Rev. 1.0, August 16, 1991.

- Trip Blank - Samples consisting of a "clean," volatile organic analysis (VOA) vial filled with deionized/organic-free water and preserved. These vials are supplied by the laboratory to the field site and returned to the laboratory for storage and analysis along with the field samples as may be required in the task planning documents. Trip blanks were submitted to the contract laboratory with each shipment (cooler) of environmental samples for volatile organic compound (VOC) analyses. Trip blanks were analyzed for all VOC analyses specified for samples in the corresponding cooler. The trip blank data demonstrate that the samples were not exposed to contamination during storage and transport to the laboratory. Trip blanks were submitted for VOC analysis, therefore the containers did not contain head space. Trip blanks are typically required for VOC sampling of: groundwater; surface water; storm water; and, rinseate.

For the 2009 annual groundwater sampling event, all sample results collected for Former Fairchild Buildings were verified for completeness by completion of a Level 2 Data Review Summary. Custody seals were used for each sample location as specified in the 1991 MEW QAPP.

The following QA/QC parameters were used to assess the laboratory analytic data via Level 2 Data Review:

- Holding time;
- Detection and reporting limits;
- Surrogate recovery (organic methods only);
- Laboratory control sample recovery;
- Matrix spike and spike duplicate recovery;
- Method blank contamination;
- Travel blank contamination (organic methods only);
- Field/rinseate blank contamination; and,
- Field sample duplicates precision.

Ten percent of all sample delivery groups underwent a stringent Level 4 data validation as required by the MEW QAPP. The samples validated via Level 4 data were placed on separate Chain(s) of Custody from the Level 2 data deliverables. Level 4 validation procedures vary by method. In addition to the verification check list provided above, the Level 4 review of organic laboratory data checks the following:

- Ion abundance;
- Minimum number of initial calibration standards analyzed;
- Relative response factors in initial and continuing calibrations;
- Percent relative standard deviations in initial calibrations;
- Percent differences in continuing calibrations;
- Internal standard retention times;

- Internal standard area counts;
- Analytical sequence carryover;
- Dilutions performed appropriately;
- Calibration blank contamination; and,
- Data package completeness for all raw data, including chromatograms and bench sheets, for calibration standards, quality control data, and samples.

The Level 4 review of inorganic (metals) data checks for the following:

- Minimum number of initial calibration standards analyzed;
- All initial calibration verification recoveries are within established limits;
- Initial calibration correlation coefficients are within established limits;
- Continuing calibration verification recoveries are within established limits;
- Analytical sequence carryover;
- Dilutions performed appropriately;
- Laboratory duplicate results are within established limits;
- Initial and continuing calibration blank contamination; and,
- Data package completeness for all raw data, including bench sheets, for calibration standards, quality control data, and sample.

Technical staff assigned qualifiers to data that were found outside control limits in the MEW QAPP. Data qualifiers, or flags, communicate data issues to end users and decision makers and are defined in the USEPA Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review.

A total of 233 samples were submitted to Curtis and Tompkins in Berkeley, California, a state-certified analytical laboratory for specified analyses, including VOCs, semi-VOCs, Bis(2-ethylhexyl) phthalate, metals, and 1,4-dioxane analysis. Two samples were analyzed for Acute Toxicity using EPA-821-R-02-012 and turbidity using USEPA method 180.1 by Block Environmental Services, Inc, another state-certified laboratory. In addition to the monthly treatment system samples, 96 total groundwater samples were collected from the Former Fairchild Buildings Area, including Treatment Systems 1, 3, and 19 monitoring and extraction wells as a part of MEW Annual Groundwater Sampling Event. The groundwater samples were analyzed for Halogenated VOCs using EPA Method USEPA 8260B for the 8010 MS Parameters by Curtis and Tompkins.

All samples were collected, stored, transported, and managed according to USEPA protocols. Sample temperature and holding times were correctly observed.

No significant analytical issues were noted and the data are usable for their intended purposes. Table C-1 summarizes the sampling QA/QC, and Table C-2 summarizes samples for the 2009 annual groundwater sampling event at Former Fairchild Building 19.

Table C-1. Summary of Sampling QA/QC for January through December 2009, Former Fairchild Building 19, 369/441 Whisman Road, Mountain View, California.

Who performed sampling (Firm name/address/contact/phone):	Weiss Associates 350 East Middlefield Road, Mountain View, CA 94043 Joyce Adams (510) 450-6162
Chain of Custody forms completed for all samples?	YES
Field parameters stabilized prior to taking sample?	YES[1]
Zero headspace in sample containers (applicable to VOCs only)?	YES
Samples preserved according to analytical method?	YES
Required field QA/QC samples taken?	YES

*Explain any "NO" answers:

1 Not applicable for groundwater treatment system samples. Field parameter stabilization is not part of the standard sampling protocol for treatment system. All field parameters are assumed stable when grab samples are collected from a running treatment system.

Table C-2. Summary of Analytical QA/QC for January through December 2009, Former Fairchild Building 19, 369/441 Whisman Road, Mountain View, California.

Who performed analysis (Lab name/address/contact/phone):	Curtis and Tompkins 2323 Fifth Street Berkeley, CA 94710 Anna Pajarillo (510) 486-0900 Block Environmental Services, Inc. 2451 Estand Way Pleasant Hill, CA 94523 Nanette Bradbury (925) 682-7200
Analytical methods (by method number and chemical category):	
Groundwater Treatment System Samples:	64 samples (including sixteen travel blanks and nine duplicates) were analyzed by USEPA 8260B – Halogenated Volatile Organic Compounds (8010 MS Parameters) One sample analyzed by EPA-821-R-02-012– Acute Toxicity of Effluents to Freshwater and Marine Organisms One sample analyzed by USEPA 180.1 – Turbidity One sample analyzed by USEPA 200.8 – Metals One sample analyzed by USEPA 200.8 and 245.1– Zinc One sample analyzed by USEPA 1631 – Low-Level Mercury One sample analyzed by USEPA 7196A – Hexavalent Chromium Two samples analyzed by SM4500CN-E – Cyanide
Groundwater Well Samples[1]:	96 samples[1] (including 3 travel blanks, 4 field blanks, 4 duplicates, and 5 rinseate blanks) analyzed by USEPA 8260B – Halogenated Volatile Organic Compounds (8010 MS Parameters) 21 samples analyzed by USEPA 8270C-SIM-1,4 Dioxane
Are the labs state-certified for the above analytical methods?	YES
Analyses performed according to standard methods?	YES
Sample holding times met?	YES
Analytical results reported for all values above MDL?	YES
QA/QC analyses run consistent with analytical methods?	YES
QA/QC results meet all acceptance criteria?[2]	YES
QA/QC results and acceptance criteria on file?	YES

*Explain any “NO” answers:
1. The Analytic Reports and Chain of Custody forms are located in Appendix B.

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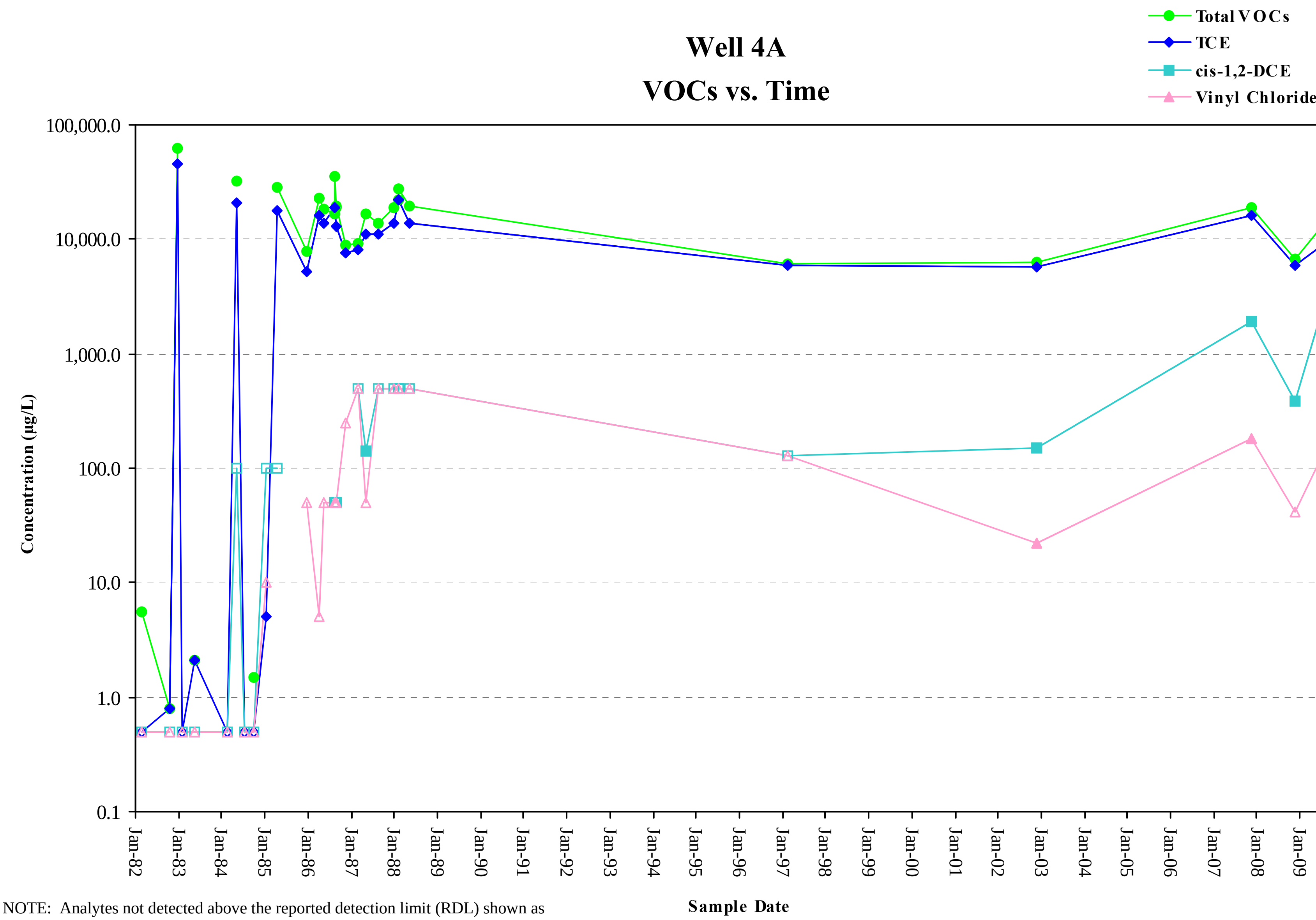
APPENDIX D

VOCS VERSUS TIME GRAPHS



NOTE: Analytes not detected above the reported detection limit (RDL) shown as open chart symbols at the RDL.

Abbreviations: VOC = volatile organic compounds, TCE = trichloroethylene, DCE = dichloroethelyene, µg/L = micrograms per liter

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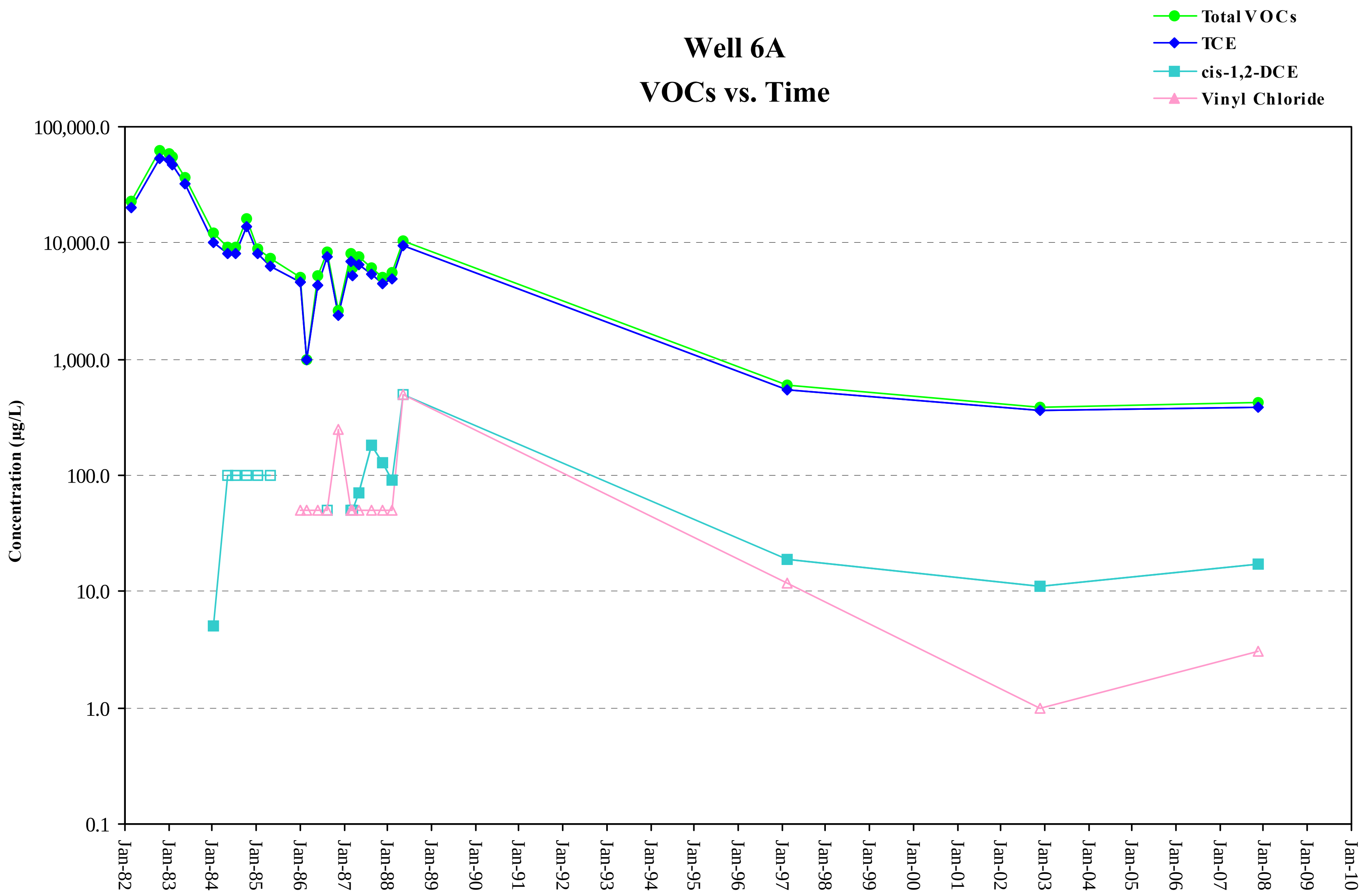

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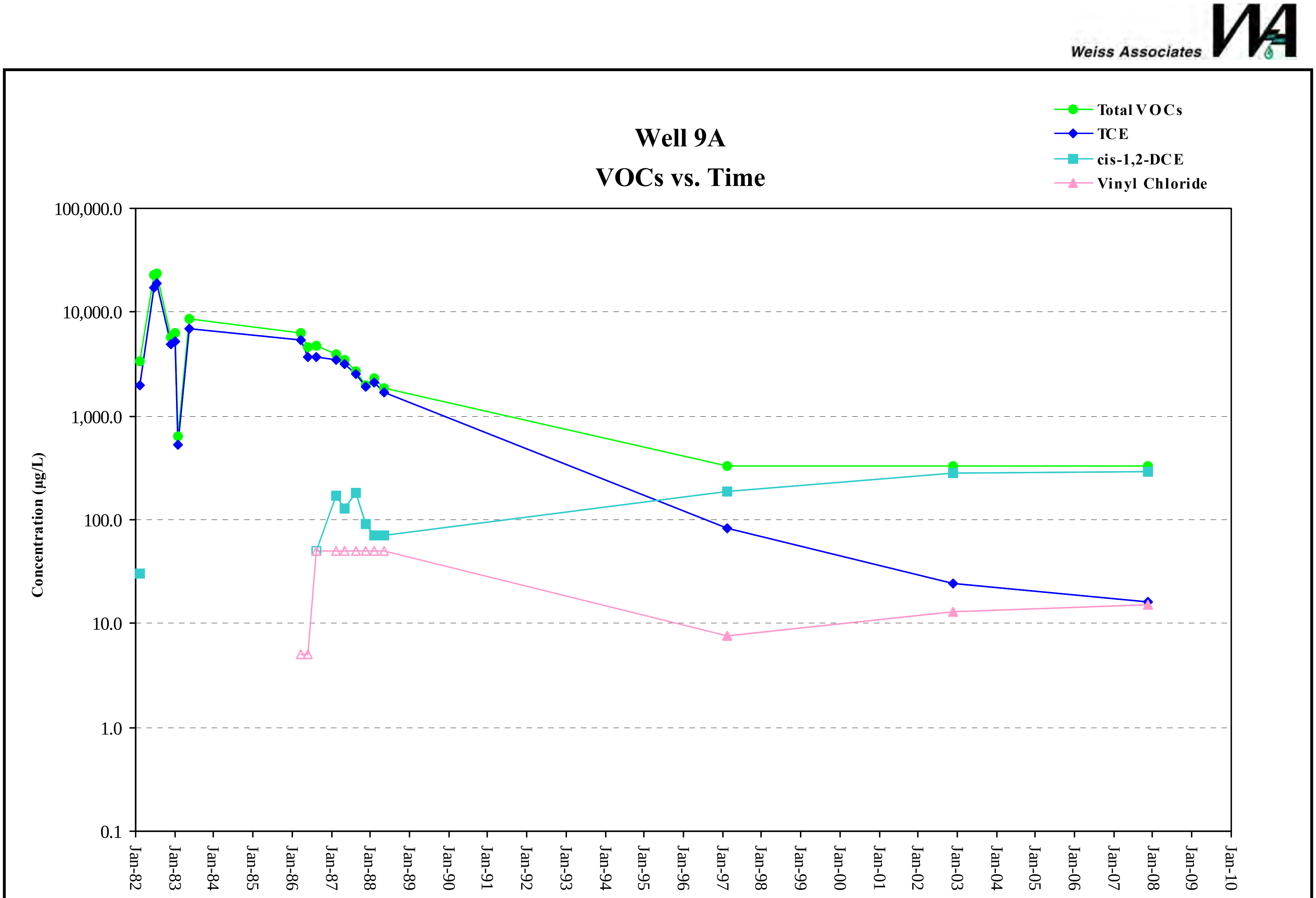

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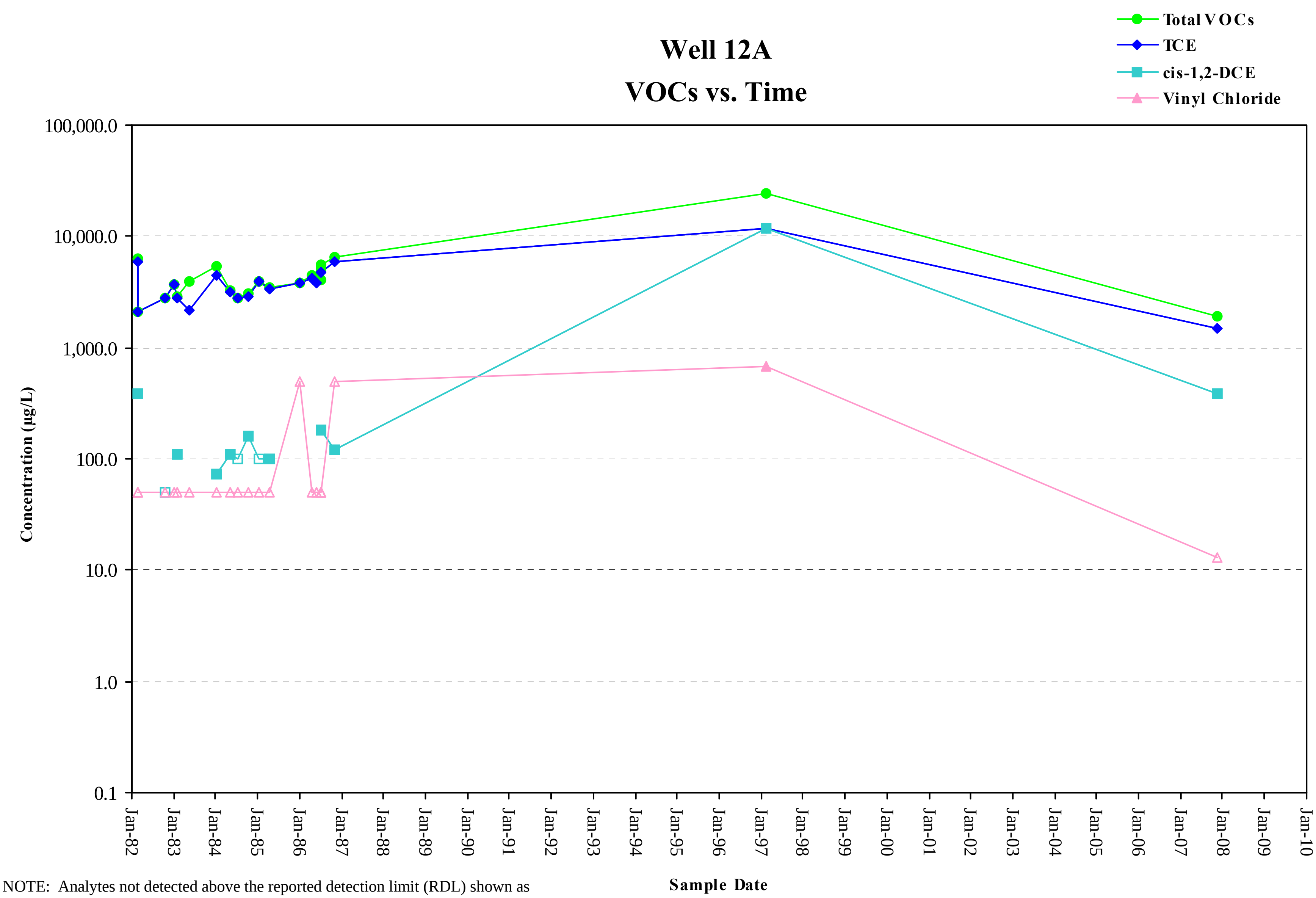

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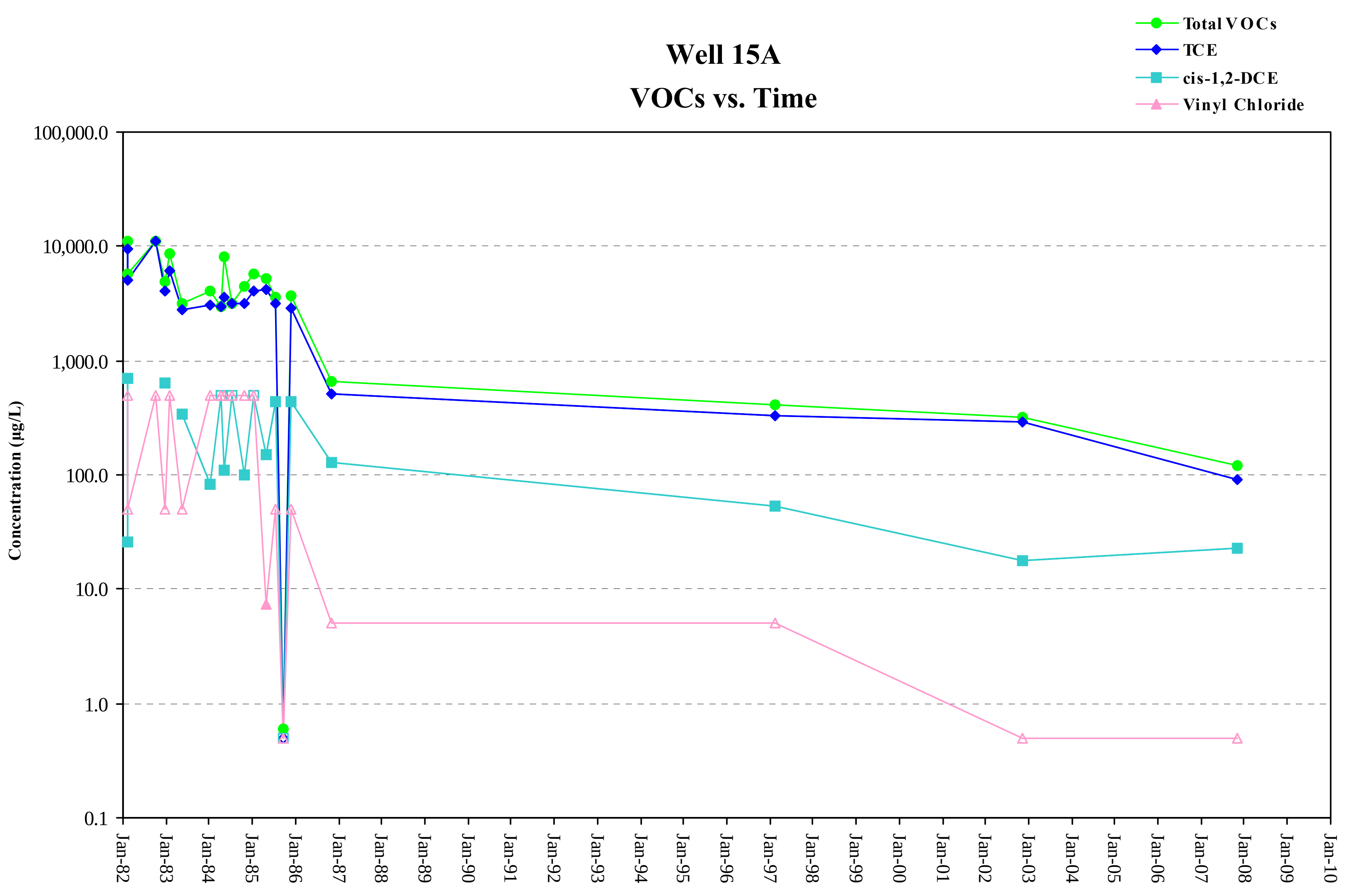

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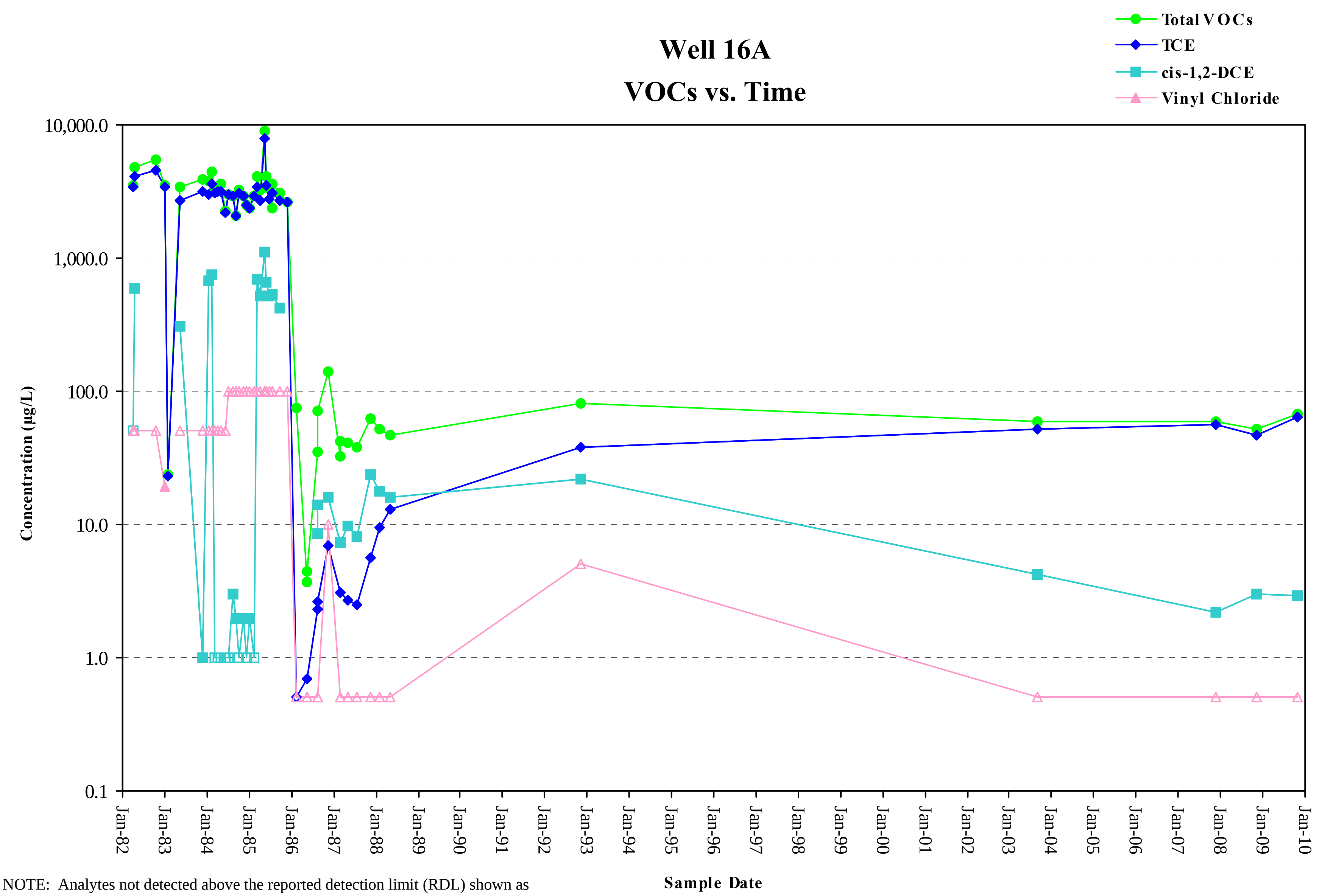

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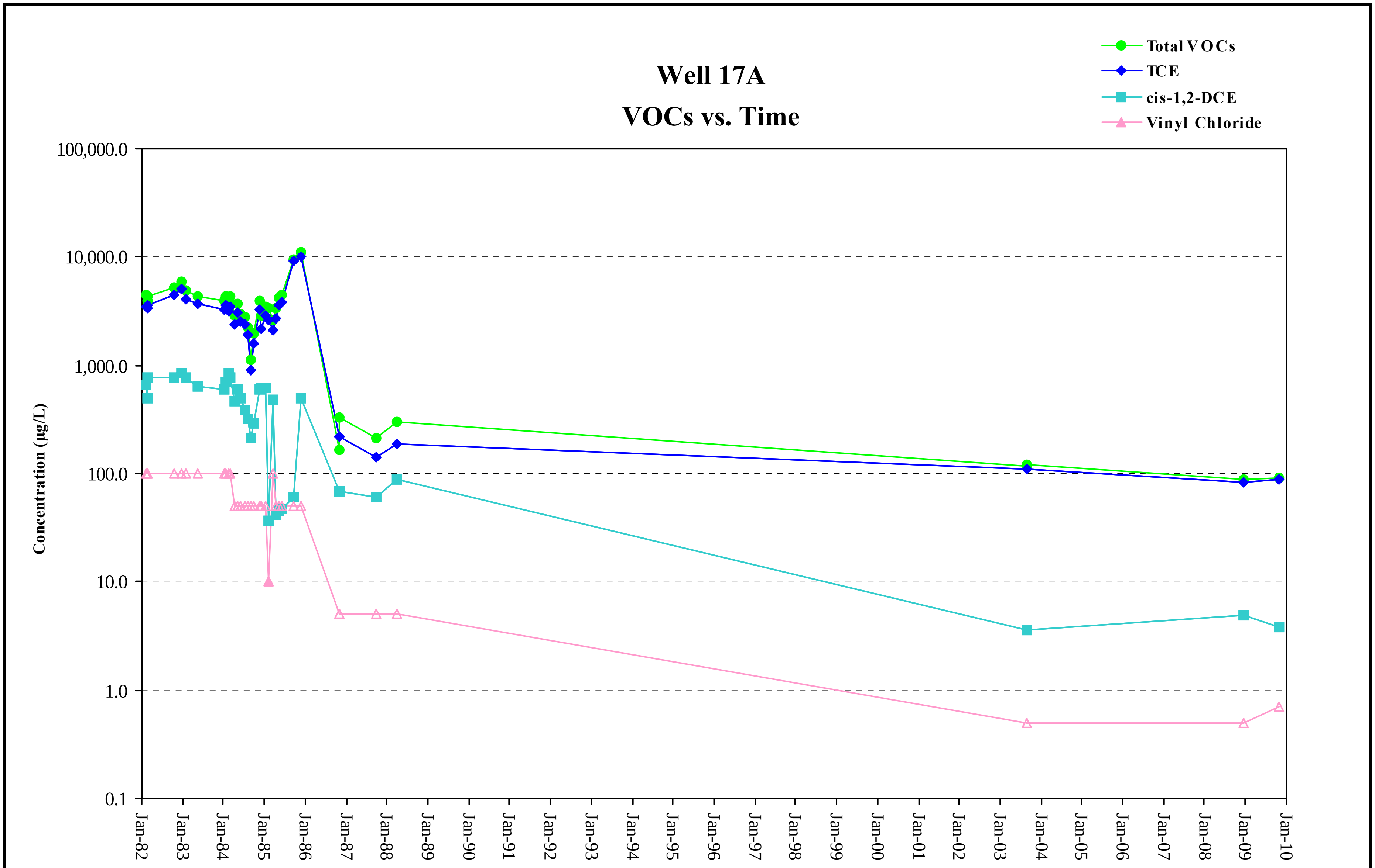

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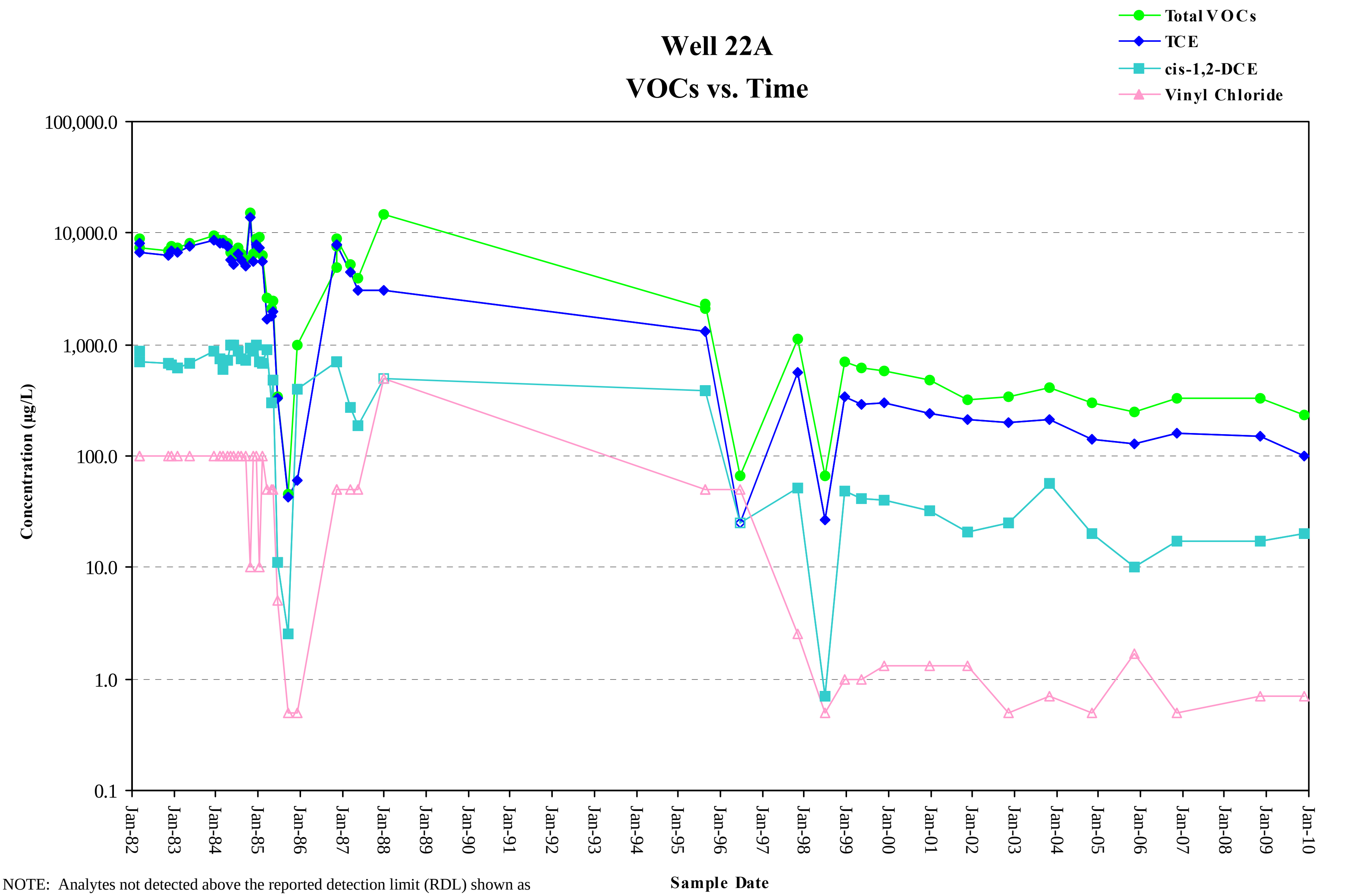

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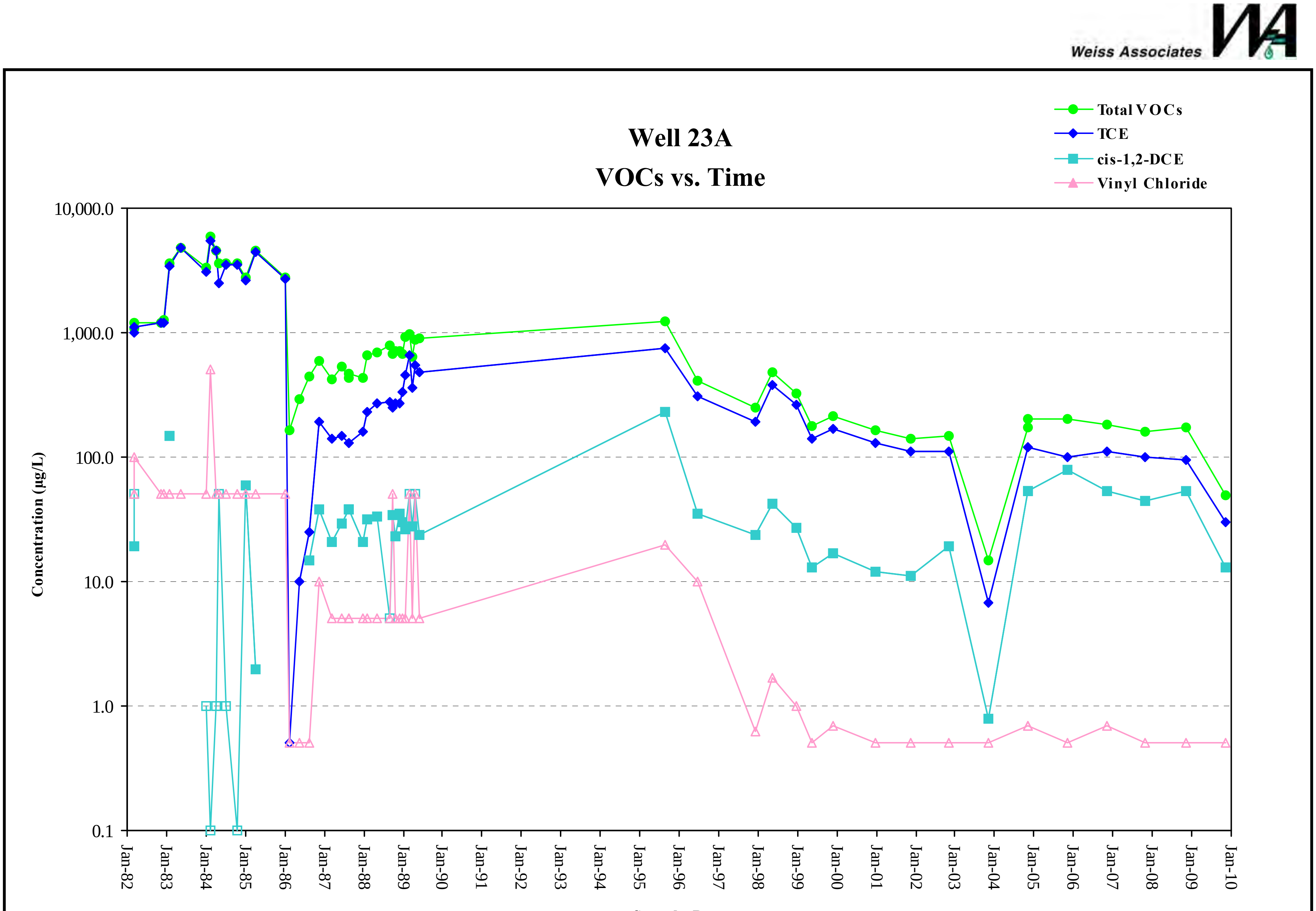

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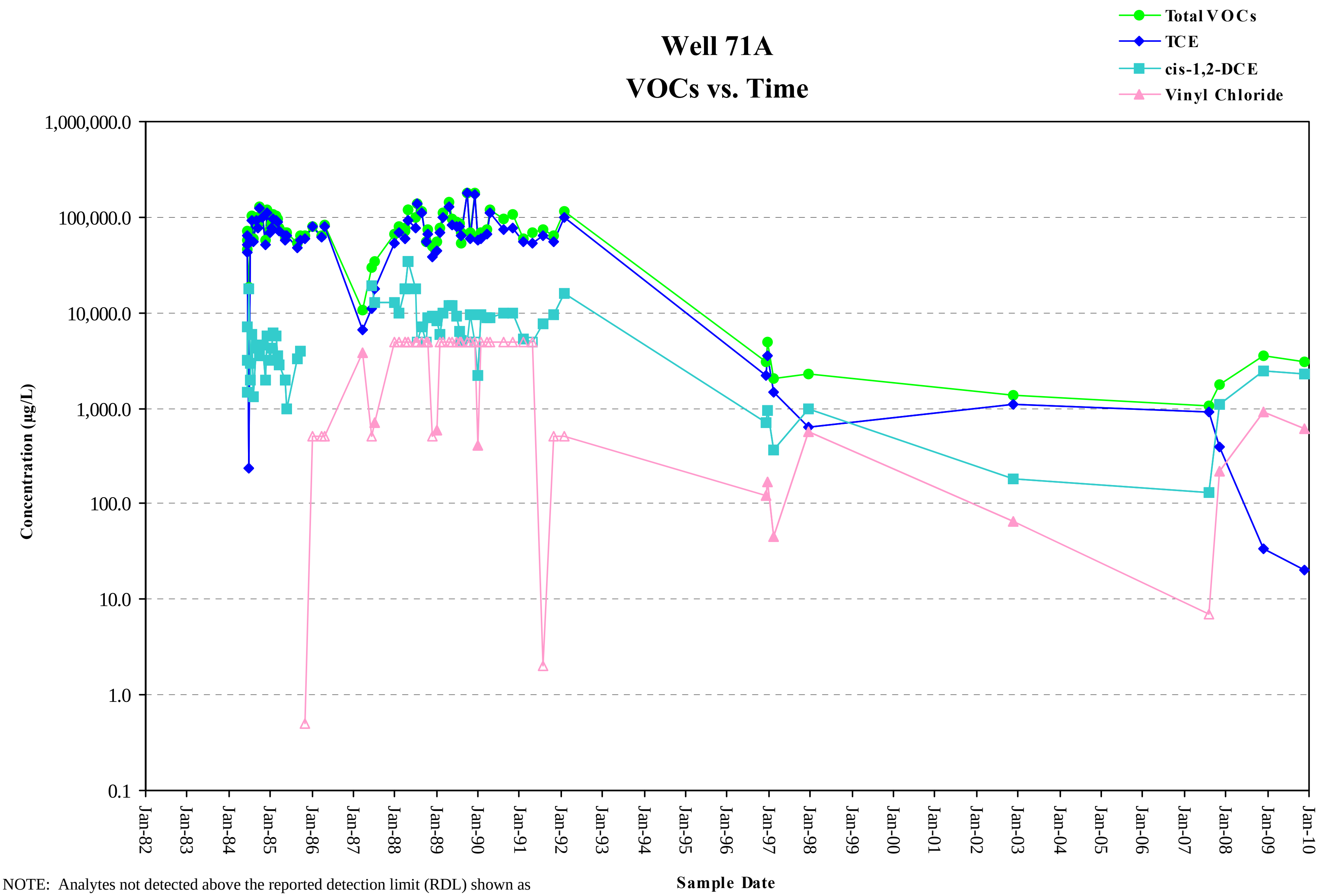

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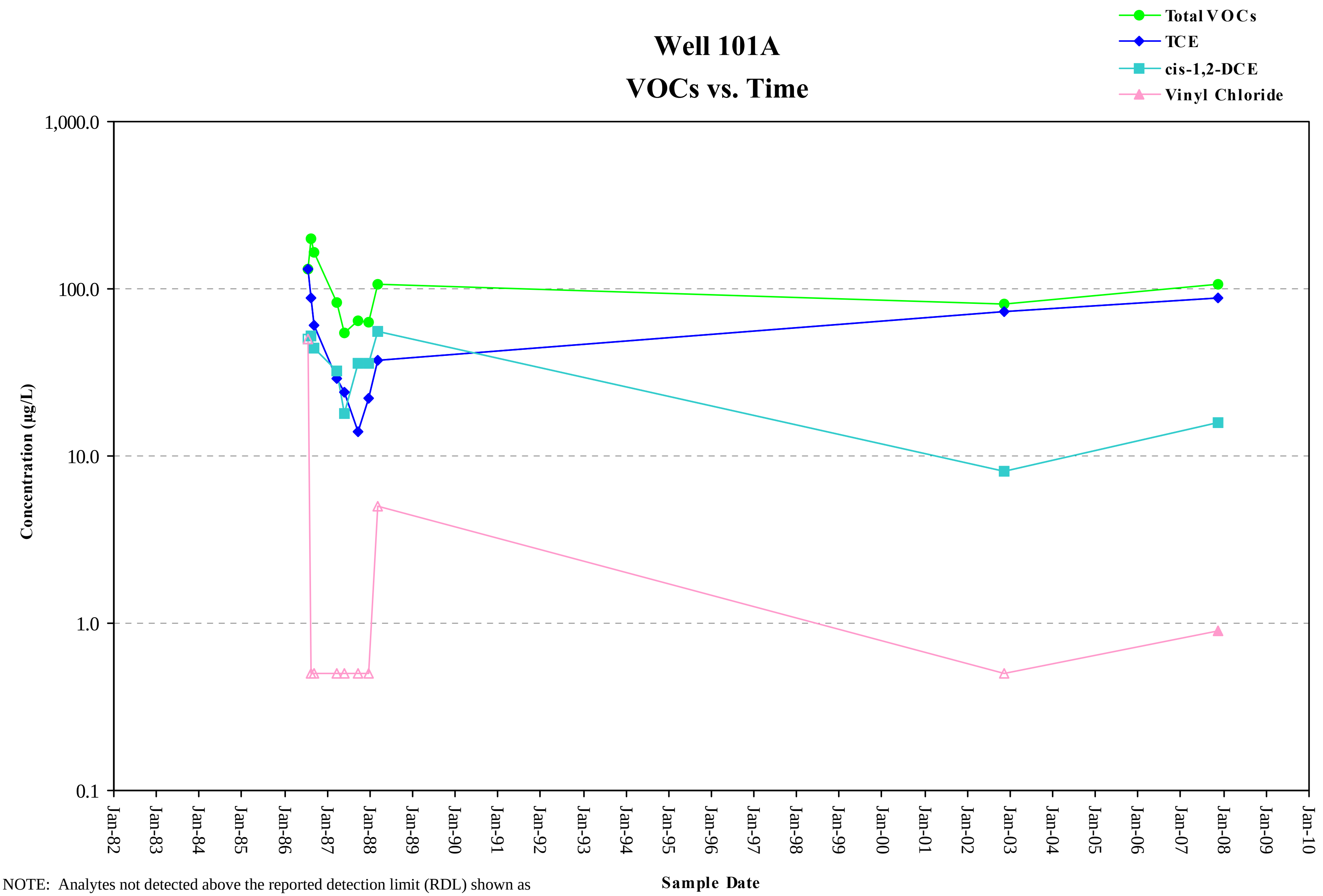

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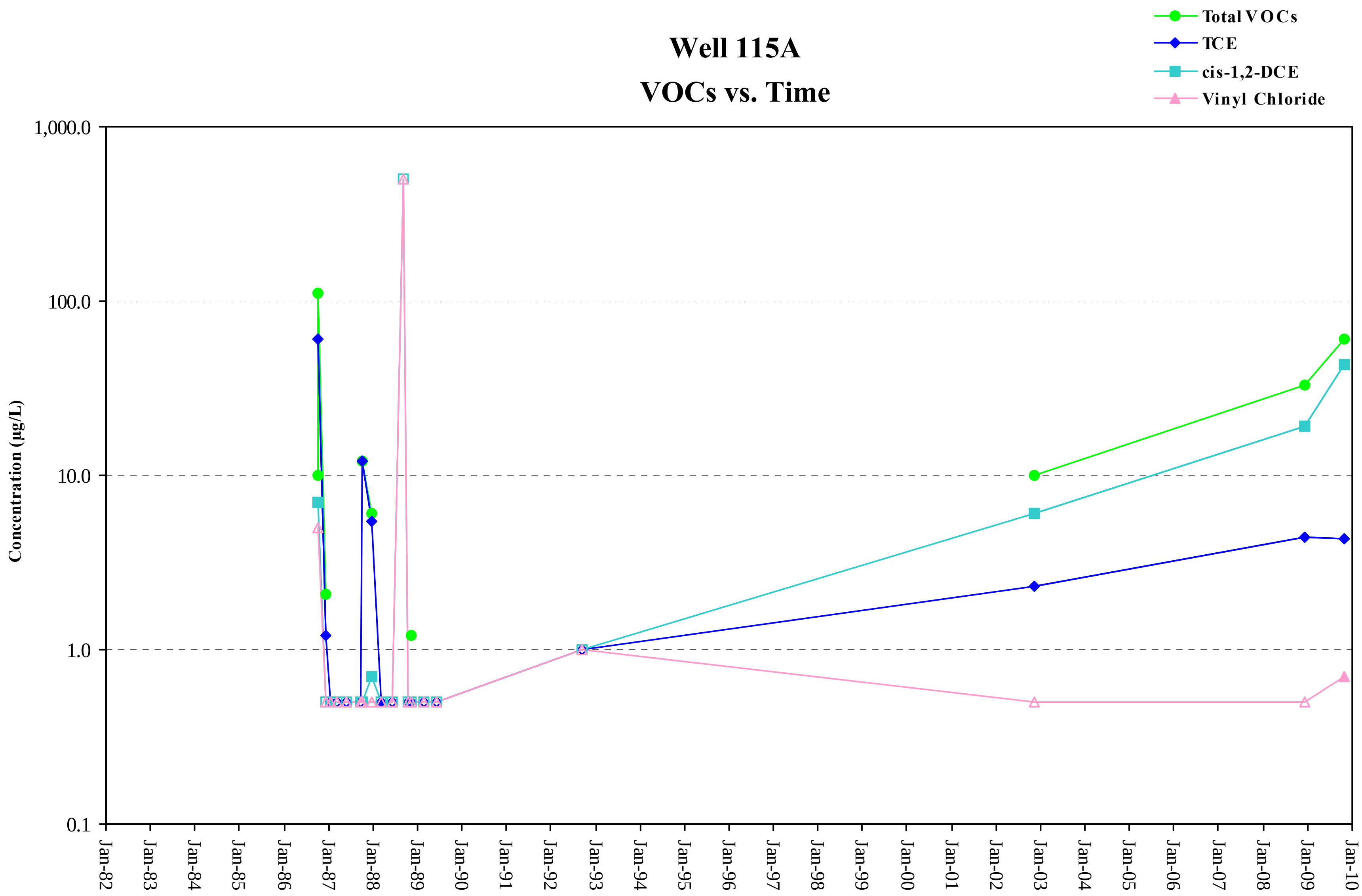

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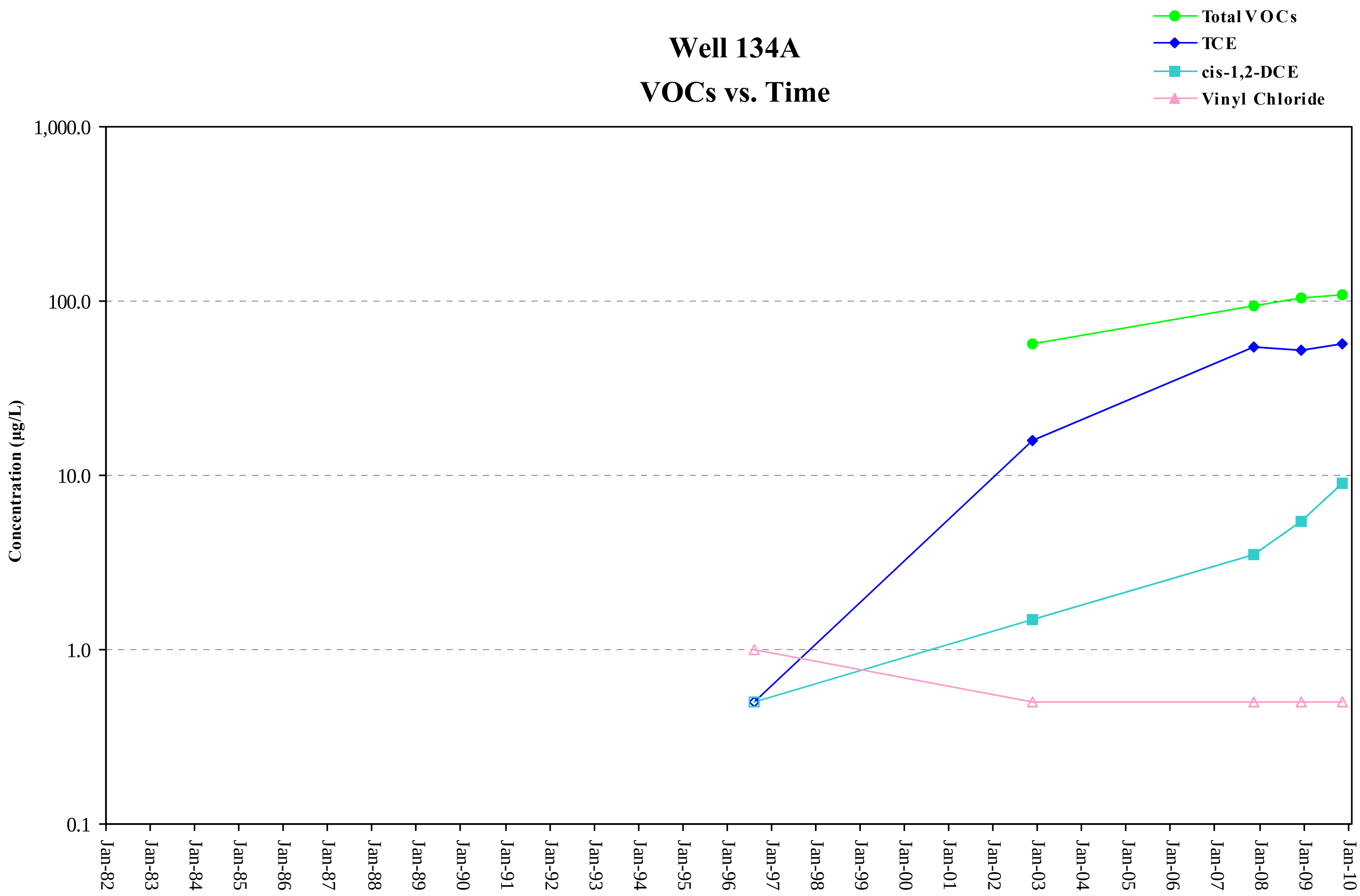
Well 134A
VOCs vs. Time



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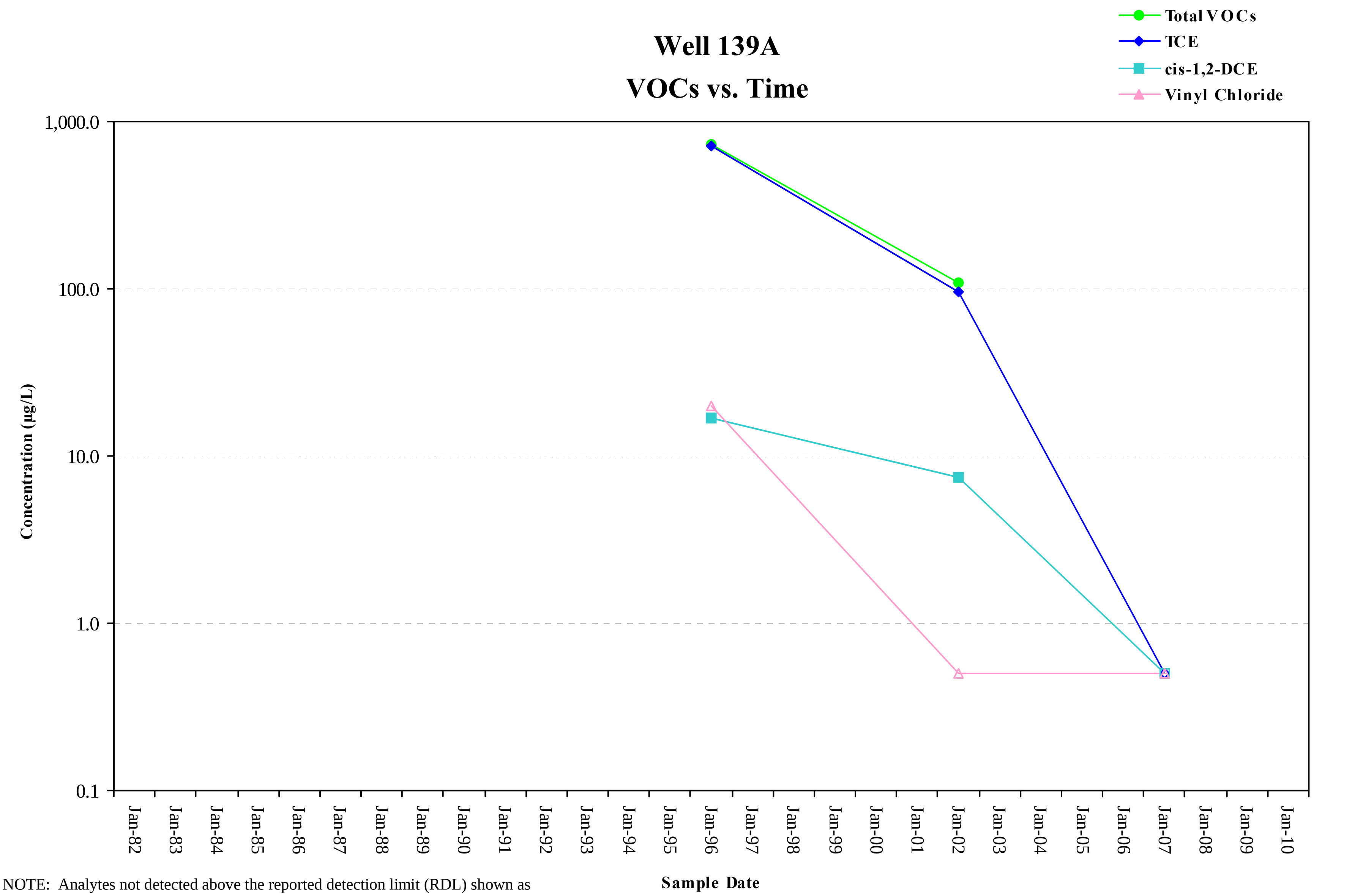

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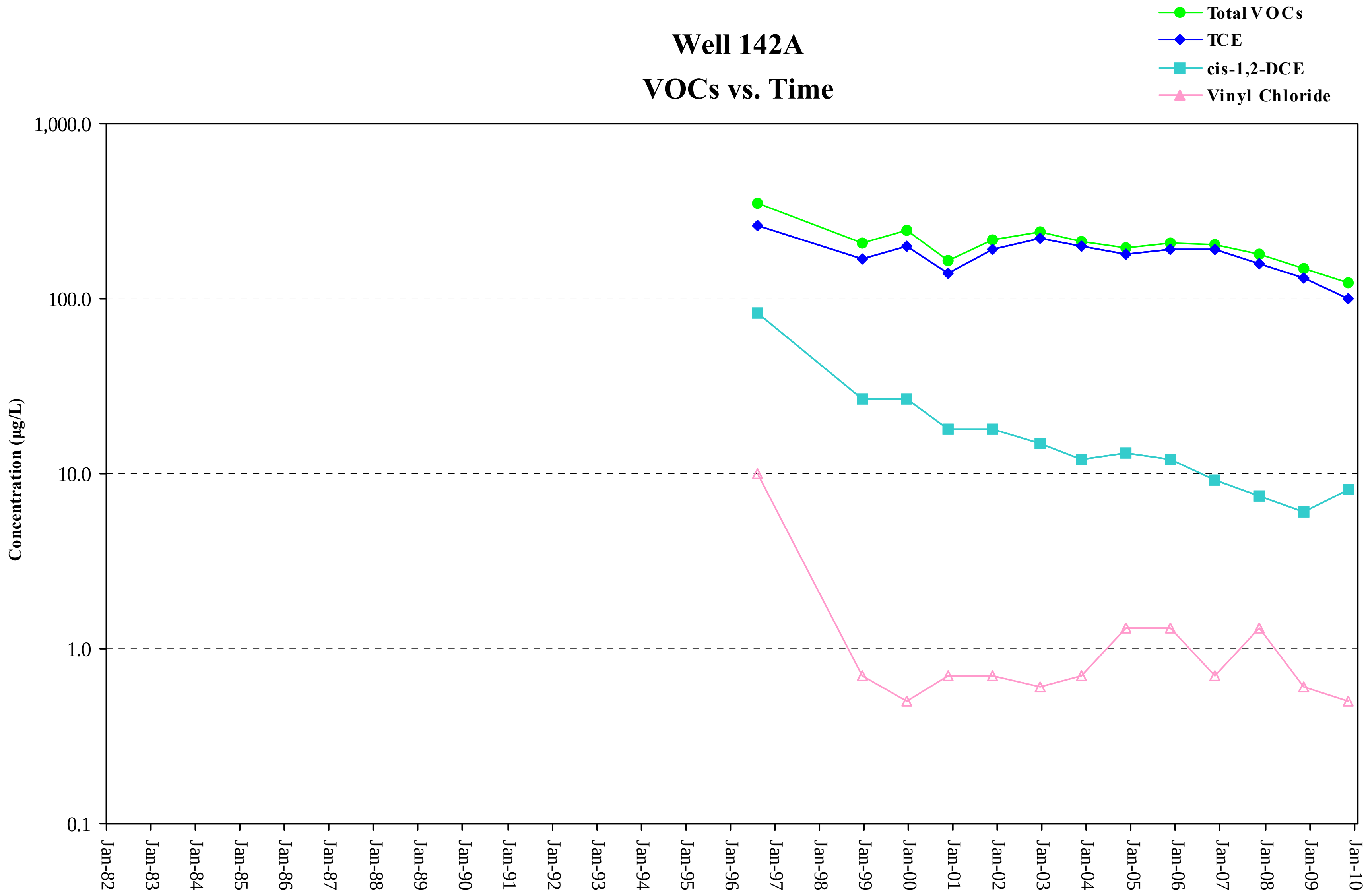

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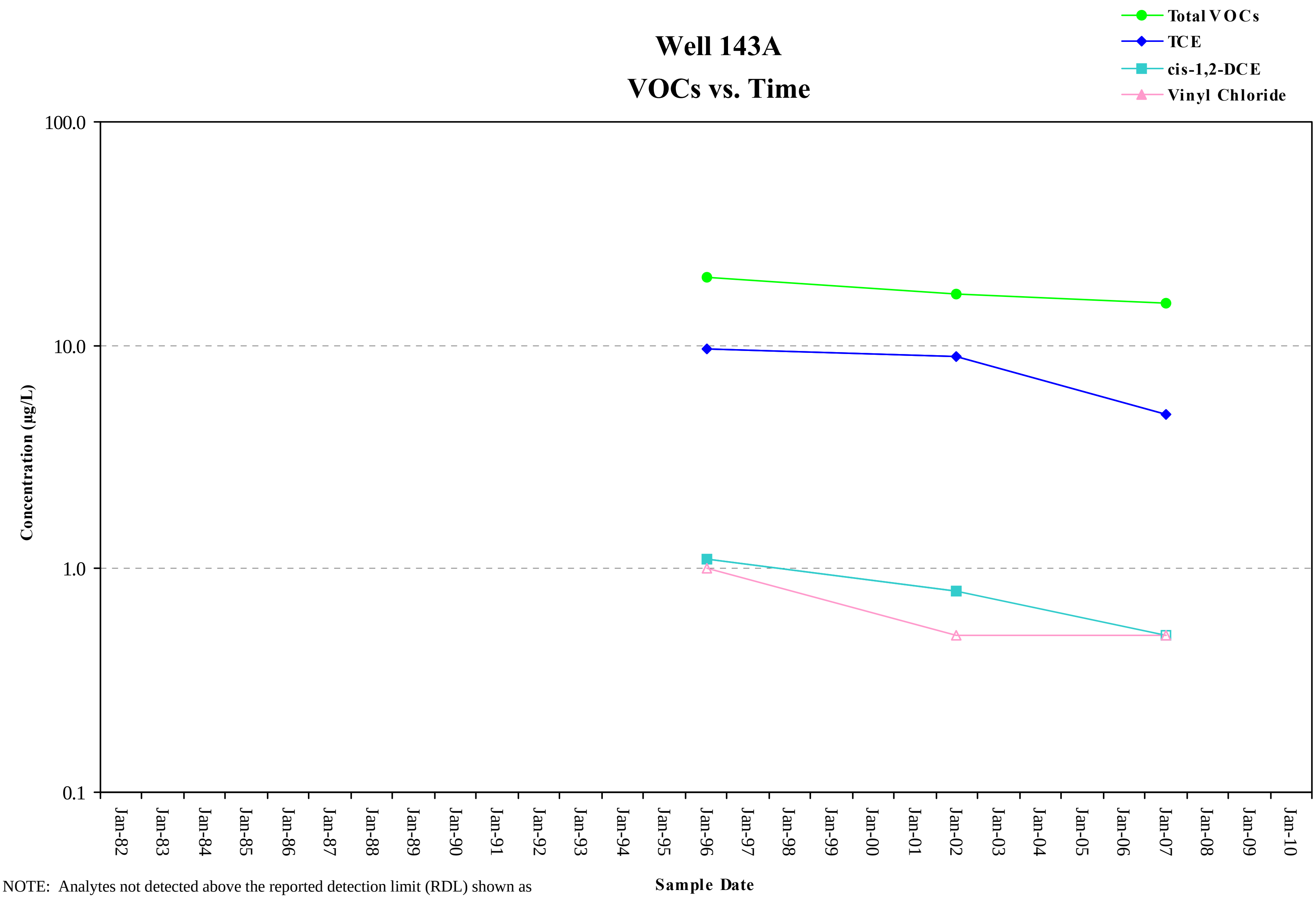

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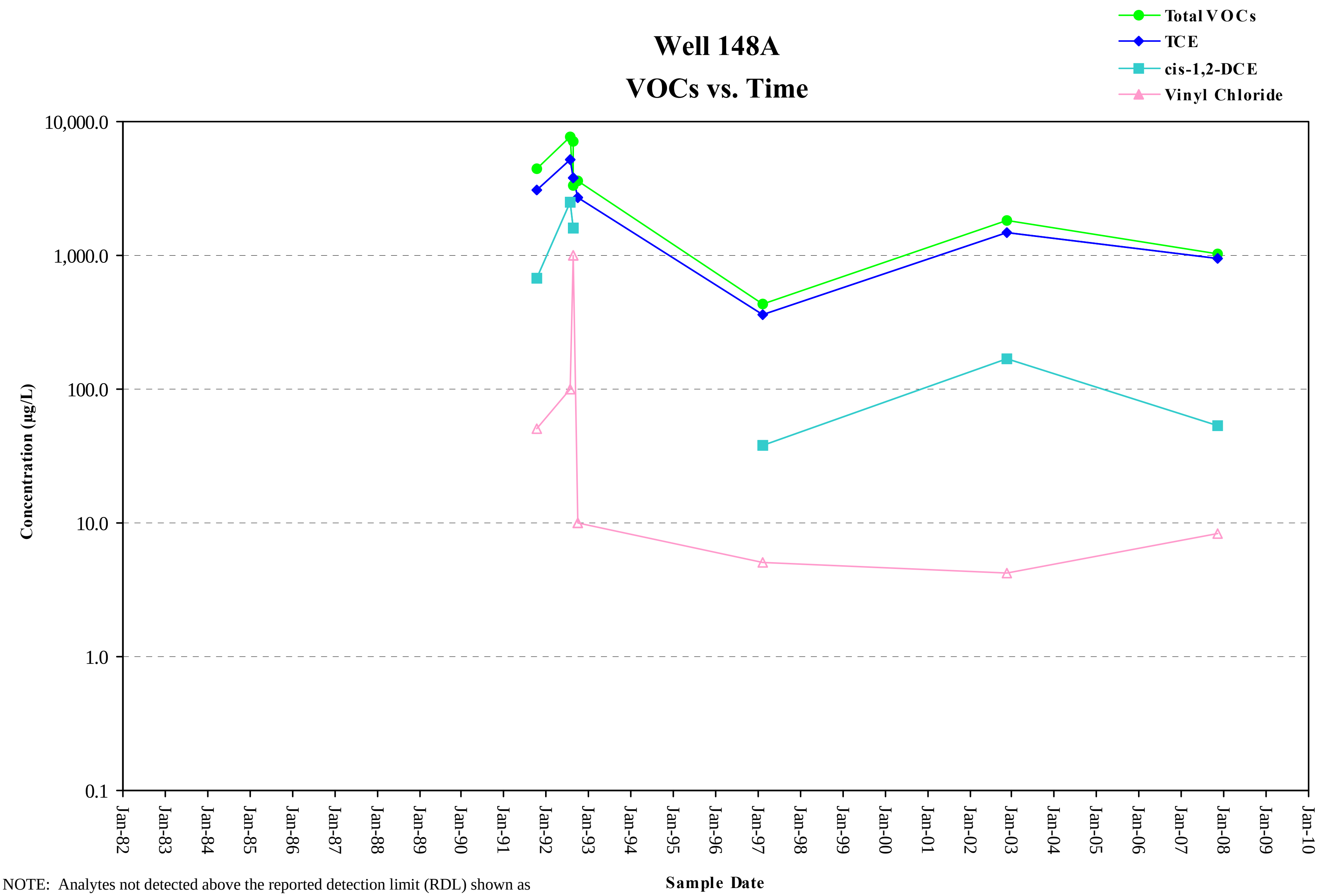
Weiss Associates

Well 148A
VOCs vs. Time



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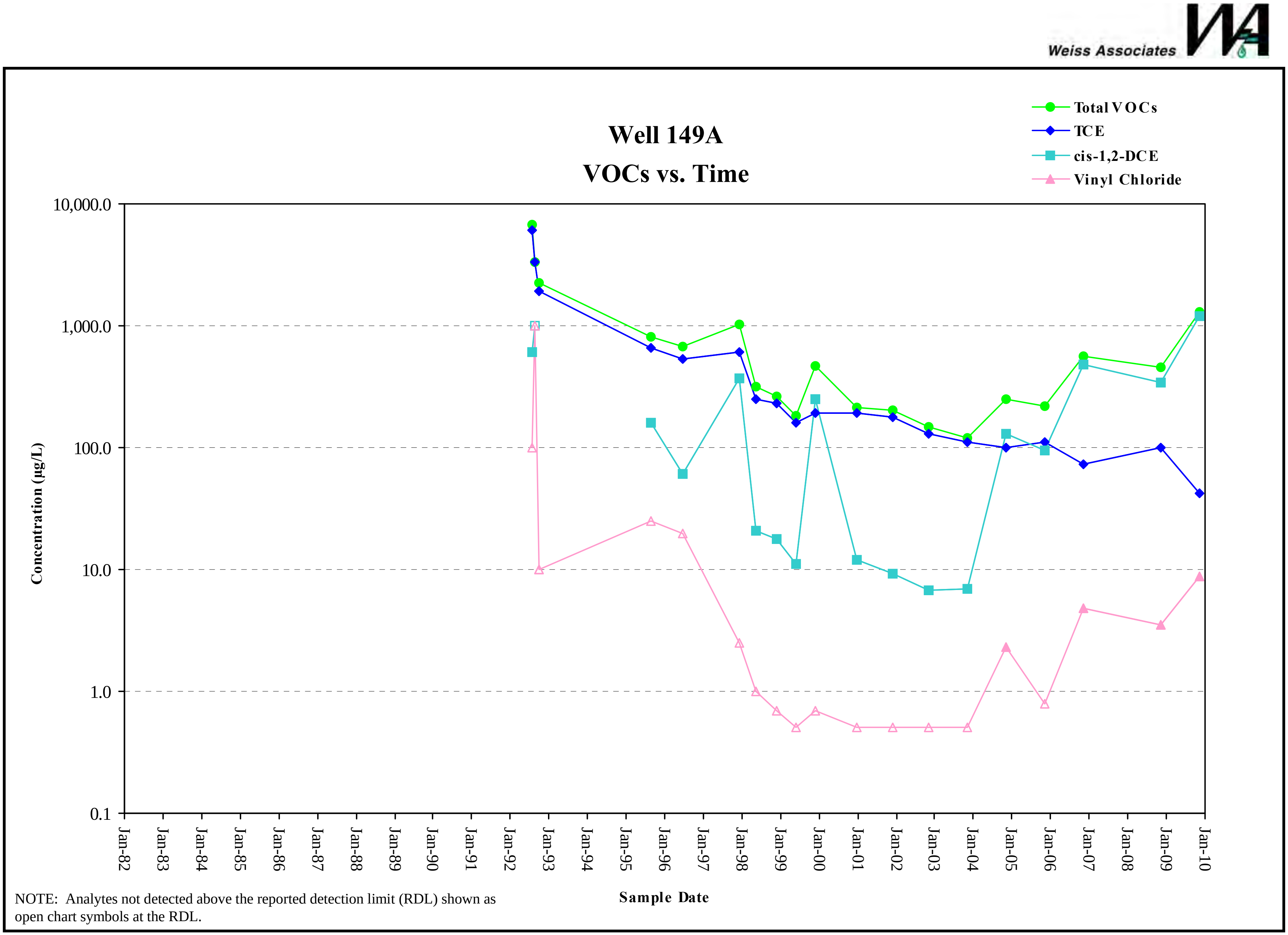

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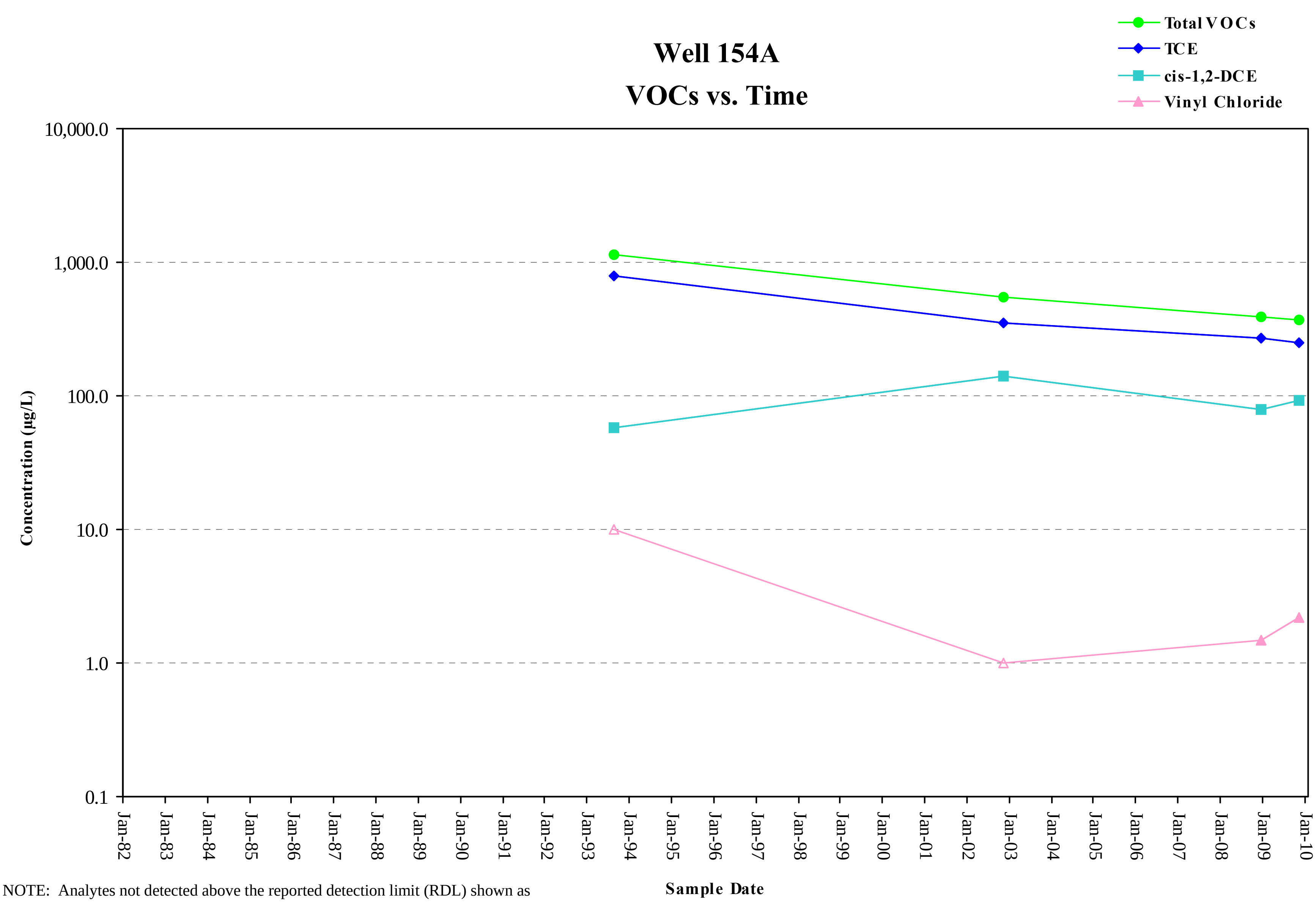

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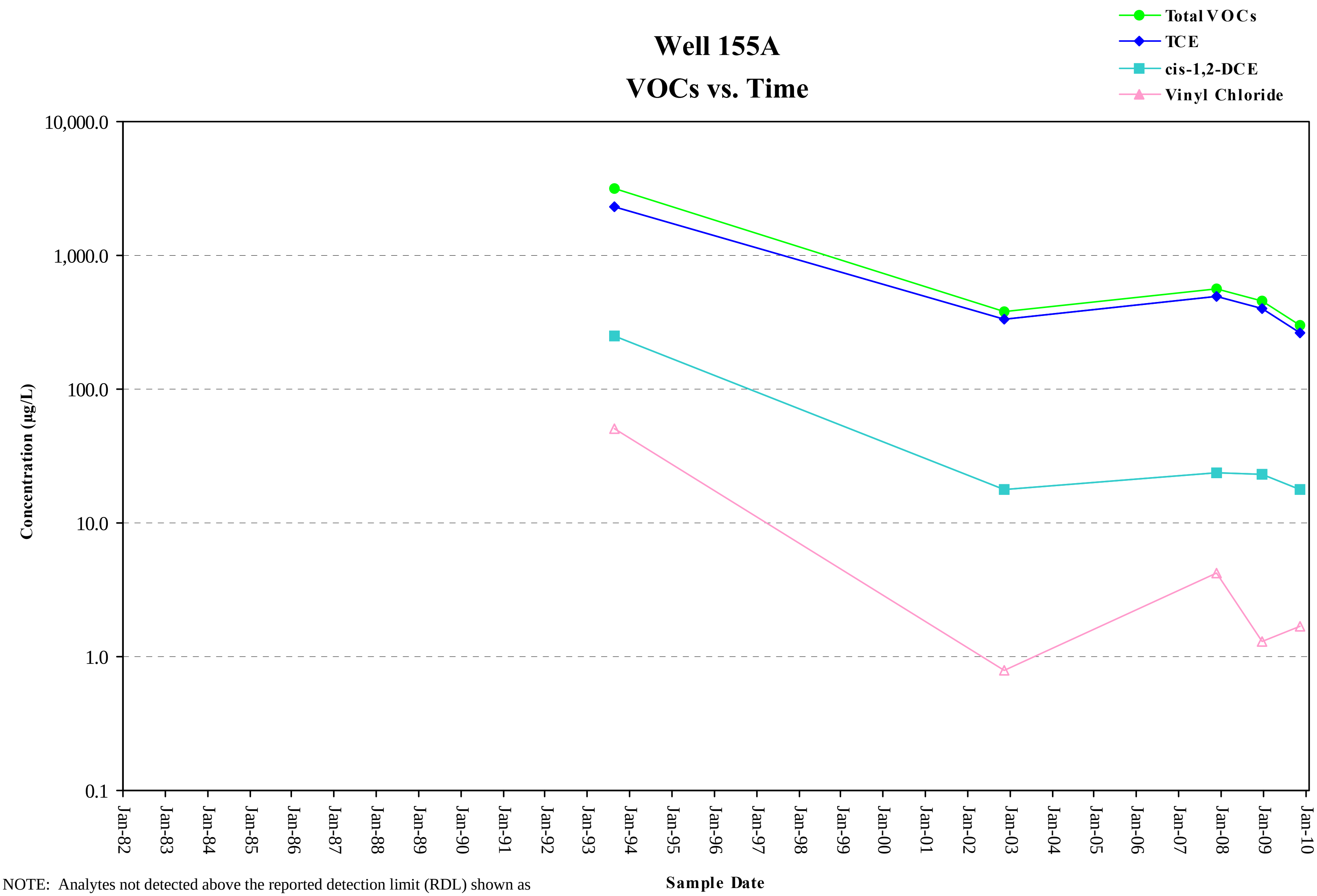

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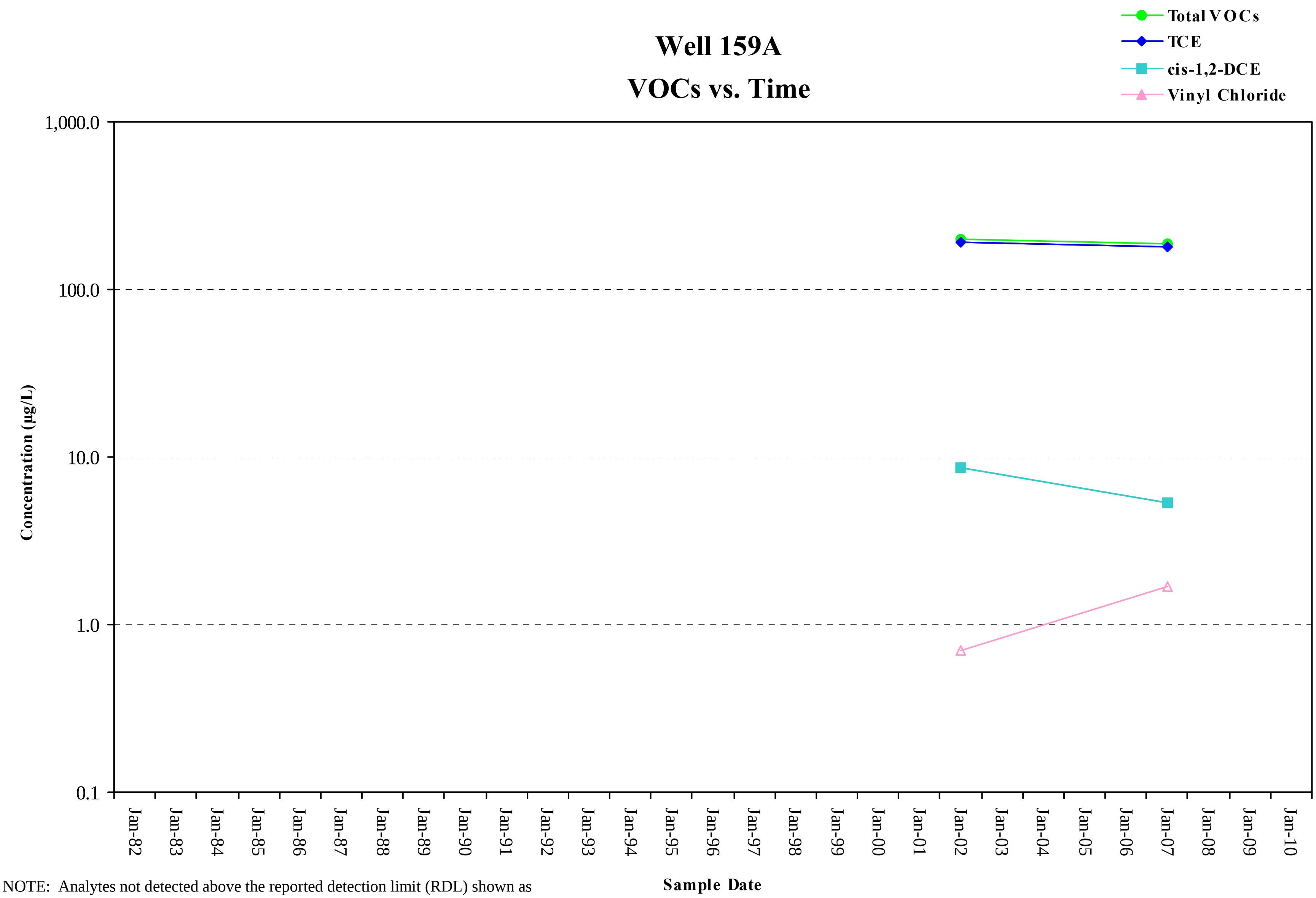

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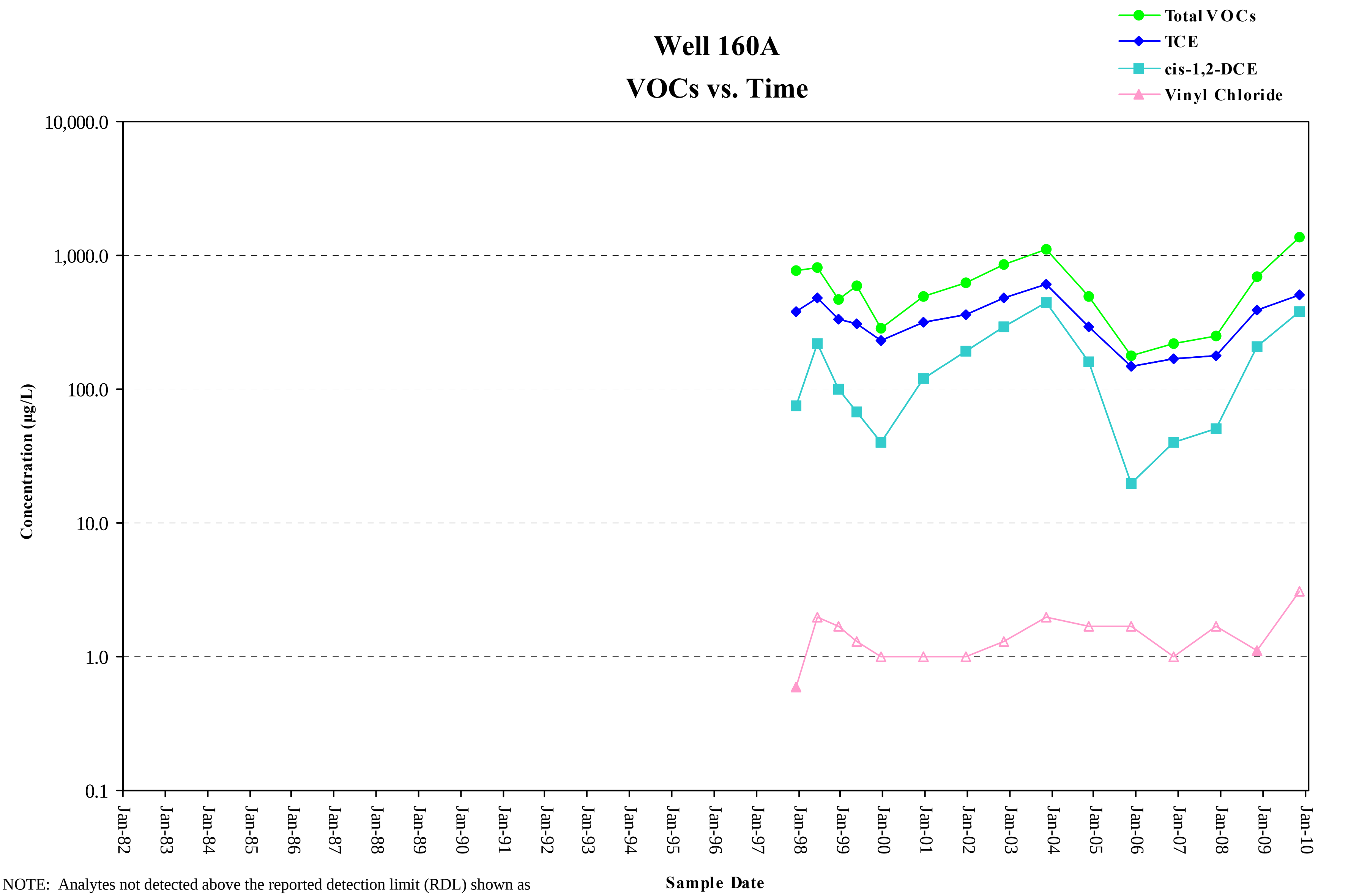

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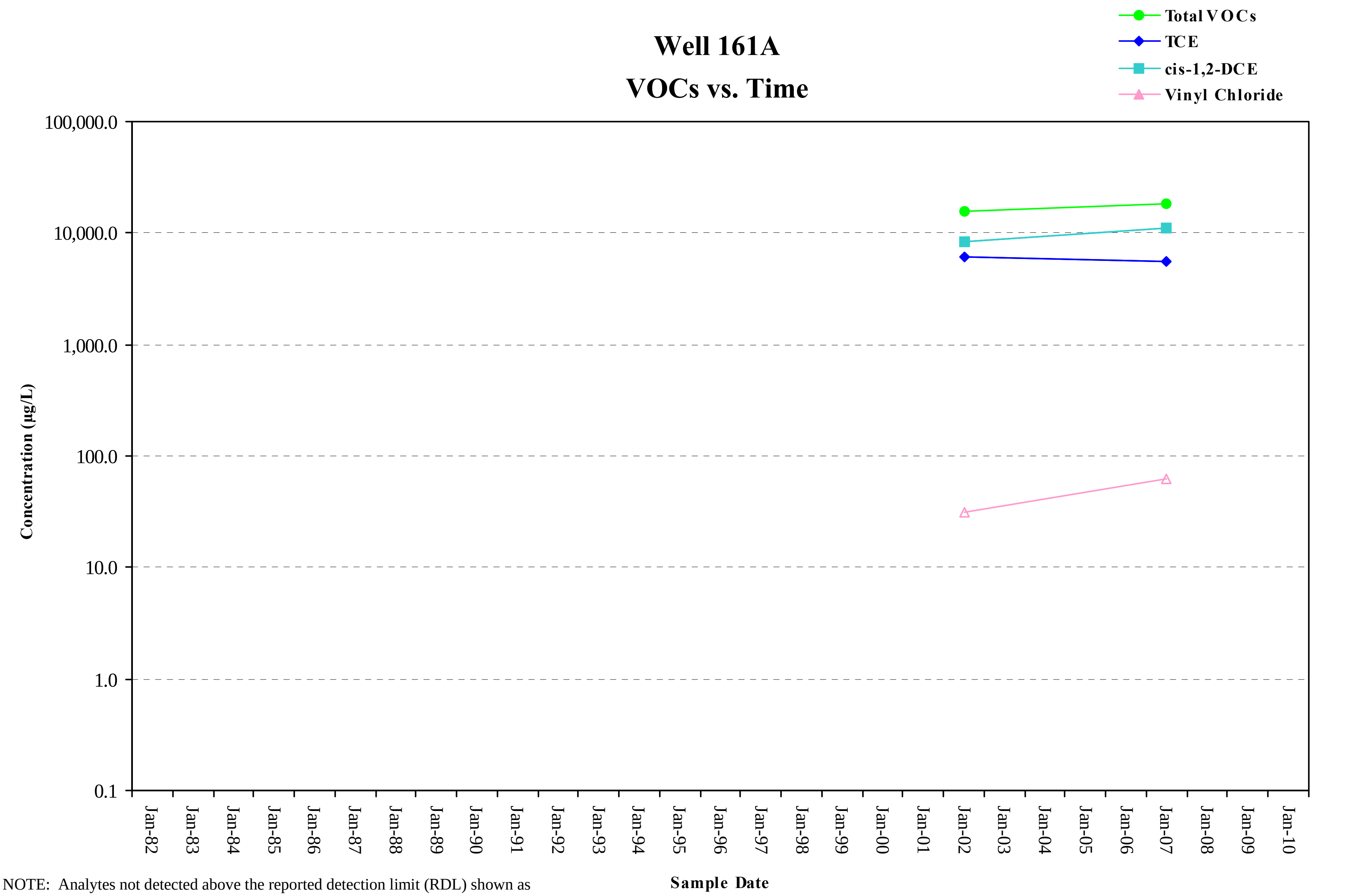

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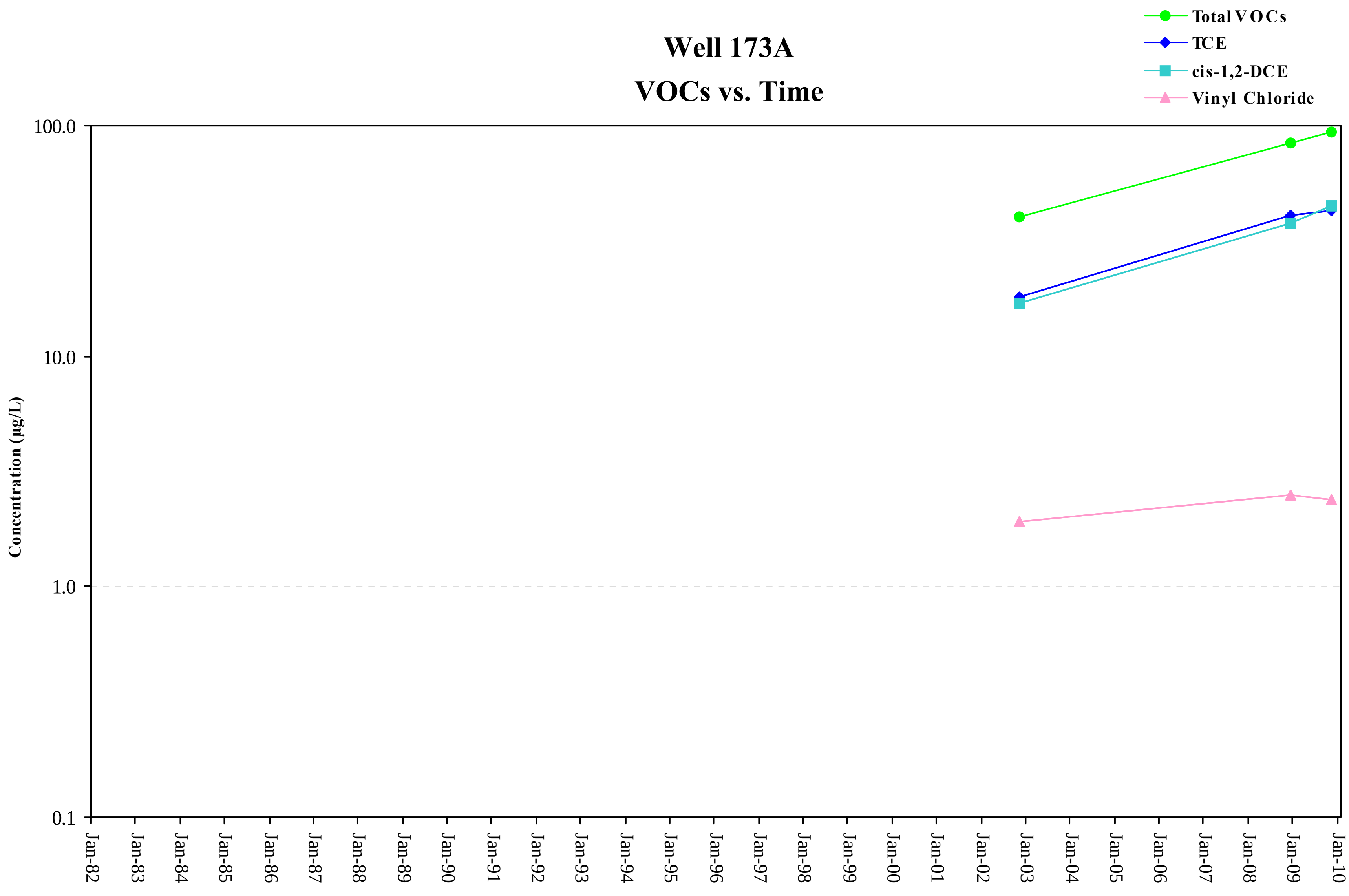
Weiss Associates



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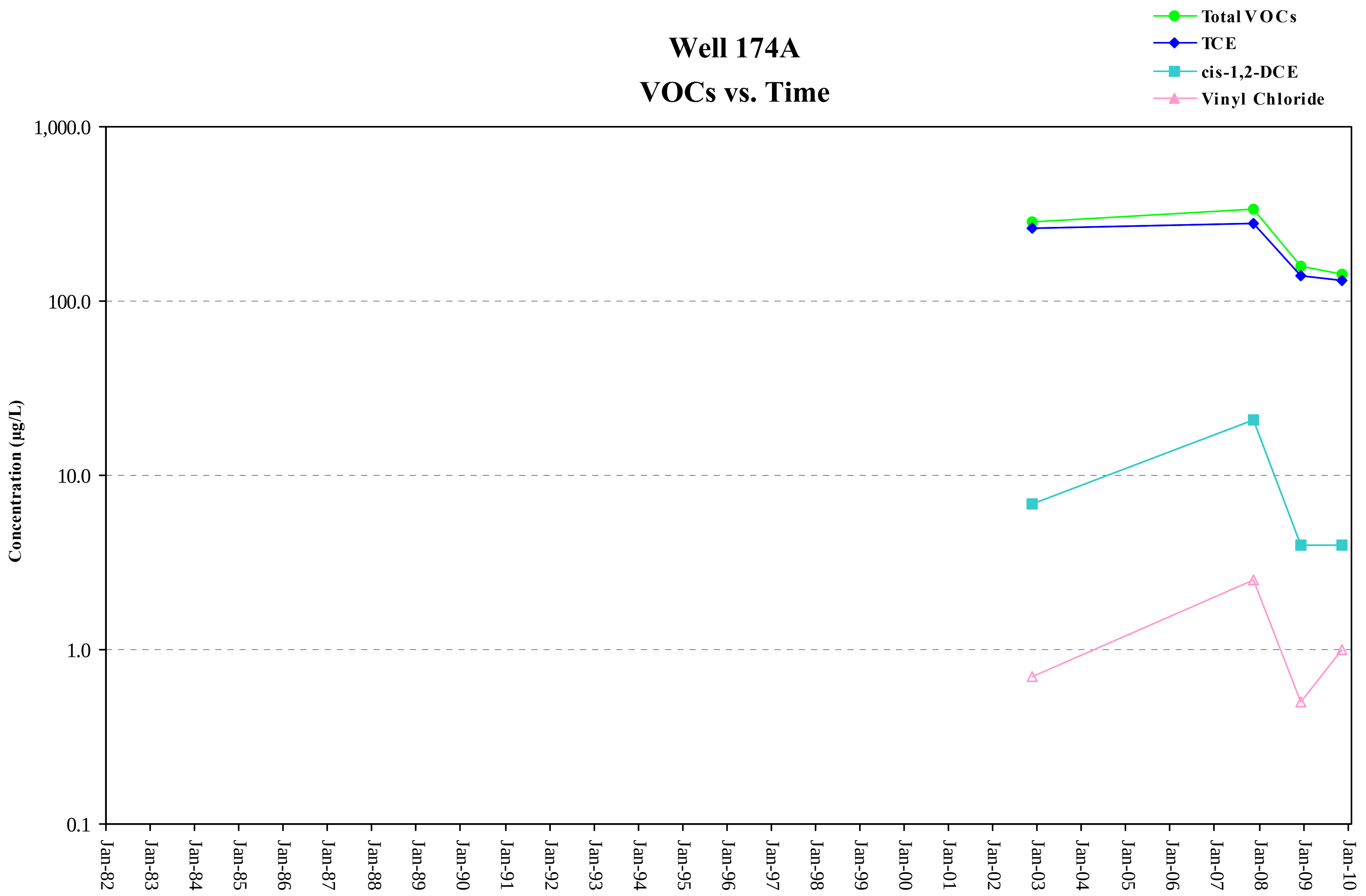
Well 174A
VOCs vs. Time



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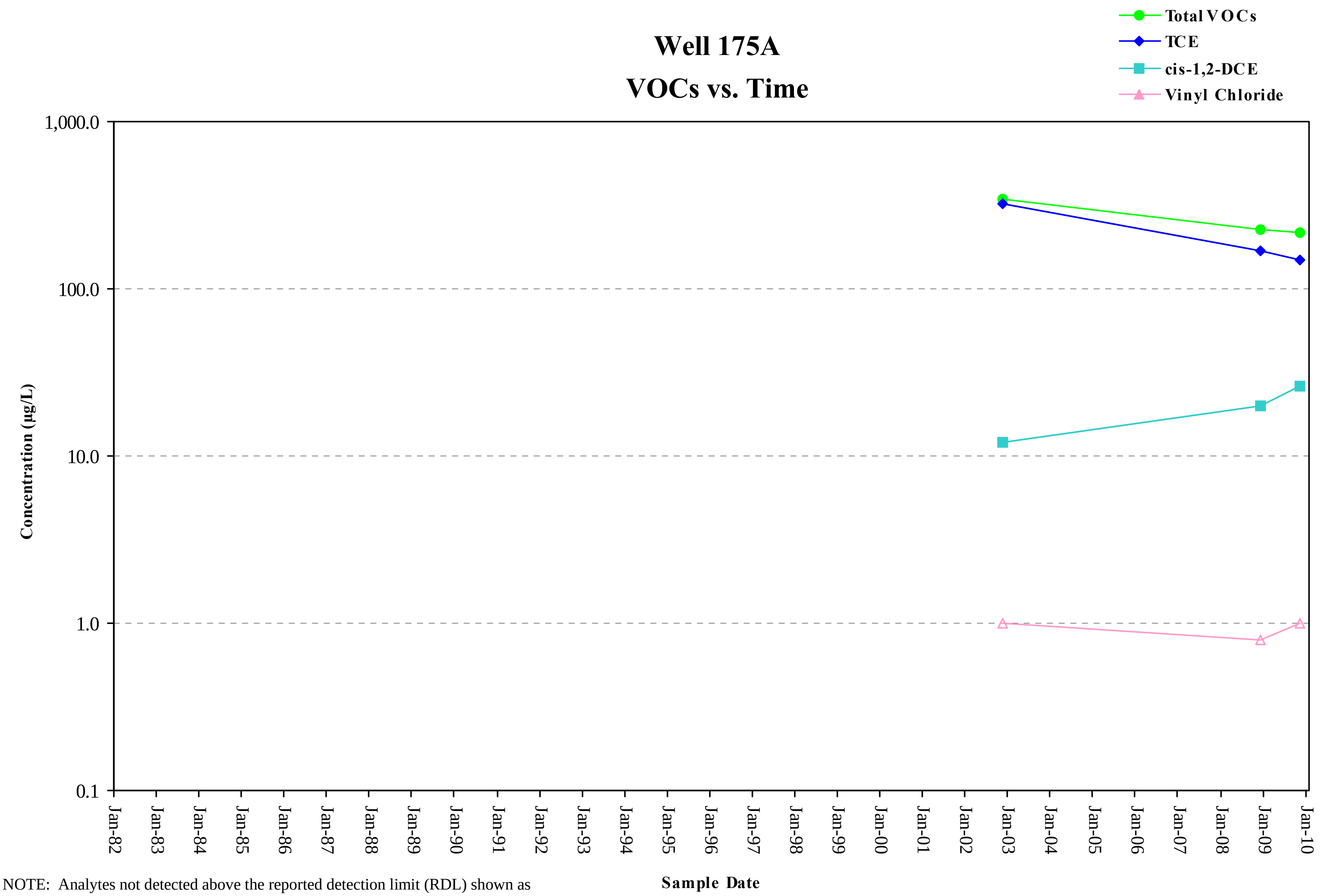

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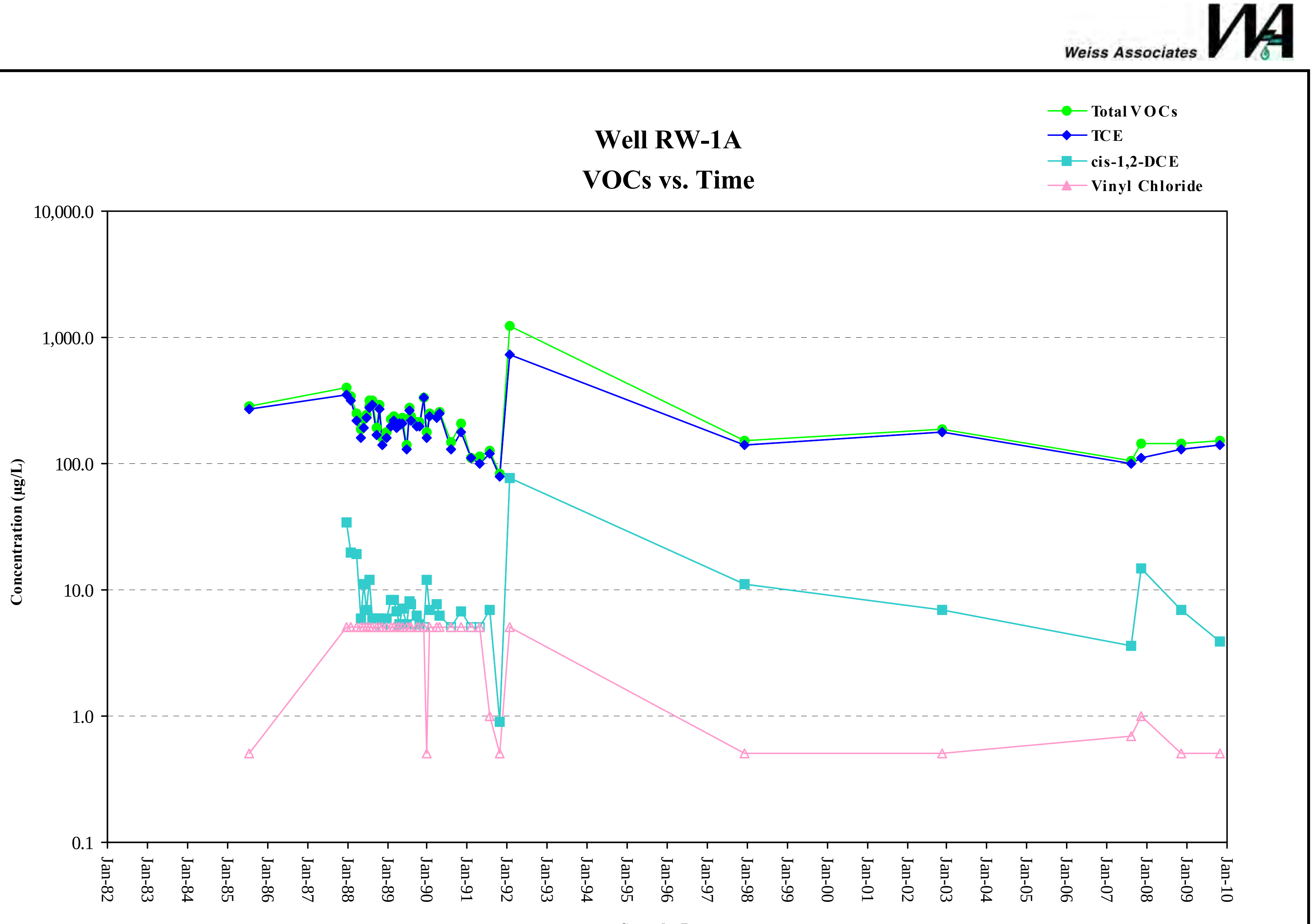

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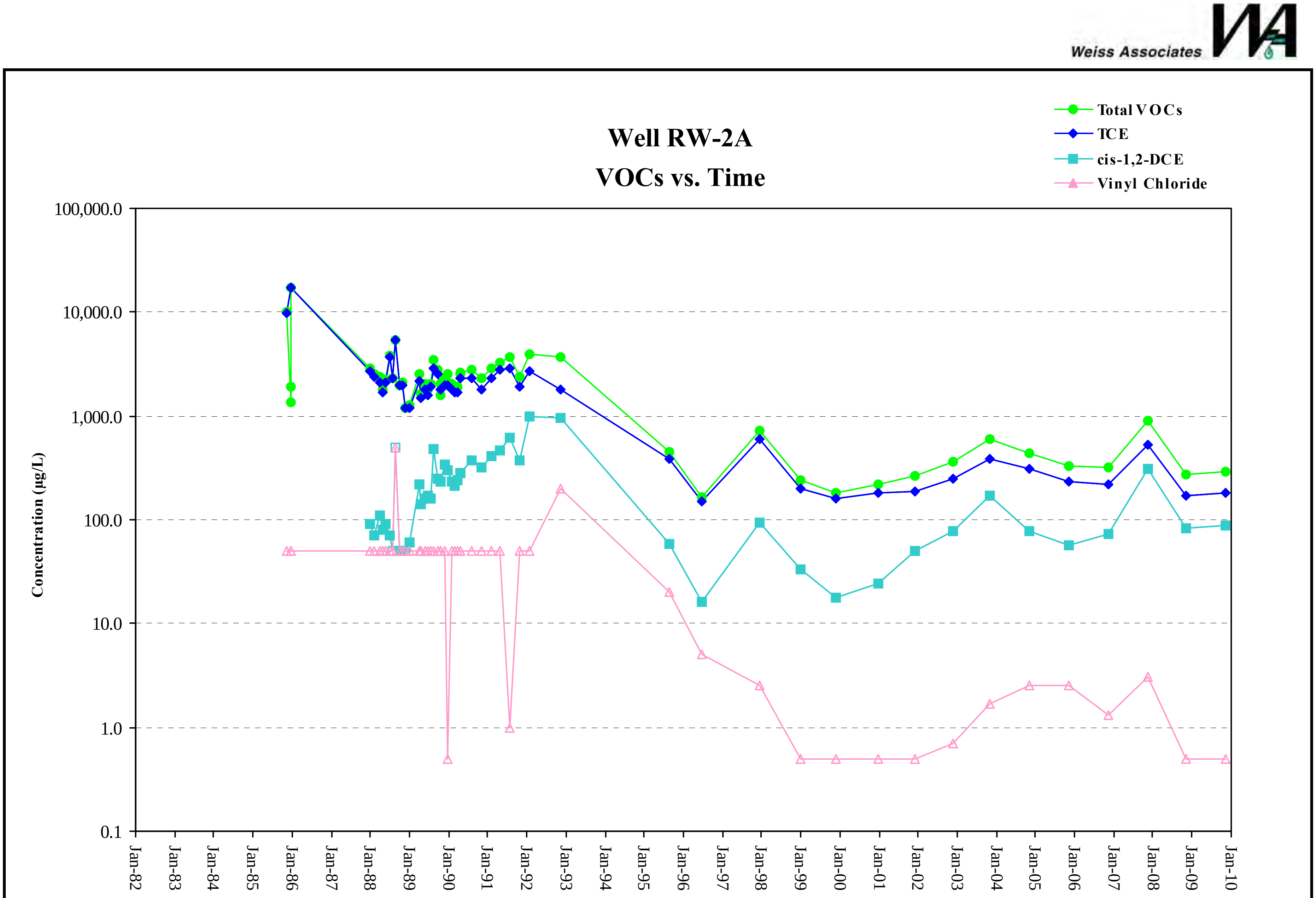

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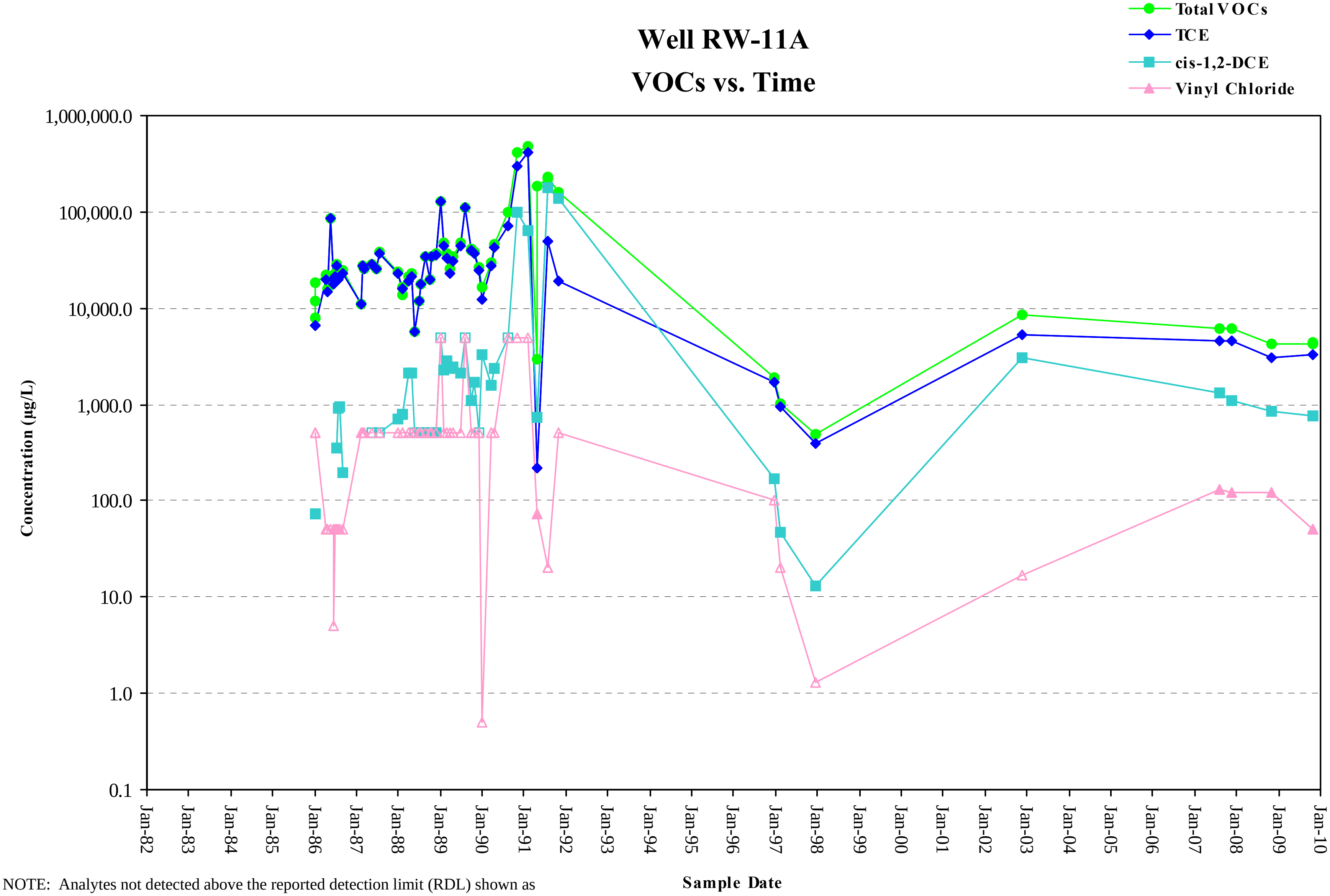

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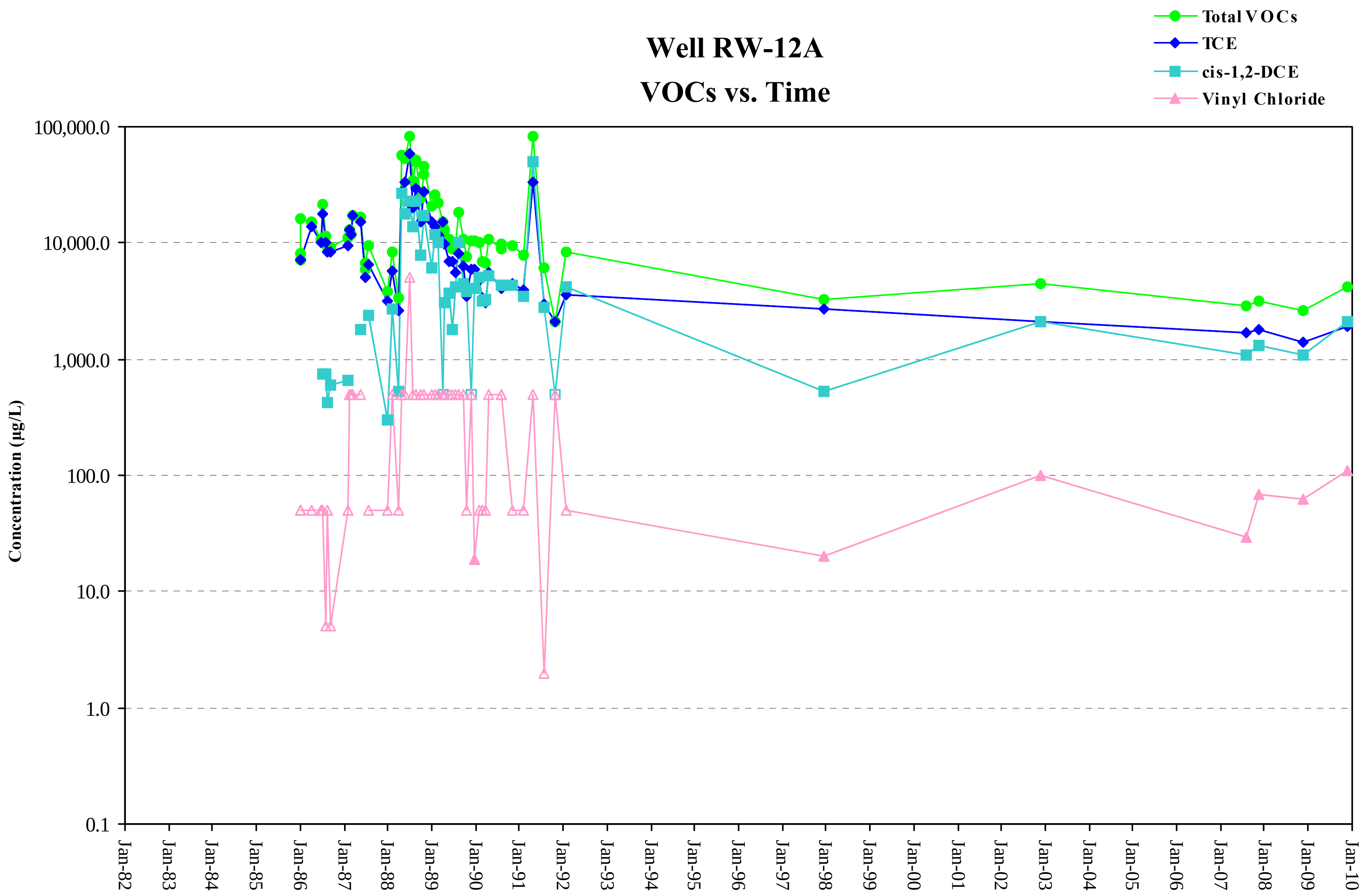

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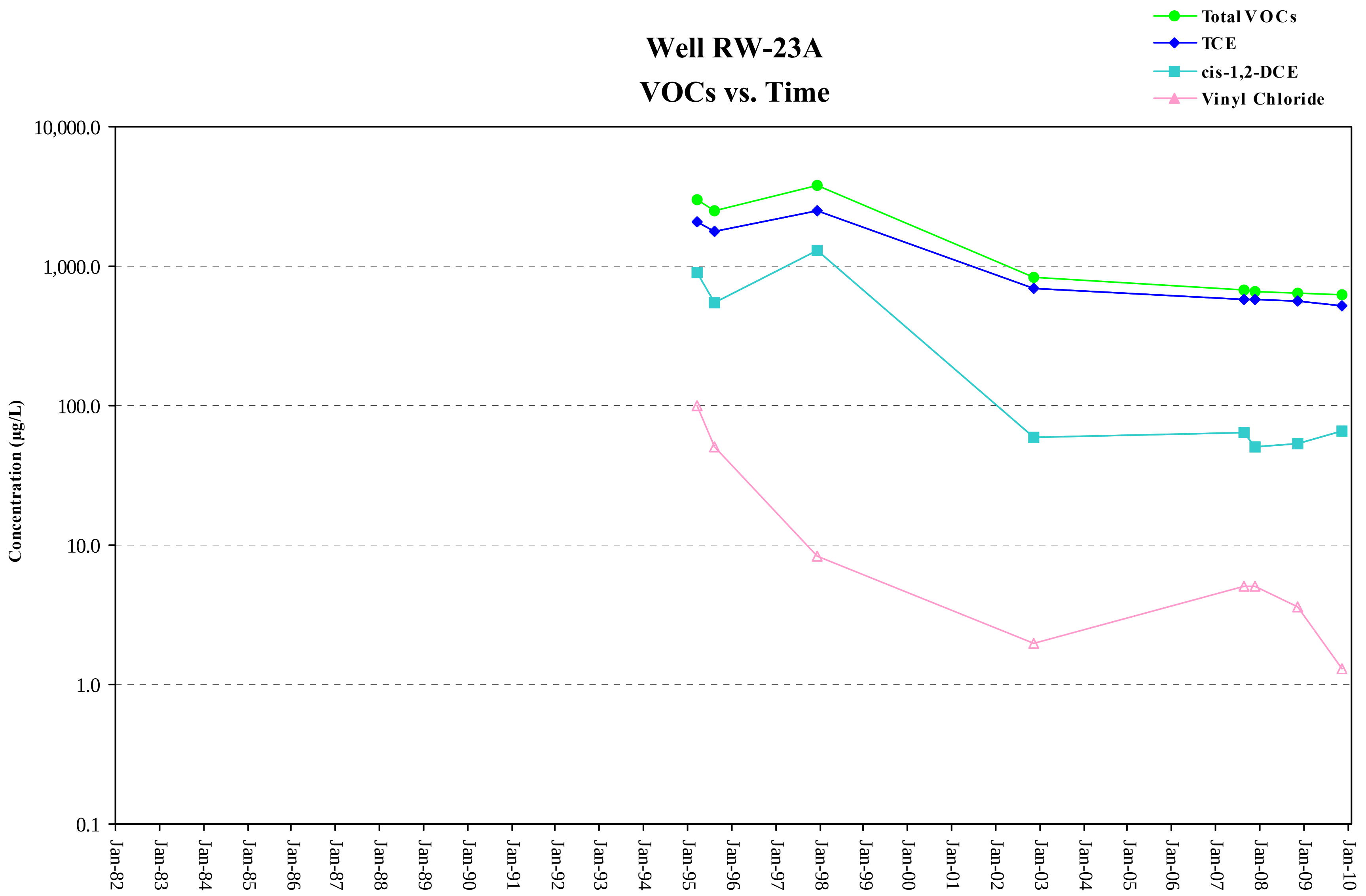

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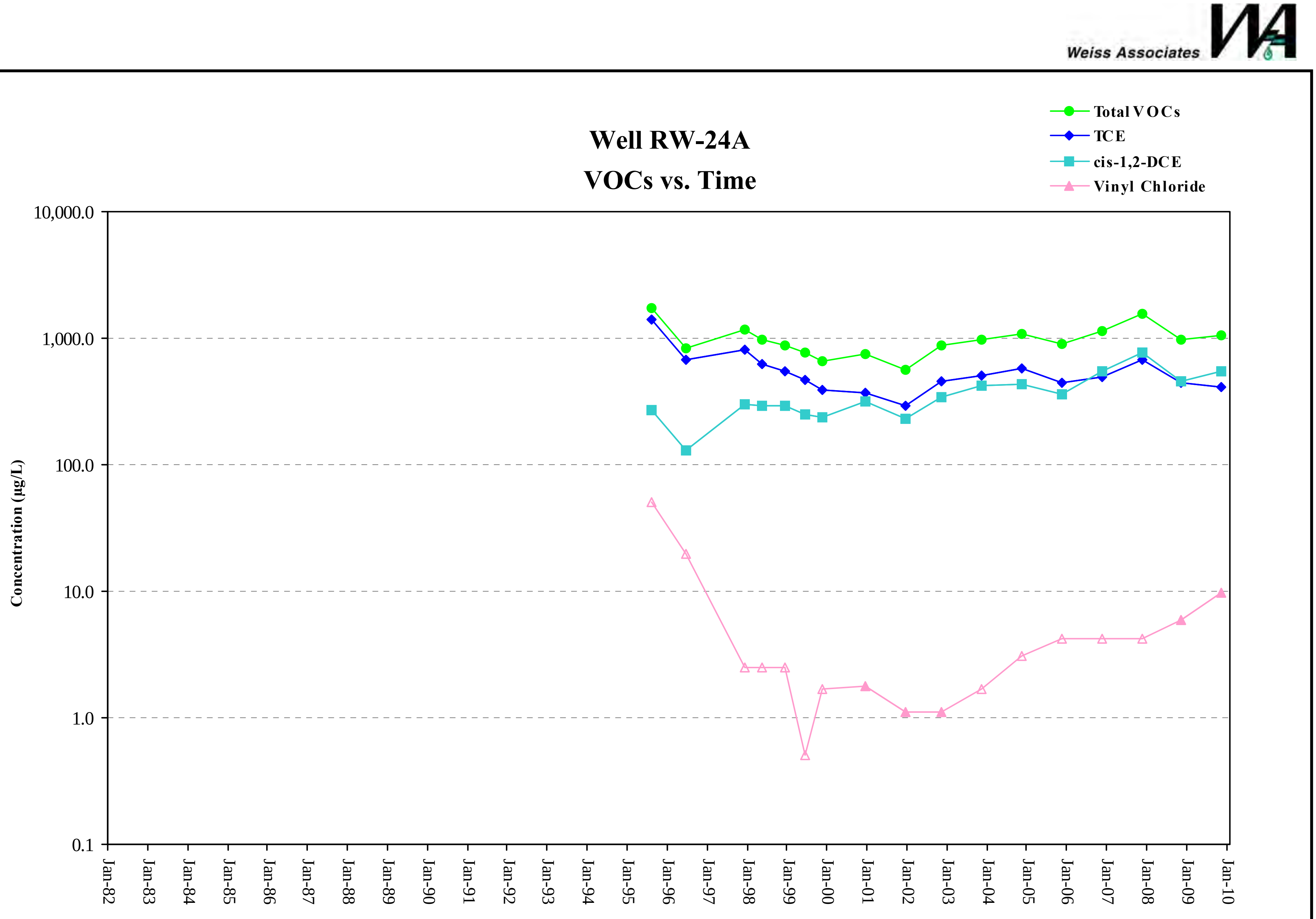

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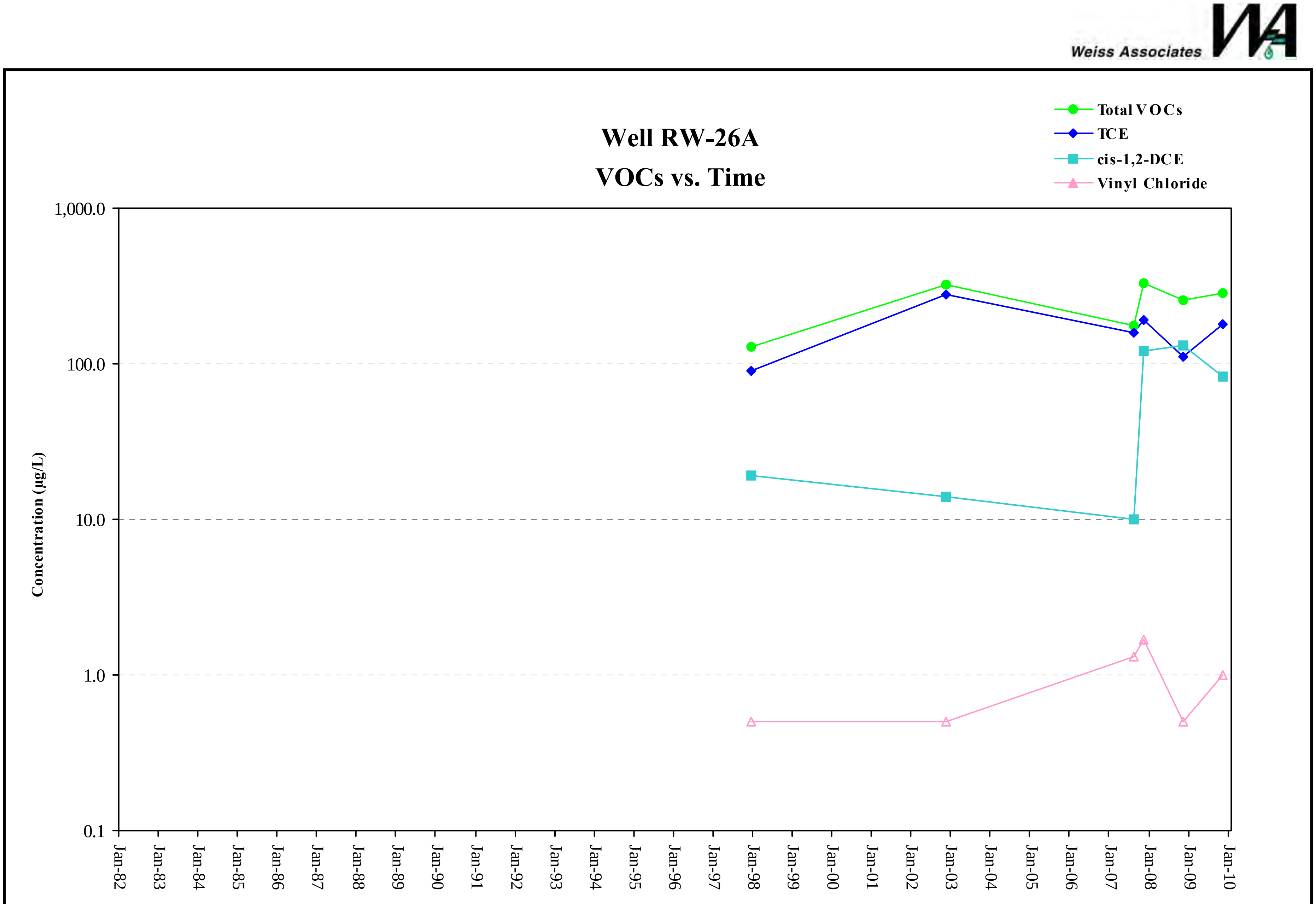

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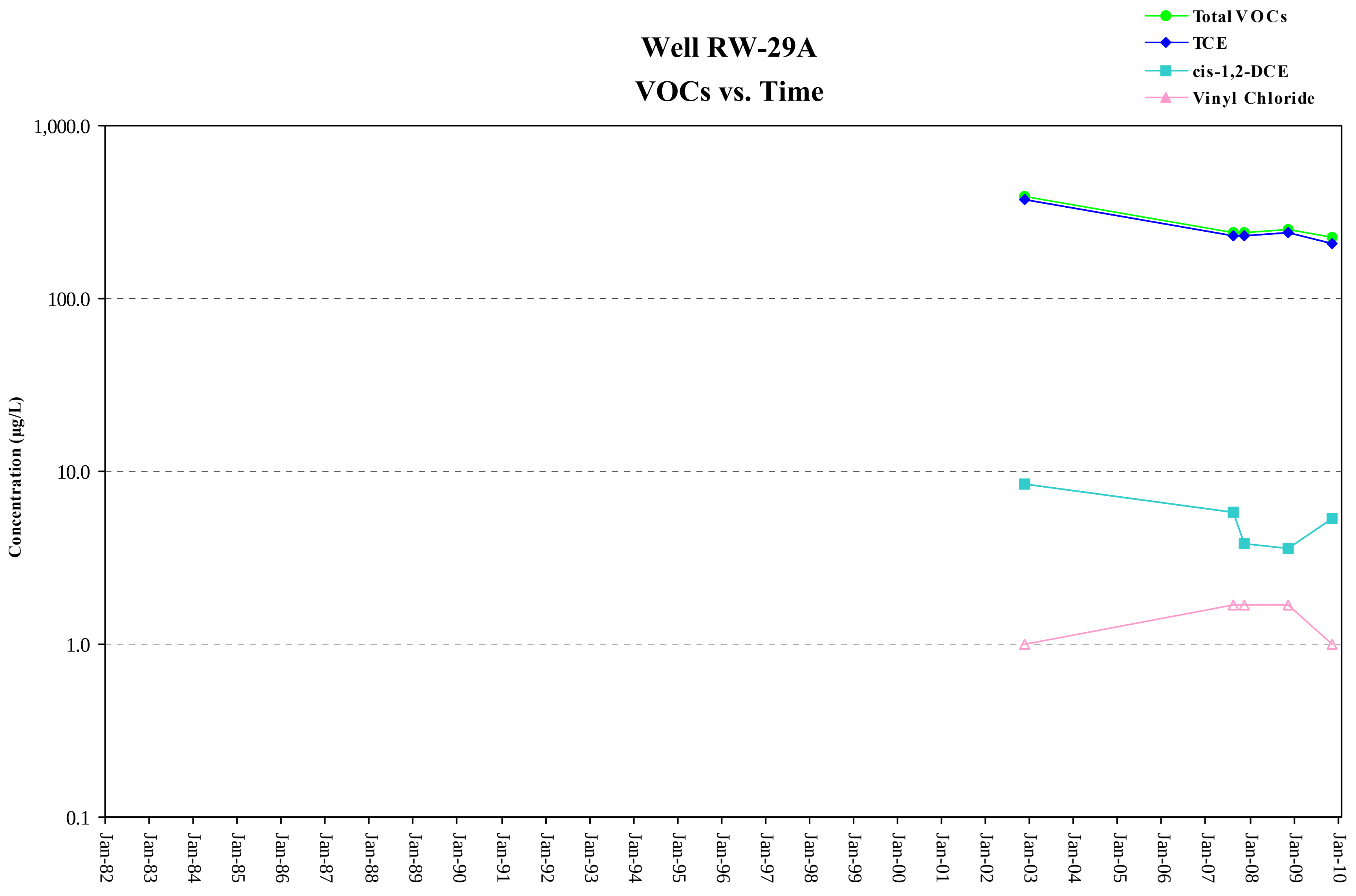

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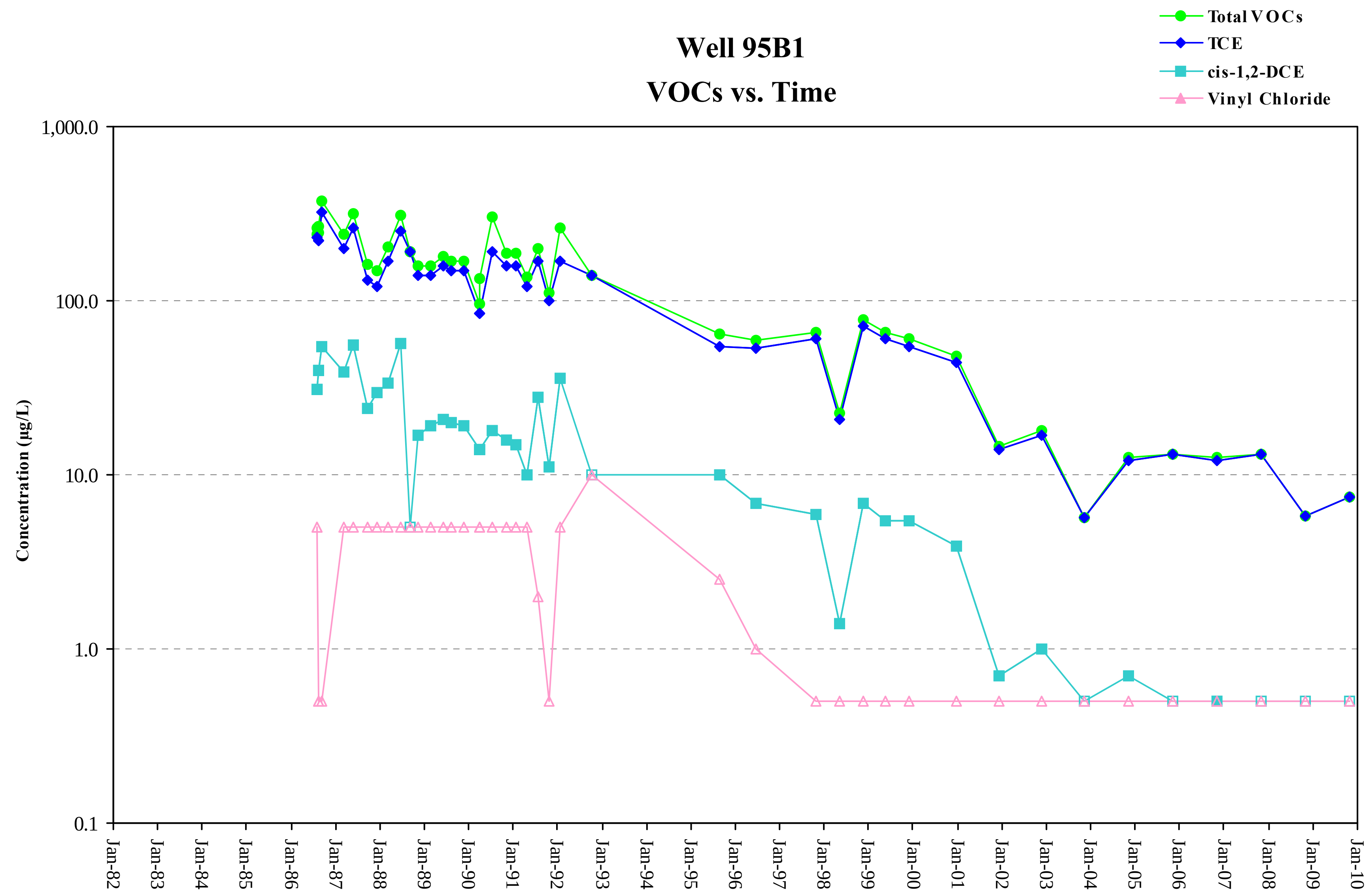

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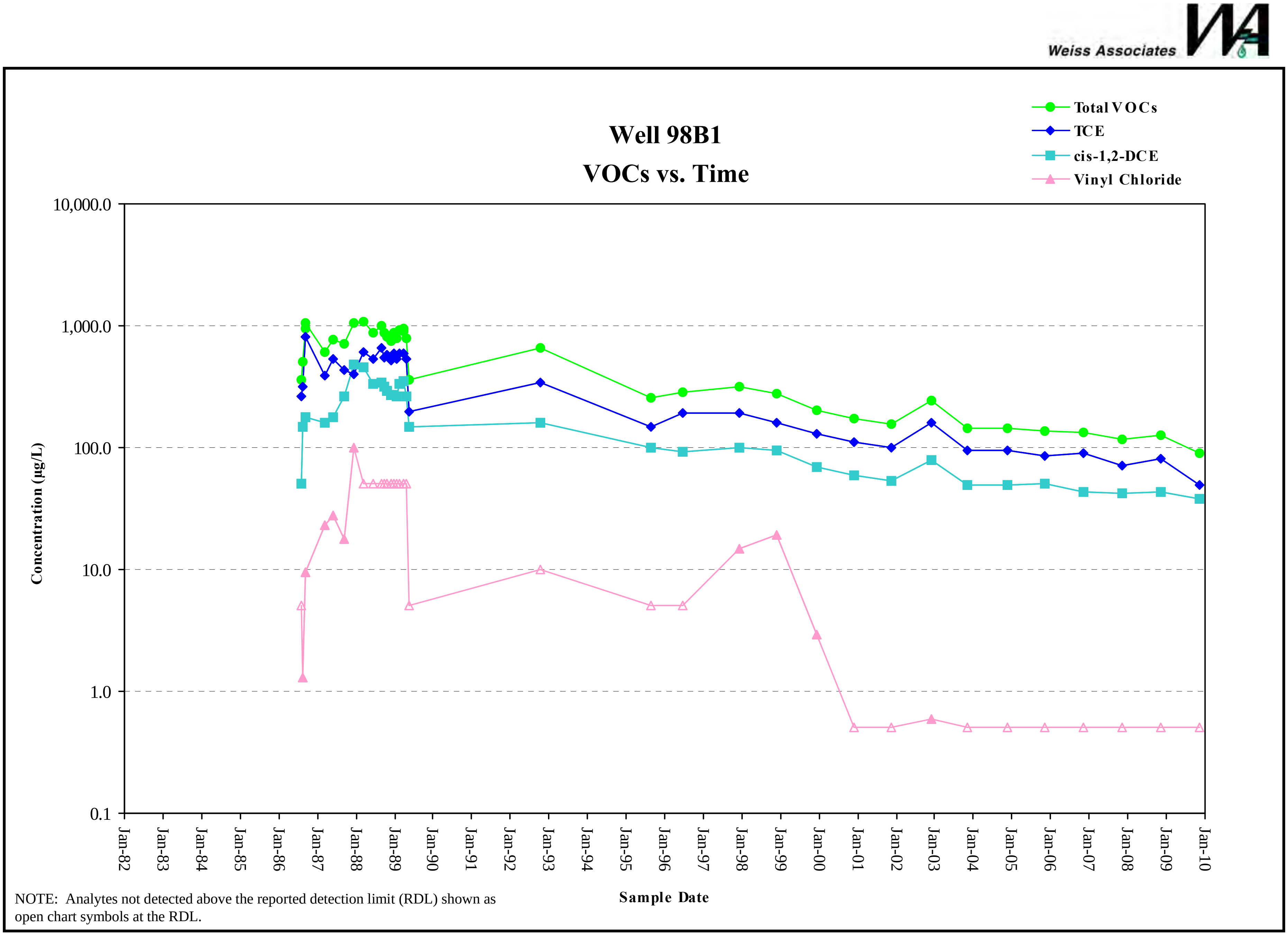

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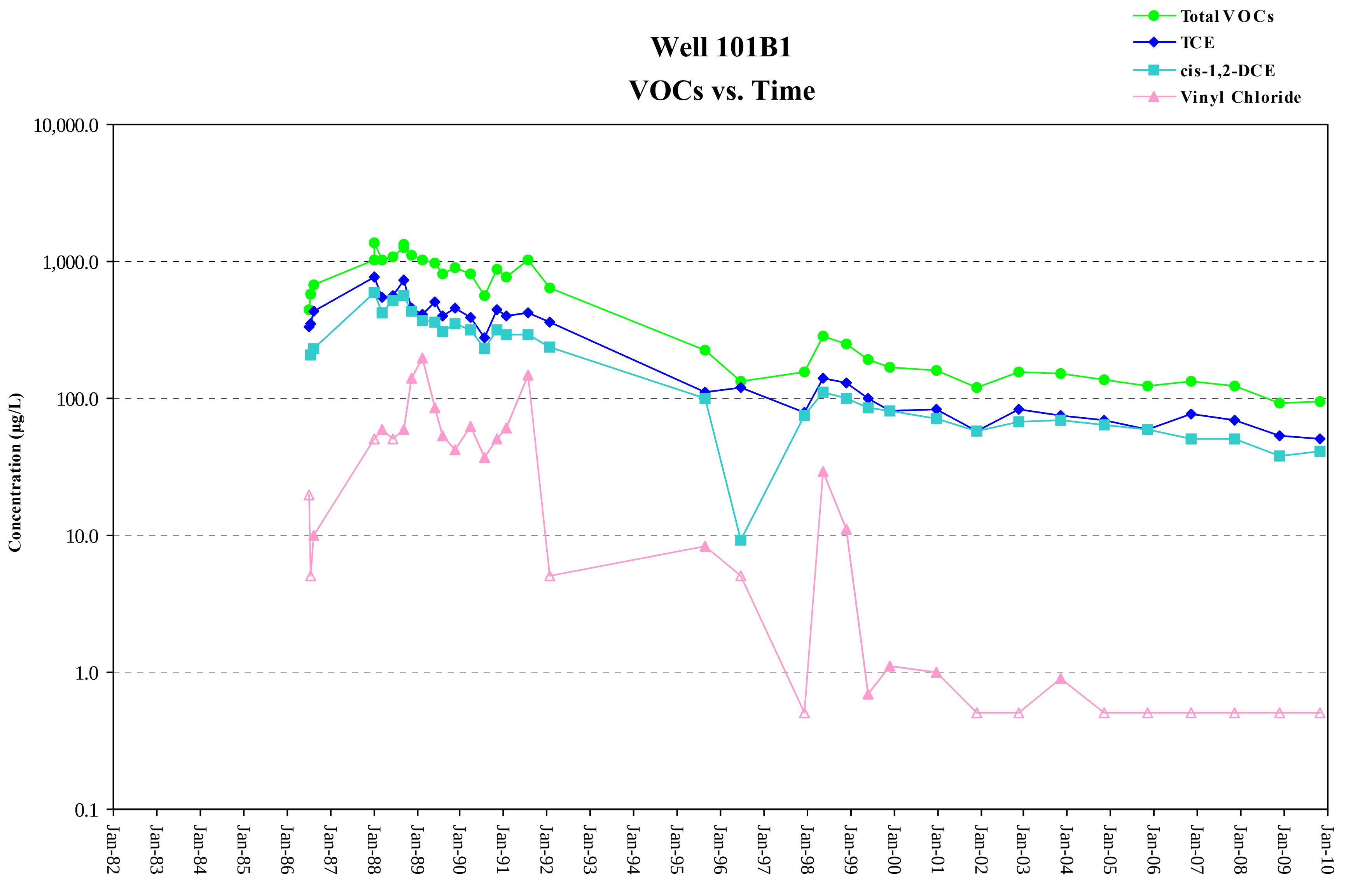

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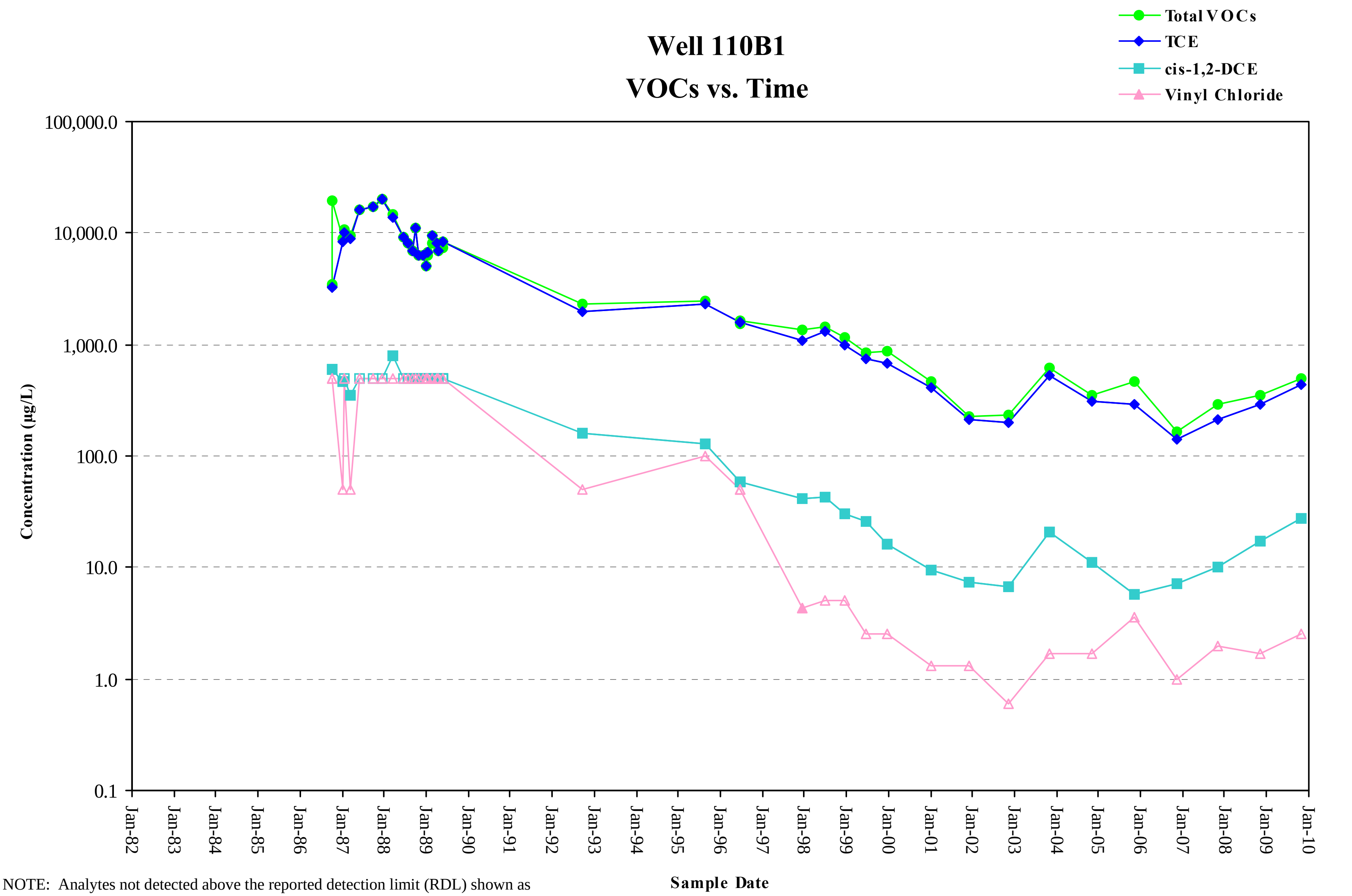

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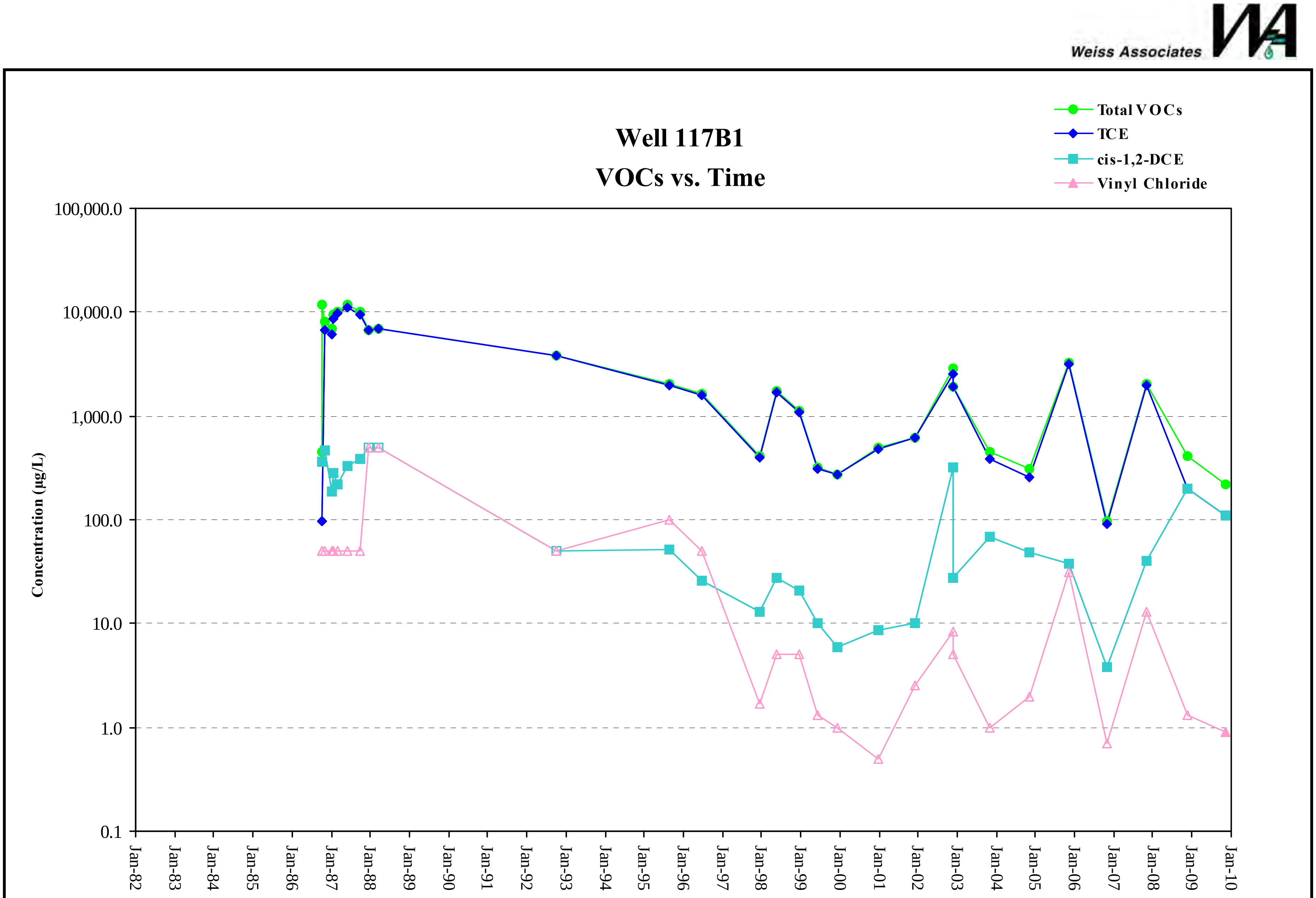

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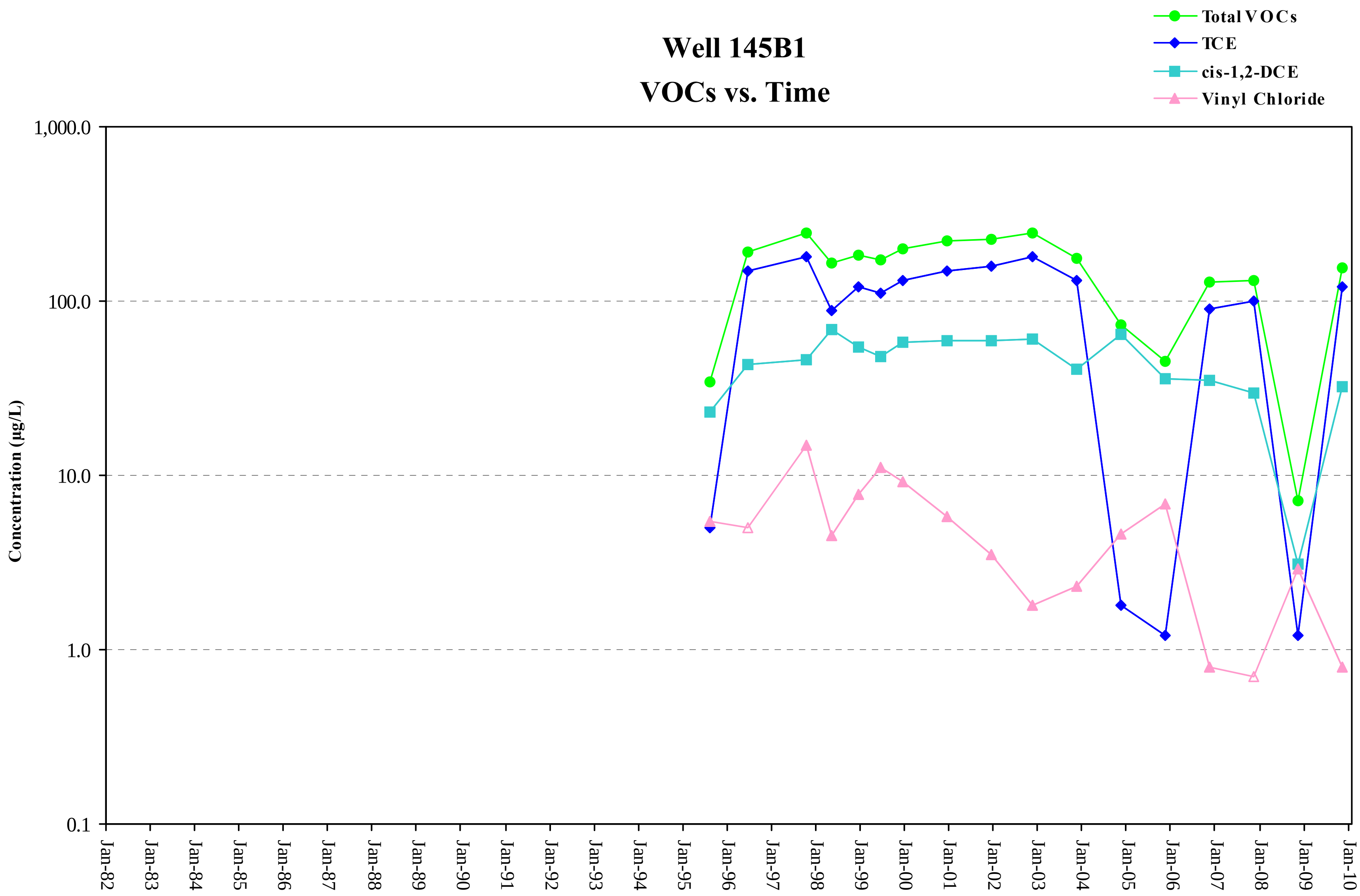

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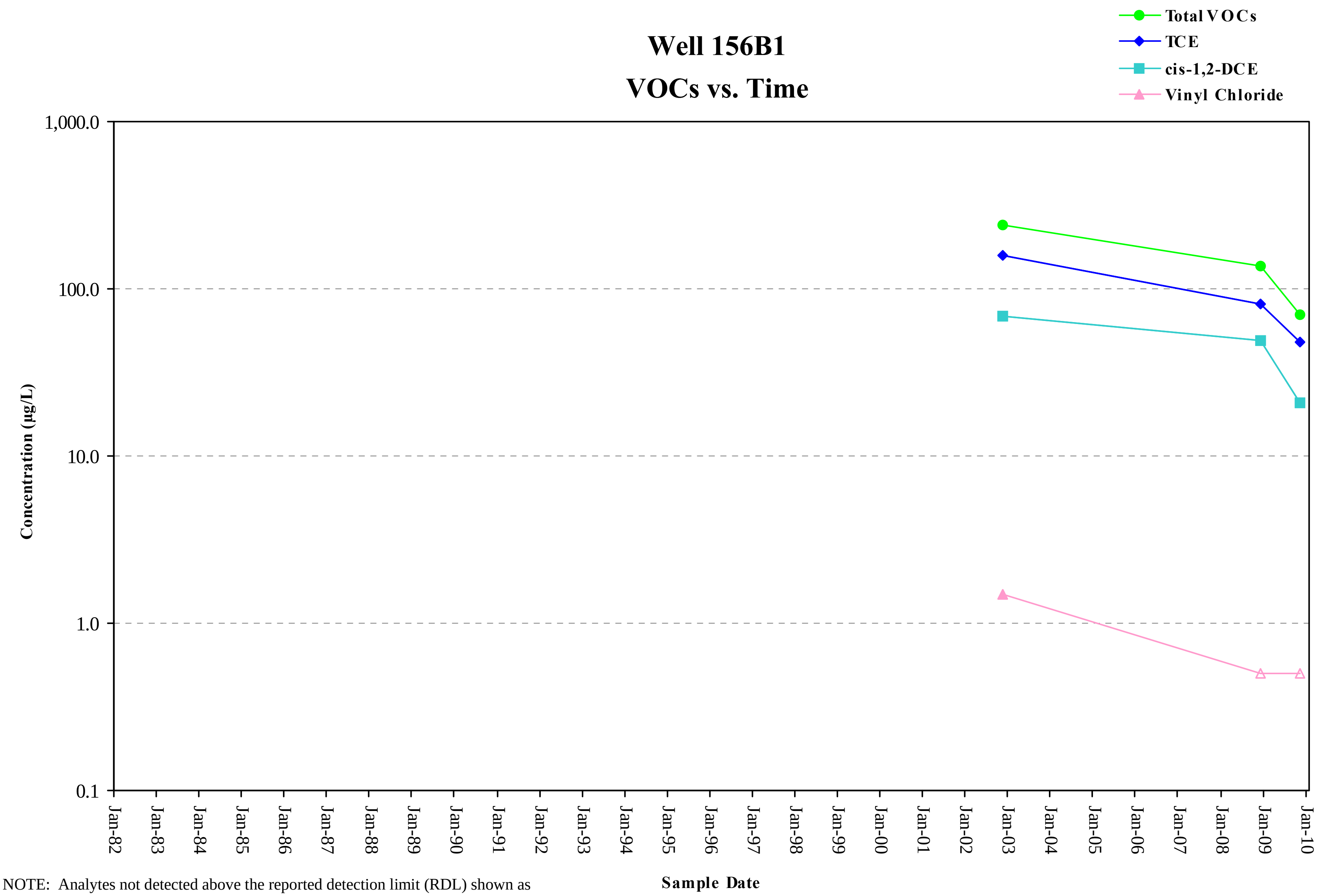

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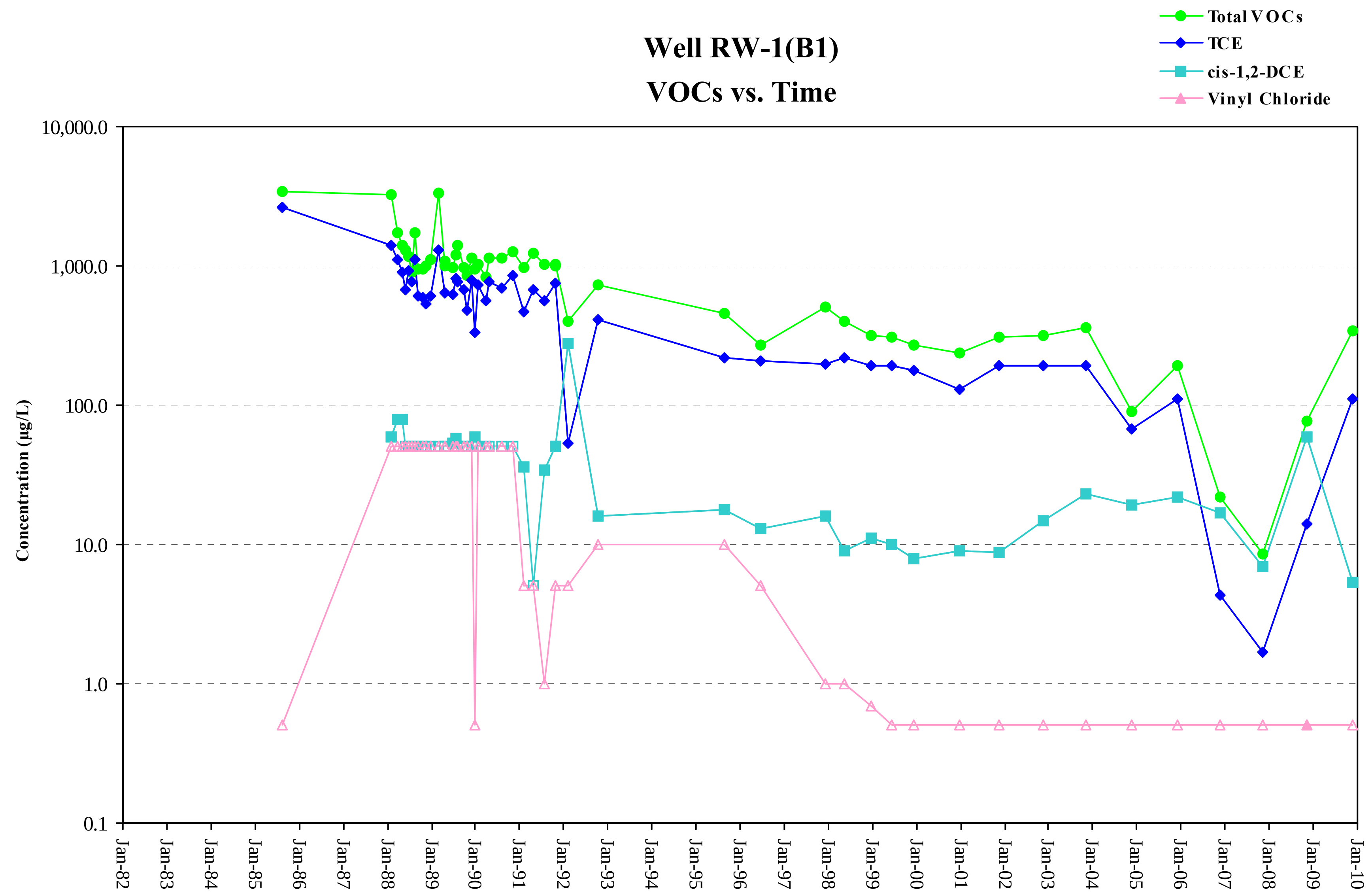

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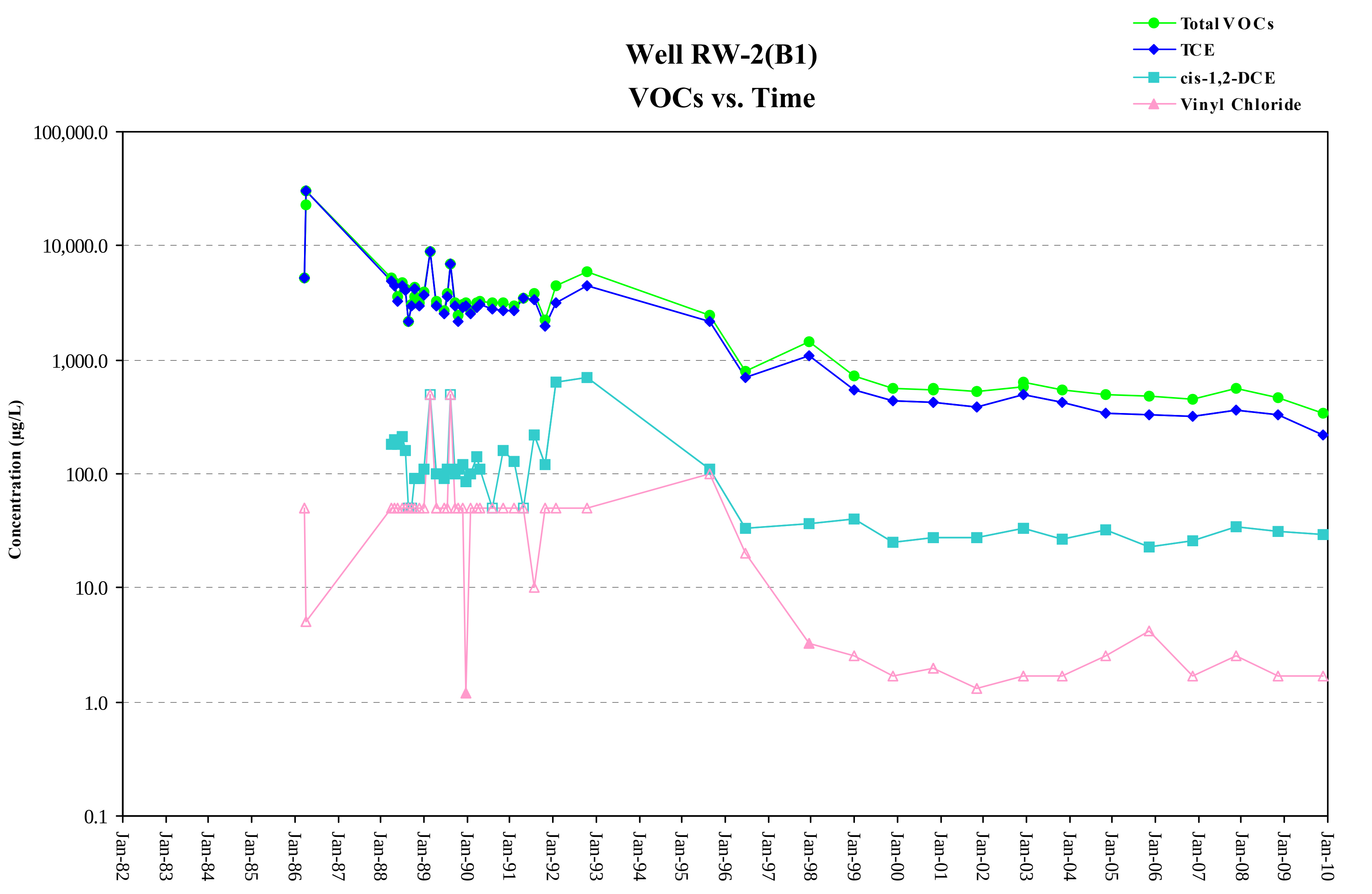

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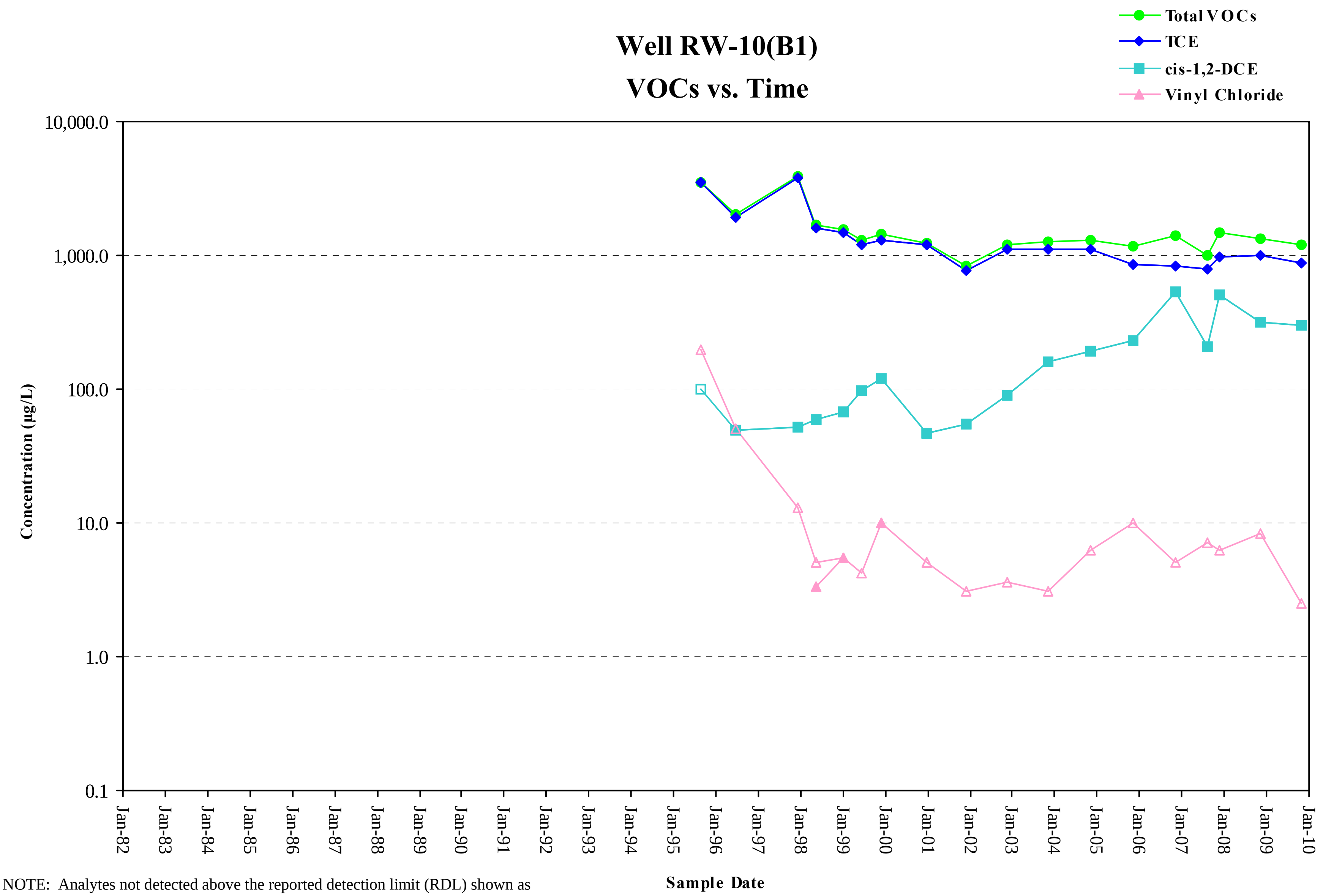

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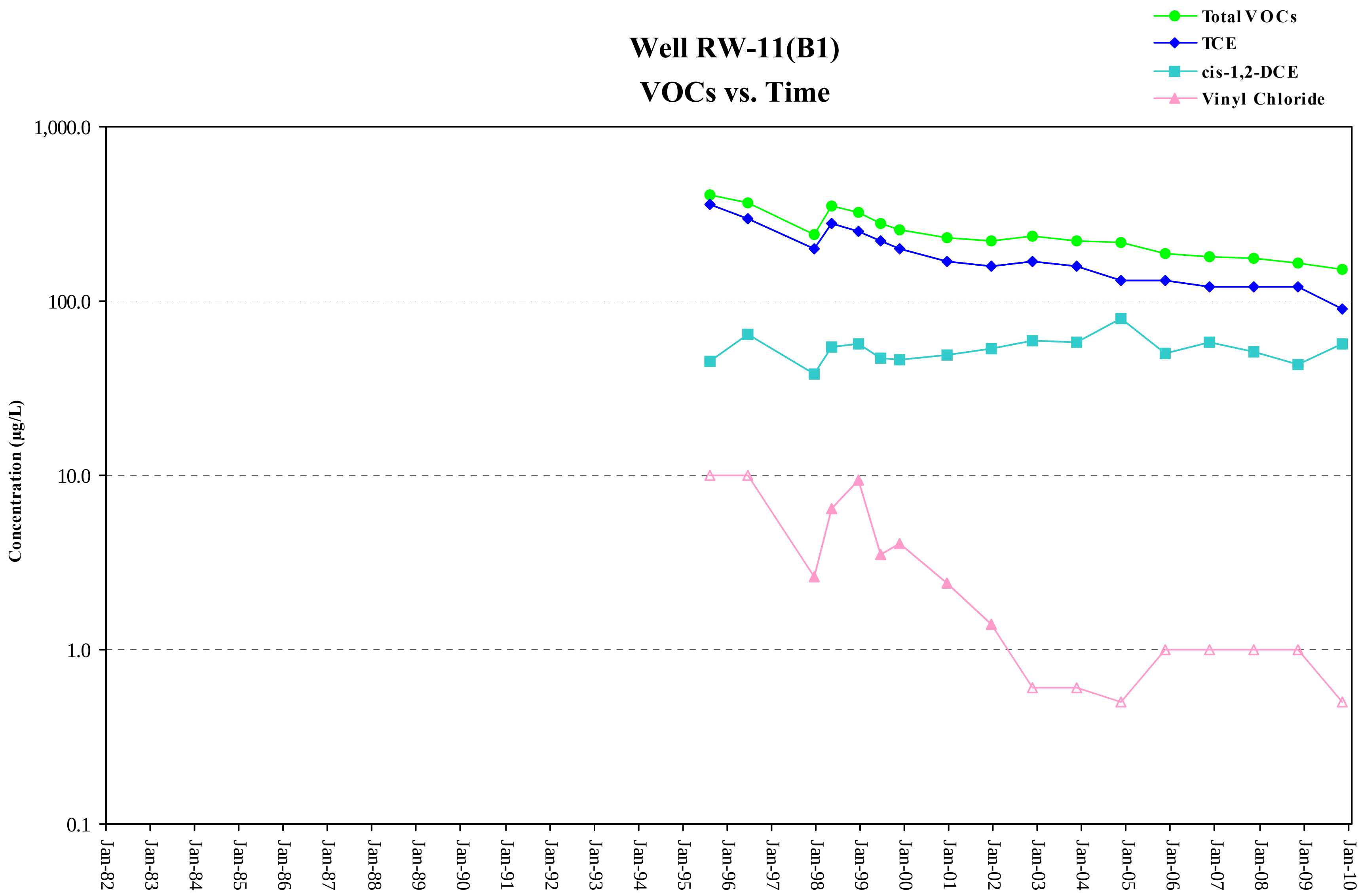

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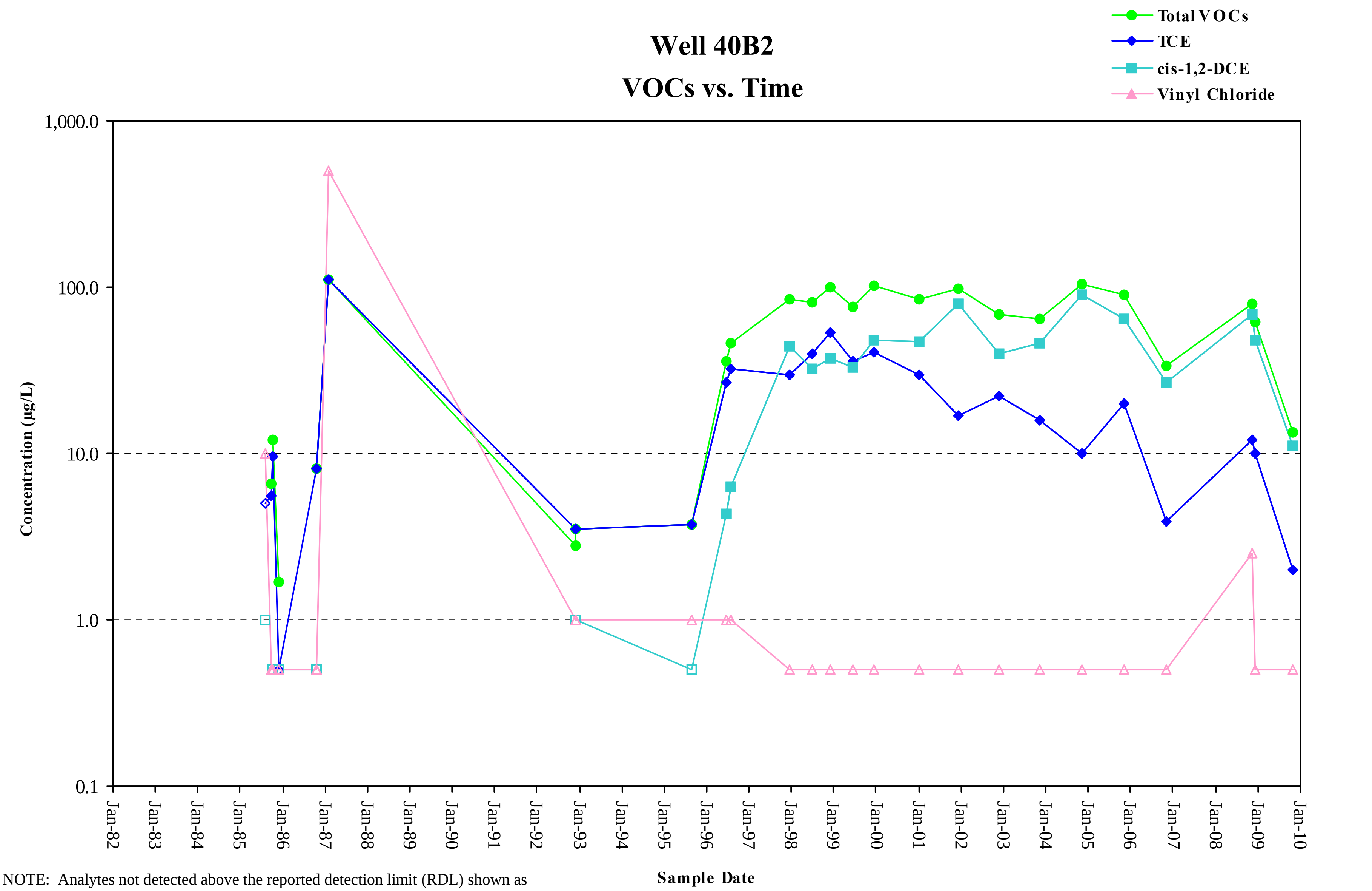

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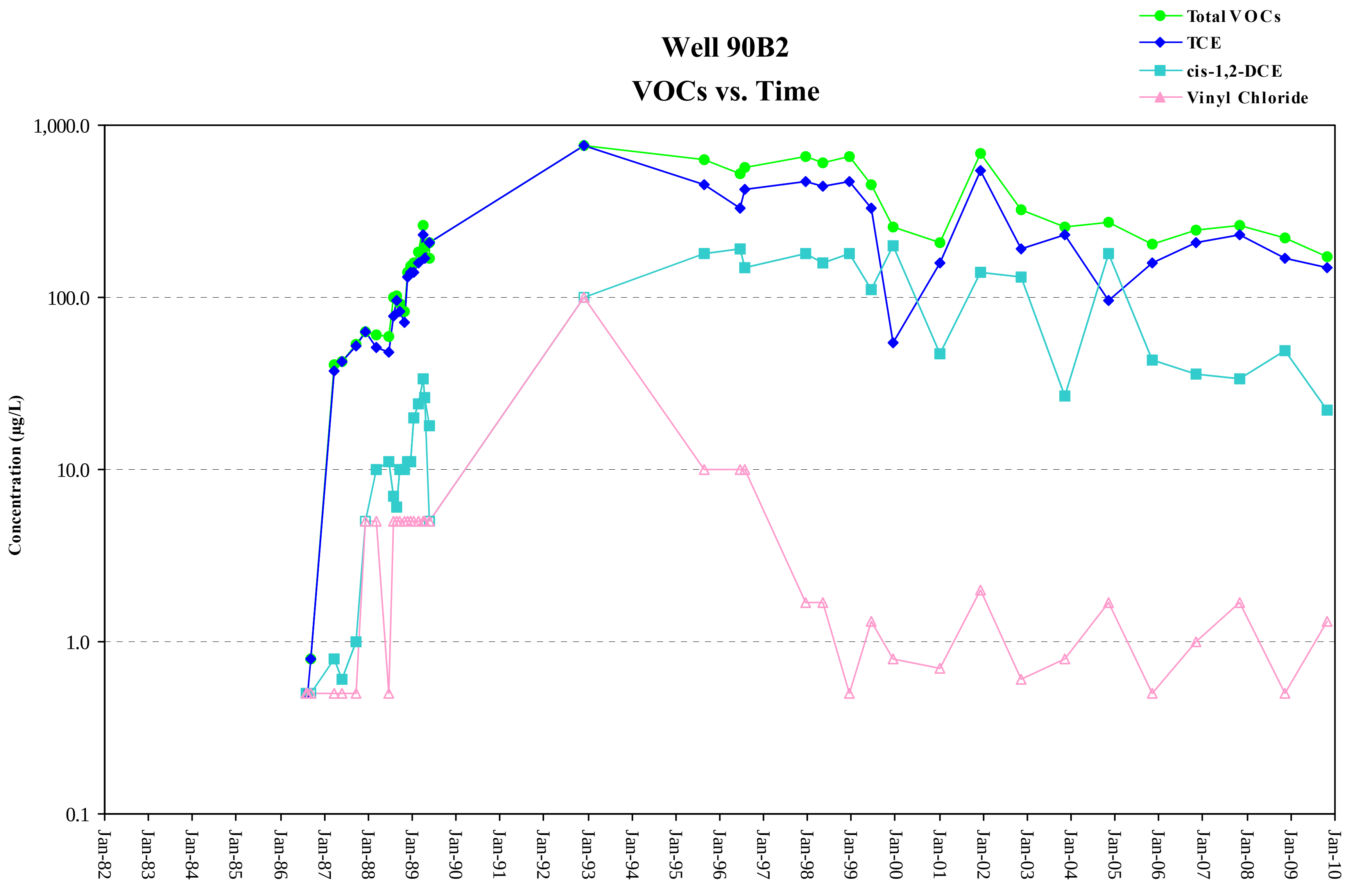

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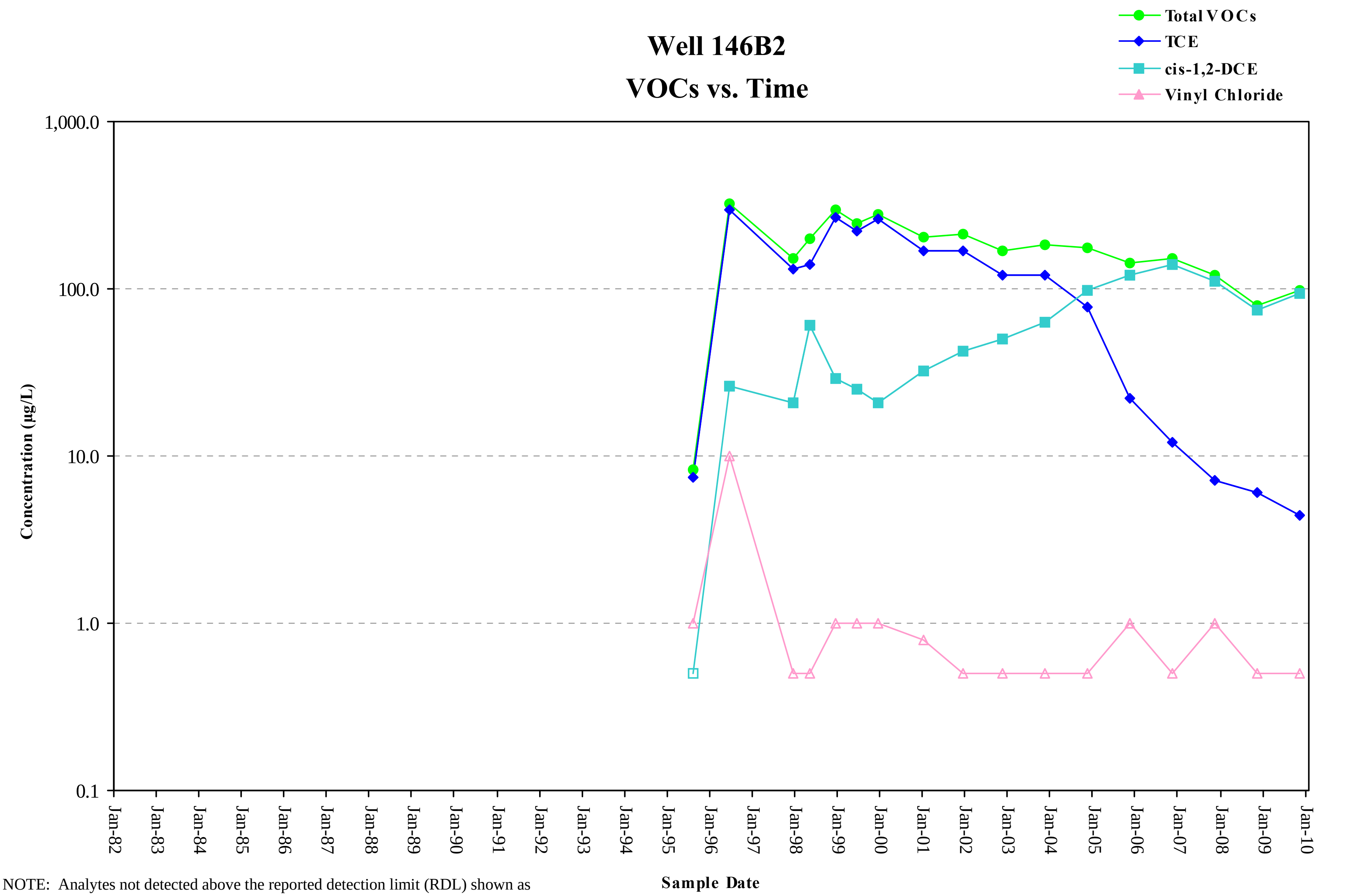

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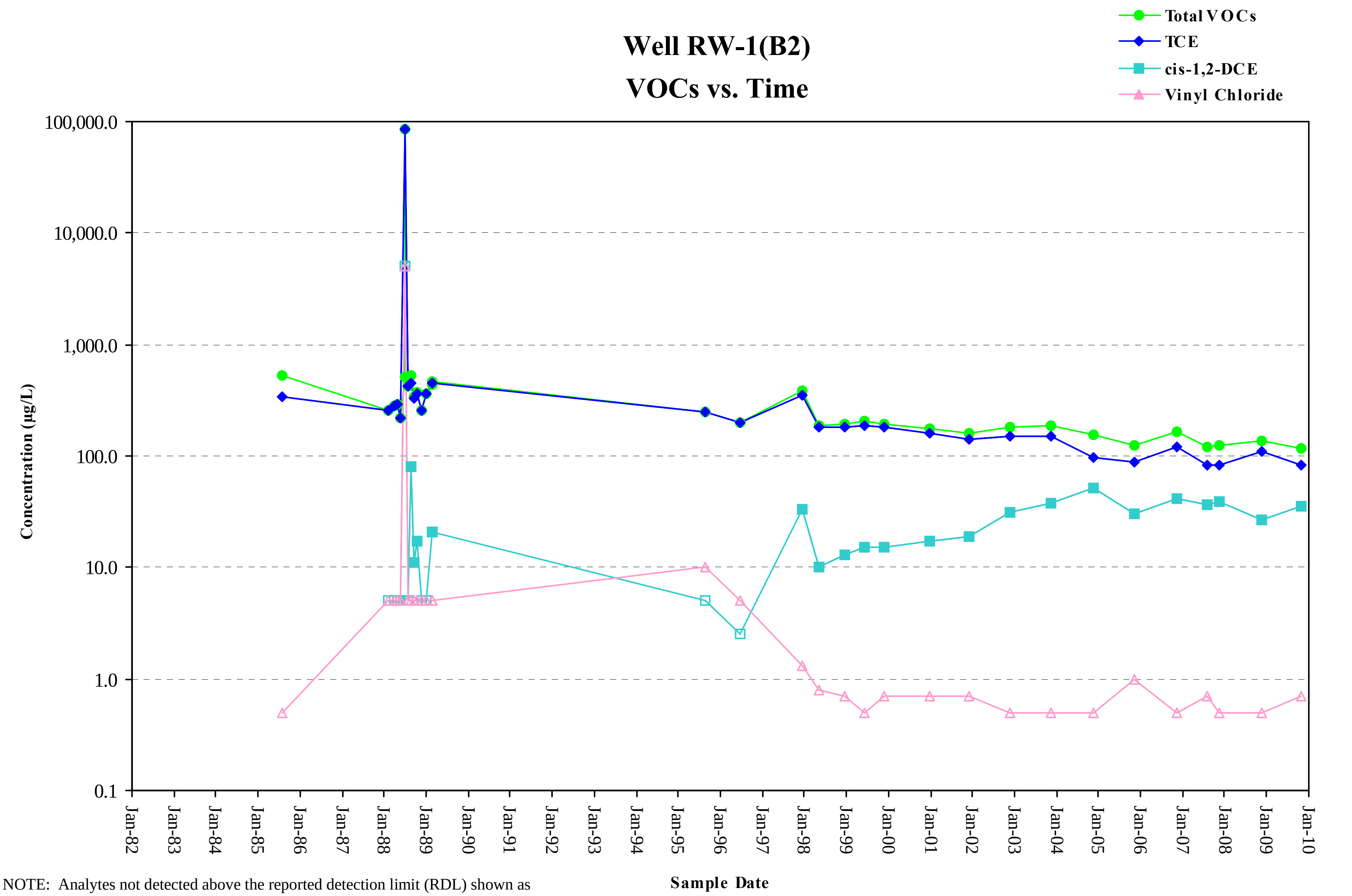

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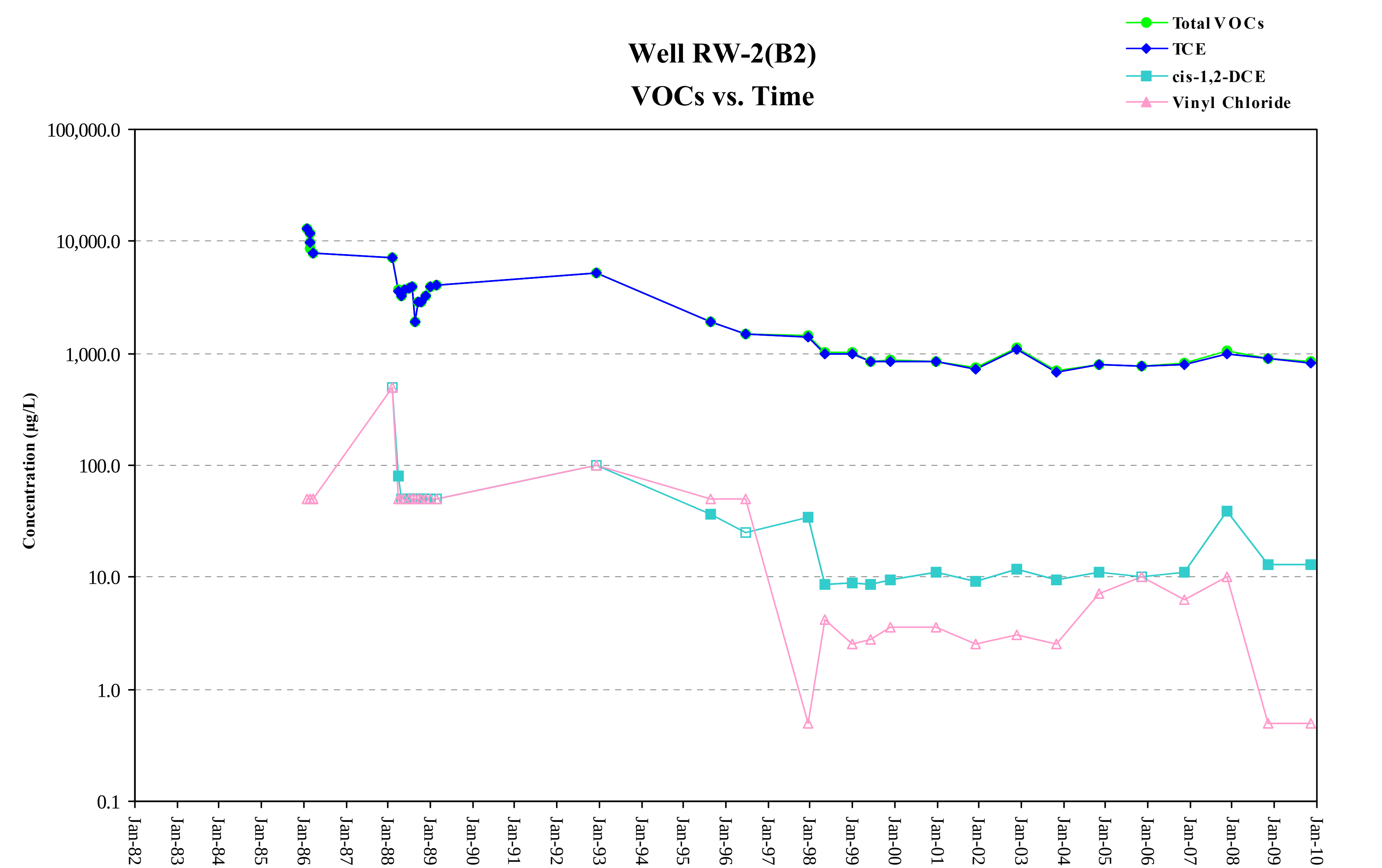

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