Weiss Associates

2008 ANNUAL PROGRESS REPORT

for

Former Fairchild Building 19
369/441 Whisman Road
Middlefield-Ellis-Whisman Study Area
Mountain View, California

prepared for

Schlumberger Technology Corporation
225 Schlumberger Drive
Sugar Land, TX 77478

June 15, 2009

Green Business
Santa Clara County

Weiss Associates *Environmental Science, Engineering and Management*

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submitted to

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Weiss Project No. 363-1883-2-04

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June 15, 2009

Tess Byler, P.G. Date
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
cm/sec	centimeter per second
DHS	Department of Health Services, California
ft bgs	feet below ground surface
GAC	granular activated carbon
HLA	Harding Lawson Associates
K	hydraulic conductivity
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
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
NPL	National Priority List
TCE	Tetrachloroethene
PRP	potentially responsible parties
QA/QC	quality analysis and quality control
RAO	remedial action objective
RGRP	Regional Groundwater Remediation Program
RI	remedial investigation
RI/FS	remedial investigation and feasibility study
ROD	Record of Decision
RRWs	regional recovery wells
SCRWs	source control recovery wells
SCVWD	Santa Clara Valley Water District
SVE	Soil Vapor Extraction
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 2008 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; Figure 1) contains a summary of Site activities from January 1 through December 31, 2008, and monitoring data for the past five years (2004 through 2008). 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), Section XI of the Consent Decree entered in Action No. 20275 (N.D. Cal.) in 1992 (Consent Decree) and the USEPA's correspondence prescribing 2004 and future Annual Report contents (USEPA, 2005).

The groundwater containment and treatment system at the Site removes volatile organic chemicals (VOCs), and consists of the following components:

- Slurry wall containment structure around the Site that is approximately 40 feet deep and extends a minimum of two feet into the A/B1 aquitard beneath the Site;
- Fifteen source control recovery wells (SCRWs);
- Groundwater treatment system (System 19) that removes volatile organic chemicals (VOCs) using activated carbon under NPDES Permit CAG912003, Order No. R2-2004-0055 that expires in June 2009;
- 35 Monitoring wells; and,
- Treatment of seven regional recovery wells (RRWs) that are part of the Regional Groundwater Remediation Program (RGRP) but are plumbed to System 19.

Site activities conducted in compliance with the 106 Order during this reporting period included continued operation, monitoring and maintenance activities at the Site, and submitting an Optimization Evaluation to the USEPA for the Fairchild Sites on September 3, 2008.

Groundwater Treatment: During 2008, System 19 treated approximately 35.6 million gallons of groundwater, and 180 pounds of VOCs removed from groundwater. System 19 operated in full compliance with the permit discharge limitations specified in Regional Water Quality Control Board, San Francisco Bay Region Order Number R2-2004-0045, permit number CAG912003. From January 1 through December 31, 2008, the groundwater treatment system operated 96% of the time. 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 Building 1-4 slurry wall evaluation (Northgate; 2006, 2007a, 2007b, 2008a) and remained offline in 2008.

[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 2008 demonstrate that the System 19 and RGRP extraction wells continue to achieve adequate horizontal and vertical plume capture based on converging lines of evidence, including graphical flow net analysis and chemical concentration trends. VOC concentrations in groundwater continue to remain below historical maxima, and generally show long-term decreasing to stable trends.

Technical Assessment: The groundwater extraction, treatment, and containment systems are functioning as intended and meet the Remedial Action Objectives for the Site. Concentrations within the 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.

Problems Encountered: The treatment system shutdown from July 7-14 for approximately 165 hours without any alarm notification, There was no treatment unit bypass during this period. Additionally, well RW-1B2 was off 72.5 hours between August 30, and September 2, 2008. Notification requirements were clarified August 2008, and since that time any well or system shutdowns have been reported in a timely manner.

Planned Activities for 2009: The Optimization Evaluation Report described short and long term remedy optimization strategies including reduced pumping, pulsed pumping and treatability studies of alternative technologies for Fairchild extraction wells and treatments systems, A Work Plan for a Treatability Study of Alternative Technologies may be submitted based on recommendation in the Optimization Evaluation Report, pending USEPA comments on the Optimization Evaluation Report. The MEW Companies will continue to work with the USEPA to address the vapor intrusion pathway. The 2009 Annual Progress Report will be submitted to the USEPA by June 15, 2010.

1. INTRODUCTION

This 2008 Annual Progress Report was prepared by Weiss Associates (Weiss) on behalf of Schlumberger Technology Corporation for the former Fairchild Semiconductor Corporation facilities located at 369/441 Whisman Road (former Buildings 13 19 and 23) located in Mountain View, California (the Site). Geosyntec Consultants contributed to the content of this report.

This progress report contains a summary of Site activities and data from January 1 through December 31, 2008, and 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), Section XI of the Consent Decree entered in Action No. 20275 (N.D. Cal.) in 1992 (Consent Decree) and the USEPA's correspondence prescribing 2004 and future Annual Report contents (USEPA, 2005).

1.1 Site Background

The Site is located at 369/441 North Whisman Road, a light-industrial area in Mountain View California. The Site is located within the Middlefield-Ellis-Whisman (MEW) area, an approximately ½-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.

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 an abandoned solvent storage tank used from 1967-1978, acid neutralization sumps (both located in the south wing of former Building 19) and waste chemical holding tanks (east of former Building 19). 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 (Canonie, 1988).

Remedial investigation/feasibility studies (RI/FS) for the MEW area were completed in 1988 (HLA, 1987; 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, 1990, 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 PRPs, (such as the former Building 19 Site), and a Regional Groundwater Remediation Program (RGRP) that addresses co-mingled volatile organic chemicals (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.

[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 Site was redeveloped in the 1990's, with current addresses of 369, 379, 389 and 399 North Whisman Road, and was occupied by AOL/Netscape and/or HP/Mercury Interactive until about 2007. The Site is currently unoccupied. Near the Site, there is planned and ongoing redevelopment in the residential areas, including Whisman Road and Fairchild Drive.

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
A[a]	0 to 45 feet
B1[b]	50 to 75 feet
B2	75 to110 feet
B3	120 to 160 feet
C	200 to 240 feet
Deep Aquifer	>240 feet

[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

The upper groundwater zone at the MEW area, defined as the saturated zone above the B/C aquitard, occurs from the top of the saturated zone to a depth of approximately 165 ft bgs south of Highway 101 and generally less than 100 ft bgs north of Highway 101. The B/C aquitard is the major confining layer beneath the MEW area. The upper groundwater zone is subdivided into two units, the A-zone and the B-zone, which are separated by the A/B aquitard. The B aquifer has been further subdivided into three zones. From youngest to oldest, 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. Two lower groundwater zones have been defined: the C-zone and what has been termed the Deep Aquifer (HLA, 1987; Intel, 1987).

Ranges of hydraulic conductivity (K) hydraulic gradient, and transmissivity of the upper aquifer zone i.e., above the B3/C aquitard, calculated from pumping tests conducted at the MEW Site from 1986 through 2005[3] as presented below:

[3] References are Canonie 1986a, 1986b 1987 & 1988, Geomatrix 2004, HLA 1986 & 1987, Locus 1998, PRC 1991, Navy 2005 and Weiss Associates 1995.

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 vertical component of groundwater flow is generally upward from the B1- to the A-zone, but is locally downward in the sames areas of the Site (HLA, 1987) vertical gradients beneath the B-zone are generally upward (Geosyntec et al, 2008).

1.3 Description of Remedy

The remedial action objectives (RAOs) for the MEW area are to; (1) protect potential potable water supplies, (2) remediate or control the elevated concentrations of chemicals present in the localized vadose zone soils, and (3) remediate or control the groundwater that contains elevated concentrations of specified chemicals, including the discharge of such groundwater into the surface water (Canonie, 1988).

As specified in the ROD, cleanup has been addressed in two stages: initial actions and a long-term remedial phase. Initial cleanup activities conducted by potentially responsible parties (PRPs) 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), with remedial activities being conducted by individual PRPs, as well as the MEW Regional Groundwater Remediation Program (RGRP).

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; Canonie, 1994a; Canonie, 1994b).

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. 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 feet and aerated at the 369 Whisman Road site. A soil vapor extraction (SVE) system operated from 1996 to 1997 to remediate soil from 6 feet

below ground surface (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; Smith, 1997).

The groundwater remedy as specified in the MEW ROD is hydraulic remediation by extraction and treatment. Hydraulic capture of former source areas at the Site is based on slurry walls and groundwater extraction wells.

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 soil bentonite slurry walls surround former source areas, extend a minimum of two feet the A/B1 aquitard beneath the Site and reach a maximum of about 40 feet deep.

Fairchild first installed extraction wells and groundwater treatment systems (air strippers) at its former facilities in 1985-1986. The treatment systems were replaced (with GAC systems) in 2003 (RMT, 2003).

The groundwater cleanup standards are 5 µg/L of TCE for the shallow aquifers and 0.8 µg/L TCE for the C and deep aquifers. The cleanup levels for other VOCs listed in the ROD are:

- Chloroform – 100 µg/L;
- 1,1-dichloroethene – 6 µg/L;
- 1,1,1-trichloroethane – 200 µg/L; and,
- Vinyl chloride – 0.5 µg/L.

Cleanup standards for the following chemicals of concern were not specified in the ROD: 1,2-dichlorobenzene, 1,1-dichloroethane, 1,2-dichloroethene, Freon 113, phenol, and tetrachloroethene (PCE). 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 maximum contaminant levels (MCLs).

The first Five-Year review for the MEW area was completed in 2004 (USEPA, 2004).

1.4 Summary of Site Activities and Deliverables

The Site monitoring and reporting schedule is included as Table 1. Site activities conducted in compliance with the 106 Order during this reporting period include:

- Continuing groundwater extraction and treatment;
- Monitoring the GWETS weekly for operation and flow rates, and sampling the treatment systems monthly in compliance with National Pollutant Discharge Elimination System (NPDES) Permit CAG912003, Order No. R2-2004-0055;

- Submitting the quarterly Self-Monitoring Reports that present treatment system water quality results and extraction and treatment quantities to the Water Board on January 31, April 30, July 30 and October 30;
- Collecting quarterly groundwater elevation measurements in Site slurry wall well pairs on March 27, May 22, August 28, and November 20;
- Collecting semi-annual groundwater elevation measurements in Site monitoring and extraction wells on March 27 and November 20;
- Submitting Fairchild Buildings Slurry Wall System Efficiency Study Report and Efficiency Evaluation Report for MEW RGRP to the USEPA in April;
- Attending "All Parties" meetings on May 14, June 12, June 26 and December 3;
- Distributing the 2007 Annual Progress Report to the USEPA and the MEW Distribution List parties on June 15;
- Submitting Optimization Evaluation-Fairchild Sites MEW Area to the USEPA in September;
- Collecting annual groundwater samples from Site monitoring and extraction wells in November;
- Completing annual settlement survey measurements of designated settlement measuring point wells, December 17;
- Assessing the progress of remedial actions during 2008; and,
- Planning remedial actions for 2009.

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 and recommendations, and a summary of planned activities for 2009. Supporting data are presented in Figures 1 through 7, Tables 1 through 10, and Appendices A through D.

2. GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

During 2008, System 19 extracted and removed approximately 35.6 million gallons of groundwater and approximately 180 pounds of VOCs. A VOC mass removal summary is provided in Table 5. Cumulative groundwater extracted and mass removed by System 19 are illustrated in Figure 3. Field measurements and sampling results remained within NPDES parameters during this reporting period.

2.1 Treatment System Description

The GWETS at 369 Whisman Road (South of 101) includes:

- 15 source control recovery (i.e., groundwater extraction) wells;
- Seven regional recovery wells (Figure 2);
- Double-contained groundwater conveyance piping, well vaults, and a treatment compound (System 19);
- Three 5,000-pound GAC vessels in series; and,
- Electrical distribution and control panels, a PLC, and an auto-dialer.

Discharge of treated groundwater from the treatment system to the storm sewer is authorized by NPDES Permit CAG912003, Order No. R2-2004-0055.

2.1.1 System 19 Extraction Wells

The average monthly flow rates and total volume of groundwater extracted and treated by System 19 in 2008 are provided in Tables 2 and 3, respectively. System 19 treats groundwater extracted from five water-bearing zones at the Site (A, B1, B2, B3, and C/Deep aquifers). Many wells at the Site cycle on and off because flow rates are limited by the hydrogeologic properties of the aquifers in which they are screened.

During 2008, 10 of the 15 SCRWs, (RW-1B2, RW-2A, RW-2B1, RW-2B2, RW-10B1, RW-11A, RW-11B1, RW-23A, RW-24A, and RW-29A), and 2 RRWs, (REG-4B1 and 65B3) connected to System 19 were operational. 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 these 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 2008 Annual Progress Report (Weiss, 2009b). 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 offline in 2008. The final

Optimization Evaluation-Fairchild Sites Report recommends continued shutdown of wells A71, RW-1A, RW-12A, and RW-26A and further evaluation of the mass removal efficiency of RW-1B1, RW-10B1, RW-11A, RW-23A, and RW-29A (Geosyntec et al, 2008). The following wells remain temporarily offline:

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

The wells that are currently in operation at System 19:

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)

Target flow rates for the operating extraction wells plumbed to System 19 are provided in Table 9.

2.1.2 Groundwater Monitoring Wells

There are currently 39 monitoring wells associated with the Building 19 Site. Water levels are measured semi-annually in all of the monitoring wells at the Site, and are measured quarterly for wells located along the slurry wall. Monitoring wells 93B1, 98B1, 140A, and 141A are not part of the annual water quality sampling program.

2.2 Groundwater Level Monitoring

Approximately 1,100 wells currently monitor the containment and remediation of the MEW area VOC plume. Per the MEW monitoring schedule, Site-wide groundwater elevation measurements are collected semi-annually and water quality samples are collected annually. Facility-specific water levels were measured in slurry wall well pairs quarterly from March through November 2008 (Figure 2; Table 6).

Hydrographs of Site slurry wall well pair water levels are provided in Figure 4. During this reporting period, regional groundwater elevations were recorded in Site monitoring and extraction wells on March 27 and November 20, 2008. All groundwater elevation data have been added to the MEW RGRP database, and are reported in the MEW RGRP Annual Progress Report (Weiss, 2009b). Hydrographs of select MEW monitoring wells and Potentiometric Surface Maps and Estimated Capture Zones for the five aquifers monitored at MEW are also included in the MEW RGRP Annual Progress Report (Weiss, 2009b).

2.3 Groundwater Quality Monitoring

The 2008 Annual Groundwater Sample Event at the Site was conducted in November 2008. Groundwater samples from selected wells; (17A, 115A, 134A, 154A, 155A, 156B1, 173A, 174A, 175A, and 40B2) were also collected in December 2008 as part of the slurry wall evaluation (Northgate, 2008a). A summary of chemical analytic results for the previous five years (through 2008) is provided in Table 7. Appendix B contains the analytic reports and chain-of-custody documents for samples collected in 2008, and Appendix C contains the QA/QC report and summary tables. VOC versus time graphs for Site SCRWs and select monitoring wells are included in Appendix D. TCE isoconcentration contour maps for 2008 are included in the MEW RGRP Annual Progress Report (Weiss, 2009b).

Historical data for Site monitoring and extraction wells is shown in time-concentration graphs in Appendix D for TCE, cis-1,2-DCE, and vinyl chloride. Based on visual inspection of these plots, long term stable to declining TCE concentrations are indicated in downgradient monitoring wells beyond the slurry wall (e.g., wells 22A, 23A, 149A). TCE concentrations increased in downgradient monitoring wells 115A, 160A, and 173A during 2007/2008, but are generally within historical detections.

In addition, historical VOC plume maps for the MEW area (Weiss, 2004, Geosyntec et al., 2008) show an overall reduction in VOC plume size and magnitude over time.

2.4 Hydraulic Control and Capture Zone Analysis

2.4.1 Methodology

Capture zone analysis is the process of evaluating field observations of hydraulic heads and ground-water chemistry to estimate the capture zone achieved by the groundwater extraction system, and then comparing the estimated capture zone at specific measurement events to a "Target Capture Zone" to determine if capture is sufficient (USEPA, 2008).

Capture from SCRWs was estimated for March and November 2008 by graphical flow net evaluation of estimated groundwater flow streamlines drawn perpendicular to groundwater contours in March and November 2008 to derive estimated capture zones and are included in the MEW RGRP 2008 Annual Progress Report (Weiss, 2009b). The capture for SCRWs estimated for November 2008 are presented in Figures 5 through 7.

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 are of secondary importance and primary weight is afforded to 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.

The RGRP prepares regional potentiometric surface and capture zone maps that encompasses the facility-specific areas[4]. The complete potentiometric surface maps and estimated capture zones for both March and November 2008 data are included in the MEW RGRP 2008 Annual Progress Report (Weiss, 2009b).

2.4.2 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; 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 November 2008 estimated hydraulic capture based on graphical flow net evaluation for the SCRWs in each aquifer, A/A1, B1/A2 and B2 (Figures 5 through 7). The capture zone width calculations presented in Table 12 are based on site estimates of hydraulic conductivity, thickness and 2008 pumping rates. As noted previously, the calculated capture zone widths were the starting point for the capture evaluation, with primary emphasis placed on the graphical flow net evaluation of capture and not the calculated capture.

Hydraulic capture is one line of evidence that is used to assess overall effectiveness of capture. It should be noted that the facility-specific hydraulic capture areas, including the target capture areas on this property, are also encompassed by the regional capture zones depicted on the MEW RGRP Potentiometric Surface Maps and Estimated Capture Zones, included with the MEW RGRP 2008 Annual Progress Report (Weiss, 2009b).

[4] Since August 2005, remediation of the former Intel and Raytheon property at 401 East Middlefield Road is being addressed by a pilot test for enhanced in-situ bioremediation using food grade emulsified vegetable oil (Weiss, 2005; Weiss, 2008). Pumping in SCRWs at this property ceased in August 2005, and are not included in the capture evaluation

2.4.3 Horizontal and Vertical Gradients

Figure 4 presents graphs of head difference between slurry wall well pairs. The well pairs are used to evaluate either the direction of horizontal gradient across the slurry wall (wells located inside and outside the slurry wall) or the direction of vertical gradient across the A/B aquitard (wells located in the A-zone and B1-zone). Well locations are presented in Figure 2.

Groundwater elevations were recorded quarterly in March, May, August and November 2008 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 (Table 6). Results of the well pair analysis indicate the following at the Building 19 Slurry Wall:

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 cross gradient sides of the slurry wall. Groundwater elevations in the downgradient (northern side of the slurry wall) wells 134A, 155A, 159A, and 134A (inside slurry wall) were higher than in wells 110B1, 154A, 17A, and 115A (outside slurry wall), respectively, indicating an outward gradient throughout 2008.

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 12A and 159A was consistently higher than in wells 117B1 and RW-1(B1), respectively throughout 2008 indicating a downward gradient in these well pairs.

These observations are generally consistent with historical observations.

2.4.4 Capture Assessment

A summary of the 2008 capture evaluation is provided below:

Step	2008 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 5 through 7. No target capture was defined for wells RW-2A and RW-2B1.
Step 3a: Water level maps	Potentiometric surface contours are provided in Figures 5 through 7. Water levels in extraction wells were not used to construct potentiometric surface maps because nearby monitoring wells are generally available to measure the effect of pumping. 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	2008 Status
Step 3b: Water level pairs	Table 6 and Figure 4 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 width are provided in Table 8. 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 2008, 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. 115A, 160A, and 173A); however the changes are within fluctuations within the past five years, and are well below historical maximums.
Step 6: Estimated capture zones and compare to Target Capture Zone	Vertical and horizontal VOC plume capture in 2008 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.

2.5 Extraction and Treatment System Operation and Maintenance

As required by the Site NPDES permit, extraction well and treatment system flow readings are recorded weekly and the Site treatment system is sampled monthly. Results are reported quarterly to the Water Board. Extraction system performance for System 19 is summarized in Tables 2 and 3, and analytic results of the monthly treatment system samples are summarized in Table 4. Appendices B and C contain the analytic and quality assurance/quality control (QA/QC) reports, respectively, for samples collected at the Site during 2008.

From January 1 through December 31, 2008, the Site groundwater extraction and treatment system ran 96% of the time except during brief shutdowns for maintenance. The following is a summary of non-routine maintenance or operational activities conducted at the Site during this reporting period:

Date	Component	Comments	Regulatory Notification
January 4, 2008	System	The treatment system was shut down several times due to power outages caused by severe storms between January 4 and January 8.	Not Applicable
January 25, 2008	RW-2A	The pump in extraction well RW-2A shut down due to a vault flood alarm, and remained offline for approximately three hours until the vault was dewatered.	Not Applicable
January 30, 2008	System, GAC Vessels	The treatment system was shut down to replace the carbon in the primary GAC vessel.	Not Applicable

Date	Component	Comments	Regulatory Notification
February 4, 2008	System	The treatment system was shut down due to a high-level alarm in the pad sump between February 4 and February 5.	Not Applicable
March 4, 2008	RW-1B2	The pump in extraction well RW-1B2 shut down due to a low-flow alarm, and remained offline until it was restarted on March 5.	Not Applicable
March 18, 2008	System, GAC Vessels	The treatment system was shut down to replace the carbon in the primary and secondary GAC vessels.	Not Applicable
March 24, 2008	RW-1B2	The pump in extraction well RW-1B2 shut down due to a low-flow alarm, and remained offline until it was restarted on March 26.	Not Applicable
March 26, 2008	RW-1B2	The pump in extraction well RW-1B2 shut down due to a low-flow alarm, and remained offline until it was restarted on March 31.	Not Applicable
April 11, 2008	System	The treatment system was shut down due to a high-level alarm in the pad sump and was restarted the same day on April 11.	Not Applicable
May 14, 2008	System, GAC Vessels	The treatment system was shut down on May 14 to replace the carbon in the primary GAC vessel and was restarted on May 15.	Not Applicable
June 19, 2008	RW-1B2	The pump in extraction well RW-1B2 shut down due to a low-flow alarm, and remained offline until it was restarted on June 20.	Not Applicable
July 7, 2008	System	The treatment system went off-line for seven days due to a pad flood alarm without triggering any auto dialer alarm. The system was restarted on July 14.	US EPA and Water Board notifications
July 15, 2008	System, GAC Vessels	The treatment system was shut down to replace carbon in the primary GAC vessel on July 15 and was restarted on July 16.	Not Applicable
August 30, 2008	RW-1B2	The pump in the extraction well RW-1B2 went off-line for approximately 72.5 hours due to a low-flow alarm; and remained offline until it was restarted on September 2.	US EPA Notification
September 3, 2008	System, GAC Vessels	The treatment system was shut down to replace carbon in the primary GAC vessel on September 3 and was restarted on September 4.	Not Applicable
October 23-24, 2008	System, GAC Vessels	The treatment system was shut down to replace carbon in the primary GAC vessel on, October 23 and was restarted on, October 24.	Not Applicable
October 24, 2008	RW-10B1	The pump in extraction well RW-10B1 would not restart at appropriate flow rate following October 23-24 carbon change, and was offline for approximately, 15 hours until it was restarted on October 25.	Not Applicable
November 5, 2008	RW-23A	The pump in the extraction well RW-23A went off-line for approximately 10 hours due to a failed power saver, which was replaced on November 5.	Not Applicable

Date	Component	Comments	Regulatory Notification
November 19-26, 2008	RW-10B1	The pump in extraction well RW-10B1 went offline intermittently between, November 19 and November 26, due to low flow alerts and was off for a combined total of approximately 33 hours.	Not Applicable
December 3-10, 2008	System	The treatment system was shut down intermittently between, December 3, and December 10, due to a flow meter analysis and was off for a combined total of approximately 4 hours.	Not Applicable
December 11, 2008	System, GAC Vessels	The treatment system was shut down to replace carbon in the primary GAC vessel on, December 11 and was restarted on December 12.	Not Applicable

During 2008, the extraction and treatment system operated within the effluent limits established by the Site NPDES permit for the entire period. The treatment system shut down from July 7-14 for approximately 165 hours without any alarm notification and was discovered during a weekly site visit. There was no treatment unit by pass and discharge that occurred during the system shut down. Based on communication with Water Board staff on September 30, 2008, any future shut downs greater than 120 hours will be orally reported within five days of shut down, and a written submission within 15 days of shut down. Additionally, the pump of the extraction well RW-1B2 was shut down due to a low-flow alarm on August 30, 2008. The alarm was cleared, however the well could not be restarted remotely. The well remained offline until it was restarted on September 2 (after Labor Day weekend). All notification and reporting occurred as required, and preventative actions included improvement of system operation reliability and timely reporting.

3. OTHER ACTIVITIES

3.1 Optimization Evaluation for Groundwater

In response to a request from USEPA[5], an Optimization Evaluation Report for the Fairchild Sites in the MEW area was submitted to USEPA September 3, 2008 (Geosyntec et al, 2008). The evaluation considered previous efficiency evaluations at the site (Northgate, 2007a-b and 2008a and b) and recommended implementing an optimization program for the Fairchild sites in conjunction with similar optimization programs for the RGRP and other facilities. The MEW Companies are awaiting USEPA comments on the Optimization Evaluations prior to implementing the recommended programs.

3.2 Air/ Vapor Intrusion

A *Revised Supplemental Feasibility Study for Vapor Intrusion* was submitted in January 2008 (Locus, 2008a) and a *Revised Supplemental Remedial Investigation* report was submitted to the USEPA in February 2008 (Locus, 2008b). Comments were received June 2, 2008 and the USEPA plans to issue a proposed plan for a ROD amendment to address vapor intrusion in 2009.

3.3 Annual Settlement Survey

An annual settlement survey was performed on December 17, 2008. 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. Geosyntec 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 operations. Furthermore, the changes are relatively uniform over a large area, whereas settlement induced stress is typically caused by differential settlement over the scale of a single building footprint. Additional information on the settlement survey can be found in the RGRP 2008 Annual Progress Report (Weiss, 2009b).

[5] Letter from USEPA to MEW Parties dated 5 June 2008,

4. PROBLEMS ENCOUNTERED

Section 2.5 provides a summary of all non-routine O&M events that occurred at the Building 19 Treatment System.

In response to comments from USEPA and the Water Board regarding timely reporting of system down-time events, the reporting requirements were clarified in August 2008 to be as follows:

1. USEPA: The owner and /or operator of the 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.

5. TECHNICAL ASSESSMENT

The following assessment of the groundwater remedy performance was made based on data collected through 2008.

- The remedy is functioning as intended. Based on 2008 data reviewed, the groundwater remedy is generally functioning as intended. An Annual Remedy Performance Checklist is included in Appendix A.
- The capture zone is adequate. Groundwater elevation and chemical monitoring results from 2008 demonstrate that the SCRWs and RRWs at this Site 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 maxima, and generally show long-term decreasing trends.
- VOC concentrations are decreasing over time. Table 7 and VOC versus time graphs (Appendix D) indicate that TCE concentrations are steady or declining in most wells. The capture assessment is supplemented by concentration trends in downgradient wells and groundwater gradients, which indicate general supporting evidence for adequate plume control within the Building 19 slurry wall enclosure. Although downgradient monitoring wells 115A, 160A, and 173A indicate increased concentrations in 2008, TCE increases in wells immediately downgradient of the slurry wall, 115A and 173A, are similar to historical concentrations and do not appear to be related to migration across slurry wall. TCE increases in well 160A are more likely due to continued extraction in nearby regional well RW-24A.
- 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 2008 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 2008.

The remedial actions meet the RAOs for groundwater; however, it will be many years before cleanup standards are achieved. While concentrations within the TCE plume have generally decreased by an order of magnitude or more, the perimeter extent of TCE concentrations has largely stabilized, and treatment system influent concentrations are stable. Optimization of the remedy may therefore be warranted.

6. CONCLUSIONS AND RECOMMENDATIONS

During 2008 the Building 19 extraction wells for each aquifer, A/A1, B1/A2 and B2, achieved adequate horizontal and vertical capture based on converging lines of evidence including graphical flow net analysis and groundwater concentration trends. However, remedy optimization may be appropriate due to generally stable to declining concentrations that have been observed in monitoring and extraction wells.

During 2008, System 19 treated approximately 35.6 million gallons of groundwater, and 180 pounds of VOCs were removed from groundwater. System 19 operated in full compliance with the permit discharge limitations specified in Regional Water Quality Control Board, San Francisco Bay Region Order Number R2-2004-0045, permit number CAG912003. From January 1 through December 31, 2008, the groundwater treatment system operated 96% of the time.

Upon receipt of comments from USEPA, recommendations from the Optimization evaluation for the Fairchild Sites should be implemented.

7. UPCOMING WORK IN 2009 AND PLANNED FUTURE ACTIVITIES

Activities for 2009 include the following:

- Submitting a Notice of Intent to continue treatment operations beyond June 2009 as part of permit renewal activities for Fairchild Treatment System 19;
- Responding to USEPA comments on the September 3, 2008 Optimization Evaluation and implementing approved recommendations at the Site;
- Providing information to USEPA for inclusion in the second Five-Year Review; and,
- Comments on USEPA's Proposed Plan for a ROD amendment for vapor intrusion;

The effectiveness and progress of Site remedial actions during 2009 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. Site-specific data collected during 2009 will be summarized in the Annual Progress Report, which will be submitted to the USEPA by June 15, 2010.

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FIGURES

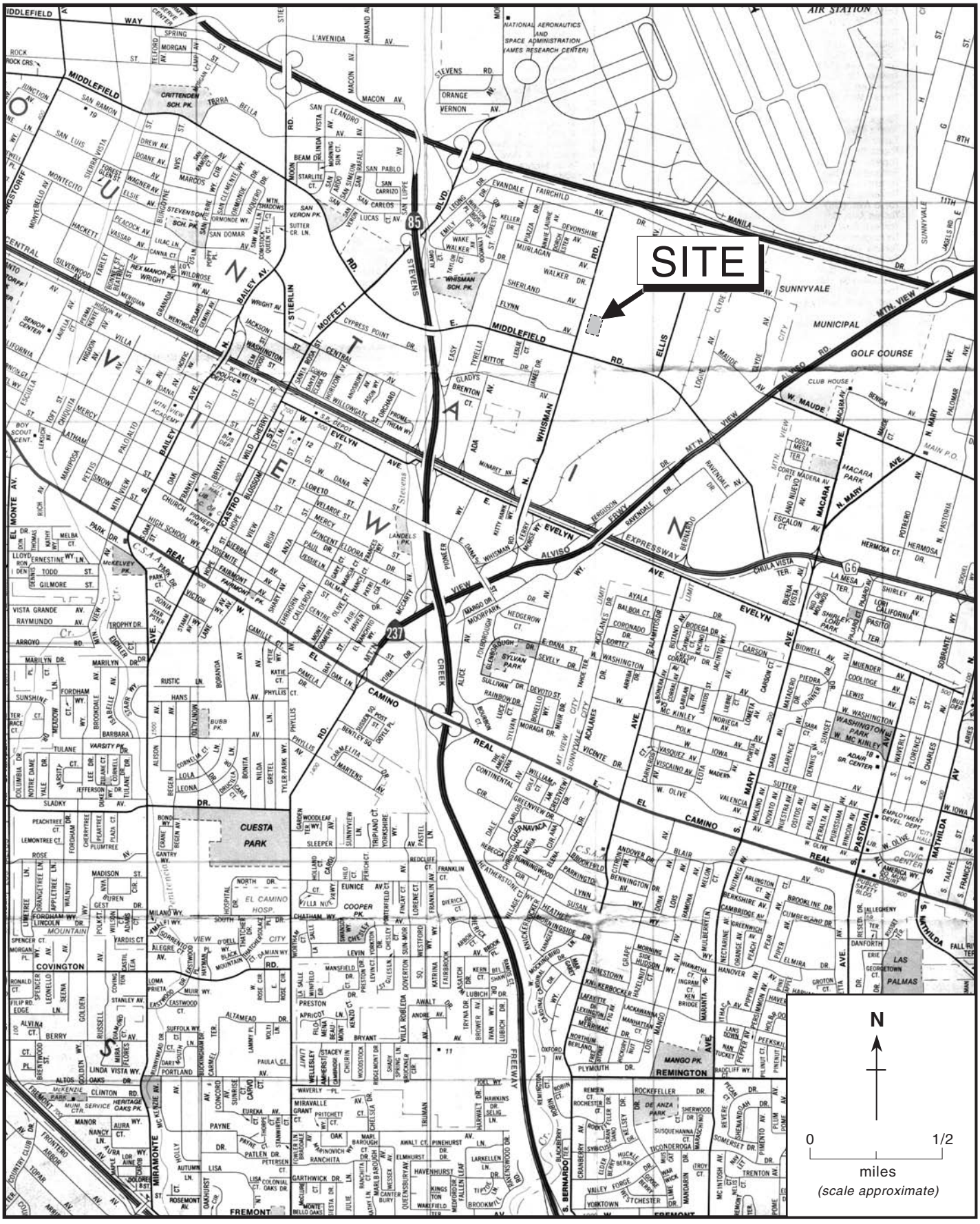

Figure 1. Site Location Map, Former Fairchild Building 19, 369-441 North Whisman Road, Mountain View, California

Legend

Building 19 Remedy Components

- Regional Recovery Well, On
- Regional Recovery Well, Off
- Source Recovery, On
- Source Recovery, Off
- Monitoring Well

Extraction and Monitoring Wells in the Vicinity

- Regional Recovery Well
- Source Recovery Well
- Monitoring Well

- 369/441 Whisman Road (Current - 369, 379, 389, 399 North Whisman Road)
- Fairchild Groundwater Treatment System 19
- Groundwater Treatment Plant
- Slurry Wall
- Building
- Road
- Treatment-System Pipeline
- Treatment-System Discharge Pipeline

Figure 2

Former Fairchild Building 19
Site Map and Well Network
Mountain View, California

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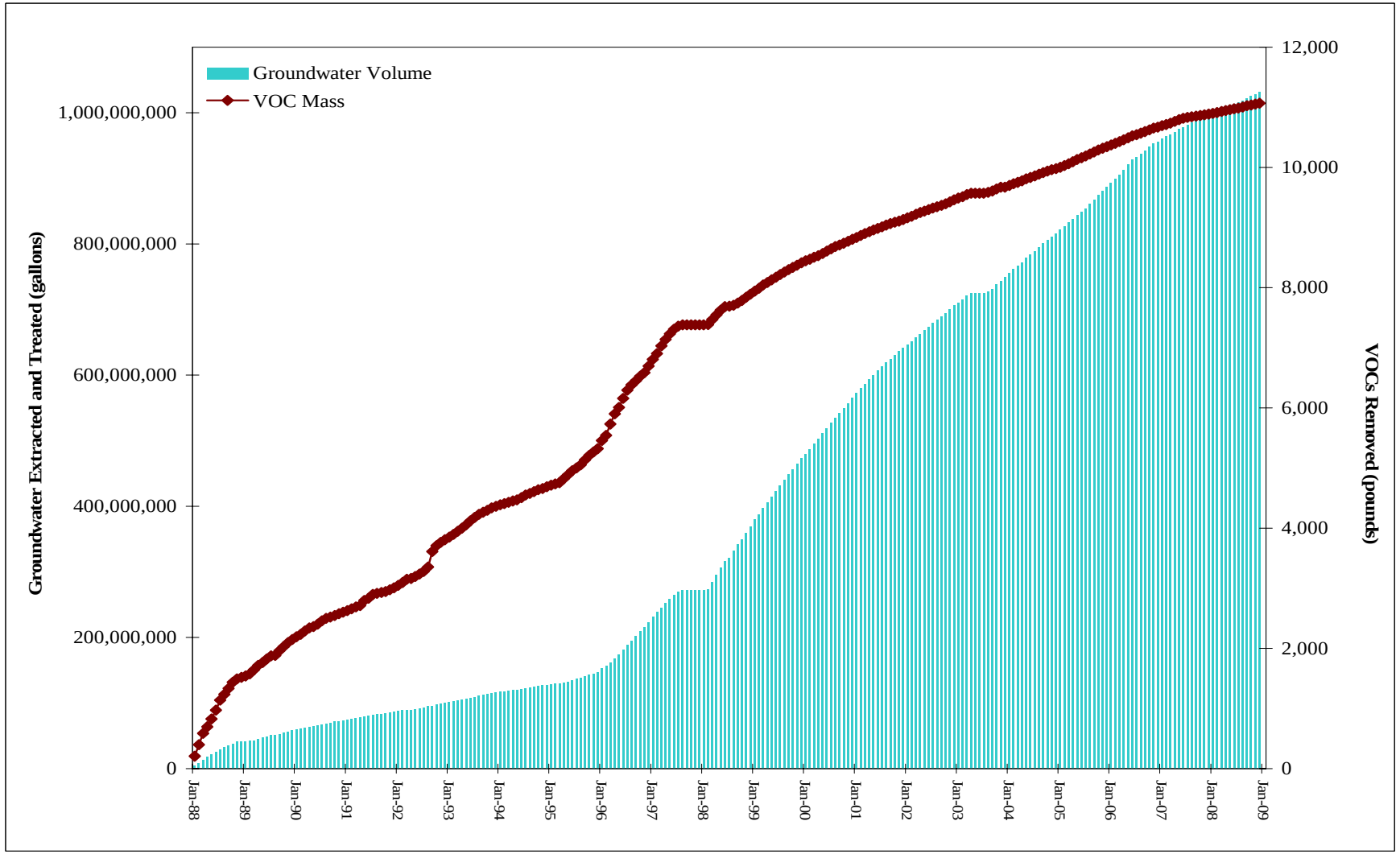
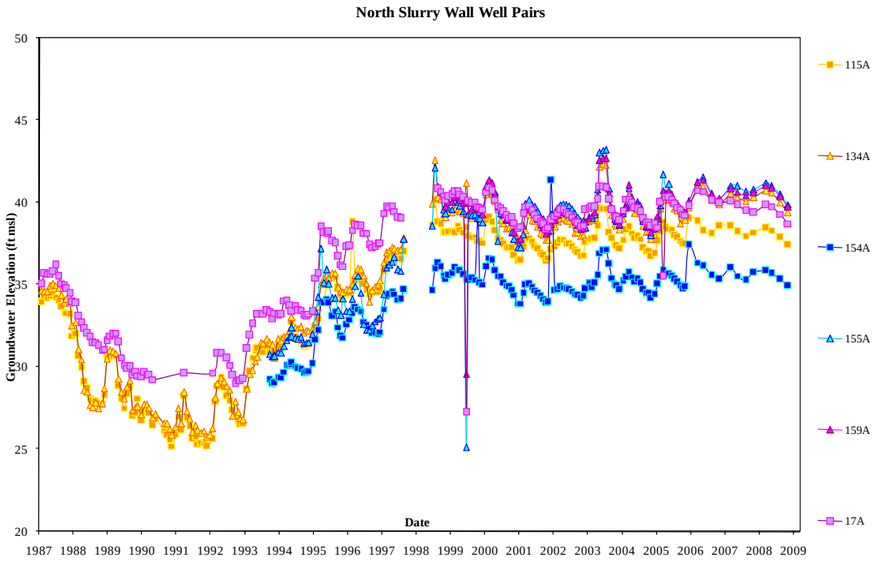


Figure 3. Cumulative Groundwater Extracted and VOC Mass Removed, System 19, 369 Whisman Road, Mountain View, California



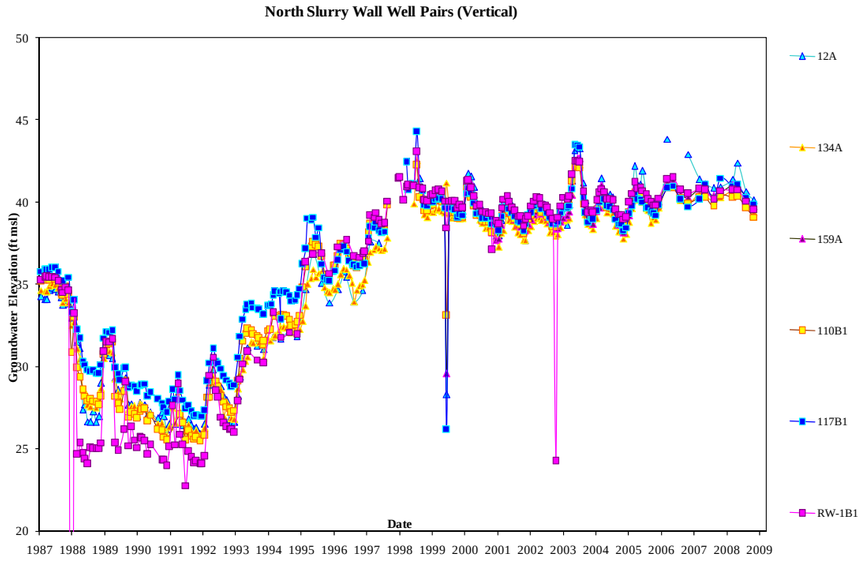


Figure 4. Building 19 Hydrographs – Groundwater Elevation Measurements

Buildings 1 through 4 Slurry Wall

Building 9 Slurry Wall

Raytheon Slurry Wall

Building 19 Slurry Wall

Legend

A/A1 Aquifer Wells for Building 19

- Source Recovery Well, On
- Source Recovery Well, Off
- Monitoring Well

A/A1 Aquifer Wells in the Vicinity

- Regional Recovery Well
- Source Recovery Well
- Monitoring Well
- Groundwater Elevation Intermediate 1 ft Contour
- Groundwater Elevation Index 5 ft Contour
- 369/441 Whisman Road
- Capture zone
- Target Capture zone
- Slurry Wall
- Building
- Road

(3.8) = Pump Rate in gallons per minute
0.0** = extraction well temporarily off for efficiency evaluation

0 300 600 900 Feet

Figure 5
Former Fairchild Building 19
A/A1 Groundwater Zone Target Capture and Estimated 2008 Capture Area
Mountain View, California

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Buildings 1 through 4 Slurry Wall

Building 9 Slurry Wall

Building 19 Slurry Wall

Raytheon Slurry Wall

RW-2(B1) 5.60

RW-11(B1) 8.60

RW-1(B1) off

110B1

RW-10(B1) 5.00

145B1

156B1

117B1

98B1

93B1

95B1

101B1

REG-4B(1) 6.50

Perimeter Rd

Dailey Rd

Bayshore Fwy/Hwy 101

Fairchild Dr

Evandale Ave

Devonshire Ave

Murlagan Ave

Sherland Ave

Flynn Ave

N Whisman Rd

National Ave

Ellis St

Middlefield Road

Legend

B1/A2 Aquifer Wells for Building 19

- Regional Recovery, On
- Source Recovery Well, On
- Source Recovery Well, Off
- Monitoring Well

B1/A2 Aquifer Wells in the Vicinity

- Regional Recovery Well
- Source Recover Well
- Monitoring Well
- Groundwater Elevation Intermediate 1 ft Contour
- Groundwater Elevation Index 5 ft Contour

- 369/441 Whisman Road
- Capture zone
- Target Capture zone
- Raytheon Slurry Wall
- Fairchild Slurry Wall
- Building
- Road

(5.6) = Pump Rate in gallons per minute
off = extraction well off with regulatory approval

0 300 600 900 Feet

Figure 6

Former Fairchild Building 19
B1/A2 Groundwater Zone Target Capture and Estimated 2008 Capture Area
Mountain View, California

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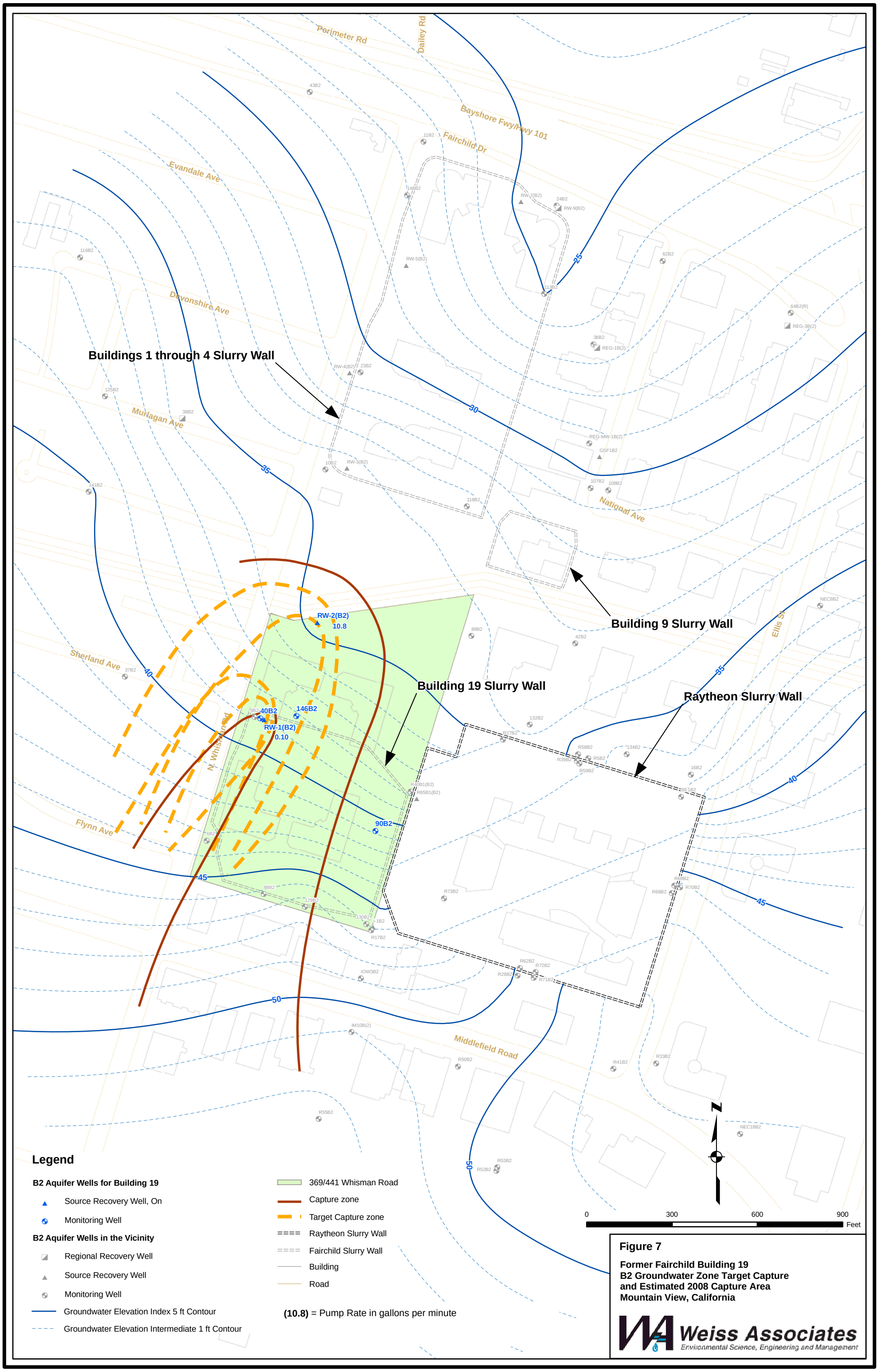

Legend

B2 Aquifer Wells for Building 19

- Source Recovery Well, On
- Monitoring Well

B2 Aquifer Wells in the Vicinity

- Regional Recovery Well
- Source Recovery Well
- Monitoring Well
- Groundwater Elevation Index 5 ft Contour
- Groundwater Elevation Intermediate 1 ft Contour
- 369/441 Whisman Road
- Capture zone
- Target Capture zone
- Raytheon Slurry Wall
- Fairchild Slurry Wall
- Building
- Road

(10.8) = Pump Rate in gallons per minute

Figure 7

Former Fairchild Building 19
B2 Groundwater Zone Target Capture and Estimated 2008 Capture Area
Mountain View, California

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TABLES

Table 1. 2008 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											#	
115A												10,o
12A											#	
134A											#	10,o
139A											#	
140A[6]												
141A[6]												
142A[9]											1,o	
143A											#	
148A											#	
149A											1,o	
15A											#	
154A												1,10,o
155A											#	10,o
159A											#	
16A[9]											1,o	
160A											1,o	
161A											#	
17A												10,o
173A												10,o
174A											#	10,o
175A												1,10,o
22A[9]											1,o	
23A											1,o	
4A											#,1,o	
6A											#	
71A											#	1,o
9A											#	
RW-1A											#,11,o	
RW-2A											1,o	
RW-11A											#,11,o	
RW-12A											#,11,o	
RW-23A											#,11,o	
RW-24A											1,o	
RW-26A											#,11,o	
RW-29A											#,11,o	
101B1											1,o	
110B1											1,o	
117B1											1,o	
145B1											1,o	
156B1												1,10,o
93B1[6]												
95B1											1,o	
98B1[9]											1,o	
RW-1B1[9]											1,o	
RW-2B1[9]											1,o	
RW-10B1											1,o	
RW-11B1											1,o	
146B2											1,o	
40B2												1,10,o
90B2											1,o	
RW-1B2											1,o	
RW-2B2											1,o	
Sys19 Influent		1,o			1,o			1,o			1,o	
Sys19 Midpoint 1[7]	1,o	1,o	1,o	1,o	1,o	1,o	1,o	1,o	1,o		1,o	1,o
Sys19 Midpoint 2[7]	1,o	1,o	1,o	1,o	1,o	1,o	1,o	1,o			1,o	1,o
Sys19 Effluent	1,o	1,o	1,o	1,o	1,o	1,o	1,o	1,o	1,o	1*,2, 3,4,5,o	1,o	1,o
Stevens Creek[v]												

Table 1. 2008 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
Site Wide Well Water Level			X								X	
Slurry Wall Well Water Levels[8]			X		X			X			X	
NPDES Rpt.	X			X			X			X		
GW Contour/ Capture Zone & TCE Maps						X						
Annual Progress Report						X						

Notes and Abbreviations:

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

o = standard observations, including field analysis for pH, temperature, and conductivity

1 = Wells sampled annually. Sample analysis by USEPA Method 8260 and reported for 8010 MS parameters for VOCs (* = full USEPA Method 8260 analyte list)

2 = 1,4-dioxane & SVOCs (every three years)

3 = 96-hour static bioassay for rainbow trout

4 = turbidity

5 = sample analysis by USEPA Method 200 series for Sb, As, Be, Cd, Cr, Cu, Pb, Ni, Se, Tl, Zi; USEPA Method 335 for cyanide; USEPA Method 1631 for Hg (every three years)

6 = Only water levels were measured for these wells

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

8 = Slurry wall water levels are measured in 142A/143A, 154A/155A, 140A/101A, 141A/139A, 115A/134A, 17A/159A, 93B1/101A, 98B1/15A, 110B1/134A, 117B1/12A, and RW-1(B1)/159A in March, May, August, and November

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 = Wells were sampled in December 2008 as part of the slurry wall evaluation study and will be sampled annually henceforth.

11 = Extraction wells within the slurry wall (RW-1A, RW-11A, RW-12A, RW-23A, RW-26A, and RW-29A) will be sampled annually starting 2008.

v = sample receiving water within 24 hours of an effluent exceedance; analyze upstream/downstream samples for the exceeded compound(s) and dissolved oxygen level

MEW= Middlefield Ellis Whisman

RGRP= Regional Groundwater Recovery Program

Table 2. Monthly Average Flow Rates (gallons per minute), January through December 2008, System 19, 369/441 Whisman Road, Mountain View, California

Well ID	January	February	March	April	May	June	July	August	September	October	November	December
65B3	5.25	6.02	6.41	6.54	6.53	6.74	4.56	6.63	6.32	6.35	6.63	6.33
71A[2]	---	---	---	---	---	---	---	---	---	---	---	---
DW3-219[3]	---	---	---	---	---	---	---	---	---	---	---	---
DW3-244[3]	---	---	---	---	---	---	---	---	---	---	---	---
DW3-334[3]	---	---	---	---	---	---	---	---	---	---	---	---
DW3-364[3]	---	---	---	---	---	---	---	---	---	---	---	---
REG-4B1	4.78	5.56	6.20	7.01	7.26	7.44	5.06	7.37	6.91	6.42	5.78	6.12
RW-1A[2]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RW-1B2	0.32	0.37	0.23	0.40	0.39	0.36	0.27	0.39	0.28	0.09	0.00	0.00
RW-2A	1.75	2.57	2.80	3.06	2.73	2.91	1.90	2.65	2.52	2.62	3.37	3.10
RW-2B1	4.33	5.09	5.32	5.26	5.28	5.49	3.80	5.63	5.29	5.31	5.65	6.15
RW-2B2	9.73	10.81	11.67	11.47	11.37	11.55	7.70	11.03	10.56	10.46	10.93	10.53
RW-10B1	4.31	5.04	5.35	5.38	5.59	5.85	4.06	5.94	5.59	5.32	4.82	5.68
RW-11A	2.52	2.75	2.90	3.13	3.14	2.92	2.09	3.05	3.17	3.08	2.82	2.40
RW-11B1	6.87	7.93	8.25	8.10	8.16	8.48	6.04	8.94	8.35	8.34	8.70	8.60
RW-12A[2]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RW-23A	3.84	4.47	4.29	4.27	4.23	4.42	3.10	4.37	4.16	4.21	4.42	4.19
RW-24A	3.30	3.74	4.31	4.44	4.56	4.52	3.17	4.57	4.28	3.91	3.88	3.05
RW-26A[2]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RW-29A	2.95	3.39	3.55	3.70	3.85	4.12	2.94	4.04	3.64	3.44	2.90	2.60
DW3-505R[3]	---	---	---	---	---	---	---	---	---	---	---	---
RW-1B1[3]	---	---	---	---	---	---	---	---	---	---	---	---
Total[1]	57.64	67.15	69.76	70.14	70.62	64.84	49.60	84.17	69.18	69.81	72.06	68.18

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.
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 EPA approval.

EPA = Envionmental Protection Agency

--- = not analyzed

Table 3. Monthly Extraction Totals (gallons), January through December 2008, System 19, 369/441Whisman Road, Mountain View, California

Well ID	January	February	March	April	May	June	July	August	September	October	November	December
65B3	211,627	242,852	323,228	263,753	272,540	339,545	177,250	267,142	327,805	246,755	286,318	301,001
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	192,581	224,101	312,544	282,480	302,998	374,901	196,728	297,109	358,176	249,658	249,540	290,692
RW-1A	0	0	0	0	0	0	0	0	0	0	0	0
RW-1B2	12,702	15,036	11,593	16,007	16,233	18,249	10,677	15,721	14,486	3,358	171	193
RW-2A	70,671	103,660	141,208	123,388	114,199	146,424	73,678	106,994	130,626	101,851	145,707	147,155
RW-2B1	174,527	205,344	268,329	211,905	220,540	276,913	73,678	106,994	130,626	101,851	145,707	292,314
RW-2B2	392,168	436,017	588,026	462,604	474,976	581,939	299,503	444,675	547,407	406,648	472,002	500,585
RW-10B1	173,652	203,243	269,429	216,748	233,318	294,975	157,867	239,332	289,831	206,802	208,210	269,824
RW-11A	101,783	110,793	146,038	126,261	131,144	147,278	81,336	122,845	164,524	119,730	121,844	114,106
RW-11B1	277,090	319,734	416,025	326,423	340,561	427,147	234,991	360,380	432,990	324,389	375,743	408,506
RW-12A	0	0	0	0	0	0	0	0	0	0	0	0
RW-23A	154,629	180,031	216,430	172,041	176,538	222,543	120,467	176,062	215,613	163,570	191,003	199,188
RW-24A	133,191	150,622	217,219	179,105	190,301	227,773	123,236	184,176	221,773	151,957	167,660	144,974
RW-26A	0	0	0	0	0	0	0	0	0	0	0	0
RW-29A	118,821	136,502	178,728	149,078	160,787	207,499	114,323	162,795	188,705	133,695	125,474	123,560
Total[1]	2,323,885	2,707,325	3,515,695	2,828,105	2,949,100	3,268,100	1,928,550	3,393,900	3,586,400	2,714,250	3,113,200	3,239,950

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.

Table 4. Chemical Analytic Results Summary, Fairchild System No. 19, 369 Whisman Road, Mountain View, California

Sample Location	Sample 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	1,4-dioxane[1]
			<---------- (µg/L) ---------->											
Influent	02/20/08	C&T/8260B	2.7	<2.5	2.7	98	6.0	5.0	470	<2.5	18	<5.0	602	---
	05/21/08	C&T/8260B	<3.1	<3.1	<3.1	100	8.6	5.0	500	<3.1	15	<6.3	629	---
	08/18/08	C&T/8260B	2.8	<0.5	4.7	100	2.0	6.8	520	2.6	20	<1	659	---
	11/24/08	C&T/8260B	<3.1	<3.1	<3.1	93	5.7	4.8	430	<3.1	13	<1	547	---
Midpoint 1	01/16/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<1.0	0.9	---
	02/11/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	03/10/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<1.0	1.2	---
	04/14/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	05/13/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<1.0	1.5	---
	06/02/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	07/15/08	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	---
	08/11/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<1.0	0.9	---
	09/10/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	11/10/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<3.0	ND	---
	12/08/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<4.0	0.9	---
Midpoint 2	01/16/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	02/11/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	03/10/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	04/14/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	05/13/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	06/02/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	07/15/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	08/11/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	11/10/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	12/08/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
Effluent[1,2]	01/31/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	02/20/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	03/20/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	04/16/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	05/21/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	06/19/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	---
	07/21/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	ND	---
	08/18/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	ND	---
	09/17/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	ND	---
	10/27/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	ND	<0.94
	11/24/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.1	ND	---
	12/17/08	C&T/8260B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.2	ND	---

Table 4. Chemical Analytic Results Summary, Fairchild System No. 19, 369 Whisman Road, Mountain View, California

Sample Location	Sample 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	1,4-dioxane[1]
			<---------- (µg/L) ----------											---------->

Notes and Abbreviations:

1 = System effluent samples were analyzed for semi volatile organic compounds (SVOCs), on October 27, 2008 using 8270C and for 1,4-Dioxane using USEPA Method 8270C-SIM. Results were Non Detect for all trigger SVOCs and 1,4-Dioxane.

2 = Chemical concentrations in effluent stream were below the NPDES effluent limitations for the entire quarter.

< # = analyte not detected above the reported detection limit of "#" µg/L

--- = not analyzed

8260B = USEPA Method 8260 for halogenated VOCs

DCA = Dichloroethane

DCE = Dichloroethene

µg/L = micrograms per liter

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 5. VOC Mass Removal Summary, January through December 2008, System 19, 369/441 Whisman Road, Mountain View, California

TOTAL GROUNDWATER EXTRACTED (gallons):	
January	2,323,885
February	2,707,325
March	3,515,695
April	2,828,105
May	2,949,100
June	3,268,100
July	1,928,550
August	3,393,900
September	3,586,400
October	2,714,250
November	3,113,200
December	3,239,950
CUMULATIVE GROUNWATER EXTRACTED IN 2008 (gallons):	**35,568,460**

TOTAL INFLUENT VOC CONCENTRATION (mg/L):	
January	0.60
February	0.60
March	0.60
April	0.63
May	0.63
June	0.63
July	0.66
August	0.66
September	0.66
October	0.55
November	0.55
December	0.55
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	11.66
February	13.58
March	17.64
April	14.80
May	15.44
June	17.11
July	10.58
August	18.63
September	19.68
October	12.36
November	14.18
December	14.76
CUMULATIVE MASS REMOVED IN 2008 (pounds):	**180.43**

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 = kiligrams

mg/L = milligrams per liter

VOC = volatile organic compound

Table 6. Groundwater Elevations, Slurry Wall Well Pairs, January through December 2008, Former Fairchild Building 19, Mountain View, California

Date	Well ID (outer/B1 well)	Groundwater Elevation (ft amsl)	Well ID (inner/A well)	Groundwater Elevation (ft amsl)	Difference [1] (ft)
03/27/08	142A	43.74	143A	41.96	1.78
05/22/08	142A	44.98	143A	41.82	3.16
08/28/08	142A	44.95	143A	41.22	3.73
11/20/08	142A	44.02	143A	40.62	3.40
03/27/08	154A	35.86	155A	41.21	-5.35
05/22/08	154A	35.70	155A	41.02	-5.32
08/28/08	154A	35.35	155A	40.47	-5.12
11/20/08	154A	34.92	155A	39.88	-4.96
03/27/08	140A	44.33	101A	42.04	2.29
05/22/08	140A	44.43	101A	42.24	2.19
08/28/08	140A	43.94	101A	41.64	2.30
11/20/08	140A	43.44	101A	41.20	2.24
03/27/08	141A	43.89	139A	41.20	2.69
05/22/08	141A	43.99	139A	41.01	2.98
08/28/08	141A	43.75	139A	40.51	3.24
11/20/08	141A	43.23	139A	39.90	3.33
03/27/08	115A	38.44	134A	40.70	-2.26
05/22/08	115A	38.31	134A	40.59	-2.28
08/28/08	115A	37.88	134A	39.99	-2.11
11/20/08	115A	37.42	134A	39.39	-1.97
03/27/08	17A	39.84	159A	41.04	-1.20
05/22/08	17A	39.75	159A	40.90	-1.15
08/28/08	17A	39.30	159A	40.37	-1.07
11/20/08	17A	38.72	159A	39.73	-1.01
03/27/08	93B1	43.61	101A	42.04	1.57
05/22/08	93B1	43.82	101A	42.24	1.58
08/28/08	93B1	42.97	101A	41.64	1.33
11/20/08	93B1	42.26	101A	41.20	1.06
03/27/08	98B1	41.71	15A	41.28	0.43
05/22/08	98B1	41.80	15A	41.06	0.74
08/28/08	98B1	41.15	15A	40.58	0.57
11/20/08	98B1	40.46	15A	39.97	0.49

Table 6. Groundwater Elevations, Slurry Wall Well Pairs, January through December 2008, Former Fairchild Building 19, Mountain View, California

Date	Well ID (outer/B1 well)	Groundwater Elevation (ft amsl)	Well ID (inner/A well)	Groundwater Elevation (ft amsl)	Difference [1] (ft)
03/27/08	110B1	40.29	134A	40.70	-0.41
05/22/08	110B1	40.36	134A	40.59	-0.23
08/28/08	110B1	39.65	134A	39.99	-0.34
11/20/08	110B1	39.10	134A	39.39	-0.29
03/27/08	117B1	40.94	12A	41.42	-0.48
05/22/08	117B1	41.03	12A	42.41	-1.38
08/28/08	117B1	40.32	12A	40.66	-0.34
11/20/08	117B1	39.84	12A	40.13	-0.29
03/27/08	RW-1(B1)	40.74	159A	41.04	-0.30
05/22/08	RW-1(B1)	40.78	159A	40.90	-0.12
08/28/08	RW-1(B1)	40.08	159A	40.37	-0.29
11/20/08	RW-1(B1)	39.53	159A	39.73	-0.20

Notes and Abbreviations:

1 = Positive value denotes either an inward gradient (outer > inner) or an upward gradient (B1 > A).
A = A water-bearing zone
B1 = B1 water-bearing zone
ft = feet
ft amsl = feet above mean sea level
inner = well inside slurry wall
outer = well outside slurry wall

Table 7. Chemical Analytic Results Summary, January 2004 through December 2008, Former Fairchild Buildings 13 and 19, 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
			micrograms per liter (µg/L)												
4A	11/12/07	CT/8260	<140	**390**	<71	**490**	**1,900**	<71	<130	<2,900	<71	<71	**16,000**	**180**	**18,960**
4A	11/18/08	CT/8260	<83	**100**	<42	**180**	**390**	<42	**110**	<1,700	<42	<42	**6,000**	<42	**6,780**
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	**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	**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	<0.5	<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**	<0.5	<0.5	<0.5	**3**	<0.5	**0.82**	<0.5	<0.5	<0.5	**47**	<0.5	**52**
17A	12/11/08	CT/8260	<1	<0.5	<0.5	<0.5	**4.9**	<0.5	**1.4**	<20	<0.5	<0.5	**82**	<0.5	**88**
22A	11/05/04	CT/8260	**0.6**	**1.6**	<0.5	**3.5**	**20**	<0.5	**130**	<5	<0.5	**3.5**	**140**	<0.5	**299**
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	**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**
23A	11/05/04	CT/8260	<0.7	**5.9**	<0.7	**8.7**	**40**	<0.7	<7.1	<7.1	<0.7	<0.7	**120**	<0.7	**175**
23A (DUP)	11/05/04	CT/8260	<0.5	**8**	<0.5	**13**	**53**	<0.5	**7.8**	<5	<0.5	<0.5	**120**	<0.5	**202**
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	**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	<0.5	**6.6**	<0.5	**10**	**54**	<0.5	**5.1**	<0.5	<0.5	<0.5	**96**	<0.5	**172**
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**
101A	11/09/07	CT/8260	<1	**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	**4.5**	<0.5	**1.6**	**19**	<0.5	**3.8**	<20	<0.5	<0.5	**4.4**	<0.5	**33**

Table 7. Chemical Analytic Results Summary, January 2004 through December 2008, Former Fairchild Buildings 13 and 19, 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
			micrograms per liter (µg/L)												
134A	11/12/07	CT/8260	<1	**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	**3.2**	<0.5	**3.7**	**5.5**	<0.5	**27**	<20	<0.5	**13**	**52**	<0.5	**104**
139A	11/09/07	CT/8260	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<0.5	ND
142A	11/03/04	CT/8260	<1.3	<1.3	<1.3	<1.3	**13**	<1.3	<13	<13	**3.8**	<1.3	**180**	<1.3	**197**
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**
143A	11/09/07	CT/8260	<1	<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	11/05/04	CT/8260	**0.5**	**1.8**	<0.5	**3.9**	**130**	**0.9**	**11**	<5	<0.5	**2.7**	**99**	**2.3**	**252**
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	<0.5	**3.4**	<0.5	**5.6**	**340**	**2.7**	**6.3**	<0.5	<0.5	<0.5	**100**	**3.5**	**462**
154A	12/11/08	CT/8260	<2	**3.1**	<1	**4.7**	**79**	**1.5**	**19**	<40	<1	**7.6**	**270**	**1.5**	**386**
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**
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**
160A	11/05/04	CT/8260	<1.7	**2.9**	<1.7	**4.5**	**160**	**2.4**	**31**	<17	<1.7	**6.7**	**290**	<1.7	**498**
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	<1	<1	**1.5**	**40**	<1	**8.3**	<40	<1	**1.6**	**170**	<1	**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	<0.5	**4.7**	<0.5	<0.5	**210**	**3.3**	**83**	<0.5	<0.5	**5.7**	**390**	**1.1**	**698**
161A	11/12/07	CT/8260	<130	<63	<63	<63	**11,000**	**1,400**	**170**	<2,500	<63	<63	**5,600**	<63	**18,170**

Table 7. Chemical Analytic Results Summary, January 2004 through December 2008, Former Fairchild Buildings 13 and 19, 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
			micrograms per liter (µg/L)												
173A	12/11/08	CT/8260	<1	**2.1**	<0.5	**1.1**	**38**	<0.5	<0.5	<20	<0.5	<0.5	**41**	**2.5**	**85**
174A	11/08/07	CT/8260	<5	**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	**1.7**	<0.5	**2**	**4**	<0.5	**2.6**	<20	**3.2**	**3.4**	**140**	<0.5	**157**
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**
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	<1	<1	<1	**15**	**19**	<1	<40	<1	<1	**110**	<1	**144**
RW-1A	11/15/08	CT/8260	<1	**0.6**	<0.5	**1.1**	**6.9**	**1.3**	**2.5**	<20	<0.5	**1.4**	**130**	<0.5	**144**
RW-2A	11/10/04	CT/8260	<2.5	**3.4**	<2.5	**5.3**	**79**	**2.7**	**28**	<25	<2.5	**9.5**	**310**	<2.5	**438**
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**	<0.5	**3.4**	**83**	**1**	**11**	<0.5	<0.5	**3.9**	**170**	<0.5	**275**
RW-11A	08/08/07	CT/8260	<71	<36	<36	<36	**1,300**	<36	**150**	<1,400	<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**	<1,000	<25	**28**	**3,100**	**120**	**4,317**
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-23A	08/08/07	CT/8260	<10	**8.5**	<5	**7**	**64**	<5	**13**	<200	<5	**5.2**	**570**	<5	**668**
RW-23A	11/14/07	CT/8260	<10	**7.8**	<5	<5	**50**	<5	**23**	<200	<5	**5.6**	**580**	<5	**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-24A	11/05/04	CT/8260	<3.1	**8.3**	<3.1	**12**	**430**	**6.4**	**52**	<31	<3.1	**14**	**570**	<3.1	**1,093**
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**

Table 7. Chemical Analytic Results Summary, January 2004 through December 2008, Former Fairchild Buildings 13 and 19, 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
			micrograms per liter (µg/L)												
RW-24A	11/06/08	CT/8260	<0.5	**6.4**	<0.5	**11**	**460**	**5**	**25**	<0.5	<0.5	**8.8**	**440**	**6**	**962**
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	**3.3**	<0.5	**6**	**130**	**1.6**	**3.1**	<20	<0.5	**0.9**	**110**	<0.5	**255**
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**
95B1	11/04/04	CT/8260	<0.5	<0.5	<0.5	<0.5	**0.7**	<0.5	<5	<5	<0.5	<0.5	**12**	<0.5	**13**
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	<0.5	<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	<0.5	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	**5.8**	<0.5	**6**
98B1	11/12/04	CT/8260	<0.5	**1.2**	<0.5	**0.9**	**49**	<0.5	<0.5	<20	<0.5	<0.5	**94**	<0.5	**145**
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**
98B1	11/07/06	CT/8260	<1	**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	**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	**1.2**	<0.5	**1**	**43**	<0.5	**0.6**	<20	<0.5	<0.5	**81**	<0.5	**127**
101B1	11/03/04	CT/8260	<0.5	**2.2**	<0.5	**1.7**	**64**	<0.5	<5	<5	<0.5	**0.6**	**69**	<0.5	**138**
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	**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	**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	**1.2**	<0.5	**1.2**	**38**	<0.5	<0.5	<20	<0.5	<0.5	**53**	<0.5	**93**
110B1	11/04/04	CT/8260	<1.7	<1.7	<1.7	**2.2**	**11**	<1.7	**18**	<17	<1.7	**8.7**	**310**	<1.7	**350**
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	<1	<1	**1.6**	**7.2**	<1	**13**	<40	<1	**5.5**	**140**	<1	**167**
110B1	11/08/07	CT/8260	<4	<2	<2	**2.6**	**10**	<2	**44**	<80	<2	**28**	**210**	<2	**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**

Table 7. Chemical Analytic Results Summary, January 2004 through December 2008, Former Fairchild Buildings 13 and 19, 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
			micrograms per liter (µg/L)												
117B1	11/04/04	CT/8260	<2	<2	<2	<2	**48**	<2	<20	<20	<2	<2	**260**	<2	**308**
117B1	11/09/05	CT/8260	<63	<31	<31	<31	**38**	<31	<31	<1,300	<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**
145B1	11/12/04	CT/8260	<0.5	**0.7**	<0.5	<0.5	**65**	**1**	<0.5	<20	<0.5	<0.5	**1.8**	**4.6**	**73**
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	**0.8**	<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	<0.5	<0.5	<0.5	**3.1**	<0.5	<0.5	<20	<0.5	<0.5	**1.2**	**2.9**	**7**
156B1	12/11/08	CT/8260	<1	**2.9**	<0.5	**1.9**	**49**	**0.7**	**1.5**	<20	<0.5	**0.5**	**81**	<0.5	**138**
RW-1(B1)	11/23/04	CT/8260	<0.5	**2.3**	<0.5	**1.1**	**19**	**0.6**	<0.5	<20	<0.5	<0.5	**68**	<0.5	**91**
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	<0.5	<0.5	**0.6**	**17**	<0.5	<0.5	<20	<0.5	<0.5	**4.3**	<0.5	**22**
RW-1(B1)	11/08/07	CT/8260	<1	<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	**1.8**	<0.5	**0.7**	**60**	**0.5**	<0.5	<20	<0.5	<0.5	**14**	**0.5**	**78**
RW-2(B1)	11/10/04	CT/8260	**3.2**	<2.5	<2.5	**3.6**	**32**	<2.5	**77**	<25	<2.5	**39**	**340**	<2.5	**495**
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	<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-10(B1)	11/04/04	CT/8260	<6.3	<6.3	<6.3	<6.3	**190**	**9.8**	<63	<63	<6.3	**7.8**	**1,100**	<6.3	**1,308**
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	<5	<5	**540**	**21**	**18**	<200	<5	<5	**830**	<5	**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-11(B1)	11/05/04	CT/8260	<0.5	**1.5**	<0.5	**1.5**	**80**	**2**	<5	<5	<0.5	**0.9**	**130**	<0.5	**216**

Table 7. Chemical Analytic Results Summary, January 2004 through December 2008, Former Fairchild Buildings 13 and 19, 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
			micrograms per liter (µg/L)												
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	<1	<1	<1	**58**	**1.5**	<1	<40	<1	<1	**120**	<1	**180**
RW-11(B1)	11/02/07	CT/8260	<2	**1**	<1	<1	**51**	**2.2**	<1	<40	<1	<1	**120**	<1	**174**
RW-11(B1)	11/04/08	CT/8260	<2	<1	<1	<1	**43**	**1.3**	<1	<40	<1	<1	**120**	<1	**164**
40B2	11/04/04	CT/8260	<0.5	**1**	<0.5	**1**	**91**	**1.9**	<5	<5	<0.5	<0.5	**10**	<0.5	**105**
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	**0.5**	<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	<0.5	<0.5	<0.5	**48**	<0.5	**4**	<20	<0.5	<0.5	**10**	<0.5	**62**
90B2	11/12/04	CT/8260	<1.7	<1.7	<1.7	<1.7	**180**	<1.7	<1.7	<67	<1.7	<1.7	**96**	<1.7	**276**
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	<1	<1	<1	**36**	<1	<1	<40	<1	<1	**210**	<1	**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	<0.5	<0.5	**1.2**	**49**	**0.9**	<0.5	<20	<0.5	<0.5	**170**	<0.5	**221**
146B2	11/04/04	CT/8260	<0.5	<0.5	<0.5	<0.5	**98**	<0.5	<5	<5	<0.5	<0.5	**78**	<0.5	**176**
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	<0.5	<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	<1	<1	<1	**110**	**3.8**	<1	<40	<1	<1	**7.2**	<1	**121**
146B2	11/05/08	CT/8260	<1	<0.5	<0.5	<0.5	**74**	<0.5	<0.5	<20	<0.5	<0.5	**6**	<0.5	**80**
RW-1(B2)	11/23/04	CT/8260	<0.5	<0.5	<0.5	**0.6**	**52**	<0.5	**2.9**	<20	<0.5	<0.5	**98**	<0.5	**154**
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	<0.5	<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	<0.5	<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	<0.5	<0.5	<0.5	**27**	<0.5	**0.7**	<20	<0.5	<0.5	**110**	<0.5	**138**
RW-2(B2)	11/05/04	CT/8260	<7.1	<7.1	<7.1	<7.1	**11**	<7.1	<71	<71	<7.1	<7.1	**790**	<7.1	**801**
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**

Table 7. Chemical Analytic Results Summary, January 2004 through December 2008, Former Fairchild Buildings 13 and 19, 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
			micrograms per liter (µg/L)												
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	<0.5	<0.5	<0.5	**4.8**	**13**	**2.2**	**3.4**	<0.5	<0.5	<0.5	**890**	<0.5	**913**

Notes and Abbreviations:
< # = analyte not detected above the reported detection limit of "#" µg/L
8260 = USEPA Method 8260B for halogenated VOCs, for USEPA Method 8010 list of analytes
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 8. Capture Zone Calculations and Analysis, Former Fairchild Building 19, Mountain View, California

Extraction Well:		RW-2A	RW-24A	RW-10B1	RW-11B1	RW-1B2	RW-2B2
b		15	15	25	25	35	35
i		0.004	0.004	0.003	0.003	0.004	0.004
K		7.9	7.9	44.6	44.6	2.4	2.4
T		119	119	1116	1116	86	86
w		625	625	200	300	400	600
estimated well loss (ft):	$s_w = CQ^2$	0.003	0.003	0.005	0.015	0.00000	0.023
extraction rate (gpm):		3.60	3.80	5.00	8.60	0.10	10.80
stagnation point (ft):	$X_0 = -Q / 2\pi Ti$	-232	-245	-46	-79	-9	-966
capture zone width (at extraction well; ft):	$Y_{well} = \pm Q / 4Ti$	365	385	72	124	14	1,517
capture zone width (maximum; ft):	$Y_{max} = \pm Q / 2Ti$	729	770	144	247	28	3,033

LINE OF EVIDENCE	CAPTURE?	COMMENTS
Water Levels *potentiometric surface maps*	*Adequate.*	*Potentiometric surface maps indicate complete horizontal capture of the target capture area in the A1-, B1-, and B2-zones.*
Calculations *capture zone widths*	*Adequate.*	*Calculated capture zone widths and stagnation points for A- and B2-zone wells are significantly larger than what is interpreted from flow net analysis (potentiometric surface maps). Calculated capture zone widths and stagnation points for B1-zone wells are similar to what is interpreted from flow net analysis.*
Concentration Trends *downgradient monitoring wells*	*Adequate.*	*Concentrations are decreasing in most downgradient monitoring wells, with exceptions in three A-zone wells 115A, 160A, and 173A. Site VOC plume size and magnitude is decreasing.*

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 and RW-24A, 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 9. 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 (2008)
----------System 19----------		
71A	off[a]	---
RW-1A	off[a]	---
RW-1(B1)	off[b]	---
RW-1(B2)	0.50	0.26
RW-2A	4.00	2.68
RW-2(B1)	5.40	4.21
RW-2(B2)	11.40	10.70
RW-10(B1)	5.00	5.27
RW-11A	3.00	2.84
RW-11(B1)	8.30	8.10
RW-12A	off[a]	---
RW-23A	4.00	4.17
RW-24A	3.70	3.99
RW-26A	off[a]	---
RW-29A	3.00	3.43
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	6.22
REG-4B(1) (RGRP)	6.10	6.36

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

Table 10. 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

Table 10. 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
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:

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

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APPENDIX A

2008 ANNUAL REPORT REMEDY PERFORMANCE CHECKLIST

2008 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 3, 2009**

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 2008).**
- **One regional recovery wells (One well operated during 2008).**

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 2008).**
- **Three regional recovery wells (Two wells operated during 2008).**

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 2008).**
- **Seven regional recovery wells (Two operated during 2008).**

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

2008 Annual Report Remedy Performance Checklist

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:

2008 Annual Report Remedy Performance Checklist

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

☐ Community Issues
☐ Vandalism
■ Maintenance Issues
☐ Other:

Please elaborate on Significant Site Events:

Maintenance issues:

System 19:
During 2008, the extraction and treatment system operated within the effluent limits established by the site NPDES permit for the entire period. However, the treatment system shut down from July 7-14 for approximately 165 hours without any alarm notification. There was no treatment unit bypass or discharge during the system shut down. Based on communication with Water Board staff on September 30, 2008, any future shut downs greater than 120 hours will be orally reported within five days of shut down, and a written submission within 15 days of shut down.

Additional non-routine maintenance issues are reported in Section 2 of the facility-specific 2008 Annual Progress Reports.

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.

2008 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	**2008 Annual Reports & 5-Year Review**
Capture zone maps, isoconcentration maps	

■ 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 Reports**
System Influent & Effluent water samples	**2008 Annual 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 analyticals, GAC removal efficiencies	**NPDES Discharge 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	**2008 Annual Reports & 5-Year Review**
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. However, the ROD specifies that the slurry walls, "maintain inward and upward gradients." Historically, that has not been the case in the downgradient direction 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 maintained trends consistent with those prior to reduced groundwater extraction rates within the slurry wall. In one case, a change in gradient from inward to outward was observed in the cross-gradient direction in one of the three slurry walls (Buildings 1-4) in May 2008. In August and November, gradient measurements were inward again.

The chemical concentration data and potentiometric surface contours 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

2008 Annual Report Remedy Performance Checklist

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

Walk-throughs/Surveys: N/A

No additional air work was conducted at 401 and 644 National Avenue in 2008.

Summary of Results: **N/A**

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 (Appendix D) and the Optimization Evaluation Report (Geosyntec et al., 2008) for change in TCE distribution over time (Figures 4-18 through 4-21).

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:
■ 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, and 515/545 N. Whisman Road and 313 Fairchild Drive.

Groundwater elevation and chemical monitoring results from 2008 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.

2008 Annual Report Remedy Performance Checklist

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: 2008 Annual Reports & 5-Year Review

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 is 5 µg/L.

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

Capture zone analysis in the 2008 Annual Progress Report indicate plume containment of target capture areas.

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: **TBD**

2008 Annual Report Remedy Performance Checklist

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 .

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.

2008 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 planned for 2009, with ROD amendment to follow.

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

XII. RECOMMENDATIONS

- **Implement optimization strategies for Fairchild systems pending receipt of and response to EPA comments on the Optimization Evaluation Report.**
- **Follow revised groundwater feasibility study framework pending finalization by EPA.**
- **Potentially responsible parties (PRPs) requested in the 2008 Annual Progress Report that USEPA not require further facility-specific reporting for Former Fairchild 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 RGRP 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 RGRP report, and this report is redundant with other reports at the MEW Site since all information is covered under Raytheon Facility Specific and RGRP reporting.

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APPENDIX B

ANALYTIC REPORTS AND CHAIN-OF-CUSTODY DOCUMENTS
JANUARY THROUGH DECEMBER 2008

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

APPENDIX C

QA/QC REPORT, SUMMARY TABLES, AND CRITERIA SELECTED

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2008 QA/QC SUMMARY

From January through December 2008, the Site treatment system was sampled monthly. Annual groundwater samples were collected in Site wells in November 2008. Groundwater samples from the selected wells were also collected in December 2008, as a part of slurry wall evaluation. As a part of monthly sampling for the MEW area, a total of 40 samples were submitted to Curtis and Tompkins in Berkeley, California, a state-certified analytical laboratory for VOCs, turbidity, Semi-VOCs, and 1,2 Dioxane analysis. One sample was analyzed for Acute Toxicity by Block Environmental Services, Inc, another state-certified laboratory. In addition to the monthly treatment system samples, 32 groundwater samples were collected from the site monitoring and extraction wells as a part of MEW Annual Groundwater Sampling Event and analyzed for VOCs by Curtis and Tompkins. All samples were collected, stored, transported, and managed according to USEPA protocols. Sample temperature and holding times were correctly observed. Tables C-1 and C-2 present a summary of sampling and analysis QA/QC for 2008 Analytical laboratory reports for the groundwater and related QC samples (travel blanks, rinseate/equipment blanks, and field blanks) are presented in Appendix F of the MEW 2008 Annual Progress Report. Appendix G of the MEW 2008 Annual Progress Report summarizes the analytical issues (Table G-2) and the results of the QC samples (Table G-3) for the 2008 annual groundwater sampling event.

Table C-1. Summary of Sampling QA/QC for January through December 2008, 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 2008, 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:	37 samples analyzed by USEPA 8260B – Halogenated Volatile Organic Compounds (8010 MS Parameters) One sample analyzed by USEPA 8270C- Semi Volatile Organic Compounds One sample analyzed by USEPA 8270C-SIM- 1,4 Dioxane One sample analyzed by USEPA/600/4-85-01 – Acute Toxicity of Effluents to Freshwater and Marine Organisms One sample analyzed by USEPA 180.1 – Turbidity
Groundwater Well Samples[1]:	32 samples analyzed by USEPA 8260B – Halogenated Volatile Organic Compounds (8010 MS Parameters)
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 F of the *2008 Annual Progress Report for Middlefield-Ellis-Whisman Study Area Regional Groundwater Remediation Program, Mountain View, CA.*.

2. Analytical issues for treatment systems samples collected during 2008 are reported in the 2008 Quarterly NPDES reports for Treament System 19. Analytical issues for groundwater samples collected during the 2008 annual groundwater sampling event are summarized in Appendix G of the *2008 Annual Progress Report for Middlefield-Ellis-Whisman Study Area Regional Groundwater Remediation Program, Mountain View, CA.*

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APPENDIX D

VOCS VERSUS TIME GRAPHS

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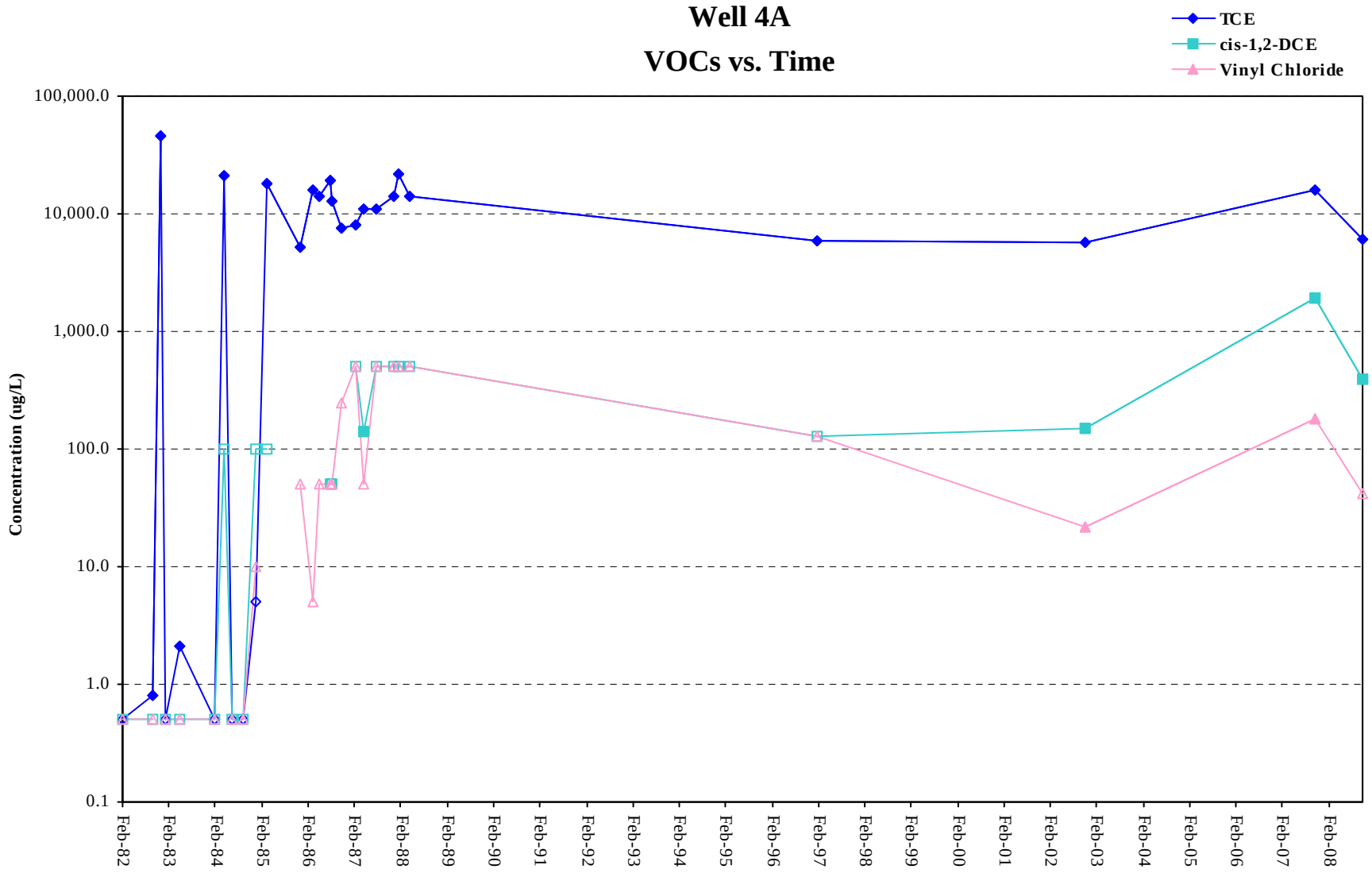
Well 4A
VOCs vs. Time



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

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
Report: rptMvChrts2008Log Loc. Group: Bldg19

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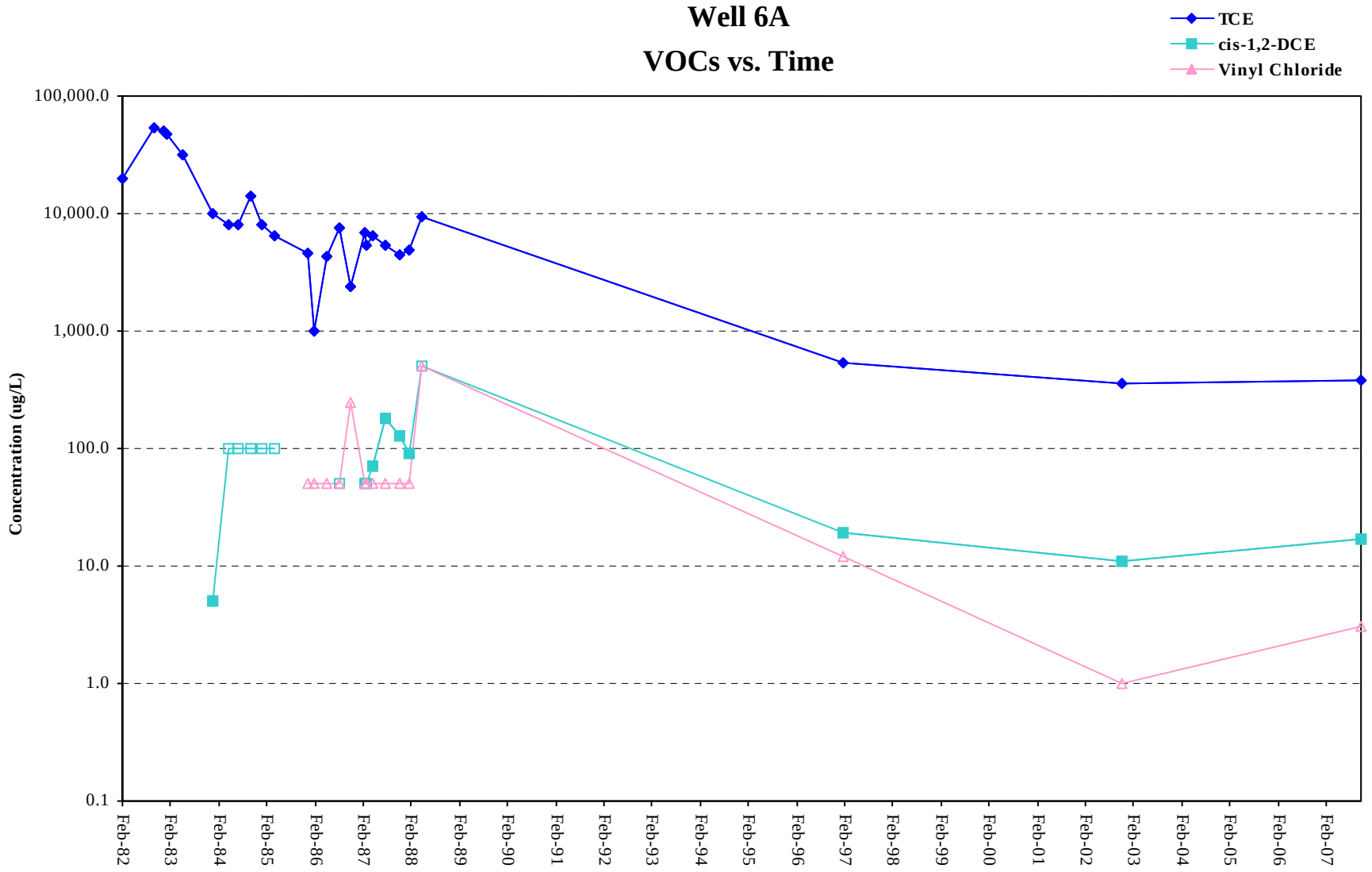
Well 6A
VOCs vs. Time



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

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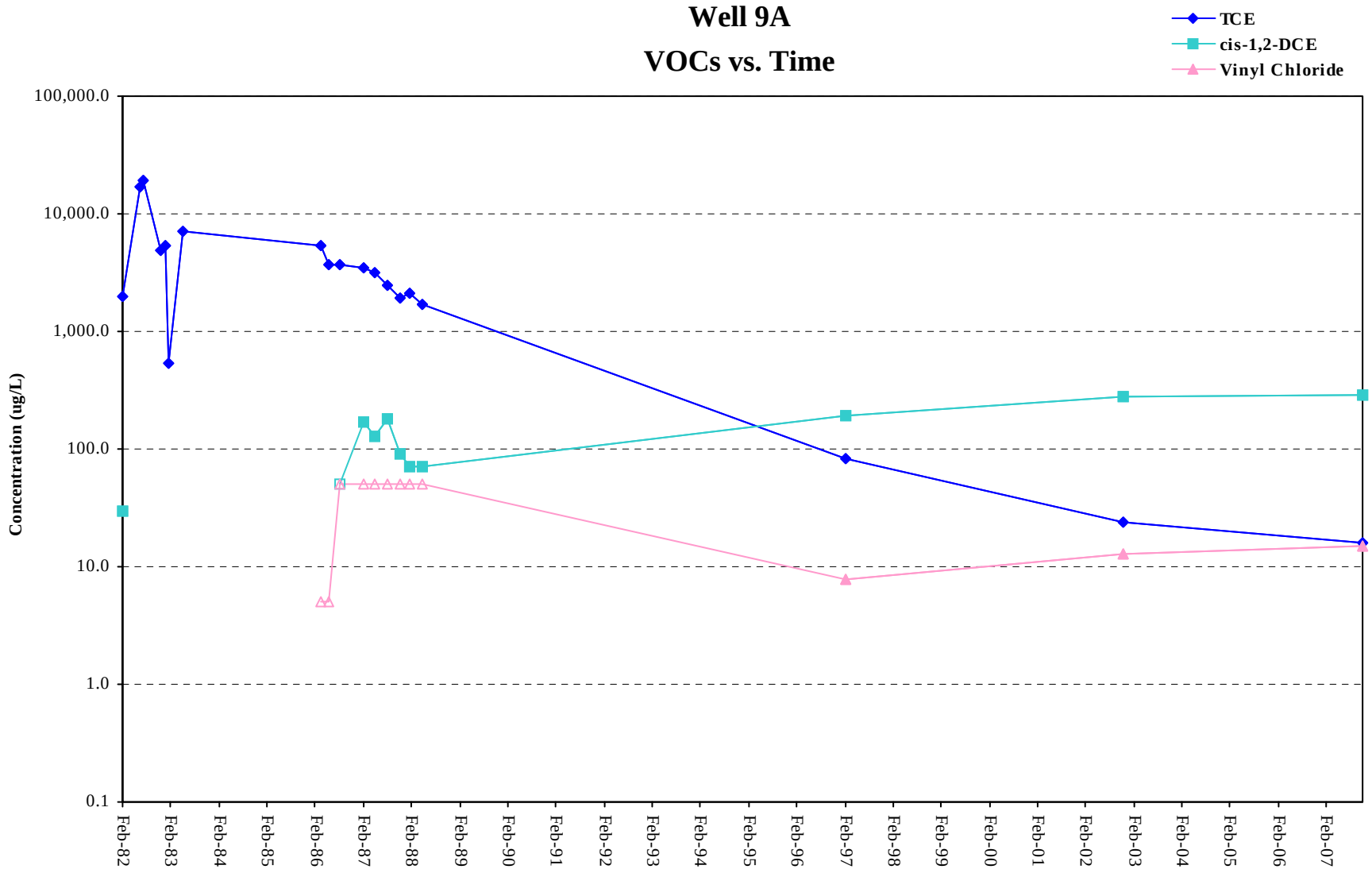
Well 9A

VOCs vs. Time



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

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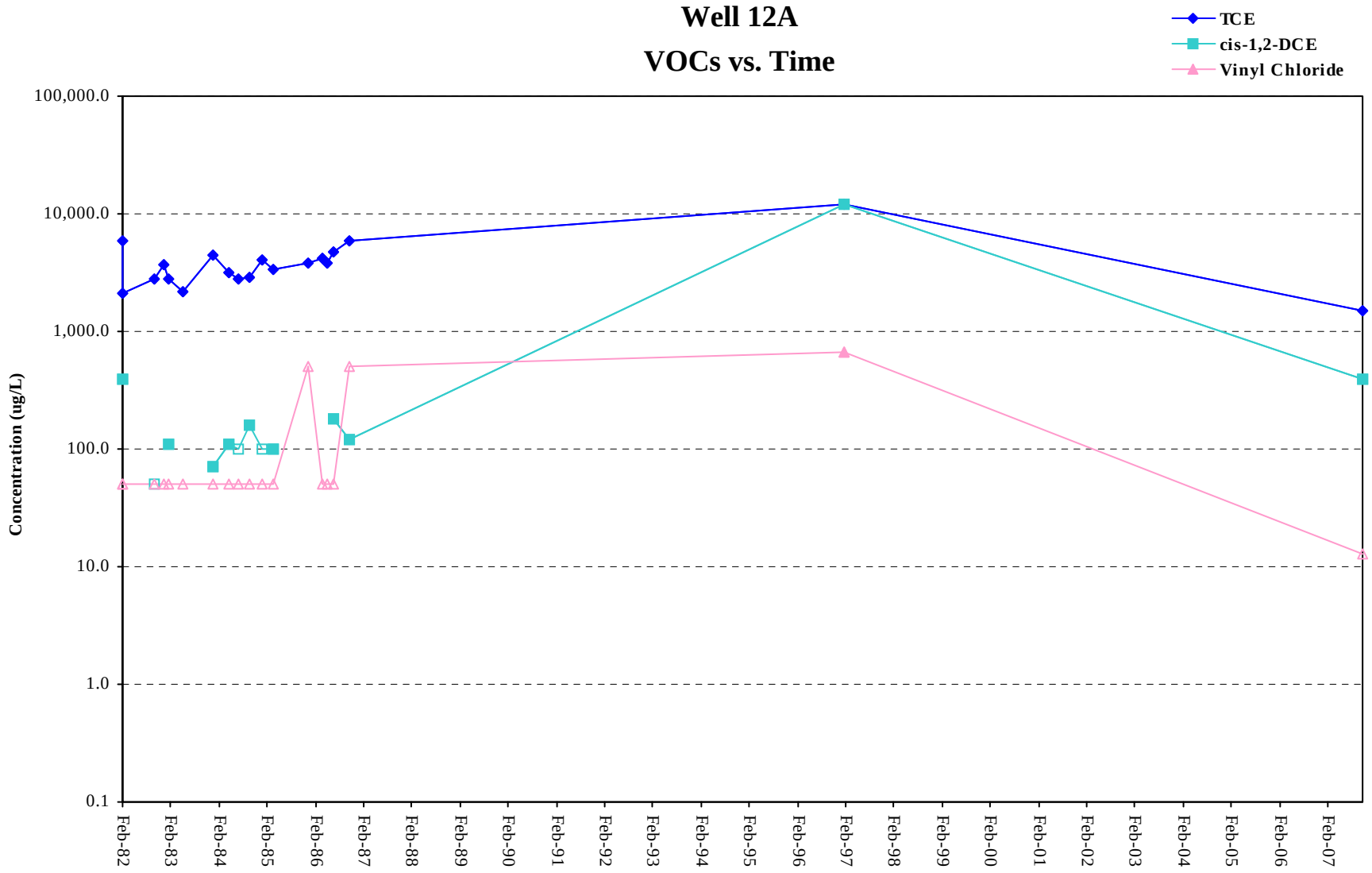
Well 12A
VOCs vs. Time



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

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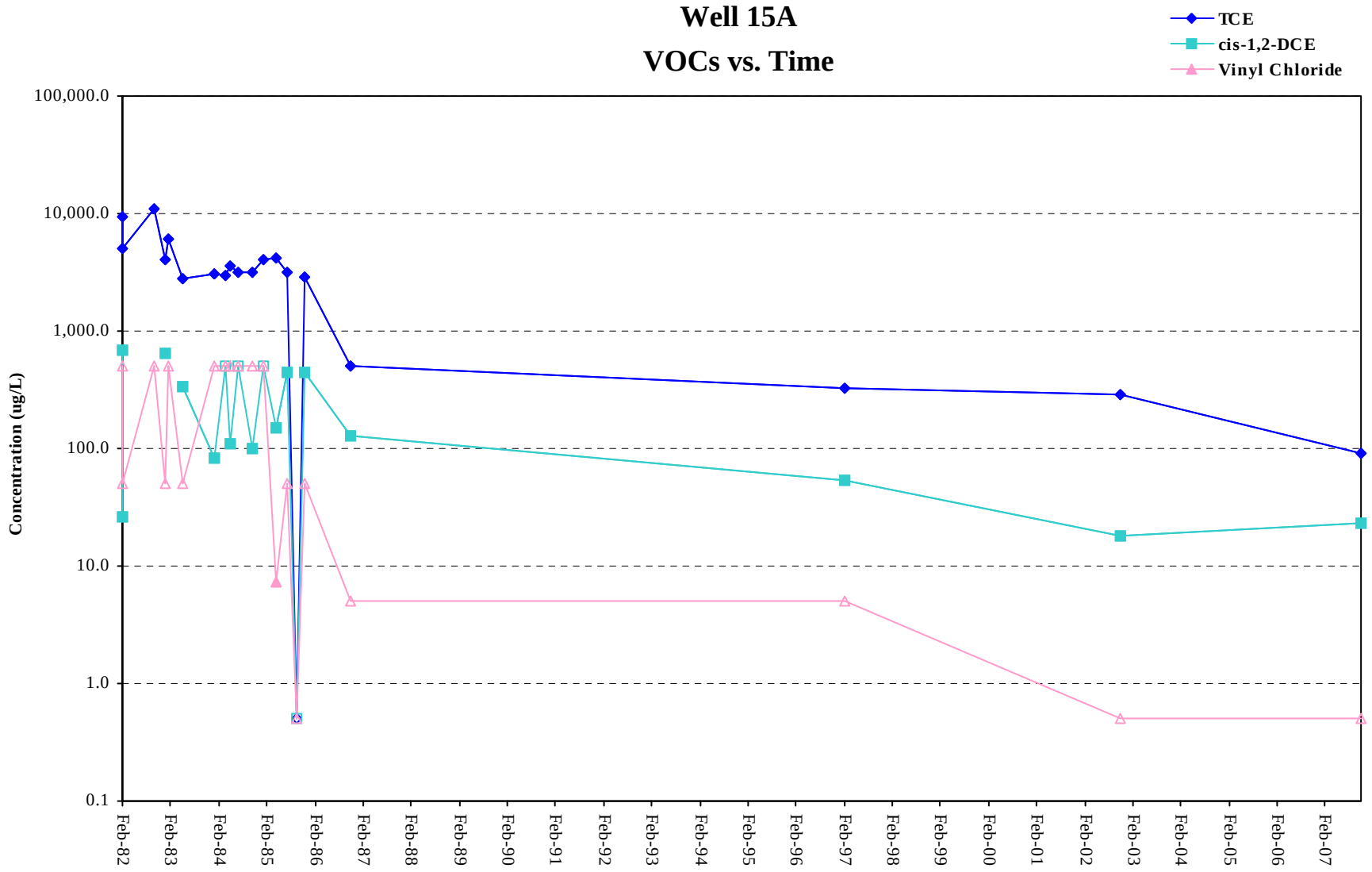
Well 15A
VOCs vs. Time



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

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Report: rptMvChrts2008Log Loc. Group: Bldg19

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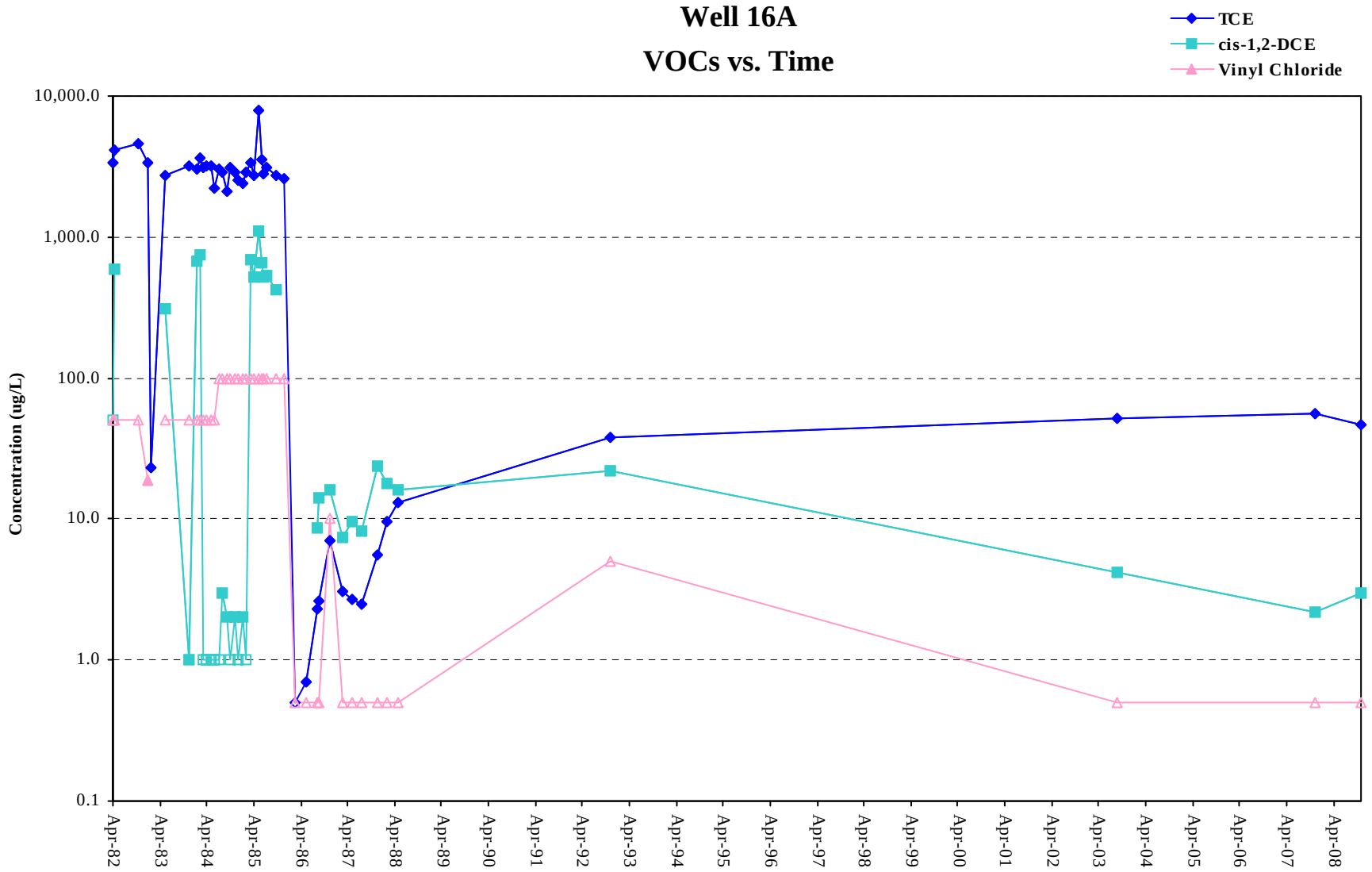
Well 16A
VOCs vs. Time



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

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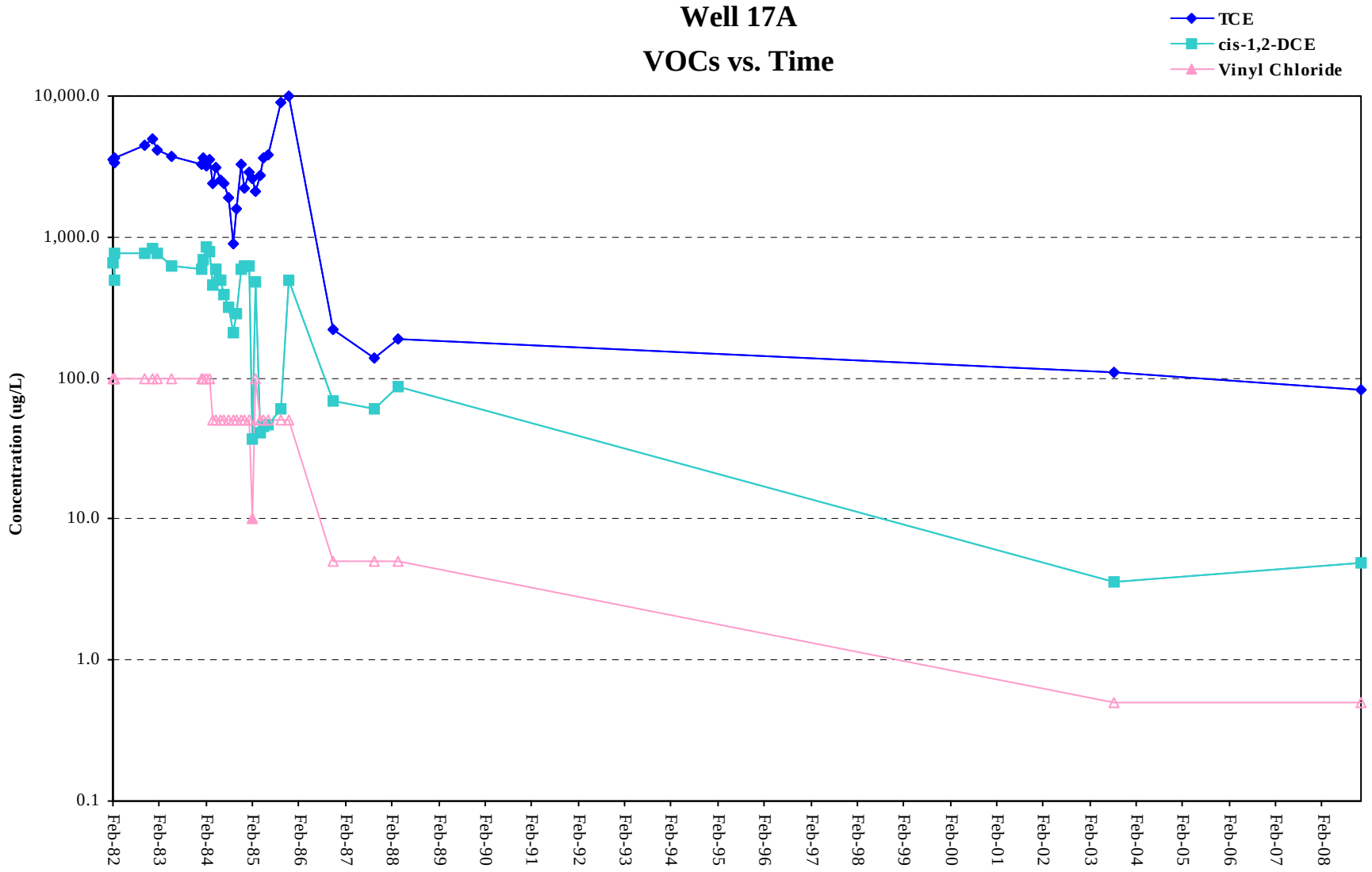
Well 17A
VOCs vs. Time



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

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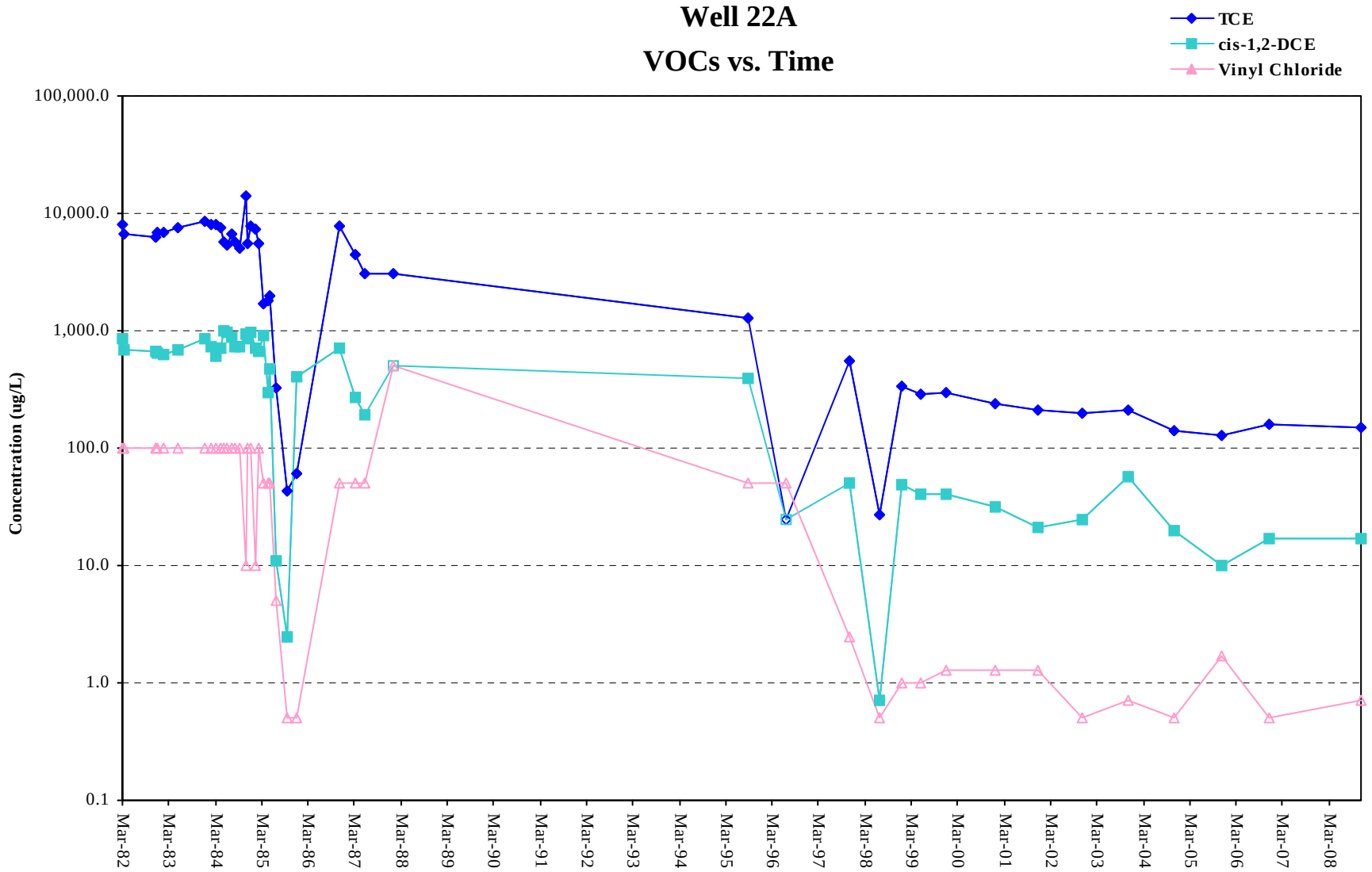
Well 22A
VOCs vs. Time



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

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Report: rptMvChrts2008Log Loc. Group: Bldg19

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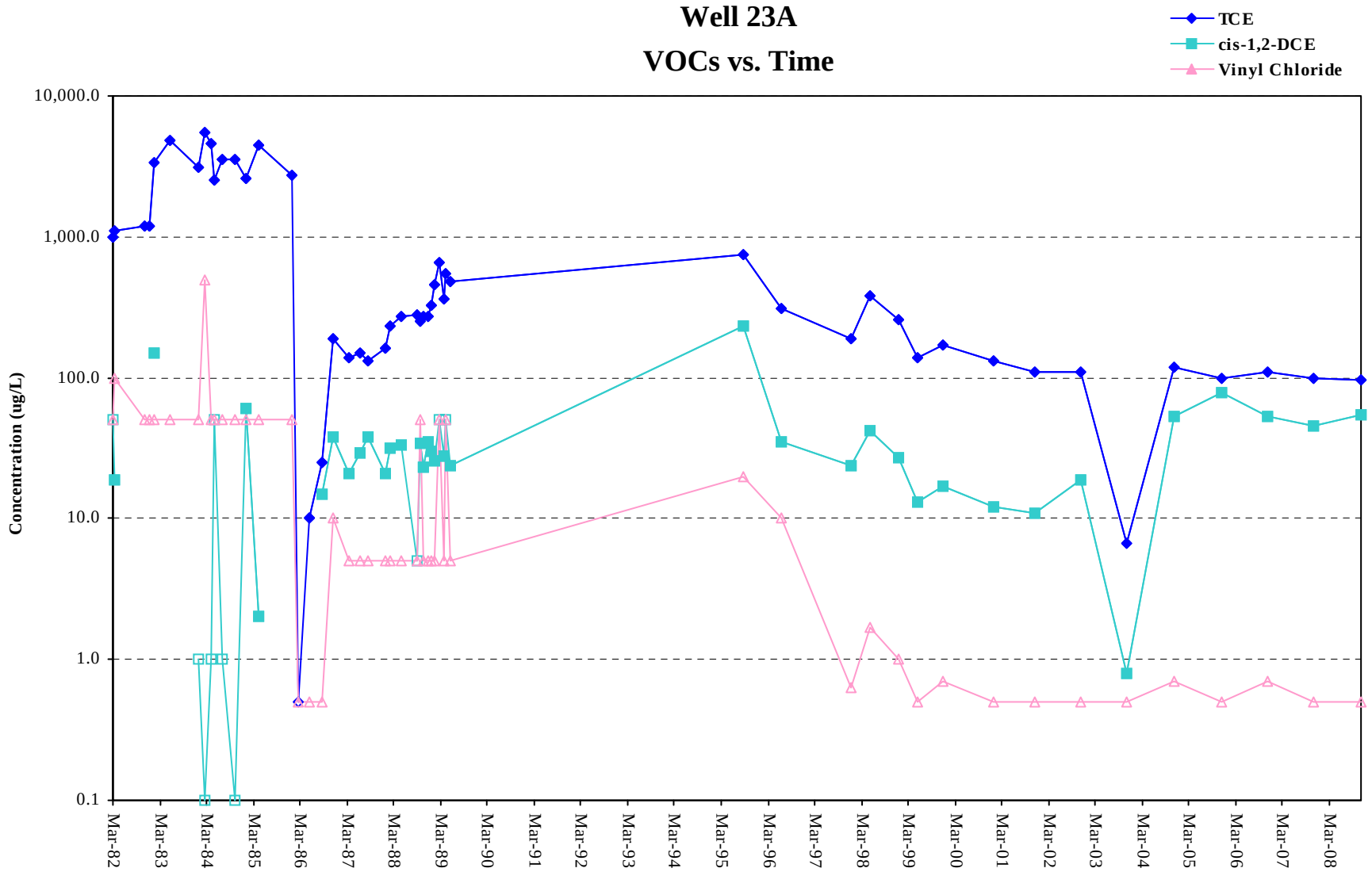
Well 23A
VOCs vs. Time



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

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Report: rptMvChrts2008Log Loc. Group: Bldg19

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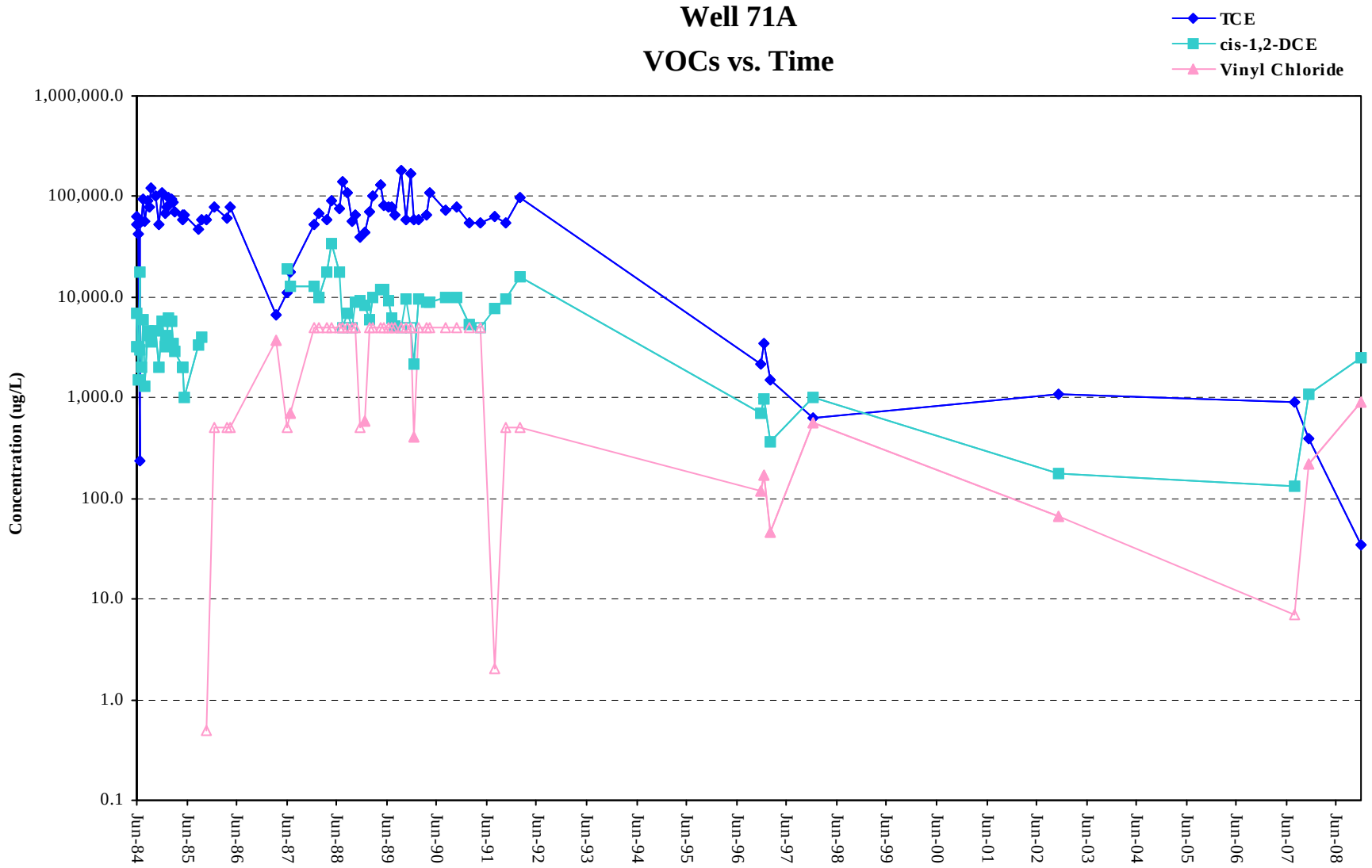
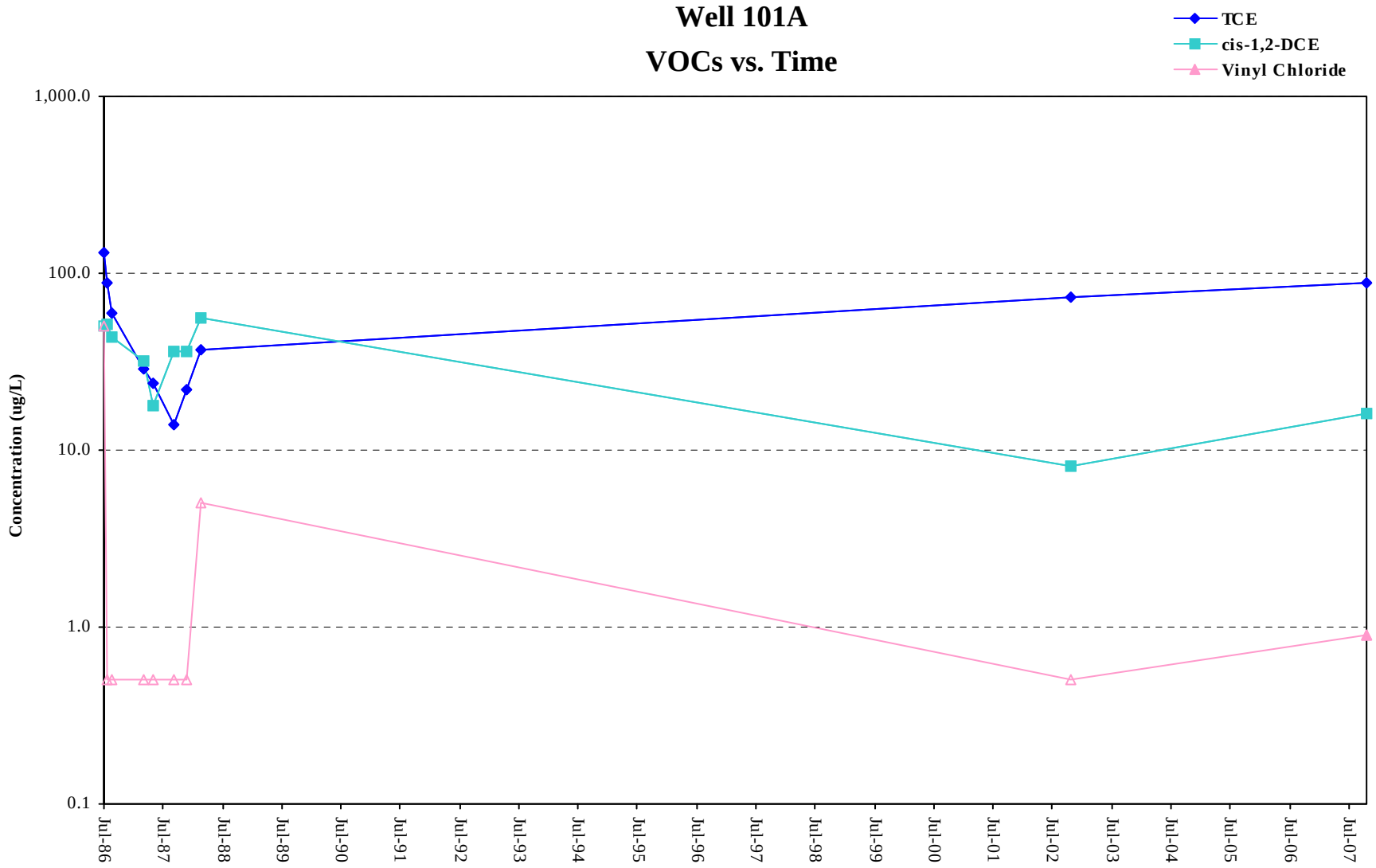
Well 71A
VOCs vs. Time



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

Weiss Associates

Well 101A
VOCs vs. Time



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

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
Report: rptMvChrts2008Log Loc. Group: Bldg19

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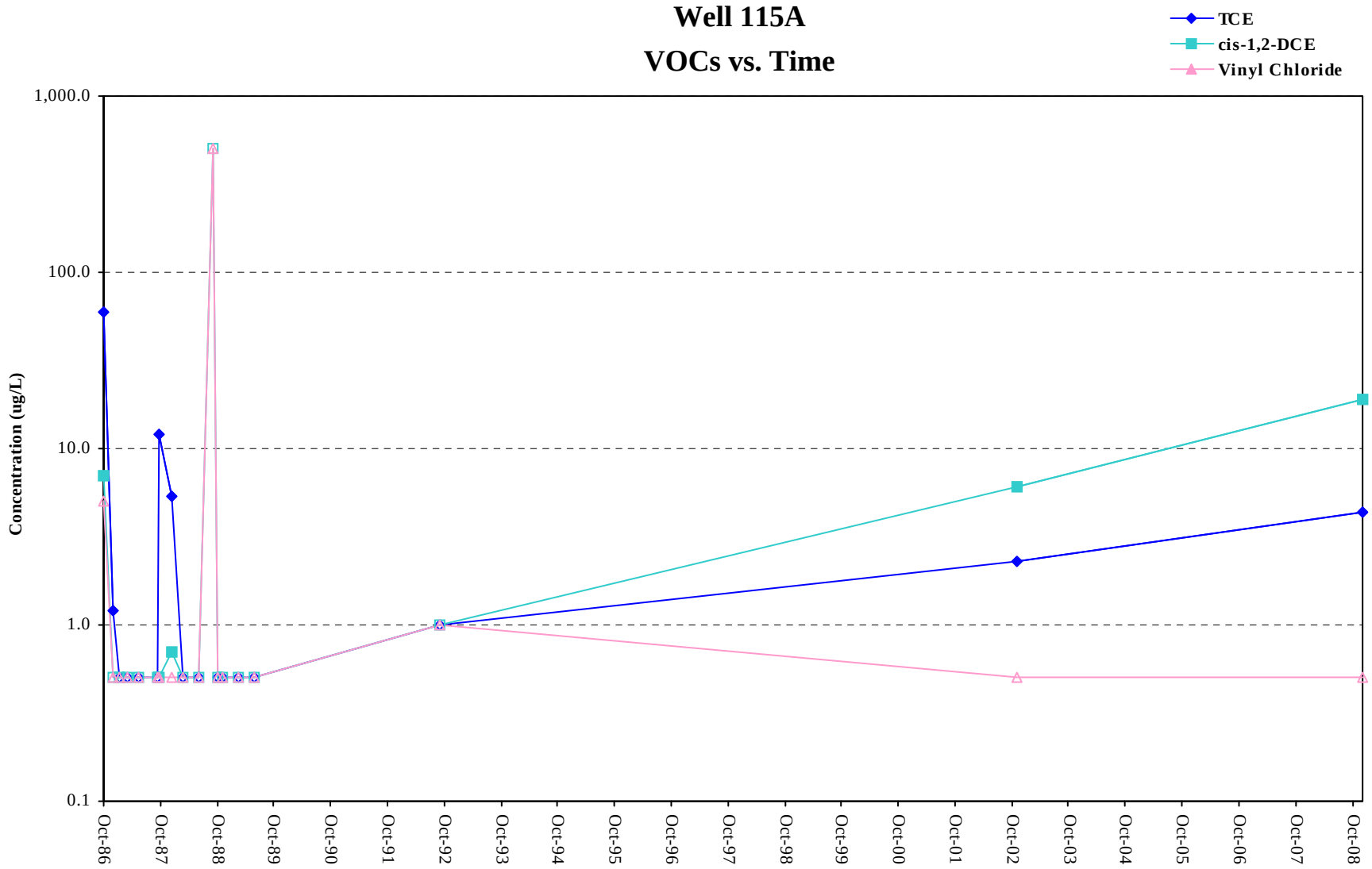
Weiss Associates

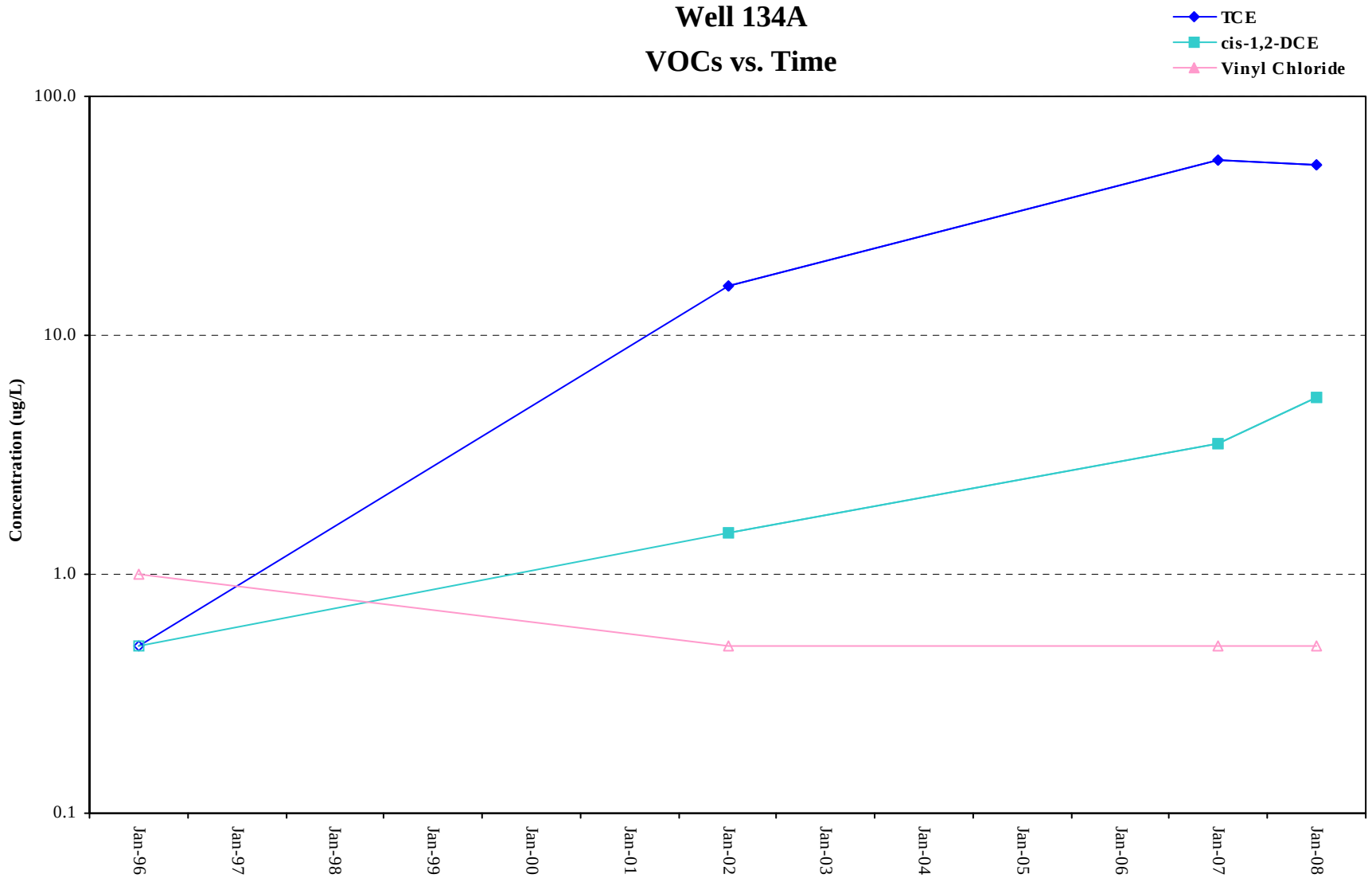
Well 115A
VOCs vs. Time



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

Weiss Associates

Well 134A
VOCs vs. Time



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

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
Report: rptMvChrts2008Log Loc. Group: Bldg19

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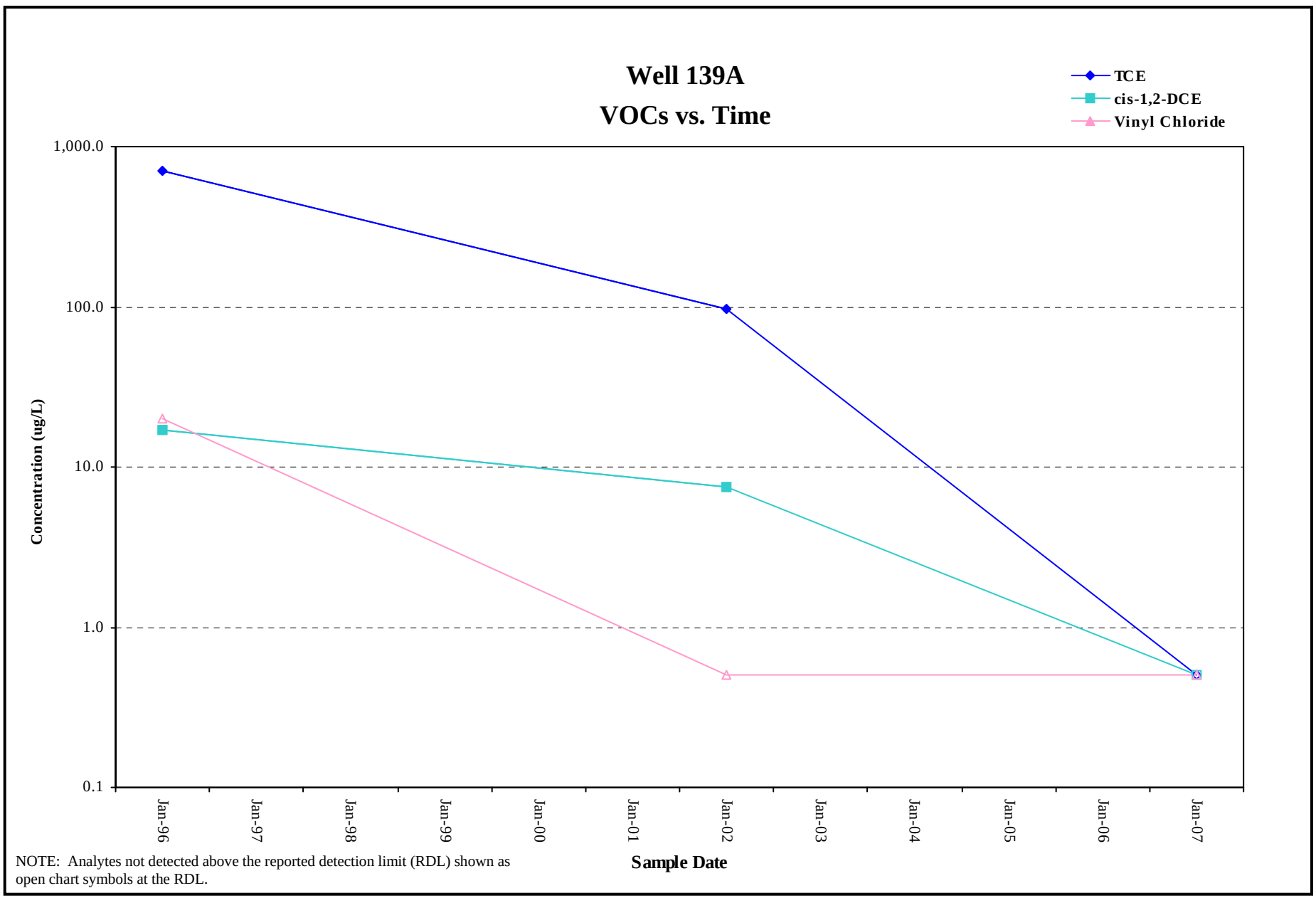
Weiss Associates



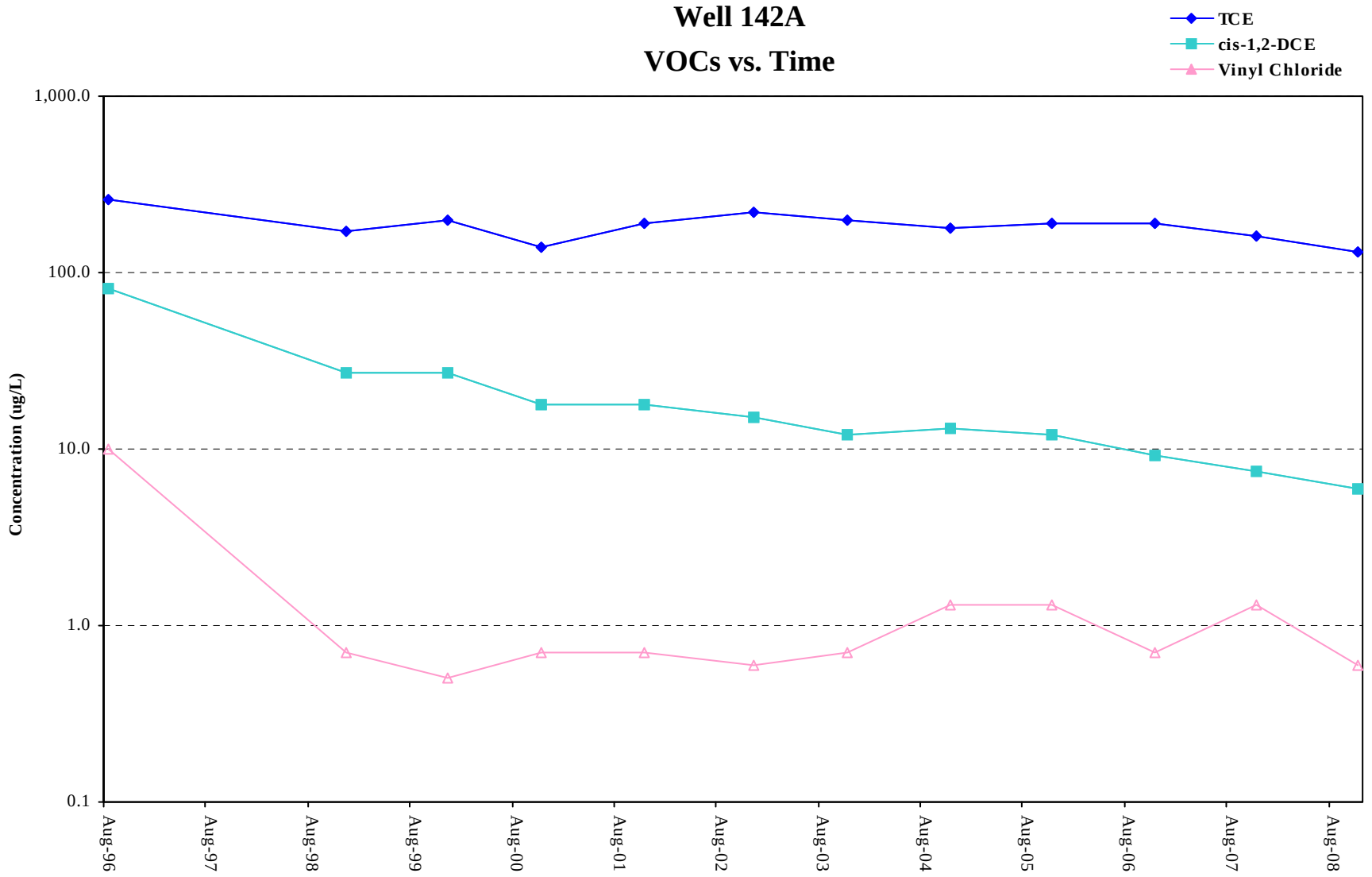
NOTE: Analytes not detected above the reported detection limit (RDL) shown as open chart symbols at the RDL.

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
Report: rptMvChrts2008Log Loc. Group: Bldg19

Printed: 6/9/2009 5:05:04 PM

Weiss Associates

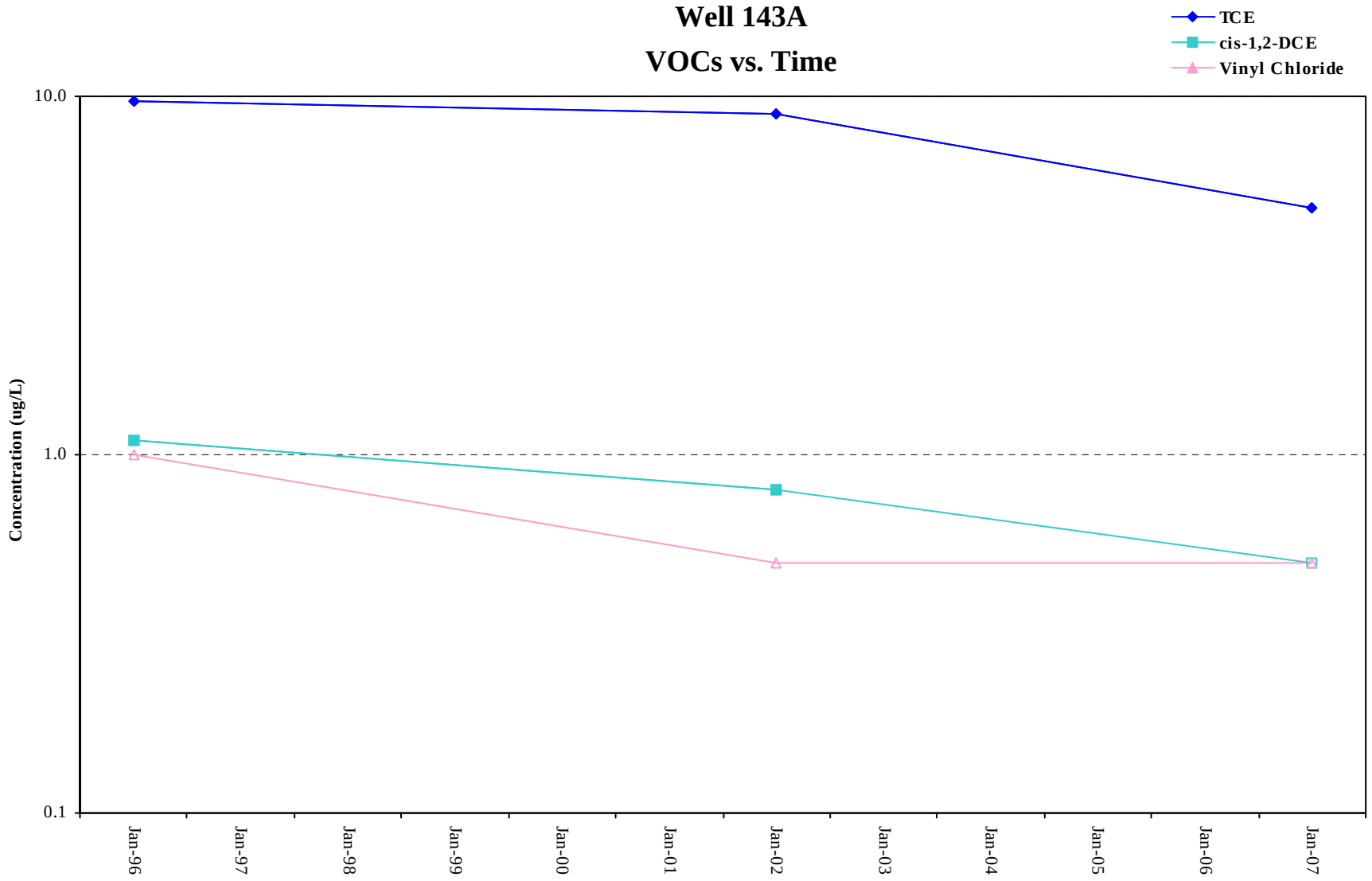
Well 142A
VOCs vs. Time



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

Weiss Associates

Well 143A
VOCs vs. Time



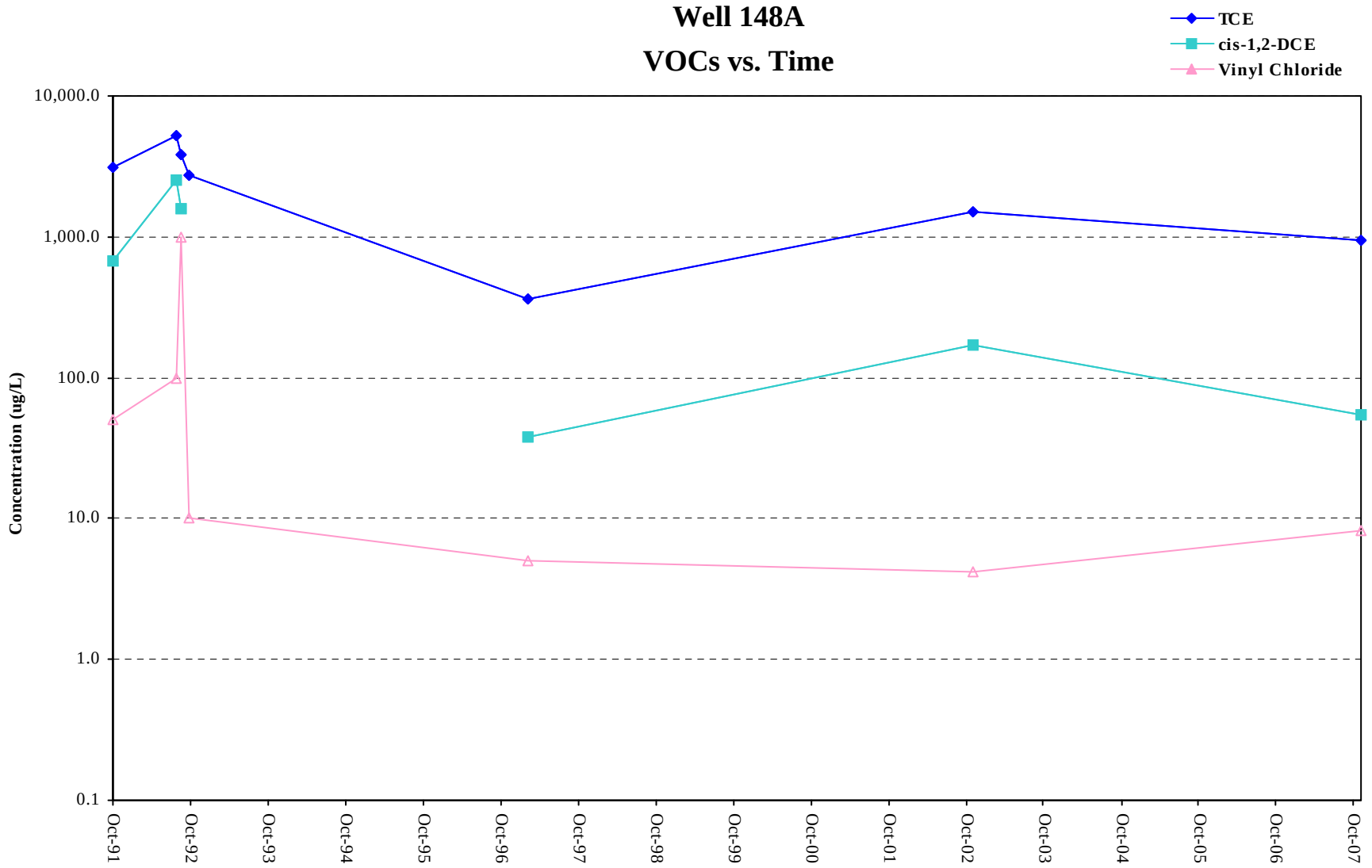
NOTE: Analytes not detected above the reported detection limit (RDL) shown as open chart symbols at the RDL.

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
Report: rptMvChrts2008Log Loc. Group: Bldg19

Printed: 6/9/2009 5:05:04 PM

Weiss Associates

Well 148A
VOCs vs. Time



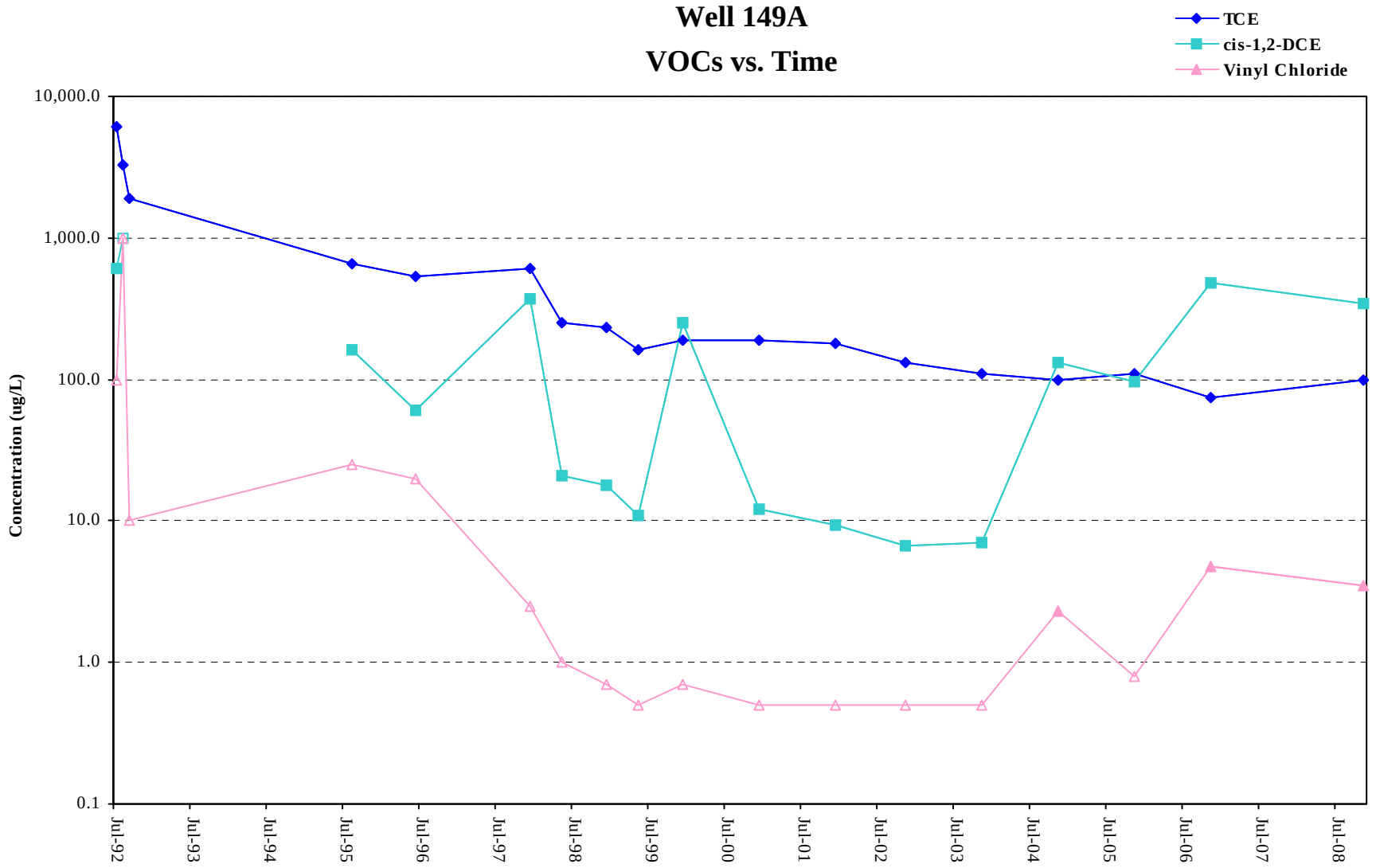
NOTE: Analytes not detected above the reported detection limit (RDL) shown as open chart symbols at the RDL.

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
Report: rptMvChrts2008Log Loc. Group: Bldg19

Printed: 6/9/2009 5:05:04 PM

Weiss Associates

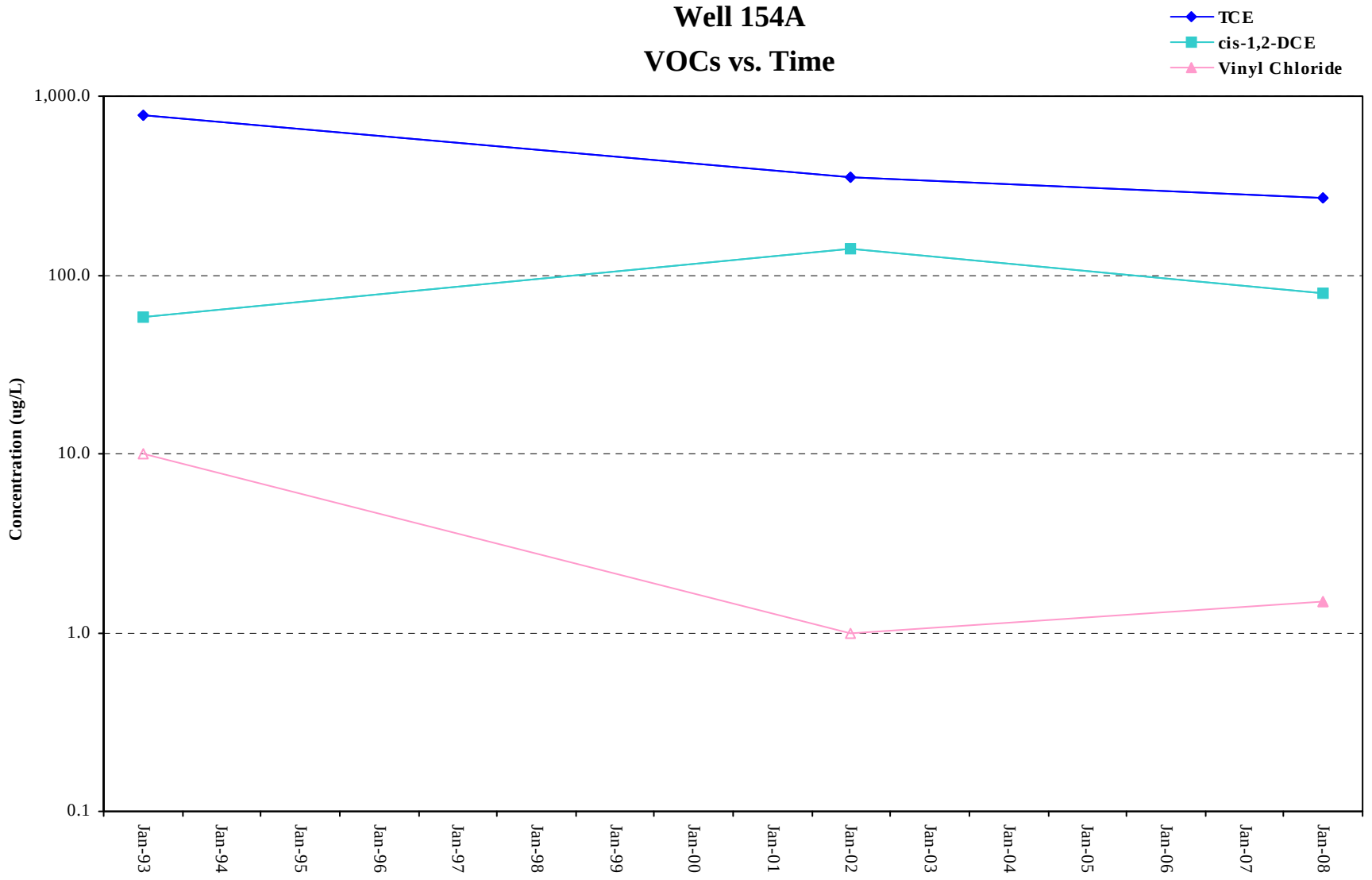
Well 149A
VOCs vs. Time



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

Weiss Associates

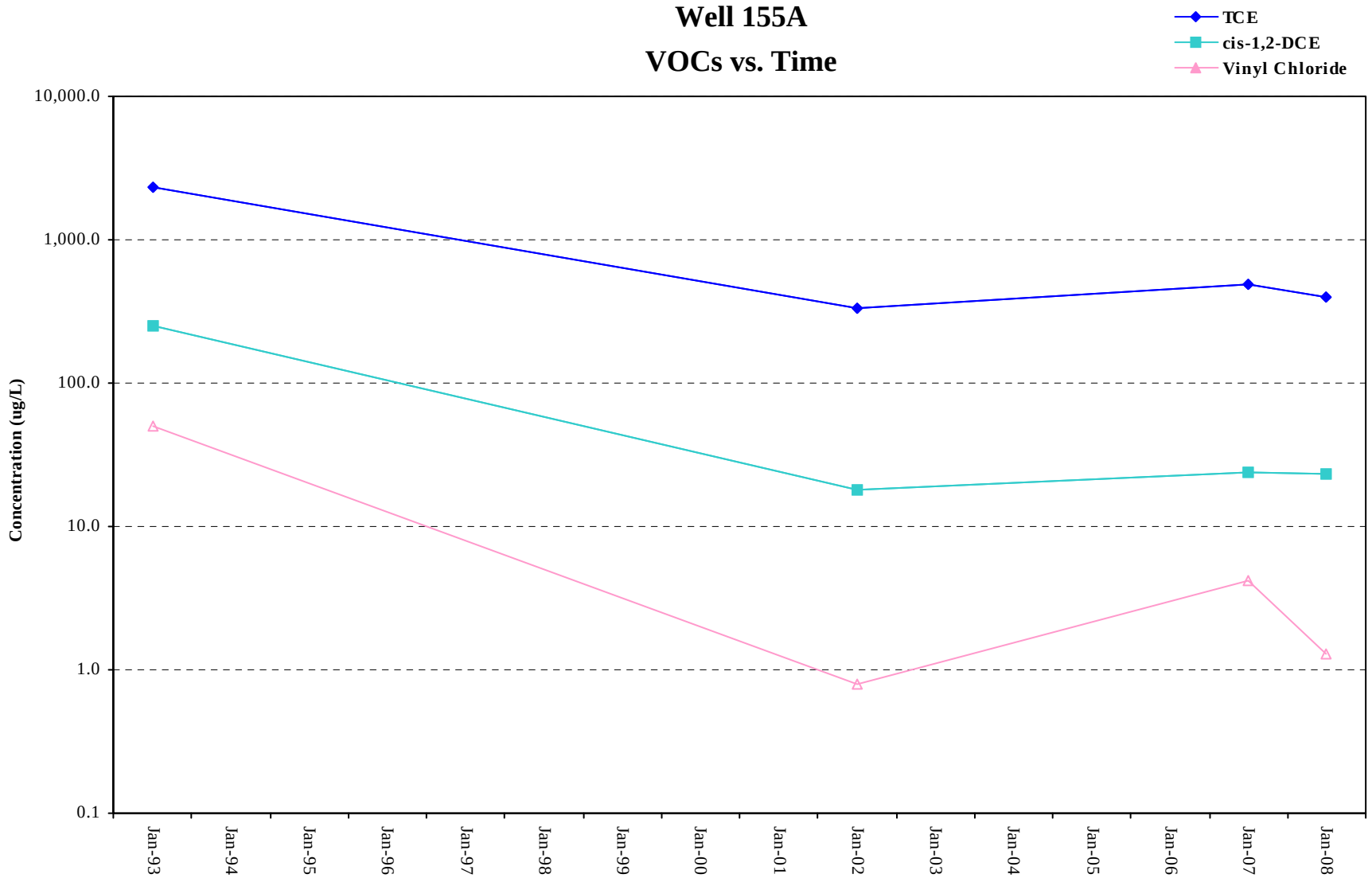
Well 154A
VOCs vs. Time



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

Weiss Associates

Well 155A
VOCs vs. Time



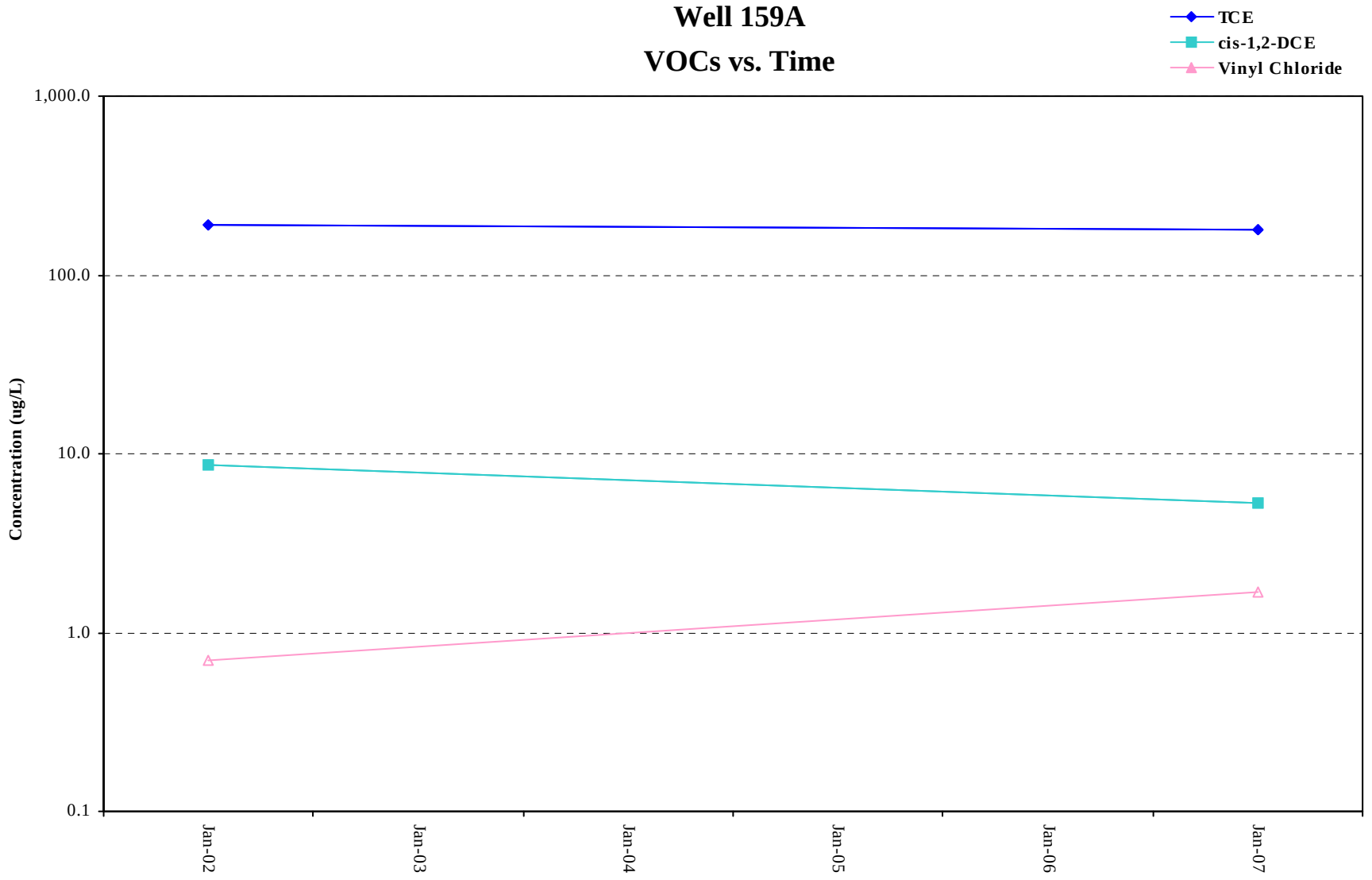
NOTE: Analytes not detected above the reported detection limit (RDL) shown as open chart symbols at the RDL.

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
Report: rptMvChrts2008Log Loc. Group: Bldg19

Printed: 6/9/2009 5:05:05 PM

Weiss Associates

Well 159A
VOCs vs. Time



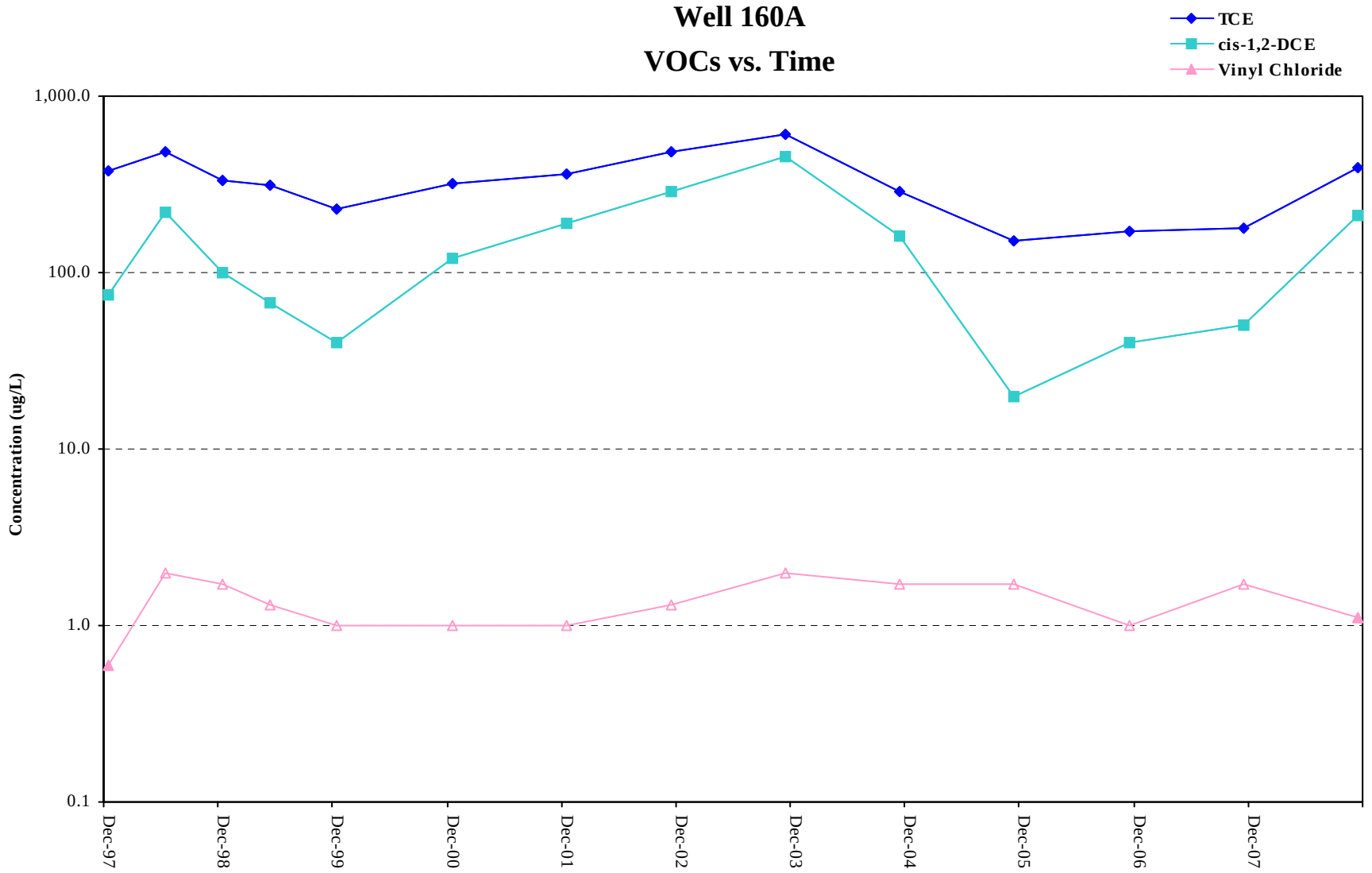
NOTE: Analytes not detected above the reported detection limit (RDL) shown as open chart symbols at the RDL.

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
Report: rptMvChrts2008Log Loc. Group: Bldg19

Printed: 6/9/2009 5:05:05 PM

Weiss Associates

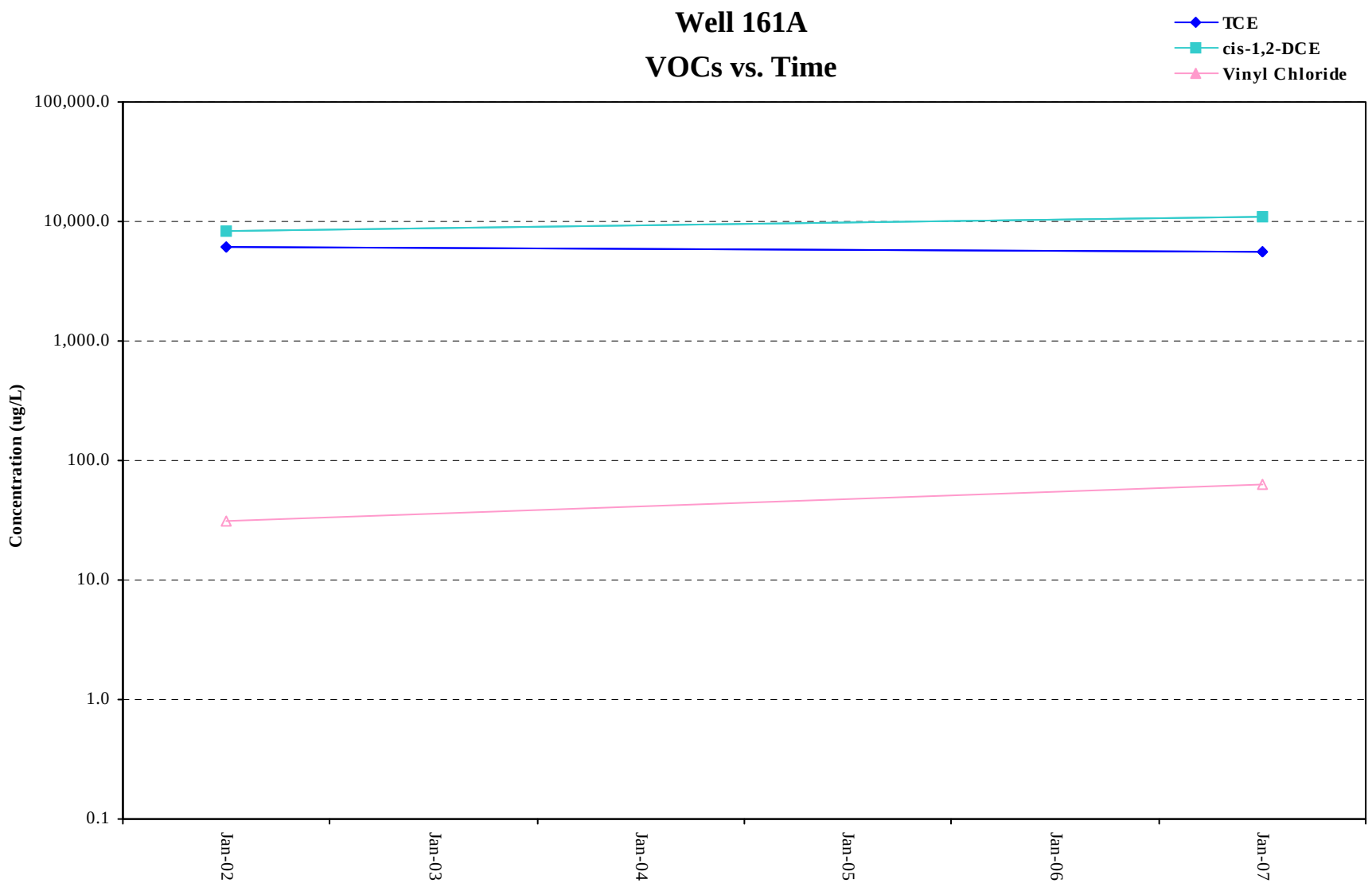
Well 160A
VOCs vs. Time



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

Weiss Associates

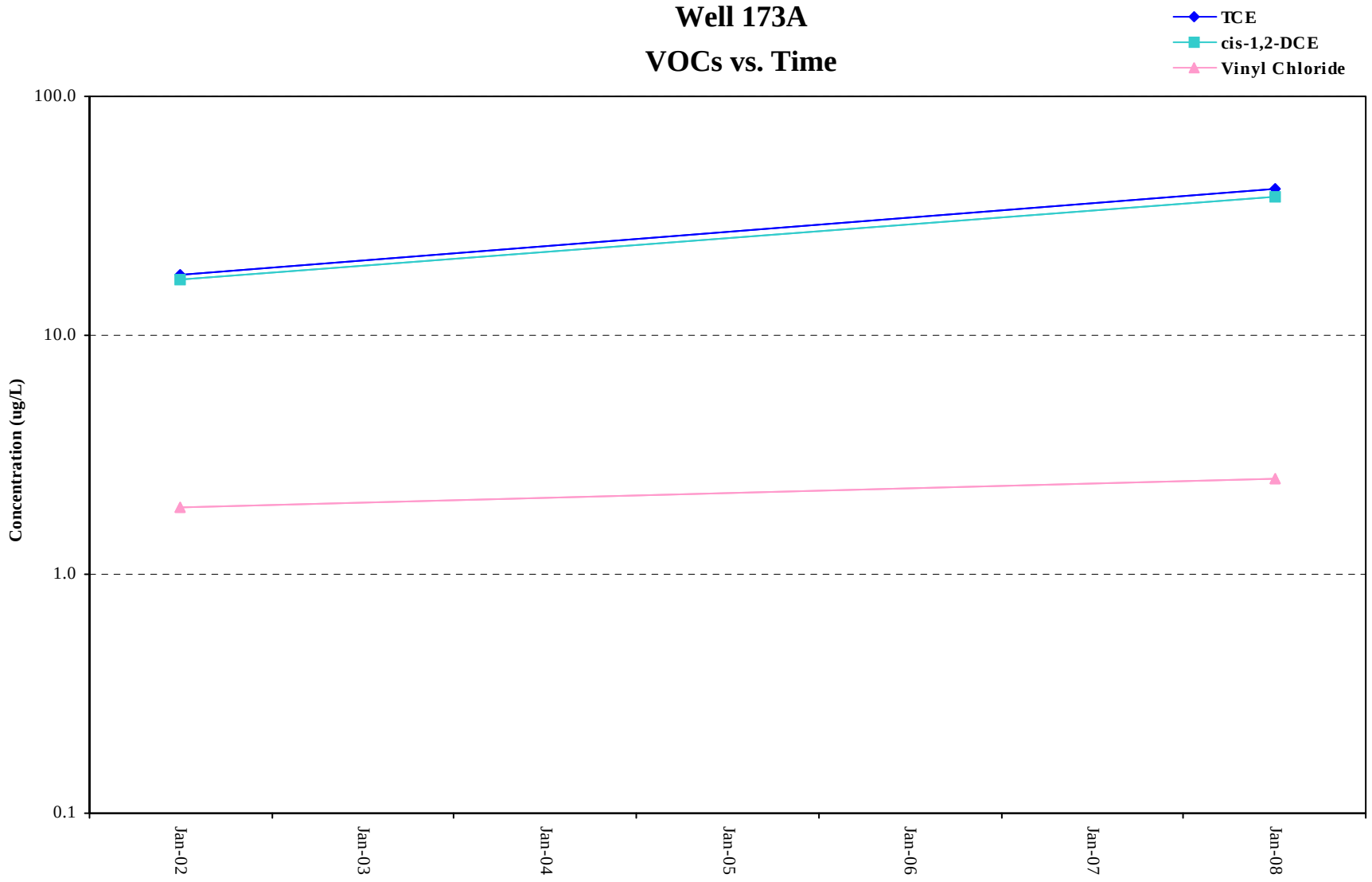
Well 161A
VOCs vs. Time



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

Weiss Associates

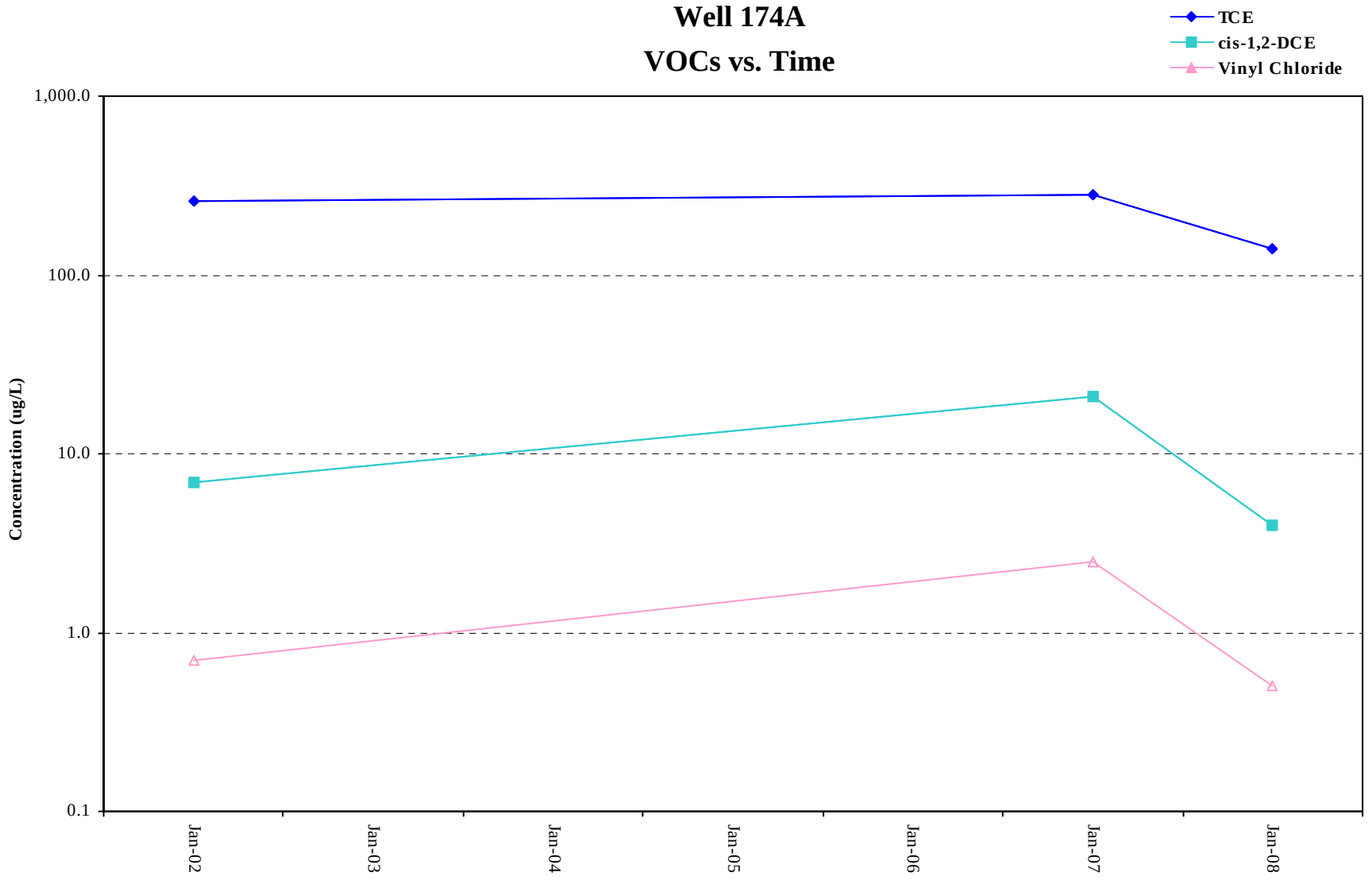
Well 173A
VOCs vs. Time



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

Weiss Associates

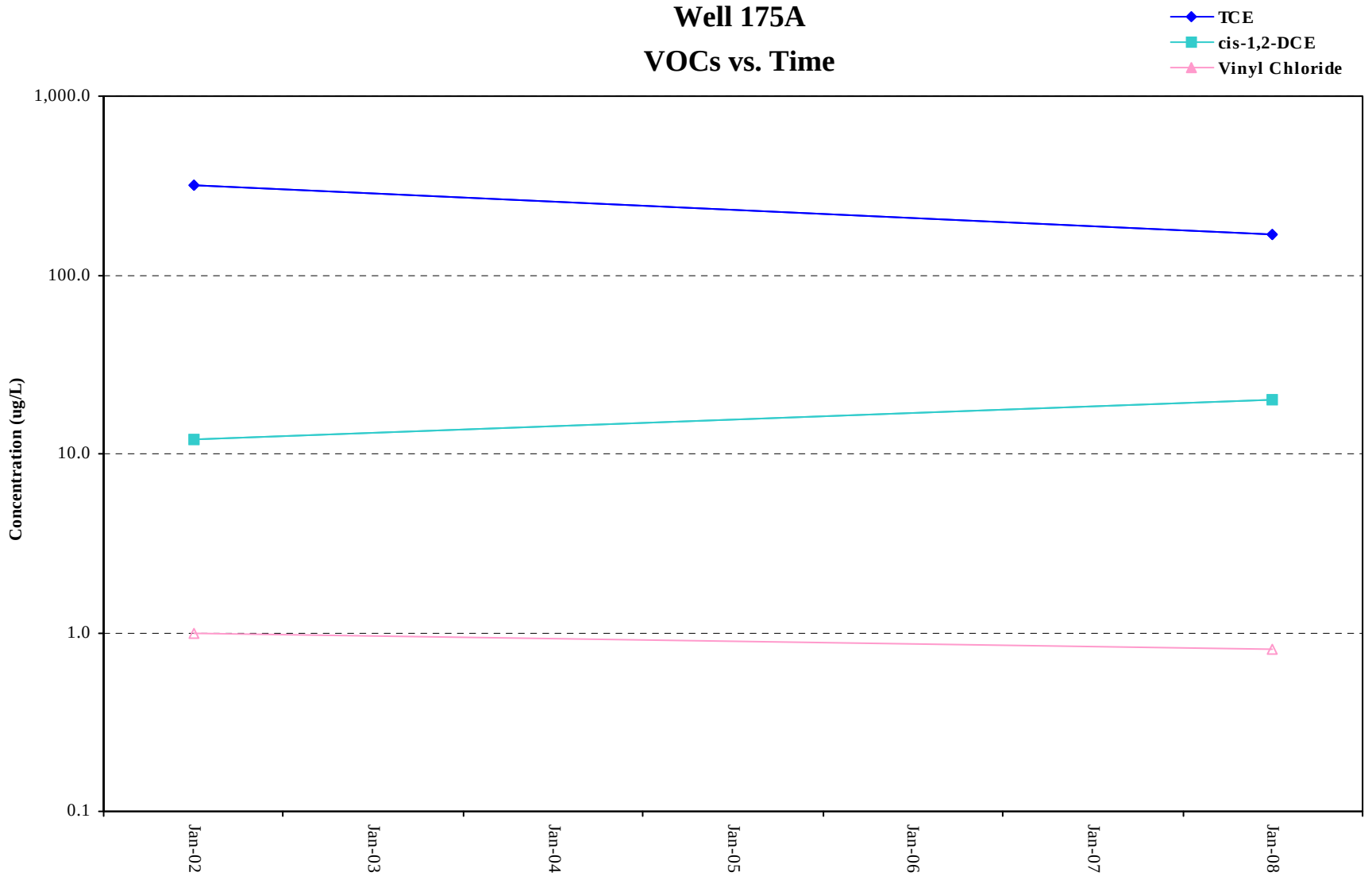
Well 174A
VOCs vs. Time



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

Weiss Associates

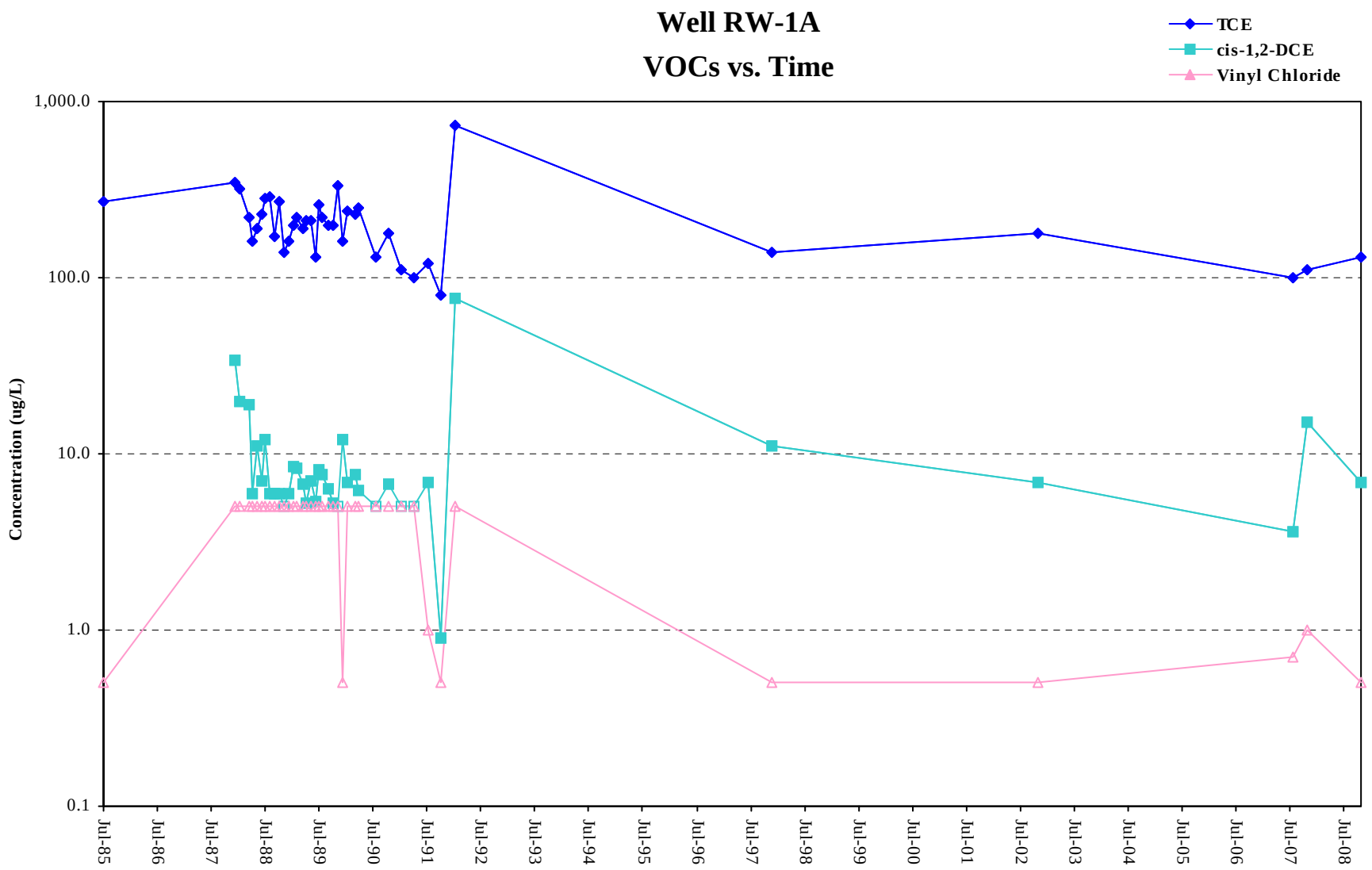
Well 175A
VOCs vs. Time



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

Weiss Associates

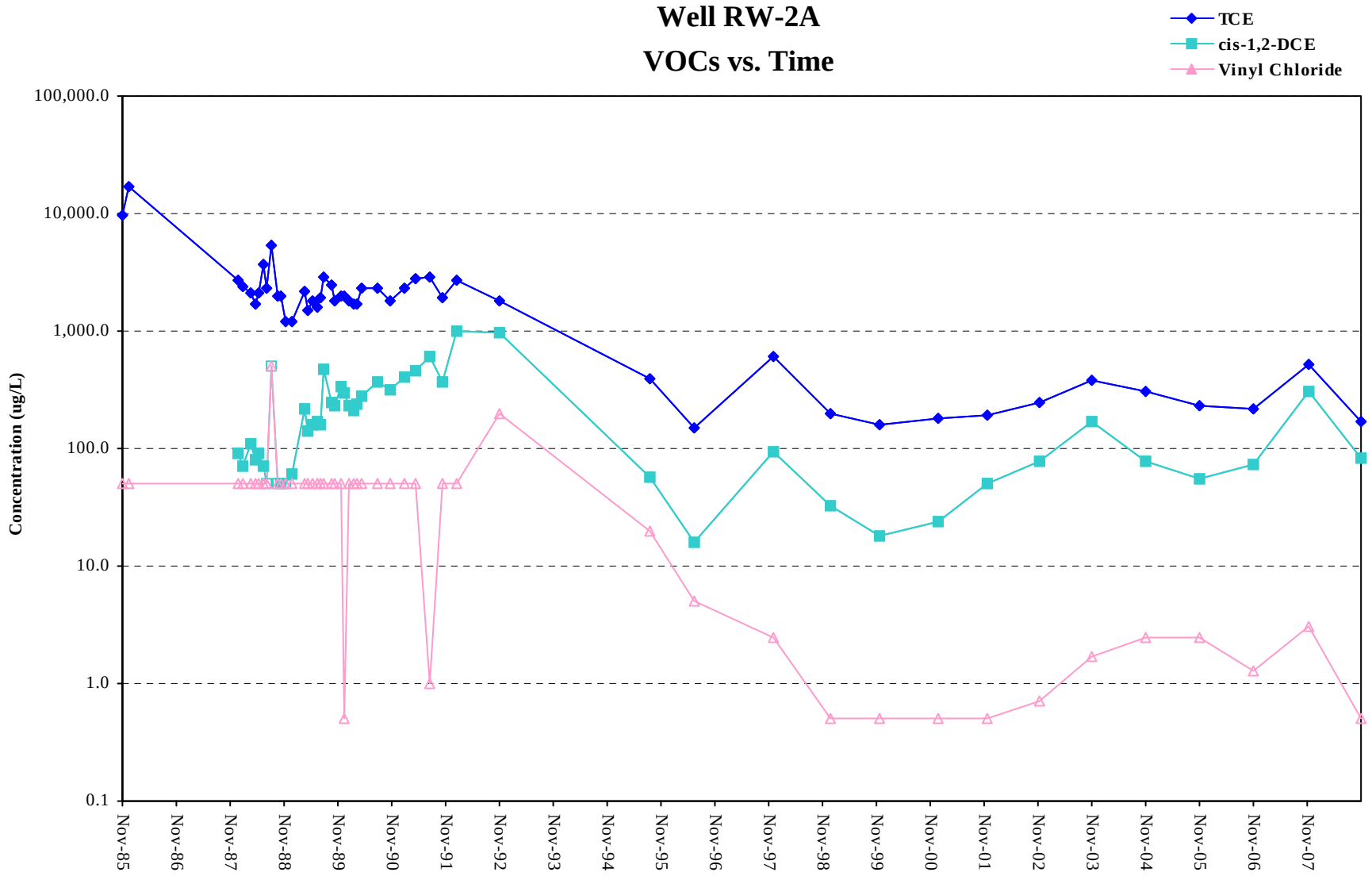
Well RW-1A
VOCs vs. Time



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

Weiss Associates

Well RW-2A
VOCs vs. Time



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

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
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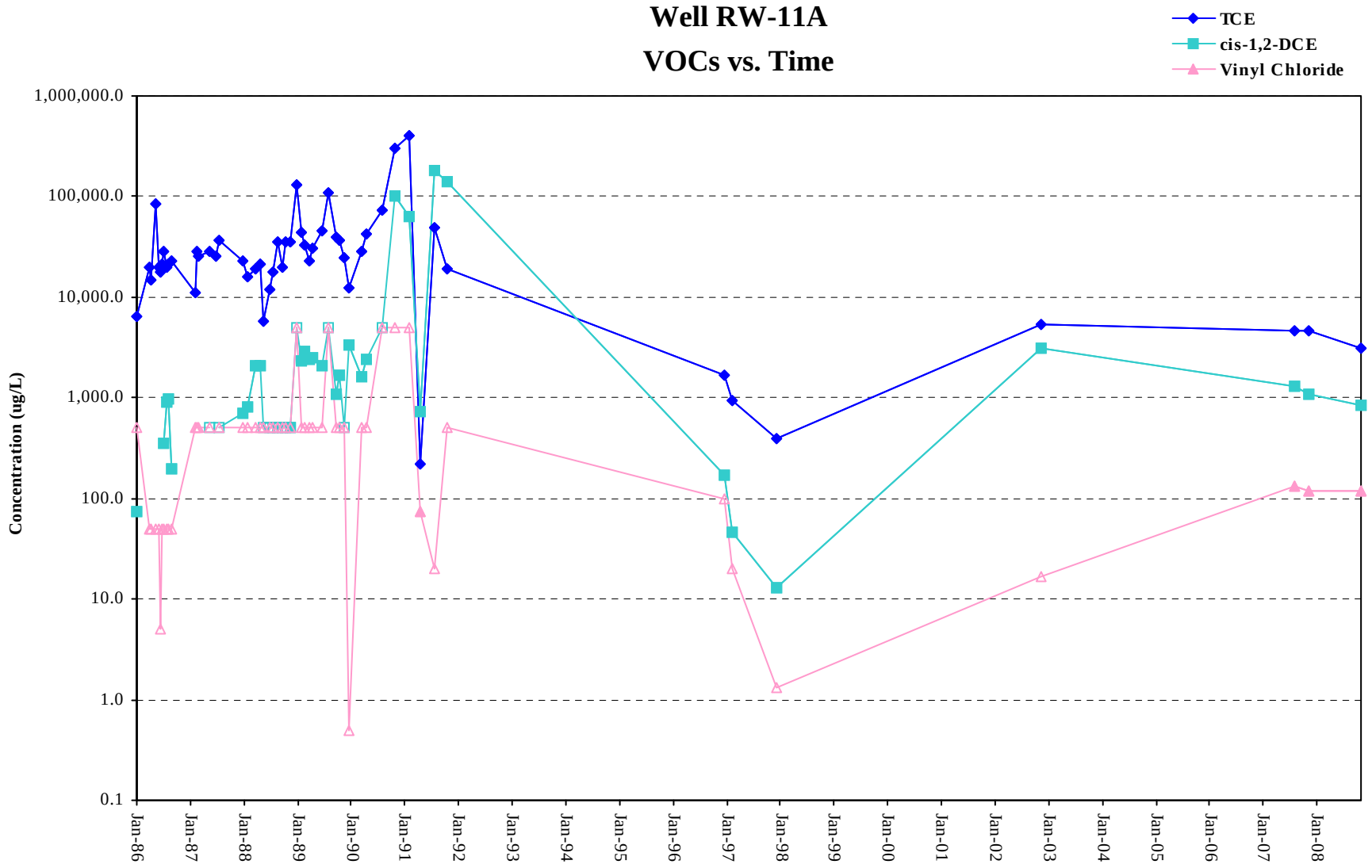
Weiss Associates

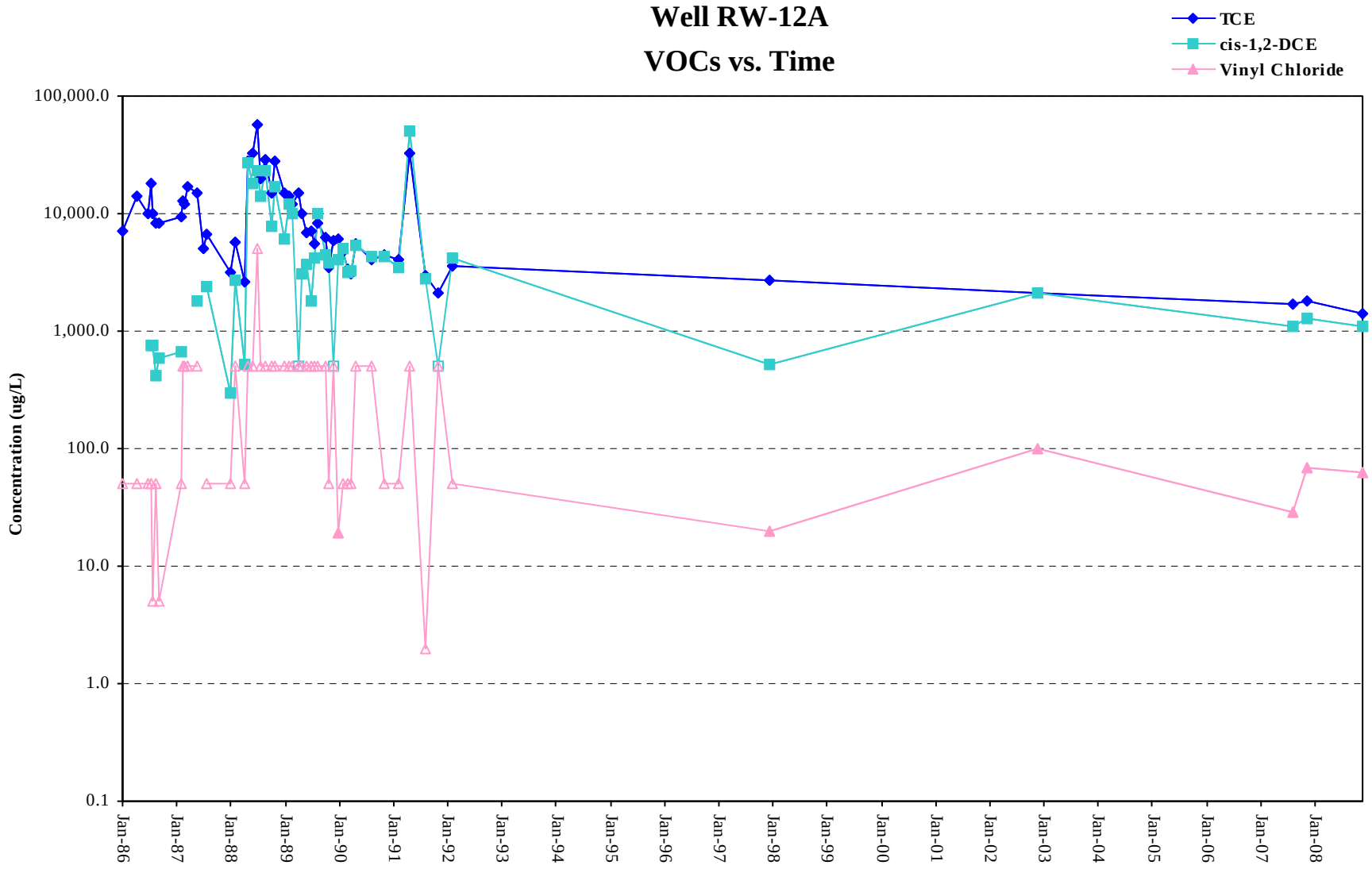
Well RW-11A
VOCs vs. Time



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

Weiss Associates

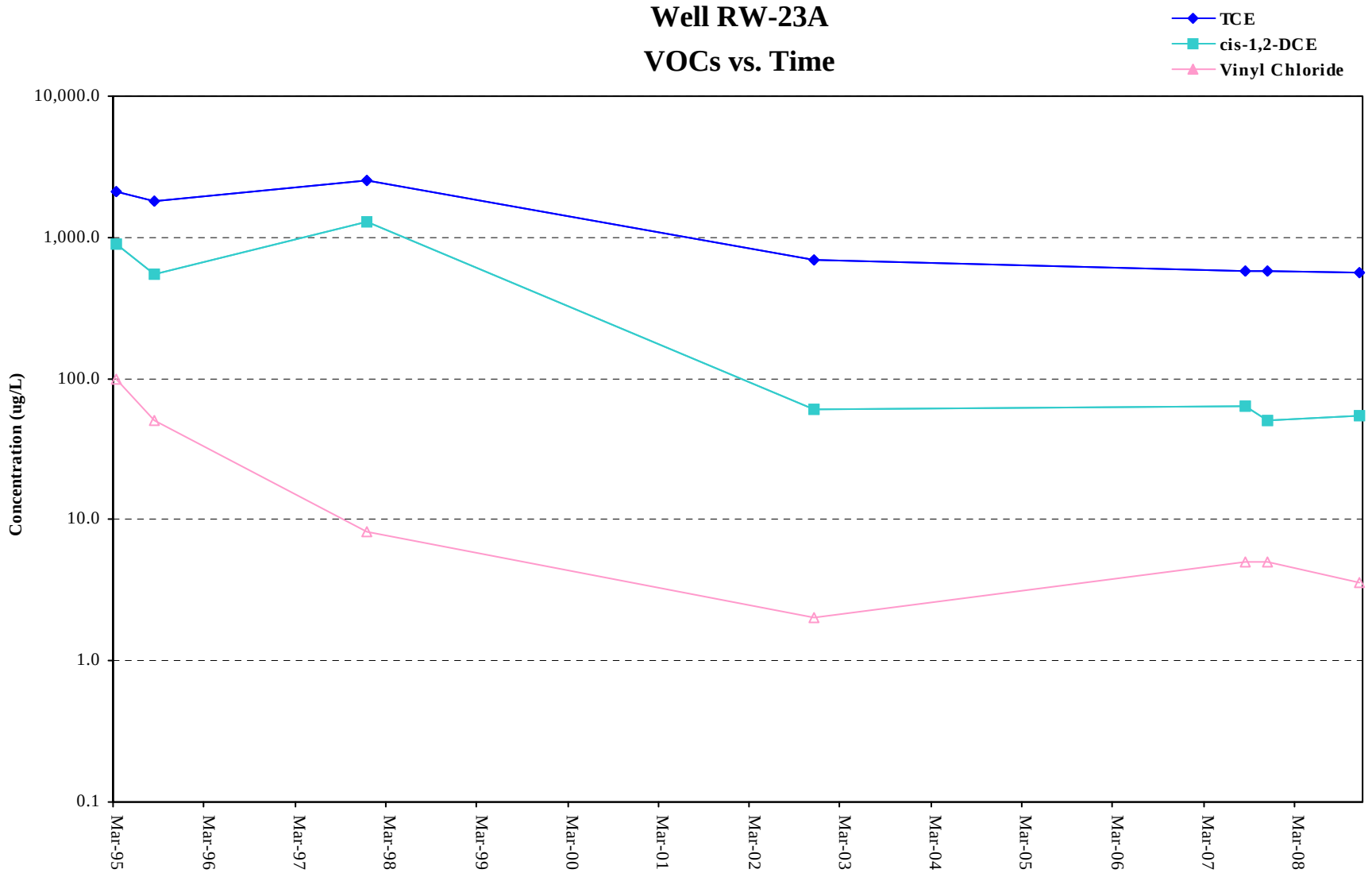
Well RW-12A
VOCs vs. Time



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

Weiss Associates

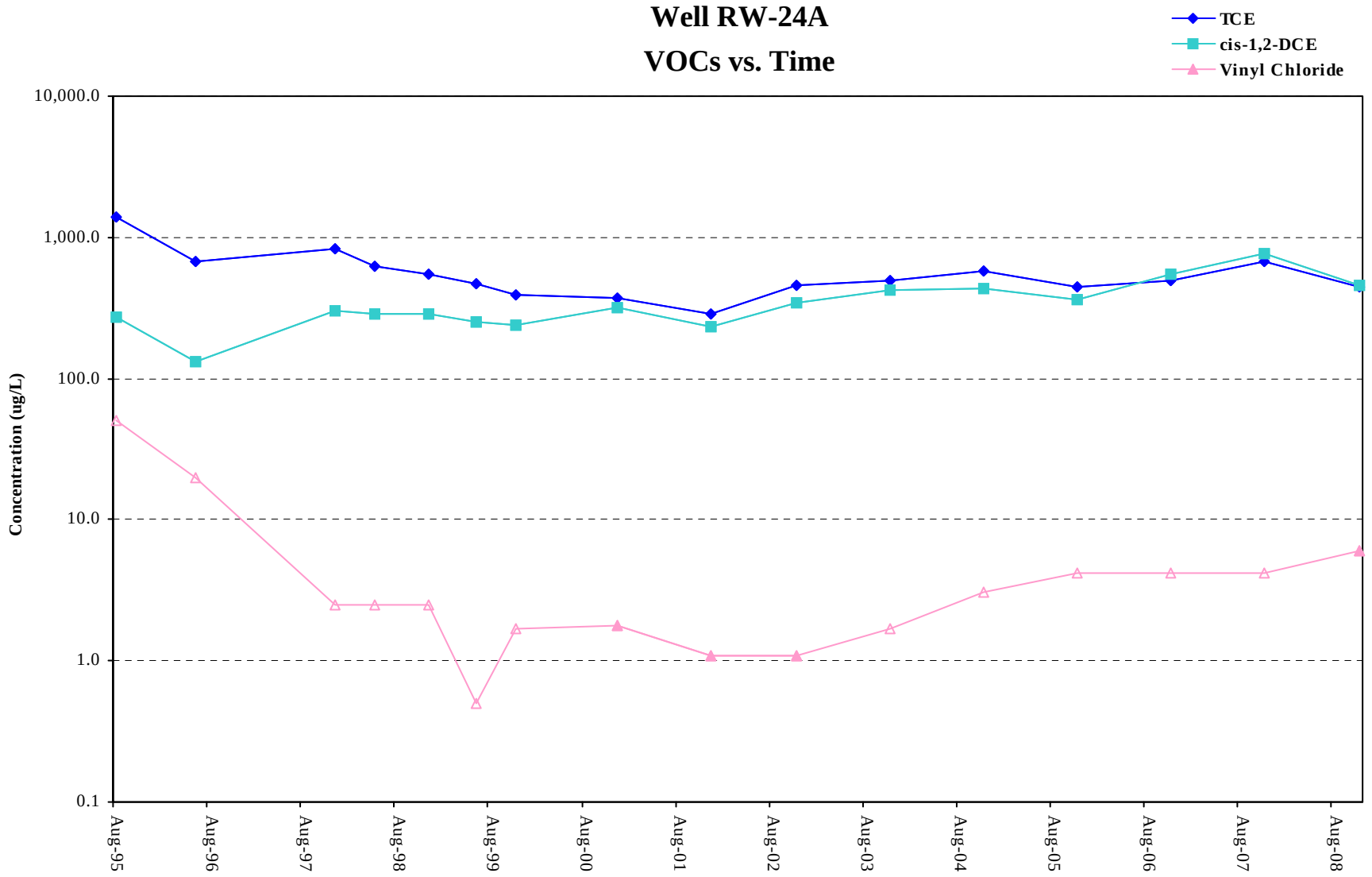
Well RW-23A
VOCs vs. Time



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

Weiss Associates

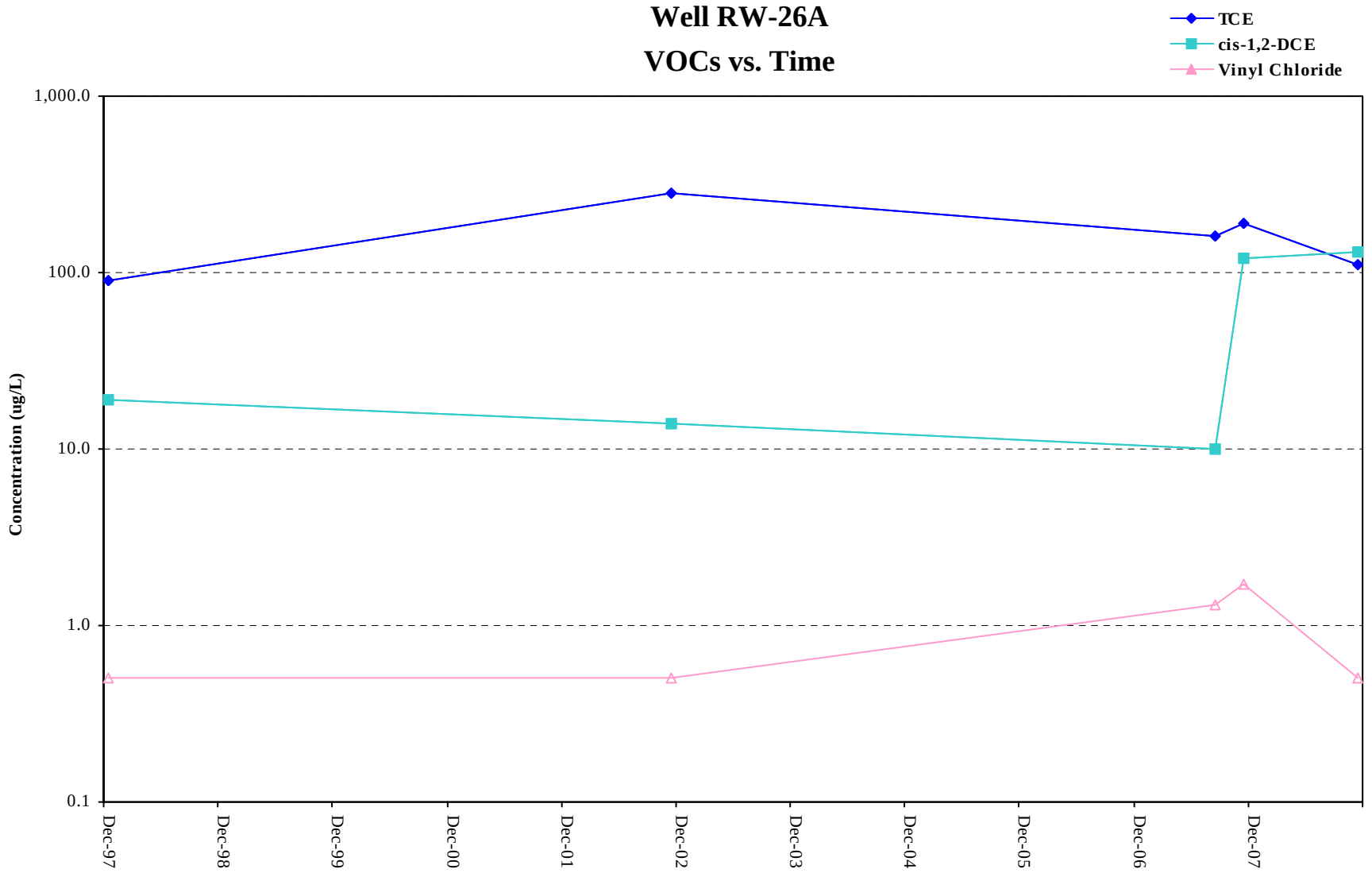
Well RW-24A
VOCs vs. Time



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

Weiss Associates

Well RW-26A
VOCs vs. Time



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

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
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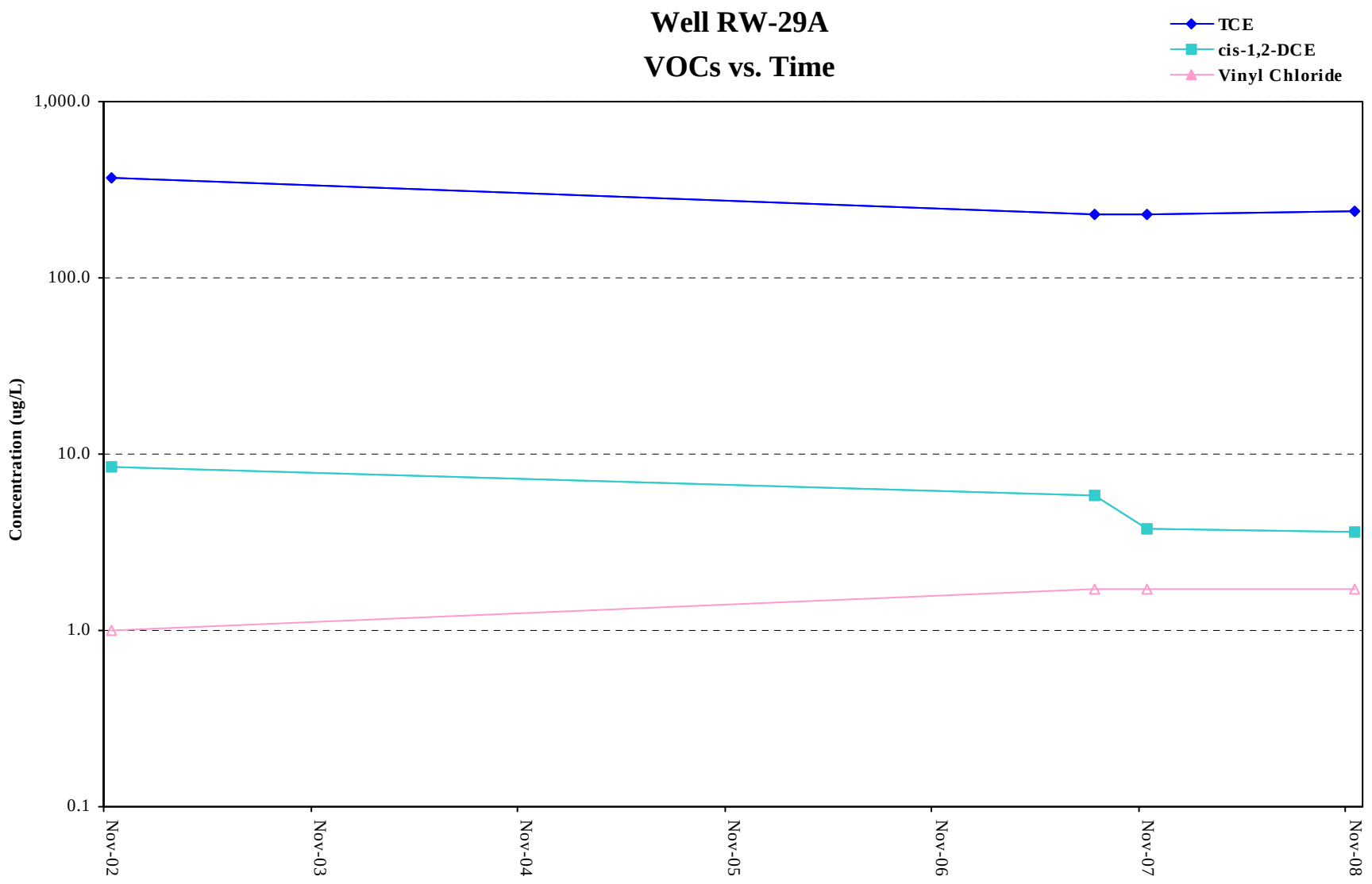
Weiss Associates

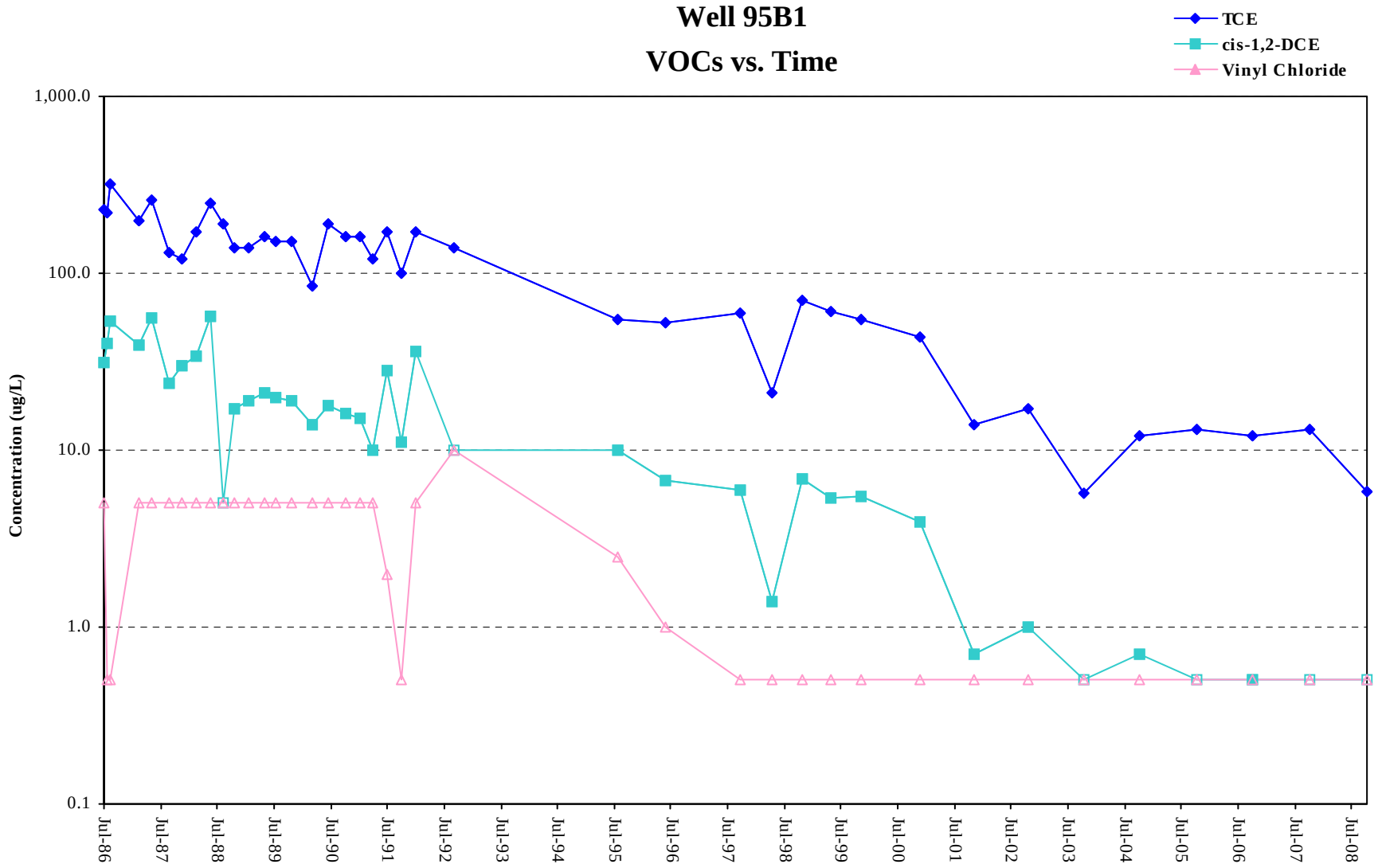
Well RW-29A
VOCs vs. Time



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

Weiss Associates

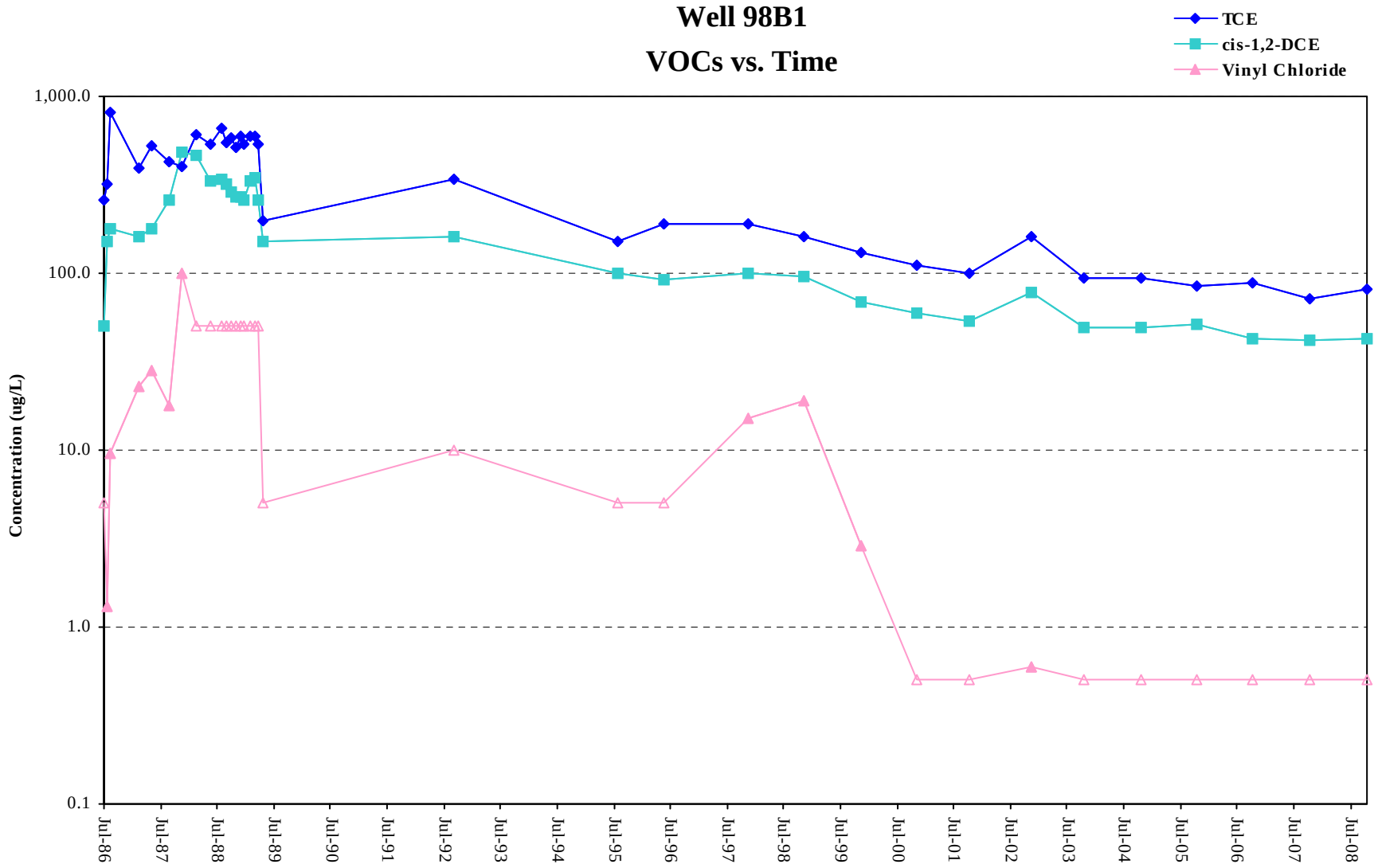
Well 95B1
VOCs vs. Time



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

Weiss Associates

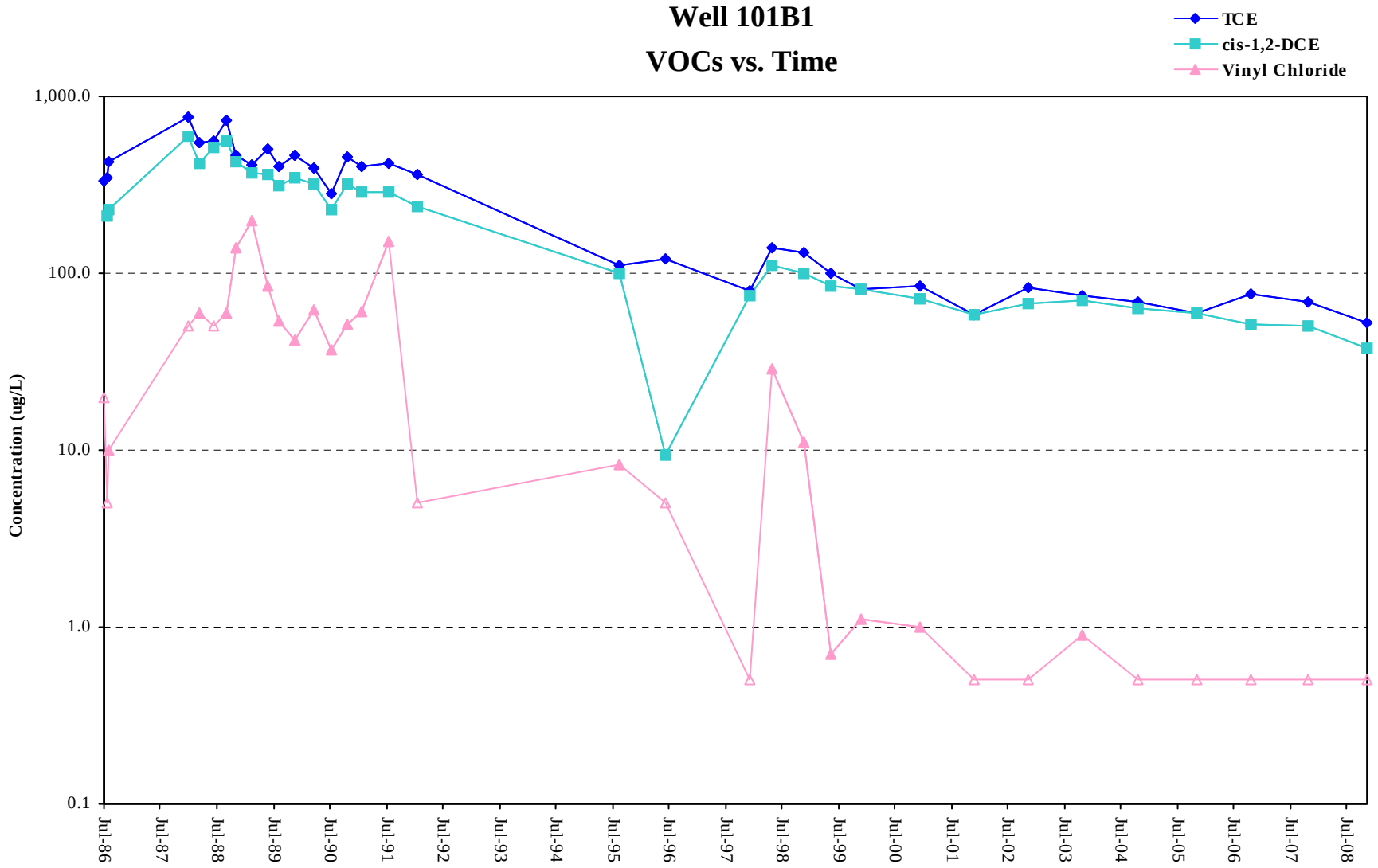
Well 98B1
VOCs vs. Time



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

Weiss Associates

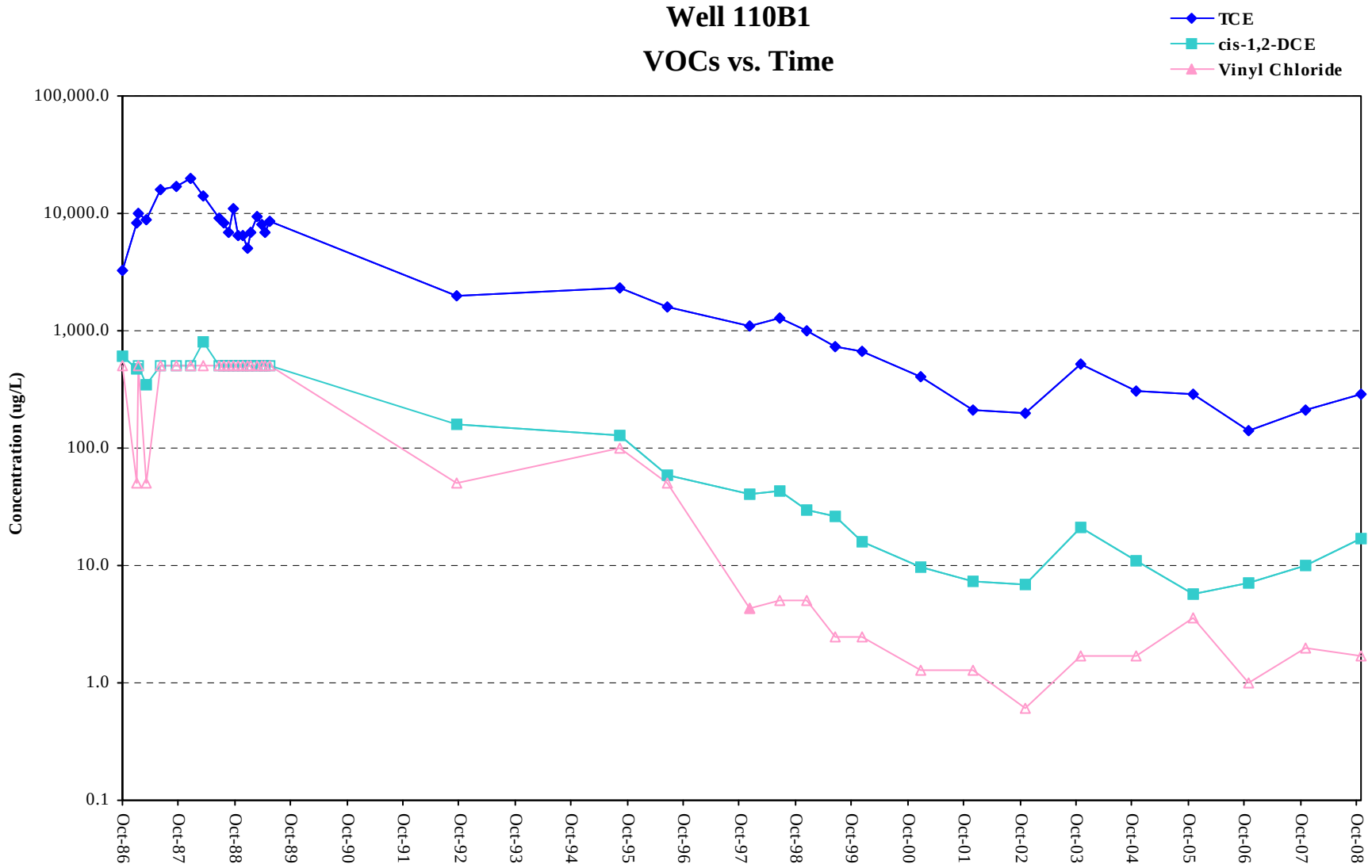
Well 101B1
VOCs vs. Time



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

Weiss Associates

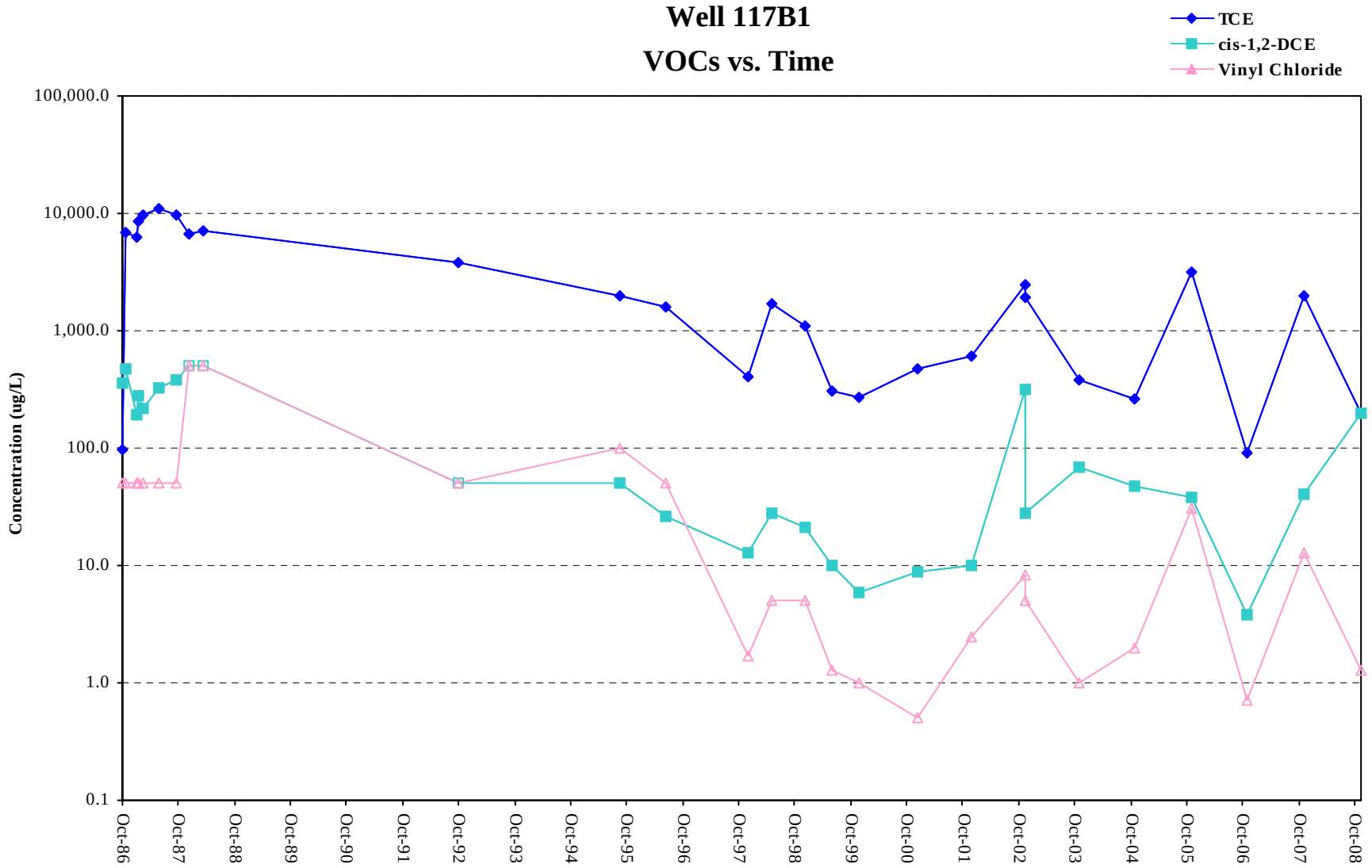
Well 110B1
VOCs vs. Time



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

Weiss Associates

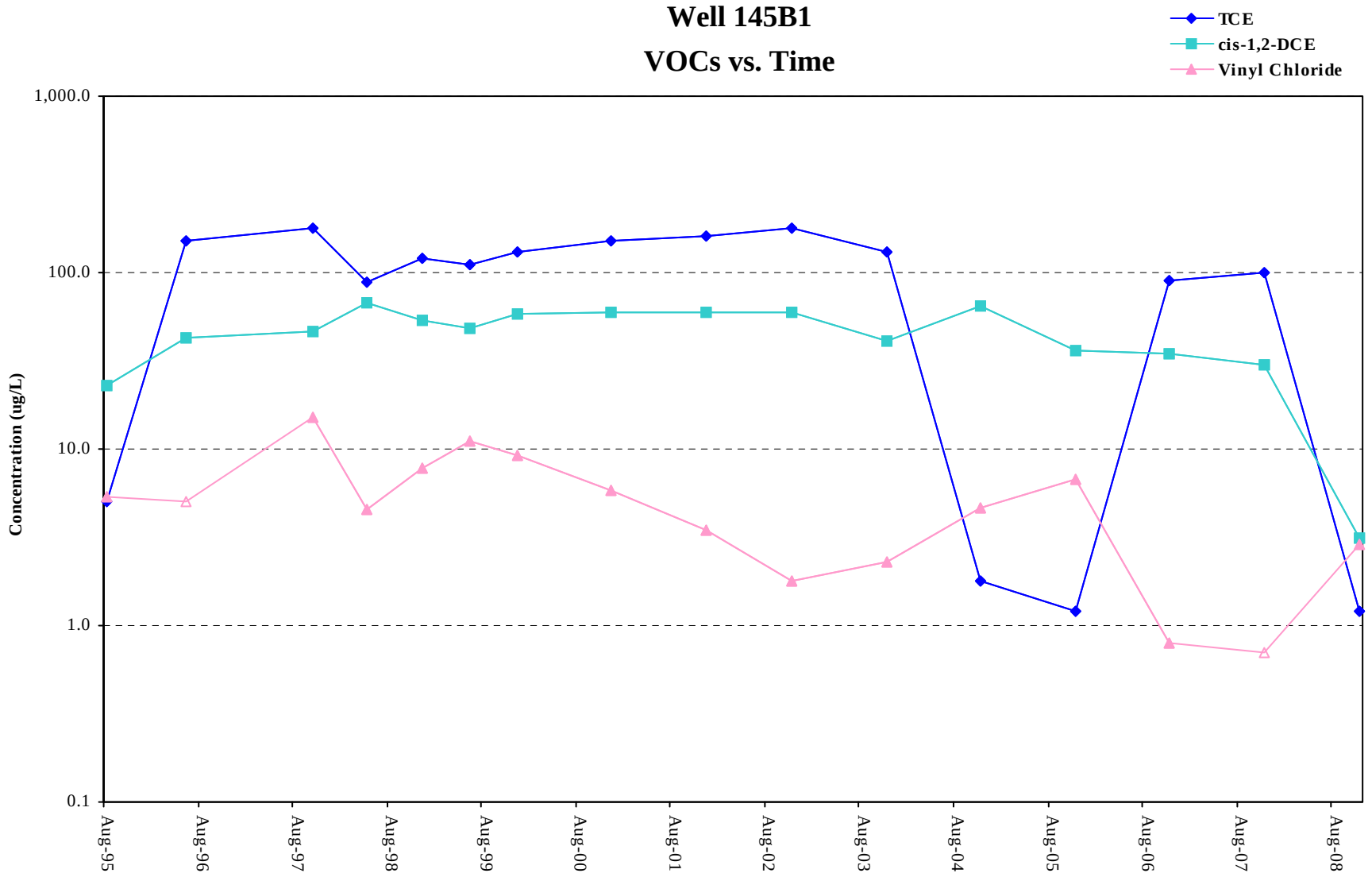
Well 117B1
VOCs vs. Time



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

Weiss Associates

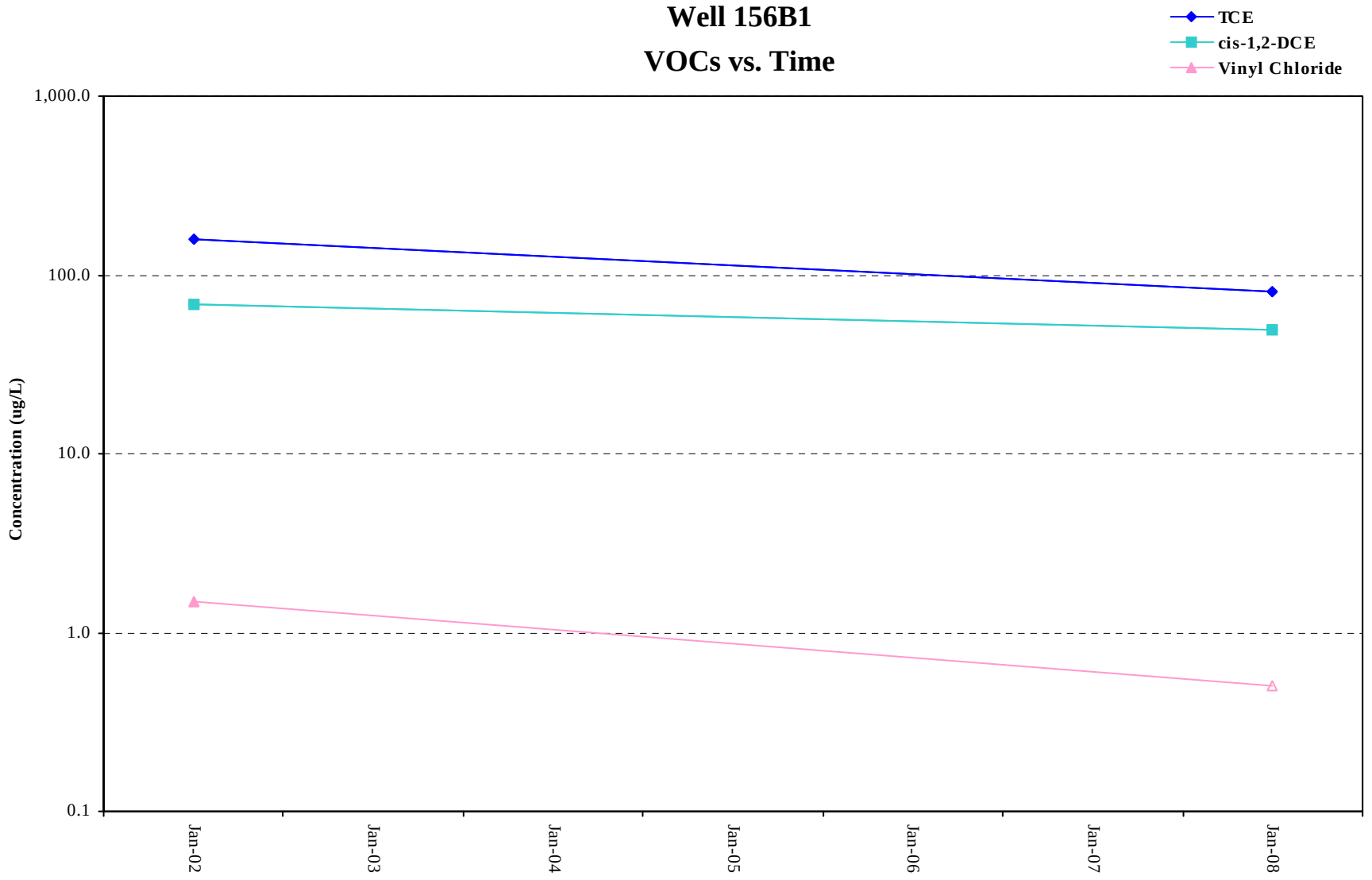
Well 145B1
VOCs vs. Time



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

Weiss Associates

Well 156B1
VOCs vs. Time



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

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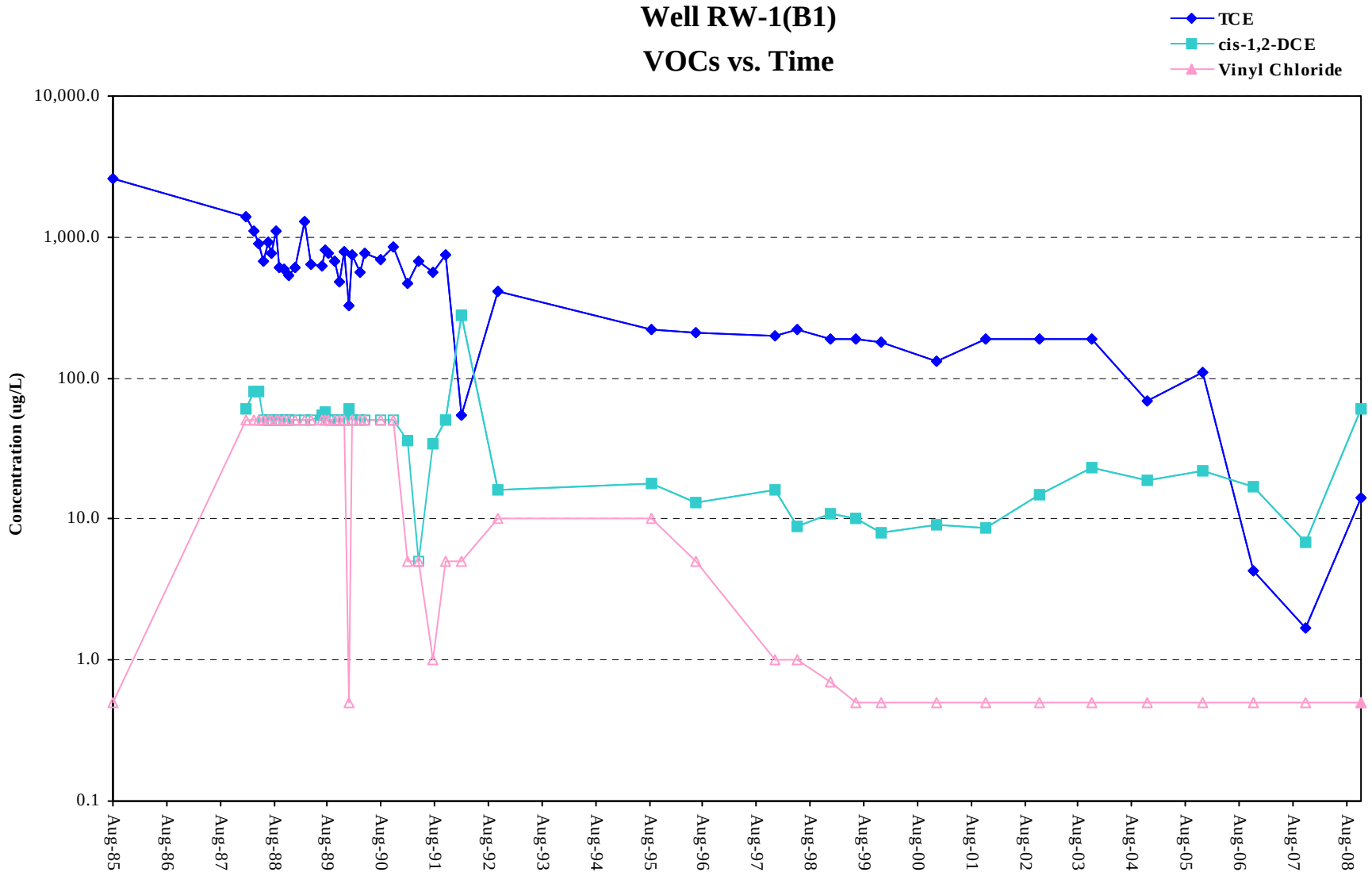
Weiss Associates

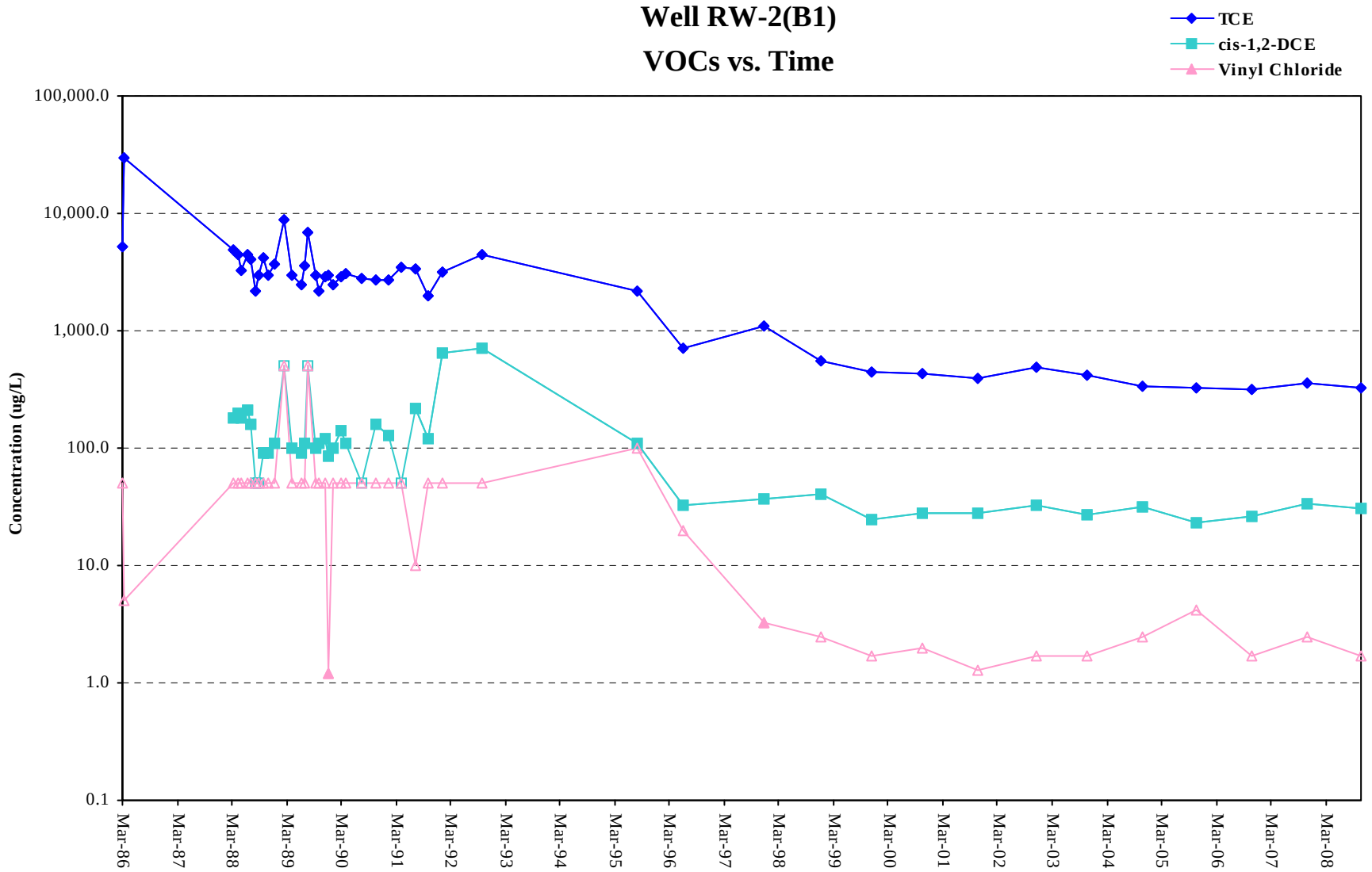
Well RW-1(B1)
VOCs vs. Time



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

Weiss Associates

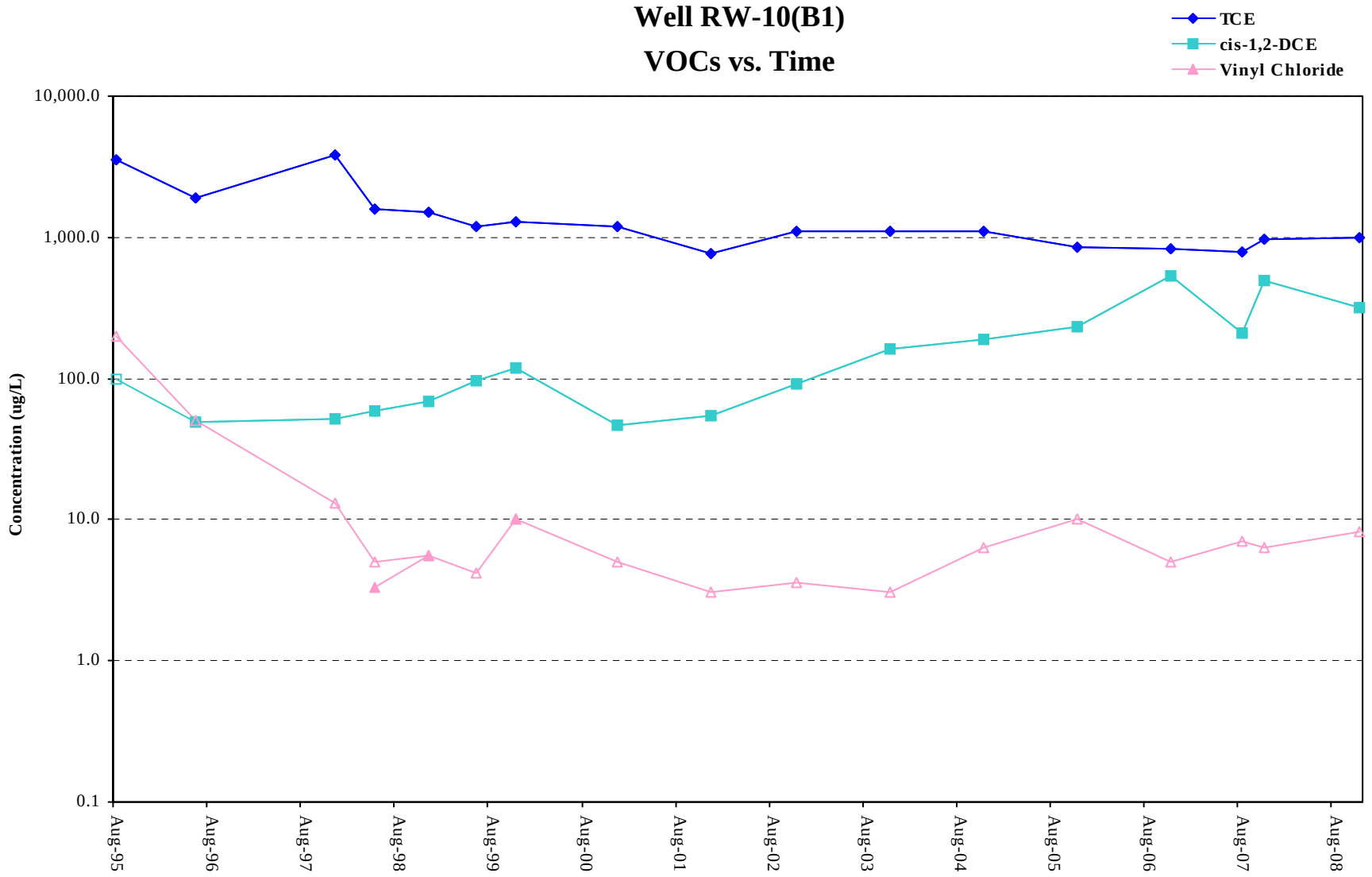
Well RW-2(B1)
VOCs vs. Time



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

Weiss Associates

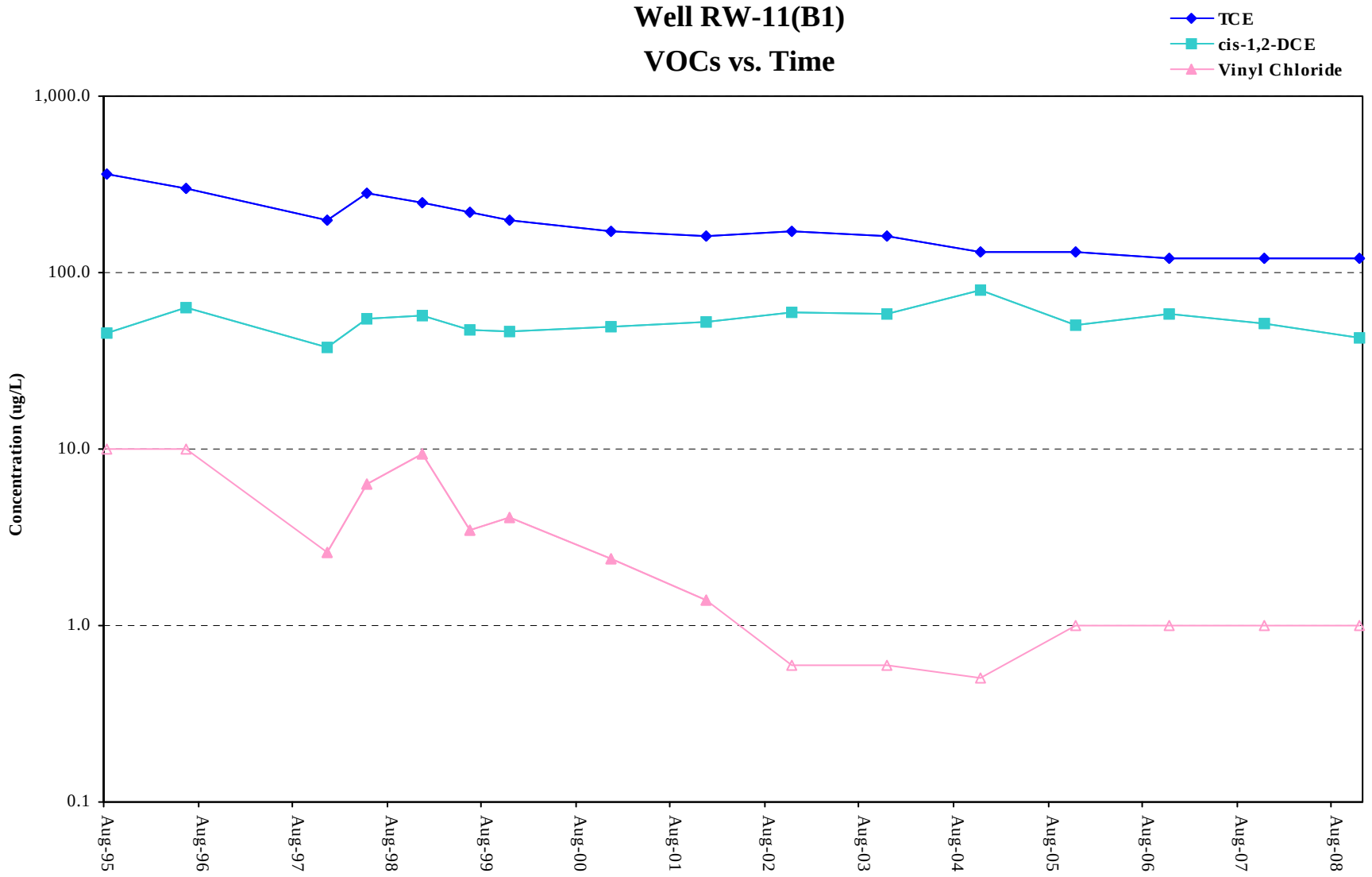
Well RW-10(B1)
VOCs vs. Time



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

Weiss Associates

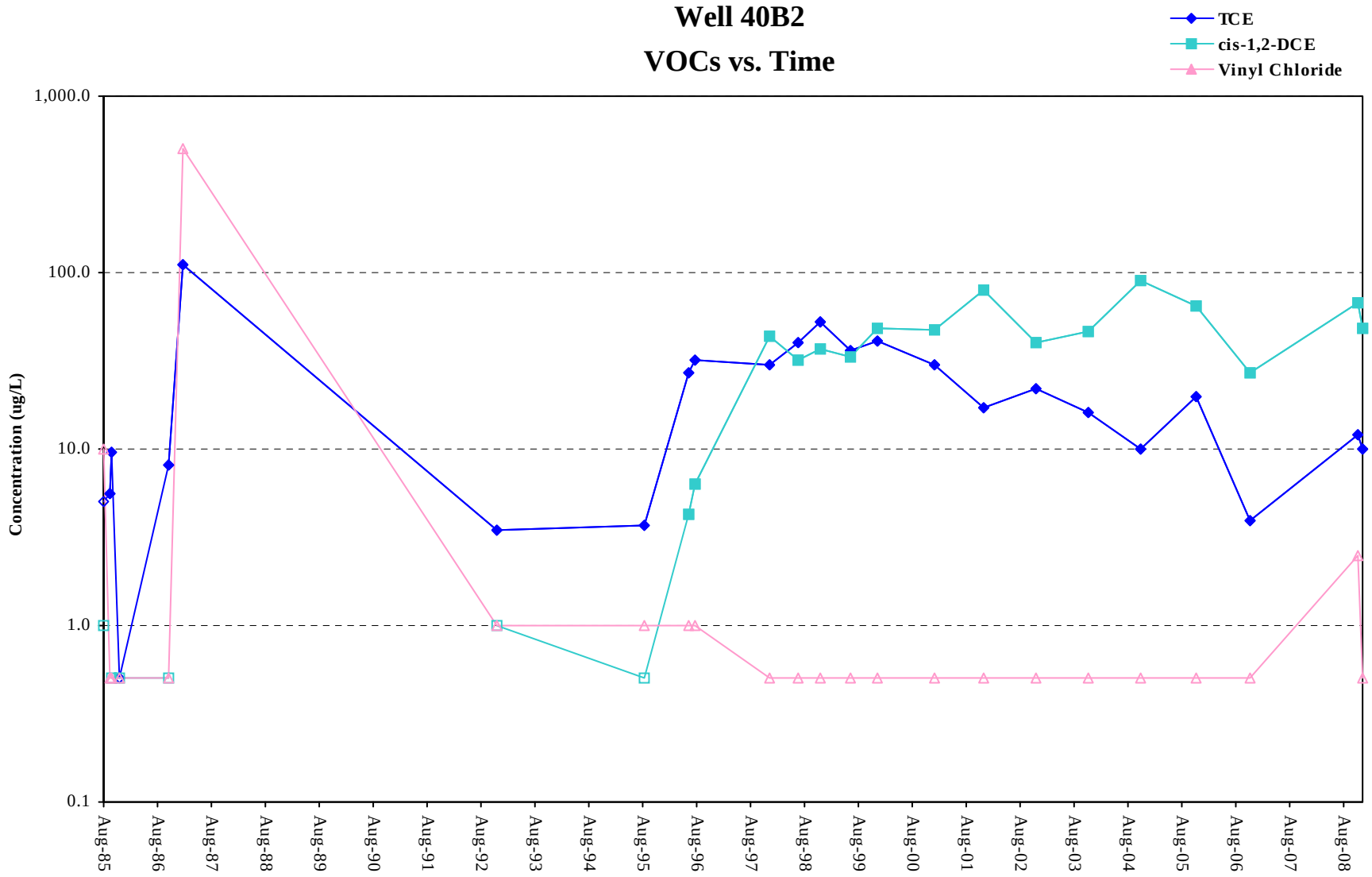
Well RW-11(B1)
VOCs vs. Time



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

Weiss Associates

Well 40B2
VOCs vs. Time

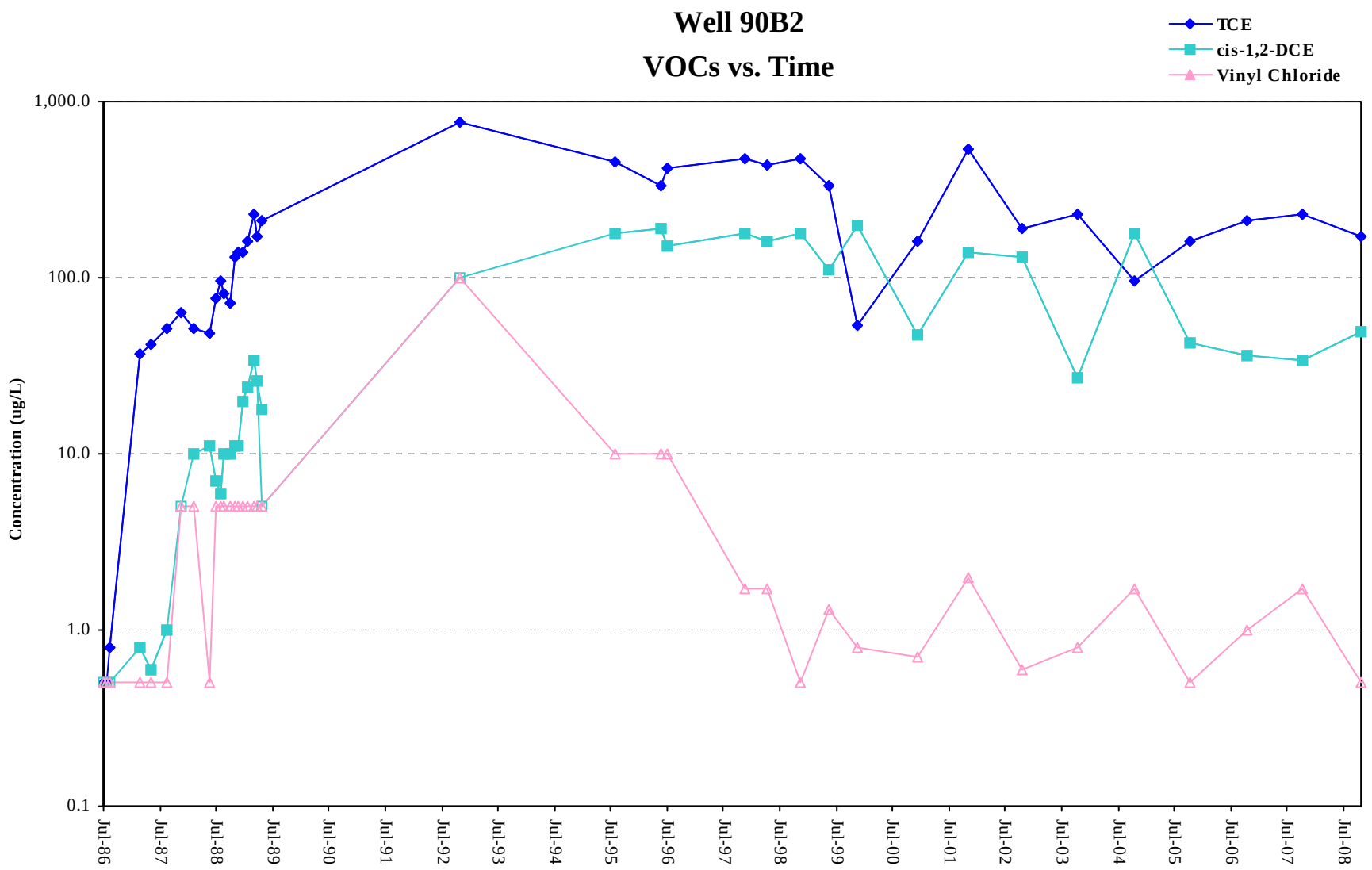


NOTE: Analytes not detected above the reported detection limit (RDL) shown as open chart symbols at the RDL.

Weiss Associates

Well 90B2

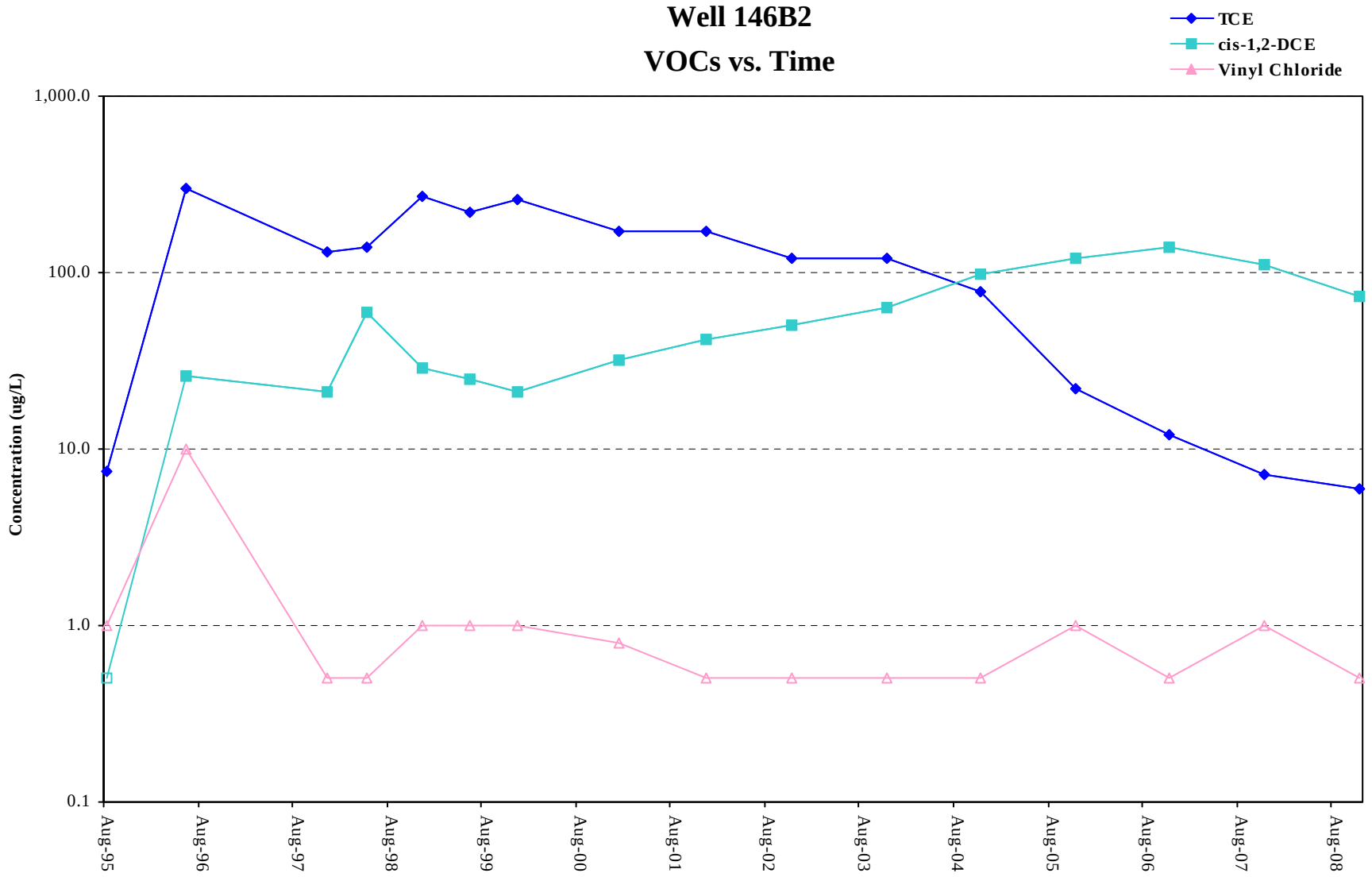
VOCs vs. Time



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

Weiss Associates

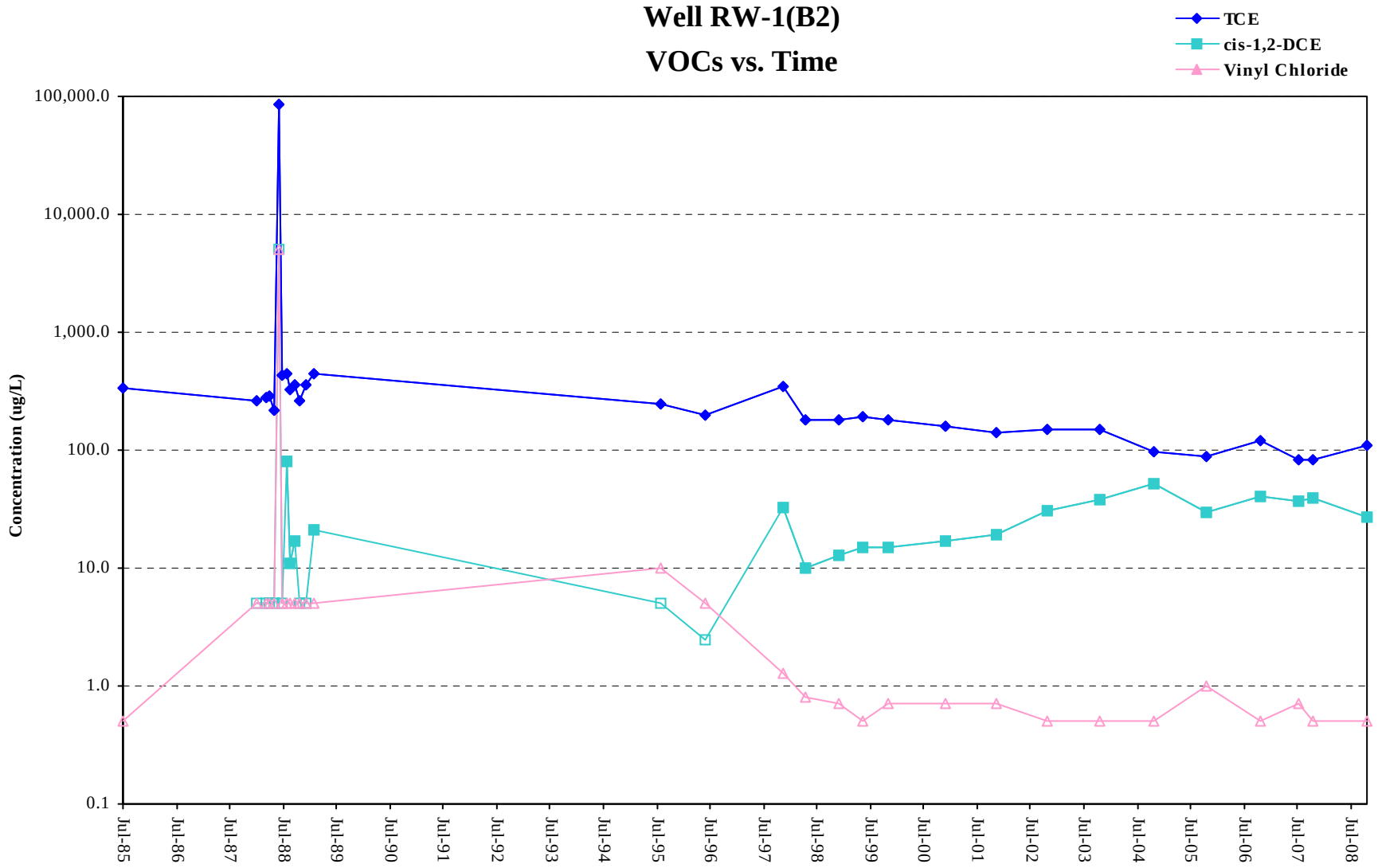
Well 146B2
VOCs vs. Time



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

Weiss Associates

Well RW-1(B2)
VOCs vs. Time



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

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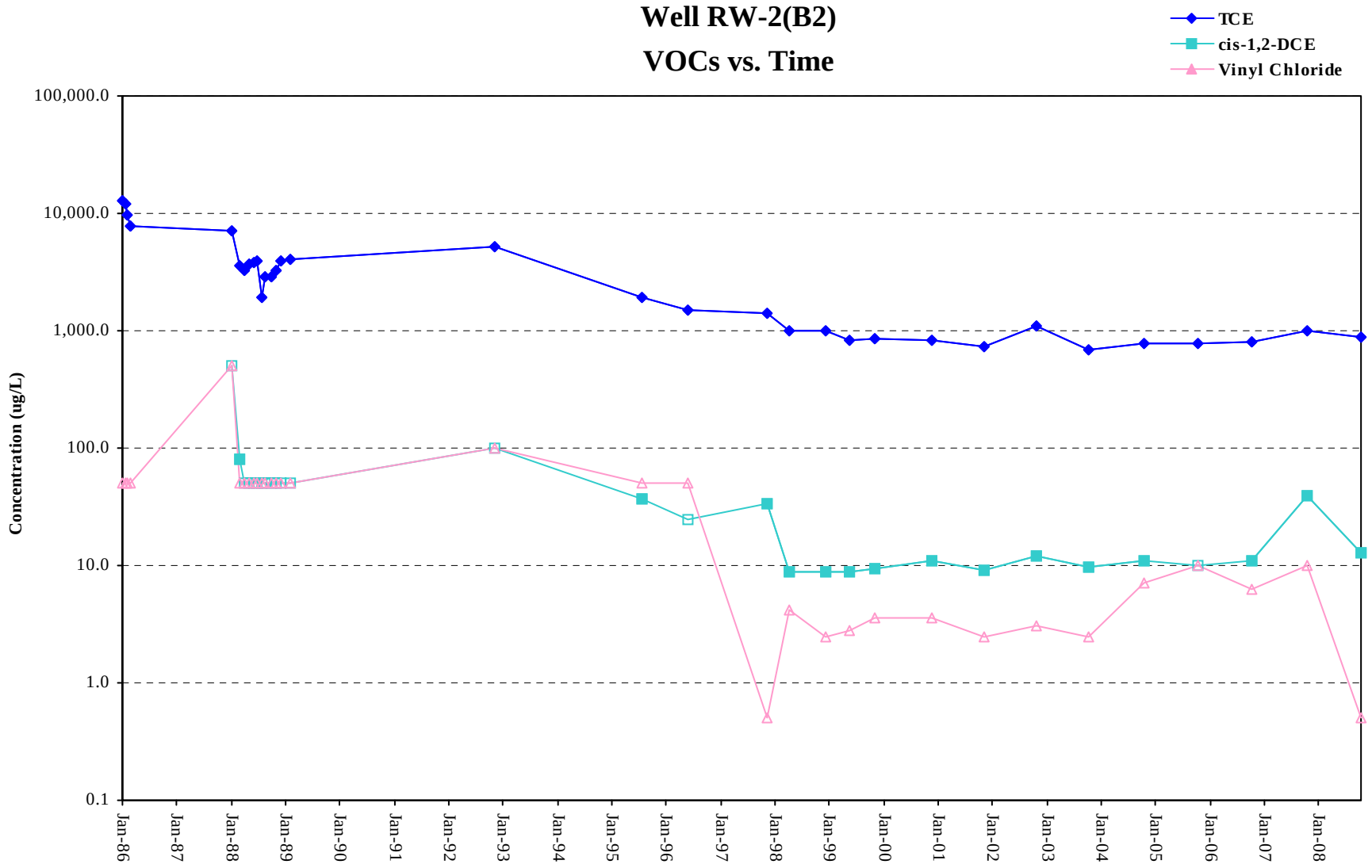
Weiss Associates

Well RW-2(B2)
VOCs vs. Time



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

Database: S:\WELLDATA\Schlumberger\Mt View - MEW\SlmbMv.mdb
Report: rptMvChrts2008Log Loc. Group: Bldg19

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