FIFTH FIVE-YEAR REVIEW REPORT FOR

INTERSIL INC./SIEMENS COMPONENTS SUPERFUND SITE

SANTA CLARA COUNTY, CALIFORNIA

PREPARED BY

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9/23/15

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Executive Summary

This is the fifth Five-Year Review (FYR) of the Intersil Inc./Siemens Components Superfund Site (Site) located in Cupertino, Santa Clara County, California. The purpose of this FYR is to review information to determine if the remedy is and will continue to be protective of human health and the environment. The triggering action for this FYR was the signing of the previous FYR on September 30, 2010.

The Site includes the following three areas (see Figure 1):

- Former Intersil, Inc. (Intersil) facility, located at 10900 North Tantau Avenue, Cupertino, California
- Former Siemens facility, located at 10950 North Tantau Avenue, Cupertino, California
- Off-Property Study Area, located north of, and hydraulically downgradient from, the former Intersil and Siemens facilities, which extends into Sunnyvale, California.

The former Siemens facility is located directly adjacent to and north of the former Intersil facility. A residential neighborhood is located immediately north of the Site. Calabazas Creek is approximately 1,100 feet east of the Site and flows north-northeast approximately 7 miles into San Francisco Bay.

From 1967 to 1988, Intersil operated its facility at 10900 North Tantau Avenue as a silicon wafer fabrication plant and office building. In connection with these activities, Intersil used inorganic etching solutions (such as acids) and large amounts of water (up to 100,000 gallons per day). Trichloroethylene (TCE), an industrial solvent, was used as a cleaning agent prior to 1979 and 1,1,1-trichloroethane (1,1,1-TCA) was used until closure of the facility in 1988. Intersil initiated investigations of the property in 1983. The investigations conducted between 1983 and 1988 revealed the presence of TCE in soil and groundwater beneath the central and northern portions of the property.

From approximately 1970 to 1982, Litronix used the former facility at 10950 North Tantau Avenue for semiconductor manufacturing operations. From 1982 to 1995, Siemens used the facility for semiconductor manufacturing operations. Until the mid-1980s, the semiconductor manufacturing operations involved the use of various organic solvents, primarily TCE and 1,1,1-TCA. Investigations began in 1982 after the discovery of contaminants during the removal of the underground storage tanks. Investigations performed between 1982 and 1989 indicated that releases of mostly chlorinated volatile organic compounds (VOCs) and semi-volatile organic compounds had occurred; these releases affected soil and groundwater at levels that required remediation.

Intersil and Siemens initiated the investigation of the Off-Property Study Area in 1986. The Off-Property Study Area has no known history of manufacturing activities and is almost entirely developed for residential use. During the initial investigation, the A Zone groundwater was not found to be impacted and no remediation of the A Zone was required under California Regional Water Quality Control Board, San Francisco Bay Region, Order 90-119. However, the Record of Decision signed shortly thereafter required further Off-Property investigation. This investigation indicated that the B Zone was the most contaminated and that the C Zone was much less contaminated. No direct groundwater extraction from the C Zone was required because the low VOC concentrations in the C Zone were captured by increased pumping in the B Zone.

General Electric (GE) has continuously operated a groundwater extraction and treatment (GWET) system at the former Intersil property since 1987. During the most recent five years, GE's GWET system removed 43.75 pounds of VOCs. GE operated a soil vapor extraction and treatment (SVET) system from 1988 to 1993 and removed 3,000 pounds of VOCs. SMI Holding, LLC (Siemens) has continuously

operated a GWET system at the former Siemens property since 1987. During the most recent five years, Siemens's GWET system removed 268 pounds of VOCs. Siemens operated a SVET system from 1983 to 2004 and removed 17,310 pounds of VOCs.

GE and Siemens have continuously operated a GWET system in the Off-Property Study Area since 1990. During the most recent FYR period, GE and Siemens's Off-Property GWET system removed 111 pounds of VOCs.

The entire Site remedy, including the past soil excavation, past soil vapor extraction, and ongoing groundwater extraction and treatment is functioning as designed. However, TCE concentrations in groundwater sampled from wells in the A and B Zones are above the TCE cleanup standard and the TCE concentrations appear to be stabilizing above the cleanup standards at several locations. Trend analysis was conducted on 12 wells, and results from three of the wells show an increasing trend in TCE concentrations. Toxicity value revisions have occurred for several Contaminants of Concern (COCs), but these changes do not affect protectiveness. Land use and exposure pathways have not changed since the last FYR, and deed restrictive covenants are in place for the former Intersil and former Siemens properties.

Although vapor intrusion was previously noted as a potential change in the exposure assumptions used at the time of remedy selection, the extensive vapor intrusion assessment conducted in the last five years has concluded that there is no unacceptable risk to indoor air in fully occupied living or work spaces on any areas of the Site, including the residential Off-Property Study Area. Results for the on-Property buildings sampled showed either no evidence of vapor intrusion or low level vapor intrusion that does not pose an unacceptable health risk.

It is recommended, however, that significant changes in Site conditions that may occur in the future, such as a rise in shallow groundwater levels or significant on- or Off-Property development, be reviewed so as to determine whether the vapor intrusion pathway should be reassessed.

Regarding 1,4-dioxane, research has shown that this chemical is an emerging contaminant that can be found at sites contaminated by 1,1,1-TCA, which is a Site COC. However, there is no information regarding the presence and distribution of 1,4-dioxane in the subsurface.

The remedy at the Intersil Inc,/Siemens Components Superfund Site, including the former Intersil property, former Siemens Property, and Off-Property Study Area, currently protects human health and the environment because all exposure pathways and scenarios are being controlled, including the vapor intrusion pathway. In order for the remedy to be protective in the long-term, additional evaluations of the A Zone in the Off-Property Study Area must be conducted, the groundwater remedy needs to be optimized so as to be more effective, or an alternative remedy selected, and 1,4 dioxane should be analyzed in future site sampling to determine its distribution and whether it should be considered a site COC.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Intersil Inc./Siemens Components Superfund Site		
EPA ID: CAD041472341		
Region: 9	**State:** CA	**City/County:** Cupertino /Santa Clara

SITE STATUS	
NPL Status: Final	
Multiple OUs? No	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: State **If "Other Federal Agency" was selected above, enter Agency name:**
Author name (Federal or State Project Manager): Roger Papler
Author affiliation: California Regional Water Quality Control Board, San Francisco Bay Region (Lead Agency)
Review period: September 2014 – September 2015
Date of site inspection: March 10, 2015
Type of review: Policy
Review number: 5
Triggering action date: 9/30/2010
Due date *(five years after triggering action date)*: 9/30/2015

Issues and Recommendations Identified in the Five-Year Review:

OU(s): Click here to enter text.	**Issue Category: Monitoring**			
	Issue: Boundary of TCE plume in Off-Property Study Area has not been sufficiently defined.			
	Recommendation: Further evaluate and define TCE concentrations across the A Zone in the Off-Property Study Area.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	09/2016

Five-Year Review Summary Form (continued)

OU(s): Click here to enter text.	Issue Category: Remedy Performance			
	Issue: A minor increasing trend of VOCs at low levels was observed in three B-Zone wells. A stable trend above cleanup standards was observed in two A- Zone wells and one B-Zone wells. Increasing trends may preliminarily indicate a lack of full control of the TCE plume by the selected remedy (extraction wells) and stable trends may preliminarily indicate ineffectiveness of the current remedy in achieving cleanup standards.			
	Recommendation: Improve the efficiency of the current pump and treat system and/or develop alternative methods of remediation.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	09/2020

OU(s): Click here to enter text.	Issue Category: Monitoring			
	Issue: Research has shown that 1,4-dioxane is an emerging contaminant that can be found at sites where 1,1,1-TCA is a COC. However, there is no information regarding the presence and distribution of 1,4-dioxane in the subsurface.			
	Recommendation: Add 1,4-dioxane to the list of contaminants to be monitored for in regular groundwater sampling and assess whether it should be considered a site COC.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
Yes	Yes	PRP	EPA/State	09/2020

Sitewide Protectiveness Statement (if applicable)	
Protectiveness Determination: Short-term Protective	*Addendum Due Date (if applicable):* *N/A*
Protectiveness Statement: The remedy at the Intersil Inc,/Siemens Components Superfund Site, including the former Intersil property, former Siemens Property, and Off-Property Study Area, currently protects human health and the environment because all exposure pathways and scenarios are being controlled, including the vapor intrusion pathway. In order for the remedy to be protective in the long-term, additional evaluations of the A Zone in the Off-Property Study Area must be conducted, the groundwater remedy needs to be optimized so as to be more effective, or an alternative remedy selected, and 1,4-dioxane should be analyzed in future site sampling to determine its distribution and whether it should be considered a site COC.	

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List of Abbreviations

1,1-DCE	1,1-dichloroethylene
1,1,1-TCA	1,1,1-trichloroethane
ARAR	Applicable or Relevant and Appropriate Requirement
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cis-1,2-DCE	cis-1,2-dichloroethylene
COC	contaminant of concern
CSM	conceptual site model
DCE	dichloroethene
EPA	U.S. Environmental Protection Agency
ERD	enhanced reductive dechlorination
ESL	Environmental Screening Level
FYR	Five-Year Review
GAC	granular activated carbon
GE	General Electric
gpm	gallons per minute
GWET	groundwater extraction and treatment
Intersil	Intersil, Inc.
IRIS	Integrated Risk Information System (EPA)
MCL	Maximum Contaminant Level
mg/kg	milligram(s) per kilogram
mg/L	milligrams per liter
MIP	membrane interface probe
NCP	National Contingency Plan
NPDES	National Pollutant Discharge Elimination System
O&M	operation and maintenance
OU	operable unit
PCE	tetrachloroethene (also called tetrachloroethylene and perchloroethylene
PRP	potentially responsible party
ROD	Record of Decision
RSL	Regional Screening Level
RWB	California Regional Water Quality Control Board, San Francisco Bay Region
SCR	Site Cleanup Requirements
Site	Intersil Inc./Siemens Components Superfund Site
SVE	soil vapor extraction
SVET	soil vapor extraction and treatment
SVOC	semivolatile organic compound
TCA	trichloroethane
TCE	trichloroethene
trans-1,2-DCE	trans-1,2-dichloroethylene
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound

Fifth Five-Year Review Report

for

Intersil Inc./Siemens Components Superfund Site

1. Introduction

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. The methods, findings, and conclusions of FYRs are documented in FYR reports. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA 121 states:

> If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

> If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action.

The California Regional Water Quality Control Board, San Francisco Bay Region (RWB), periodically conducts FYRs of the remedy implemented at the Intersil Inc./Siemens Components Superfund Site (Site) in Cupertino, Santa Clara County, California. This is the fifth FYR. The triggering action for this review is the completion of the fourth FYR on September 30, 2010. This policy FYR is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

The RWB is the lead agency for developing and implementing the remedy for the Site. EPA has reviewed all supporting documentation and provided input during the FYR process.

The Site consists of three distinct areas in Cupertino. The first area is the former Intersil property, located at 10900 North Tantau Avenue. The second area, the former Siemens property, lies immediately to the north, at 10950 North Tantau Avenue. These two areas have comingled plumes of volatile organic compounds (VOCs) in both groundwater and vadose zone soils. This plume extends north to an adjacent residential area of Sunnyvale. This Off-Property plume is the third area within the overall site, and is known as the Off-Property Study Area.

This FYR addresses all three areas included within the Site.

2. Site Chronology

Table 1 lists the dates of important events for the Intersil Inc./Siemens Components Superfund Site (Site).

Table 1. Chronology of Site Events

Activity	Date
Former Intersil Facility	
Intersil used solvents during fabrication of integrated circuits, transistors, diodes, and other semiconductor devices at the former Intersil property	1967-1988
Intersil initiated investigations and removed in-ground waste handling units	1983-1986
California Regional Water Quality Control Board, San Francisco Bay Region (RWB) issued Waste Discharge Requirements/Site Cleanup Requirements (SCR), Order No. 86-49	1986
RWB issued Cleanup and Abatement Order No. 87-133	1987
Intersil started groundwater extraction and treatment (GWET) system	1987
Intersil removed in-ground waste handling units and ceased operation at facility and started soil vapor extraction and treatment (SVET) system	1988
RWB issued SCR Order No. 89-038	1989
RWB issued SCR Order No. 90-119 (Final SCR) and EPA included site on final listing on National Priorities List and issued the Record of Decision (ROD) based on Final SCR	1990
General Electric (GE), parent company of Intersil, purchased the property from Vallco Park, Ltd.	1992
GE decommissioned the SVET system with RWB approval	1993
Groundwater levels rose approximately 50 feet, reducing the vadose zone to the interval from surface level to 45 feet below ground surface (bgs)	1993-1998
RWB and EPA complete first FYR, which includes all 3 properties	1995
Manufacturing building demolished	1997
RWB and EPA completed second FYR, which includes all 3 properties	2000
RWB and EPA completed third FYR, which includes all 3 properties	2005
GE filed a Covenant and Environmental Restriction, including a Soil Management Plan	2005

Activity	Date
Soil vapor survey conducted; only benzene, TCE, and 1,3-butadiene were detected above California Environmental Screening Levels or Human Health Screening Levels for commercial/industrial land use	2006
Air strippers replaced by granular activated carbon (GAC) treatment vessels	2007
Four monitoring wells were abandoned, after showing consistently low concentrations of contaminants of concern (COCs)	2007
Tantau Investments constructed a commercial building on the property, including a 15-milliliter vapor barrier	2008
Membrane interface probe (MIP) subsurface investigation conducted to assess residual VOC concentrations and detected trichloroethene levels up to 9,000 micrograms per liter in one of the resaturated A Zones.	2008
RWB and EPA completed fourth FYR, which includes all 3 properties	2010
Hydrogeologic Framework Report written	2011
Second supplemental groundwater investigation conducted, indicating that VOC-impacted groundwater is captured by the current extraction well network	2011-2012
Off-Property residential soil vapor intrusion evaluation conducted	2013-2014
Former Siemens Facility	
Litronix used solvents during fabrication of semiconductor devices	1970-1995
Litronix stopped using trichloroethene (TCE)	1980
Litronix removed underground storage tanks (USTs), began soil and groundwater investigation, and discovered groundwater contamination. Siemens purchased property from Litronix	1982
Siemens installed and started up SVET system with one soil vapor extraction (SVE) well	1983
Siemens expanded SVET with two additional SVE wells	1985
Siemens installed and started up GWET system with air stripping towers, expanded SVET system with one additional SVE well, and removed inactive neutralization system	1986
Siemens conducted soil vapor sampling and hydraulic testing of the three groundwater zones	1987
EPA listed the Site on the National Priorities List under the Federal Superfund program; Siemens performed additional soil vapor sampling, vapor extraction testing, and soil investigation to 105 feet bgs	1989
Siemens started remedial investigation	1990
RWB issued SCR Order No. 90-119 (Final SCR) and EPA included Site on final listing on National Priorities List and issued the ROD based on Final SCR	1990
Siemens expanded the SVET system with 16 SVE wells and the GWET system to include 13 on-site extraction wells	1991
Siemens curtailed groundwater extraction from Well W21A with RWB approval	1999
Siemens sold property to Tantau Partners, LLC. Siemens performed indoor air quality evaluation that did not	2000

Activity	Date
reveal indoor air vapor intrusion	
Tantau Partners sold the property to Inland Western Cupertino Tantau, LLC. Siemens shut down the SVET system and started rebound study	2005
Siemens voluntarily initiated an initial Enhanced Reductive Dechlorination (ERD) Pilot Study, expanded GWET system with two wells, and permanently shut down the SVET system after completing rebound study. The draft pilot study report concluded that a northeast-trending preferential pathway exists in the Upper Restaturated Zone, currently designated as the A1 and A2 Zones	2006
Current Siemens property occupant Kaiser Permanente conducted indoor air quality investigation and risk assessment indicating ambient and indoor levels of tetrachloroethene (PCE) slightly above, and TCE below, RWB commercial/industrial Environmental Screening Levels (ESLs). The study concluded that the PCE detections were probably from indoor sources.	2007
Siemens conducted MIP investigation	2007
Siemens postponed supplemental ERD Pilot Study due to decline in groundwater level elevations in Upper Resaturated Interval of the Upper A Zone	2008
Corrective Grant Deed Stating Environmental Restriction agreed to by SMI Holding, LLC (Siemens) and Tantau Partners, LLC	2009
Hydrogeologic Framework Report written	2011
Northside groundwater investigation conducted and confirmed the northeast-trending preferential pathway in the A1 and A2 Zones.	2011
Potential vapor intrusion evaluation at the Former Siemens Facility completed	2014
Phase II ERD Pilot Study initiated	2014
Off-Property Study Area	
GE and Siemens began groundwater investigations	1986
RWB issued SCR Order No. 90-119 (Final SCR) and EPA included Site on final listing on National Priorities List and issued the ROD based on Final SCR	1990
GE and Siemens began groundwater extraction from two B Zone wells	1990
GE and Siemens expanded GWETS from two wells to three B Zone wells	1991
MIP and additional groundwater investigation conducted	2011
Vapor intrusion indoor air evaluation conducted	2013-2014
Off-property monitoring well installation completed	2014
Follow-up off-property monitoring well installation workplan approved	2015

3. Background

3.1. Physical Characteristics and Land Use

The former Intersil, Inc. (Intersil) facility is located at 10900 North Tantau Avenue and the former Siemens facility is located at 10950 North Tantau, which is currently 19000 Homestead Road, in Cupertino, California (see Figure 1). The Off-Property Study Area is located north of, and hydraulically downgradient from, the former Intersil and Siemens facilities and extends into the City of Sunnyvale. Cupertino has a population of approximately 56,000 and is located on the west side of Santa Clara Valley in Santa Clara County and is part of the San Francisco Bay Metropolitan Region.

The buildings at the former Intersil facility were demolished in the 1990s, and the property was sold several times. In 2007, Tantau Investments, LLC., purchased the property and constructed a two-story, 51,750 square foot commercial office building with a vapor barrier beneath the building foundation. General Electric (GE) retains responsibility for the operation and maintenance of the groundwater extraction and treatment (GWET) system. The former Intersil property is now occupied by Panasonic Corp. and Apple, Inc. The building on the former Siemens property is now occupied by Kaiser Permanente. Land use in the Off-Property Study Area is residential.

Drinking water for Cupertino residents and businesses is supplied by either San Jose Water Company or California Water Service. Some of the Off-Property Study Area falls within the City of Sunnyvale; the City of Sunnyvale Department of Public Works supplies drinking water to City residents and businesses. There are five active municipal wells within a 1 mile radius of the Site. No private wells exist on properties located within the Off-Property Study Area.

Calabazas Creek is approximately 1,100 feet east of the Site and flows north-northeast approximately 7 miles into San Francisco Bay.

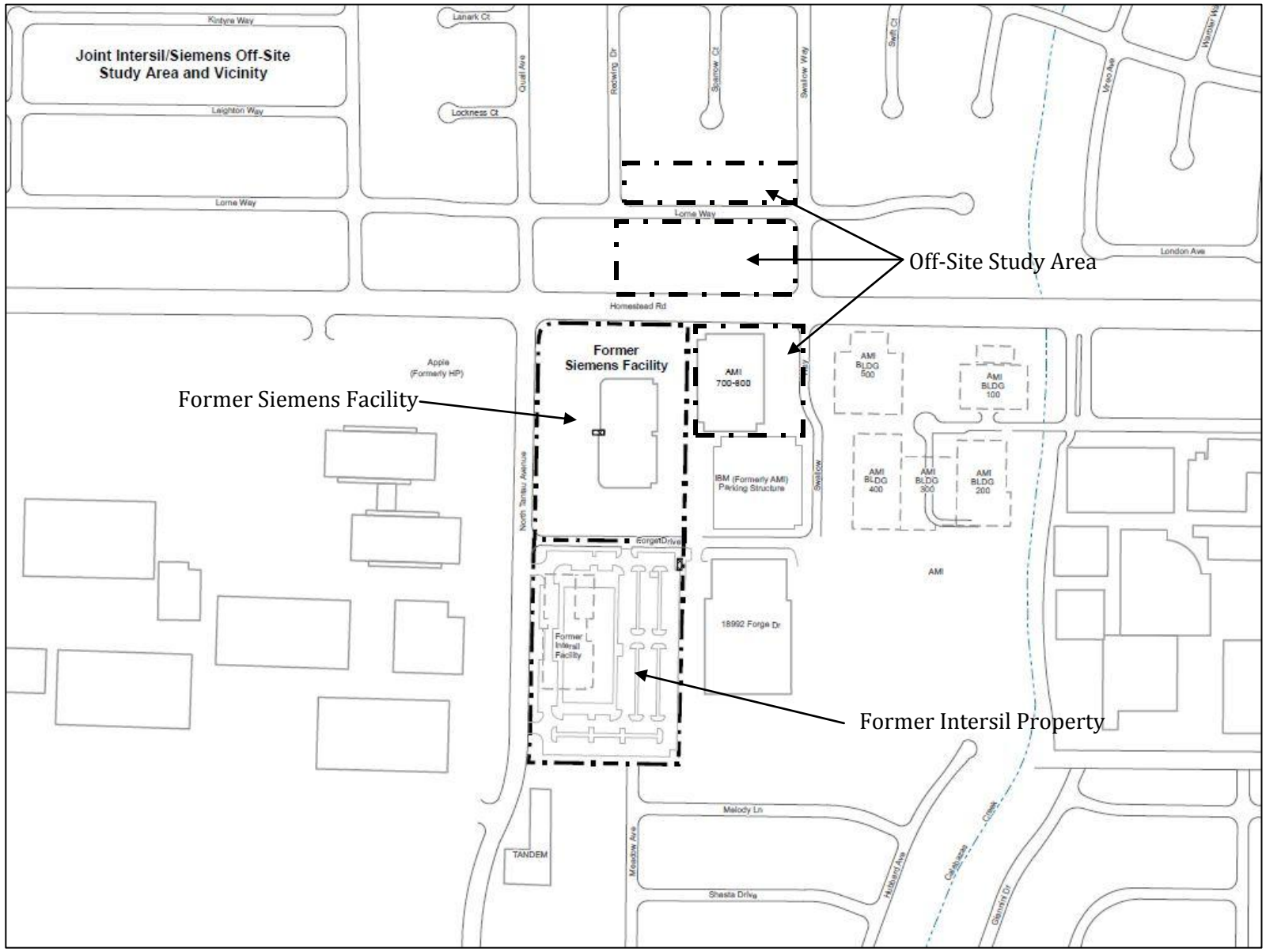

Figure 1: Detailed Map of the Site

3.2. Hydrogeology

The Site is situated in the west side of the Santa Clara Valley, California, along the western edge of San Francisco Bay. The Santa Clara Valley is a gently northward sloping alluvial plain, flanked by the Diablo Range to the northeast, and the Santa Cruz Mountains to the southwest. The alluvium comprises a complex sequence of clay, silt, sand, and gravel. Within the Santa Clara Valley, two significant water-bearing zones have been identified as the Upper (A, B, & C Zone) and Deep Aquifers.

The geologic setting at the Site consists of coarse-grained sand and gravel interbedded with fine-grained silt and clay sediments, representing alluvial stream channel and associated overbank deposits.

Historically and in current analyses, the shallow saturated sediments are divided into three water-yielding zones:

- A Zone (top of the groundwater table to 125 feet bgs)
- B Zone (approximately 130 to 150 feet bgs)
- C Zone (approximately 180 to 210 feet bgs)

The A, B, and C Zone sediments are generally separated by fine-grained sediments that act as aquitards. The Deep Aquifer is a confined aquifer (the regional aquifer) that exists at depths of approximately 300 to 500 feet bgs and is separated from the C Zone by an approximately 80- to 150–foot-thick aquitard of fine-grained sediments. The groundwater flow direction in the A, B, and C Zones and the regional aquifer is generally northward beneath the former Intersil and Siemens facilities to the Off-Property Study Area and toward San Francisco Bay.

The groundwater elevations rose approximately 50 to 55 feet between 1993 and 1998 from historical groundwater levels that were approximately 100 feet below ground surface (bgs). This created the Resaturated Interval that extended from 45 to 90 bgs. At the former Siemens property, the Resaturated Interval was been divided into two intervals: the Upper Resaturated Interval, which extends from approximately 45 to 60 feet bgs, and the Lower Resaturated Interval, which extends from approximately 60 to 90 feet bgs. The Lower A Zone saturated sediments extend from approximately 90 to 125 feet bgs. At the former Intersil property, the A Zone is apparently hydraulically connected with the Resaturated Interval.

A Hydrogeologic Framework Report (AMEC Geomatrix and ARCADIS, 2011) discussed an overview of the geology, hydrogeology, and groundwater quality for the Site and reclassified the A Zone into four zones; A1, A2, A3, and A4 Depth Intervals (Zones). Former vadose zone wells that became saturated when the groundwater levels rose are now designated as A1, A2, or A3 Zone wells based on the depths of their screened intervals and the former A Zone or Lower A Zone is now referred to as the A4 Zone (see Table 2). The A1 through A4 Depth Intervals are interconnected and not separate groundwater bearing zones. However, the finer-grained A2 Zone tends to function like an aquitard between the A1 and A3 Zones. In some locations, the A1 Depth Interval does not produce enough water to collect groundwater samples or extract groundwater. The depth ranges for the A1, A2, A3, and A4 Depth Intervals at the former Intersil and Siemens facilities are shown below in Table 3.

Table 2. Historical and New Nomenclature for A Zone

Approximate Depth (feet bgs)	Historical Nomenclature	New Nomenclature
38 to 56	Upper A Depth Interval	A1 Depth Interval (Zone)
58 or 60 to 69	Upper portion of the middle A depth interval	A2 Depth Interval (Zone)
69 or 74 to 80 or 90	Lower portion of the middle A depth interval	A3 Depth Interval (Zone)
80 or 90–125	A Zone or Lower A Zone	A4 Depth Interval (Zone)

Table 3: A Zone Subdivided

Water-Bearing Zone	Former Intersil Facility Approximate Depth (feet bgs)	Former Siemens Facility Approximate Depth
A1	38 to 56	40 to 60
A2	58 or 60 to 69	58 or 60 to 70
A3	69 or 74 to 80 or 90	70 or 74 to 90
A4	80 or 90 to125	90 to125

The groundwater plume originating from the former Siemens and former Intersil properties is managed as one commingled plume by SMI Holding, LLC (Siemens) and GE, the successor to Intersil. The groundwater plume in the A Zone extends approximately 200 feet downgradient, north of Lorne Way and potentially east of Swallow Way into the residential Off-Property Study Area. The groundwater plume in the B Zone extends approximately 1,600 feet downgradient to the north into the Off-Property Study Area.

3.3. *History of Contamination*

Former Intersil Facility

From 1967 to 1988, Intersil operated as a silicon wafer fabrication plant and office building. In connection with these activities, Intersil used inorganic etching solutions (such as acids) and large amounts of water (up to 100,000 gallons per day). Trichloroethylene (TCE), an industrial solvent, was used on a limited basis as a cleaning agent prior to 1979 and 1,1,1-trichloroethane (1,1,1-TCA) was used until closure of the facility in 1988. Intersil's processes used more acid and water than volatile organic compounds (VOCs). Fabrication operations required the use of only one 250-gallon in-ground vaulted waste solvent tank. This tank was located within the vault of the east neutralization system and was visible for inspection on the bottom and all sides. Wastes in the tank were pumped out monthly by a recycling company. Other waste handling areas included a former 250 gallon above ground storage tank on the west side of the property, a former northern neutralization system on the north side of the property, former north scrubber sump southeast of the northern neutralization system and four above ground waste chemical storage tanks located east of the former neutralization system on the east side of the property. Acids and water-based process wastewater were directed through five in-ground

wastewater neutralization systems and sumps before being discharged pursuant to a permit into the sanitary sewer.

Intersil conducted investigations of the property 1983 and 1988 which involved drilling soil borings and installing groundwater monitoring wells. The investigations conducted between 1983 and 1988 revealed the presence of TCE in soil and groundwater beneath the central and northern portions of the property.

The impact of groundwater contaminants was limited to the upper two aquifers (A and B Zones). Groundwater samples collected from the deeper aquifer (C Zone) indicated that it had not been significantly impacted.

Former Siemens Facility

From approximately 1970 to 1982, Litronix used the facility for semiconductor manufacturing operations. From 1982 to 1995, Siemens used the facility for semiconductor manufacturing operations. Until the mid-1980s, these semiconductor manufacturing operations involved the use of various organic solvents, primarily TCE and 1,1,1-TCA. Liquid wastes were stored in five underground storage tanks (USTs) that were removed in 1982. From 1982 until closure of facility operations in 1986, liquid wastes were temporarily stored on site for Off-Property disposal or recycling.

Investigations began in 1982 after the discovery of contaminants during the removal of the USTs. Investigations performed between 1982 and 1989 indicated that releases of mostly chlorinated VOCs and semivolatile organic compounds (SVOCs) had occurred and affected soil and groundwater at levels that required remediation.

The impact of groundwater contaminants is similar to the former Intersil property, and the plumes are considered to be commingled.

Off-Property Study Area

Intersil and Siemens initiated the investigation of the Off-Property Study Area in 1986. The Off-Property Study Area has no known history of manufacturing activities and is almost entirely developed for residential use. During the initial investigation, the A Zone groundwater was not found to be impacted and no remediation of the A Zone was required under California Regional Water Quality Control Board, San Francisco Bay Region (RWB) Order 90-119 (Order). The Off-Property investigation indicated that the B Zone was the most contaminated, with lower levels of contamination present in the C zone.

3.4. Initial Response

Former Intersil Facility

In 1986, interim remediation began with the removal of the inactive east neutralization system and vaulted 250-gallon waste solvent tank. In 1988, further interim remediation continued with the removal of the remaining wastewater treatment facilities in the north and east neutralization systems, the north and east scrubber sumps, and the former above-ground chemical and hazardous waste storage area.

In 1987, a GWET was installed consisting of four A Zone groundwater extraction wells. In 1991, the GWET system was expanded as part of the final remedy with the addition of one A Zone extraction

well and one B Zone extraction well. Groundwater was treated using air strippers and treated effluent was discharged to Calabazas Creek under a general National Pollutant Discharge Elimination System (NPDES) permit.

In 1988, a soil vapor extraction and treatment (SVET) system was installed with two extraction well pairs along the northern boundary of the property. In mid-1991, as part of the final remedial action, the SVET system was expanded to four well pairs. When groundwater levels rose in the 1990s, the long-screened SVET wells were then used as groundwater monitoring wells.

Former Siemens Facility

In 1983, interim remedial actions for soil remediation began at the former Siemens facility with an on-site SVET system that included one SVE well. By 1991, the SVET system was expanded to 19 wells, and was then reduced to four wells in 1995.

In 1986, interim remedial actions for groundwater remediation began with a GWET system to provide hydraulic control and remediation of the affected groundwater in both the A and B Zones. In 1991, the GWET system was expanded to include 13 on-site extraction wells mostly on the southern and upgradient site of the former Siemens property. Although not required by the Final Site Cleanup Requirements (SCR), Siemens has also periodically operated up to five groundwater extraction wells that are screened in the Lower Resaturated Interval. From 1986 through 2002, extracted groundwater was treated via two air strippers connected in series. In 2002, primary treatment of extracted groundwater was changed from an air stripper to granular activated carbon (GAC). Treated groundwater is discharged to Calabazas Creek under a general NPDES permit.

In 1991, soil excavation was performed in Areas 1 and 3, where former USTs were located.

Off-Property Study Area

Remedial action in the Off-Property Study Area began with an interim GWET system starting in 1990. The interim remedial program consisted of groundwater extraction from two B Zone wells. In 1991, the GWET system was expanded as part of the final remedial action with the addition of one B-Zone extraction well. In 2004, the Off-Property GWET system was reduced to two B Zone wells. Treated groundwater is discharged to Calabazas Creek under a general NPDES permit.

3.5. Basis for Taking Action

The Site overlies the Santa Clara Valley groundwater basin. Groundwater from this basin provides up to 50 percent of the municipal drinking water for over 1.4 million residents of the Santa Clara Valley. The Site was listed on the National Priorities List (NPL) primarily because of past chemical releases that posed a potential threat to the groundwater resource.

The primary contaminants of concern for the Site are VOCs and SVOCs in groundwater and soil gas. The 1990 Record of Decision (ROD) and RWB Order No. 90-119 for the Site identified the following contaminants of concern (COCs):

- 1,1-dichloroethylene (1,1-DCE)
- Trichloroethylene (TCE)
- Tetrachloroethylene (PCE)
- cis-1,2-dichloroethylene (cis-1,2-DCE)

- trans-1,2-dichloroethylene (trans-1,2-DCE)
- 1,1,1-trichloroethane (1,1,1-TCA)
- Freon 113
- Toluene

The presence of these contaminants in soil and groundwater provided the basis for taking action under CERCLA. The primary threats to human health were posed by ingestion of groundwater and inhalation of volatilized VOCs; EPA and the Regional Water Board (RWB) therefore determined that remedial action was necessary.

4. Remedial Actions

4.1. Remedy Selection

A Baseline Public Health Evaluation for the Intersil Inc./Siemens Components Superfund Site (Site) was prepared along with a Remedial Investigation/Feasibility Study (RI/FS). These documents form the basis of the remedial action plan. The California Regional Water Quality Control Board, San Francisco Bay Region (RWB) adopted Final Site Cleanup Requirements (SCR) Board Order No. 90-115 on August 15, 1990. The selected final cleanup remedy, as stated for the Site in the Final SCR and the 1990 Record of Decision (ROD), consists of the following elements:

- Former Intersil property: Expanded groundwater extraction and treatment in the A and B Zones, as well as soil vapor extraction and treatment;
- Former Siemens property: Expanded groundwater extraction and treatment, soil vapor extraction and treatment, and the excavation of approximately 40 cubic yards of contaminated soil; and
- Off-Property Study Area: Groundwater extraction and treatment, through the Siemens property GWET systems.

The Remedial Action Objective (RAO) for this action was to restore groundwater to beneficial use. No RAO was stated for soil cleanup, besides the excavation of contaminated soil. The ROD and the SCRs did not include institutional control requirements.

The soil cleanup standard for the former Intersil property is one milligram per kilogram (1 mg/kg) total VOCs. The soil cleanup standards for the former Siemens facility are 1 mg/kg total VOCs and 10 mg/kg total SVOCs (See Table 4.)

Table 4. ROD Soil Cleanup Standards

Chemical	Cleanup Standard (mg/kg)
Total VOCs	1
SVOCs	10

The groundwater cleanup standards for the Site are based on Federal and California Maximum Contaminant Levels (MCLs) and California Department of Health Services Recommended Drinking

Water Action Levels. These standards are specified in Findings 15 and 18 and Specification B.4. of the Final SCR, included in the 1990 ROD, and are summarized in Table 5.

Table 5. ROD Groundwater Cleanup Standards

Chemical	Cleanup Standard in (mg/L)
TCE	0.005
PCE	0.005
1,1-DCE	0.006
cis-1,2-DCE	0.006
trans-1,2-DCE	0.01
1,1,1-TCA	0.2
Freon 113	1.2
Toluene	0.1

4.2. Remedy Implementation

Former Intersil Facility

The ROD, issued in 1990, mandated that the two major systems operating at the Site continue to operate, and in some cases, be expanded. The SVET system was subsequently expanded to 12 wells, and the GWET was expanded to 7 wells. The SVET system continued to operate from 1988 to 1993, when the system approached asymptotic conditions (conditions in which diminished decreases of contaminants may be expected). The GWET system continues to operate today.

Extracted soil vapor was treated using carbon adsorption in granular activated carbon (GAC) vessels. Groundwater was treated using air strippers, although these were replaced by GAC vessels in 2007. Effluent from the treatment system was discharged to Calabazas Creek under an NPDES general permit.

Under the 1990 ROD, regular soil vapor and groundwater monitoring was required.

Former Siemens Facility

The remedy implemented at the former Siemens facility consisted of 13 groundwater extraction wells and 15 soil vapor extraction wells, representing an expansion of the systems already in place at that time. The remedy also included the further excavation of approximately 40 cubic yards of contaminated soil on the property. The SVET system operated from 1983 to 2005 when the system approached asymptotic conditions (conditions in which diminished decreases of contaminants may be expected).

Extracted soil vapor was treated using carbon adsorption in GAC vessels. Groundwater was treated using air strippers, which were replaced by GAC vessels in 2007. Effluent from the treatment system was discharged to Calabazas Creek under an NPDES general permit.

Under the 1990 ROD, regular soil vapor and groundwater monitoring was required.

Off-Property Study Area

The 1990 ROD mandated that the three existing extraction wells extract water from the B Zone aquifer. Groundwater extracted from these three wells in the Off-Property Study Area is treated in the

Siemens' treatment system and, together with effluent from the Former Siemens facility, discharged to Calabazas Creek under an NPDES general permit.

Similar to the former Siemens property, regular groundwater monitoring of the Off-Property Study Area was mandated in the 1990 ROD.

4.3. Operation and Maintenance

Former Intersil Facility

Since 1987, the GWET system on both properties have operated continuously, starting with four A Zone extraction wells. At that time, the groundwater extraction rate was approximately 9 gallons per minute (gpm). In 1991, the GWET system was expanded by two extraction wells, and the groundwater extraction rate was increased to approximately 55 gpm. In 1993, one of the A Zone extraction wells was replaced due to silt accumulation. Between 1993 and 1998, regional groundwater levels rose about 50 to 55 feet and groundwater extraction rates were maintained at approximately 48 to 50 gpm. The long-screened SVET wells were then used as monitoring wells. In 2002 and 2003, three A Zone extraction wells were curtailed and the pumping rate was increased at Well W12A to maintain hydraulic control with an extraction rate of about 45 gpm. In 2006, groundwater extraction from the one B Zone well was curtailed and the extraction rate was decreased to approximately 33 gpm.

In 2007, the GWET system was shut down for approximately one month to convert the air-stripping to carbon vessels. Because of these maintenance activities, the three active extraction Wells E9AR, W4A, and W5A did not extract groundwater. The air stripper treatment compound was also demolished during the conversion and a new treatment system compound was constructed in the northeast corner of the Site. In 2010, a fourth extraction well was added. These four wells currently operate continuously except for periodic shutdowns for maintenance. The addition of this fourth well has increased the average extraction rate to approximately 39 gpm. O&M costs include several different activities related to the remediation of the Site, as well as various other studies conducted in the last five years. These costs include:

- Santa Clara Valley Water District water production fees
- Agency oversight
- Power
- Operation and maintenance of the extraction treatment system
- Groundwater monitoring
- Data evaluation
- NPDES monitoring
- Installation of extraction Well W18MA
- Preparation of the Hydrogeologic Framework Report
- 2011 sampling of former vent wells
- Second supplemental groundwater investigation

In 2009, the projected 2009 through 2014 costs were estimated at $1,242,000. The actual O&M costs for that period (July 2009 to June 2014) were approximately $1,750,000, a 41-percent increase. The costs of system O&M are generally as expected, although the rapid corrosion of and frequent changing of the carbon treatment vessels was unexpected and contributed to slightly higher costs.

Former Siemens Facility

Since 1986, the GWET system has operated continuously, starting with two A Zone extraction wells. In 1988, the GWET was expanded to include three A Zone and three B Zone wells. In 1991, the groundwater extraction rate was approximately 98 gpm when the GWET system was expanded by five A Zone wells. Between 1991 and 2006, the GWET system was expanded with the addition of six Resaturated Interval (currently A1- through A3-Zone) wells to respond to the 50-foot rise in groundwater during the 1990s. In 2002, the groundwater extraction rate was increased to approximately 160 gpm after regional groundwater levels rose about 50 feet. Between 1992 and 2002, eleven A Zone wells and one B Zone well were curtailed.

Eight focused on-site groundwater extraction wells that are screened to the individual water-bearing A Zones and B Zone currently operate continuously except for periodic shutdowns for maintenance. In 2002, GAC replaced air stripping as the primary treatment method. The pumping rate in 2008 was approximately 146 to 152 gpm; the 2014 data indicates a rate of 154 gpm.

O&M costs include several different activities related to the remediation of the Site, as well as various other studies conducted in the last five years. These costs include:

- Operation and maintenance of the extraction treatment system (based on percent volume of total extracted water, with Off-Property Study Area)
- Santa Clara Valley Water District water production fees
- Agency oversight
- Power
- Groundwater monitoring
- Data evaluation
- NPDES monitoring
- Enhanced Reductive Dechlorination (ERD) Phase II Pilot Study
- Preparation of the Hydrogeologic Framework Report
- Northside groundwater investigation
- Vapor intrusion evaluation

In 2009, the projected 2009 through 2014 costs were estimated at $957,000. The actual O&M costs for that period were $2,248,000, a 135-percent increase. The costs of system O&M are generally as expected, although the rapid corrosion of and frequent changing of the carbon treatment vessels was unexpected and contributed to slightly higher costs.

Intersil/Siemens Off-Property Study Area

O&M costs include several different activities related to the remediation of the Off-Property Study Area, as well as various other studies conducted in the last five years. These costs include:

- Operation and maintenance of the extraction treatment system (based on percent volume of total extracted water, with former Siemens facility)
- Santa Clara Valley Water District water production fees
- Agency oversight
- Power
- Groundwater monitoring
- Data evaluation
- NPDES monitoring
- Additional (2011) groundwater investigation
- Development of Indoor Air Work Plans

- Indoor air evaluations
- Well W15A replacement
- Monitoring Well Installation Work Plan

In 2009, the projected 2009-2014 costs were estimated at $525,000. The actual O&M costs for that period were $1,325,000, a 152-percent increase. The increase is due to additional investigations, indoor air evaluations, and the Hydrological Framework Report, which were required by the RWB and EPA.

5. Progress Since the Last Five-Year Review

5.1. Previous Five-Year Review Protectiveness Statement and Issues

The protectiveness statement from the 2010 FYR for the Intersil Inc./Siemens Components Superfund Site (Site) stated the following:

> A protectiveness determination of the remedy at the Intersil/Siemens Site cannot be made until a vapor intrusion assessment is completed in the Off-Property Study Area [i.e., Off-Property Study Area]. The elevated VOCs in the Resaturated Interval (currently A1 through A3 Zones) have not been defined which will require additional investigation. The downgradient extent of the A-Zone TCE contamination has not been fully defined; therefore, there is limited information to assess the potential for vapor intrusion. All other exposure pathways that could result in unacceptable risks are being controlled, and institutional controls are preventing exposure to, or the ingestion of, contaminated groundwater. However, EPA has not yet issued a decision document formally selecting institutional controls as part of the groundwater remedy. In the Off-Property Study Area, the vapor intrusion exposure pathway will be reevaluated following the additional groundwater investigation, at which time a protectiveness determination will be made. The Five-Year Review addendum, which will include the protectiveness determination, will be completed by October 30, 2012.

Although the Five-Year Review Addendum was not subsequently completed, the 2010 FYR included six issues and recommendations. Each recommendation is given below in italics followed by a discussion of the current status.

Issues Affecting Protectiveness

Issue and Recommendation 1

The Resaturated Intervals and A-Zone have not been fully defined for the on-property and off-property areas. The on-property extent of elevated VOCs in the Upper and Lower Resaturated Intervals has not been completely defined on the north side of the former Siemens property. The off-property downgradient extent of the A-Zone has not been fully defined. The extent of the A-Zone VOC plume in the off- property area [i.e. the Off-Property Study Area] has not been fully defined (i.e. down to MCLs). The groundwater monitoring program should be expanded to define the extent of contamination in the Resaturated Intervals and A Zone, both on and off-property.

In 2011, a groundwater investigation was conducted on the north side of the former Siemens property that was an expansion of a 2007 investigation. Thirteen membrane interface probe (MIP) borings were advanced to gather more information about the extent of VOCs in the A Zone. The investigation concluded that, based on the on-property lithography and the placement and screening of several extraction wells, VOC migration off site to the north appears to be adequately contained in the A3 Zone.

A follow-up investigation was conducted in 2011 across the A Zone in the Off-Property Study Area, with the goal of further characterizing the potential presence and distribution of residual VOCs in that zone. Grab groundwater samples and soil vapor samples were taken from 10 MIP borings and 5 hydropunch borings. While the soil vapor samples were well below the soil/gas Environmental Screening Levels (ESLs) from the California Regional Water Quality Control Board, San Francisco Bay Region (RWB), the VOC concentrations in the groundwater samples led to a follow-up indoor air evaluation.

Issue and Recommendation 2

The potential for off-property indoor air vapor intrusion cannot be evaluated until the downgradient extent of VOCs in the Upper Resaturated Interval is fully defined. Evaluate the potential off-property indoor air vapor intrusion by defining the downgradient extent of the Upper Resaturated Interval.

Between 2011 and 2014 vapor intrusion was evaluated on the former Intersil and Siemens properties, as well as throughout the Off-Property Study Area. Buildings showed either no evidence of vapor intrusion or low level vapor intrusion that does not pose an unacceptable health risk. Significant changes in Site conditions that may occur, such as a rise in shallow groundwater levels or significant on- or Off-Property development, should prompt a re-evaluation of the need to assess the vapor intrusion pathway.

In 2011, after the follow-up A Zone VOC investigations were completed, a work plan was submitted to evaluate the risk of potential vapor intrusion on the former Intersil property, the former Siemens property, and the Off-Property Study Area. Indoor air evaluations were conducted across the three areas, and the results were compared to both residential and commercial ESLs.

The results of these studies vary across the three properties but overall no evidence of unacceptable vapor intrusion was found. As regards the former Intersil property, no TCE or TCE degradation byproducts were detected, possibly because of the vapor barrier voluntarily constructed in 2008 by the property owner at that time. VOCs were detected on the former Siemens property, but the results were below ESLs.

The Off-Property residential area had indoor air TCE and tetrachloroethene (PCE) concentrations slightly above ESLs in two residences. Based on information obtained during the building surveys at these residences, it is likely that the indoor air VOC levels detected originated from indoor sources.

One of these two residences had a slight exceedance (up to 0.53 micrograms per cubic meter or ug/m^3 in indoor air) of EPA's long-term residential screening level (Regional Screening Level or RSL) of 0.48 ug/m^3 for TCE. Although the TCE may have originated from an indour source, a letter was sent to this resident that summarized the sampling results and recommended further follow-up evaluation. The resident declined the offer. The remainder of the residential sampling did not yield any evidence of unacceptable vapor intrusion occurring. In November of 2014 the RWB and EPA recommended no further action.

Issue and Recommendation 3

Although a restrictive covenant is currently in place at the Site, the remedy selected in the 1990 Record of Decision did not include institutional controls. Issue a decision document formally selecting the restrictive covenant that prohibits the use of on-site groundwater and restrict residential development until final clean-up standards are achieved.

In 2005, a covenant restricting certain types of uses was filed for the former Intersil property. A similar land use deed restriction was filed for the former Siemens property in 2010. The Institutional Controls (ICs) in place prevent exposure to contaminated drinking water and soil. EPA is pursuing the appropriate documentation for the ICs that are in place.

Issue and Recommendation 4

The effectiveness of GWET is declining over time. GE plans to install one focused GWE well in the former Intersil property in an area of high concentration. The effectiveness of the new well will be evaluated. GE and Siemens should continue evaluating new emerging cleanup technologies and adding additional wells.

New techniques and technologies are being considered by General Electric (GE) and SMI Holding, LLC (Siemens) to further reduce VOC concentrations to cleanup levels. The Phase II Enhanced Reductive Dechlorination (ERD) Pilot Study, initiated for the former Siemens property, is the second attempt at exploring these new approaches with the addition of hydraulic fracturing to resolve prior delivery issues.

Issue and Recommendation 5

The Five-Year Review Report and groundwater monitoring reports for the site display plume maps at a reduced scale that do not allow for proper evaluation of plume conditions in elevated VOC areas such as the Forge Drive area. There are no plume maps for the Upper and Lower Resaturated Intervals of the Upper A Zone. Expanded scale maps of the Upper and Lower Resaturated Intervals of the Resaturated Zone plume in the Forge Drive area should be included in future groundwater reports.

Figures have been included in all annual reports after 2009 showing the TCE plume for A Zone depth intervals.

Issue and Recommendation 6

The conceptual site model (CSM) is outdated and does not allow for adequate optimization of the remedy. GE and Siemens should develop a new CSM that incorporates all high resolution data and includes an integrated geologic cross section with water-bearing zone nomenclature that is consistent across both properties.

The CSM was updated in 2011 in the Hydrogeologic Framework Report. This report updated the framework for the identification and collection of additional data that could help in the evaluation of further remedial actions. Also, the groundwater response tests conducted on both the former Intersil and former Siemens properties allow for a greater understanding of the current CSM. As part of the followup from the last FYR, a third party review of GE's hydrogeologic model indicated that the model could not be calibrated.

5.2. Work Completed at the Site During this Five-Year Review Period

Former Intersil Property

Work at the Site conducted over the last five years included the installation of extraction Well W18MA and the corresponding hydraulic response study (see Issue and Recommendation 1 of this report). Work also included the completion of the Hydrogeologic Framework Report (see Issue and Recommendation 6 of this report) and sampling within three former vent wells. Finally, GE conducted a second supplemental groundwater investigation. After the installation of Well W18MA and the hydraulic response study, GE installed a new monitoring well (Well W19MA) and took groundwater samples to determine the effectiveness of Well W18MA. The results of the supplemental groundwater investigation indicated that residual TCE concentrations were located primarily on the north side of the Intersil property and that VOC impacted groundwater is captured by the current extraction well network.

Former Siemens Facility

Work conducted at the former Siemens facility included the completion of the Hydrogeologic Framework Report (See Issue and Recommendation 6 of this report). A groundwater investigation on the north side of the former Siemens property was also completed (See Issue and Recommendation 1 of this report). A grant deed stating environmental restriction was completed in 2009, and a comprehensive vapor intrusion evaluation was conducted in 2013 and 2014 (See Issue and Recommendation 2 of this report). Finally, Siemens initiated an RWB-approved and Revised Phase II Enhanced Reductive Dechlorination (ERD) Pilot Study in August of 2014. The Phase II ERD Pilot Study proposes utilizing a suite of technologies to enhance mass removal to levels beyond those in the original pilot study including:

- Hydraulic fracturing and pulse injecting of the A1 and A3 Zones to increase the volume of substrate introduced to the aquifer;
- Using a slower release substrate, such as emulsified vegetable oil as opposed to cheese whey;
- Combining the substrate with zero valent iron in the A2 Zone to provide a long-term reactive zone; and
- Bioaugmenting the existing microbial population of the A1 and A3 Zones to enhance dechlorination.

The Phase II ERD Pilot Study was implemented in October 2014 with in situ chemical reduction at five locations and emulsified vegetable oil at six locations. The analytical and field parameter results conducted in November 2014 indicated generation of more reducing conditions that destroyed the TCE throughout most of the treatment area since the implementation of the pilot study. However, it is too soon to conclude that the ERD remedy is effective. Three additional rounds of sampling will occur in 2015 to further evaluate this pilot study. Potential bio-fouling of the north-side extraction wells also prompted the shutdown of the wells near the ERD treatment area.

Off-Property Study Area

In 2011, a groundwater investigation was conducted in the Off-Site Study Area pursuant to a request by the RWB and EPA (See Issue and Recommendation 1). The results of this study led to a series of indoor air evaluations that measured the potential for vapor intrusion across the off-property residential areas. Additionally, Well W15A was destroyed and replaced by Well W15AR, which is

located on a commercial property west of the Site. Finally, Siemens installed monitoring wells in residential areas across the A1 through A4 Zones that are now part of the annual sampling program.

In July 2014, ten monitoring wells were installed, three in the A1 Zone, four in the A3 Zone, and three in the A4 Zone. The new monitoring wells were sampled in August 2014 and during the annual sampling event in October 2014. Well installation, construction, and August sampling activities are described in Off-Site Study Area, Monitoring Well Installation Completion Report (2014d). Siemens is currently implementing an RWB approved workplan to expanding the off-property investigation to the northeast to completely define the northeast extent of the A Zone plumes.

6. Five-Year Review Process

6.1. Administrative Components

The RWB initiated the Five-Year Review (FYR) in August 2014 and scheduled its completion for September 2015. The review team was led by Roger Papler of the California Regional Water Quality Control Board, San Francisco Bay Region (RWB) and Melanie Morash of the U.S. Environmental Protection Agency (EPA), Remedial Project Manager (RPM) for the Intersil Inc./Siemens Components Superfund Site (Site). In November of 2014, EPA held a scoping call with the review team to discuss the Site and items of interest as they related to the protectiveness of the remedy currently in place.

6.2. Community Involvement

On August 28, 2015, a public notice was published in the Cupertino Courier Newspaper announcing the commencement of the FYR process for the Intersil/Siemens Site, providing Melanie Morash, EPA Region 9, and Roger Papler, RWB Region 2 contact information, and inviting community participation. The press notice is available in Appendix B. No one contacted EPA as a result of this advertisement.

The Five-Year Review report will be made available to the public once it has been finalized. The document will also be available online at www.epa.gov/region9/intersil-siemens. Copies of this document will also be available at the EPA Superfund Records Center, located at 95 Hawthorne Street, Suite 403 S, San Francisco, California 94105.

6.3. Document Review

This FYR included a review of relevant, Site-related documents including the Record of Decision (ROD), remedial action reports, and recent monitoring data. Appendix A includes a complete list of the documents reviewed for this FYR.

6.3.1. Applicable or Relevant and Appropriate Requirements Review

Section 121 (d)(2)(A) of CERCLA specifies that Superfund remedial actions must meet any Federal standards, requirements, criteria, or limitations that are determined to be legally Applicable or Relevant and Appropriate Requirements (ARARs). ARARs are those standards, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant,

contaminant, remedial action, location, or other circumstance at a CERCLA National Priority List (NPL) site.

Chemical-specific ARARs identified in the selected remedy within the ROD for the ground water at this Site and considered for this FYR for continued ground water treatment and monitoring are listed in Table 6. State primary drinking water standards, in this case, are more stringent than Federal primary drinking standards, except for the Federal standards for TCE, PCE, and 1,1,1-TCA, which are the same.

Table 6. Summary of Chemical-Specific ARARs

Contaminants of Concern	1990 ROD ARARs (mg/L)	Current[1] Federal MCLs (mg/L)	Current[1] California MCLs (mg/L)	ARARs Changed?
Trichloroethene (TCE)	0.005	0.005	0.005	No
Tetrachloroethene (PCE)	0.005	0.005	0.005	No
1,1-dichloroethene (1,1-DCE)	0.006	0.007	0.006	No
cis-1,2-dichloroethene (cis-1,2-DCE)	0.006	0.07	0.006	No
trans-1,2-dichloroethene (trans-1,2-DCE)	0.01	0.1	0.01	No
1,1,1-Trichloroethane (1,1,1-TCA)	0.2	0.2	0.2	No
Freon 113	1.2	None	1.2	No
Toluene	0.15	1.0	0.15	No

Note: [1]As of January 2015.

The following Federal and State laws and regulations, other than the chemical-specific ARARs, are still pertinent to the Site but have not changed in the past five years. The list does not include those ARARs identified in the ROD that are no longer pertinent. For example, ARARs that related to remedial design and construction are not included in the table if they do not continue into long-term operations, monitoring, and maintenance. There have been no revisions to laws and regulations that affect the protectiveness of the remedy.

- Safe Drinking Water Act, 40 CFR 141
- Clean Air Act, 42 U.S. Code 85
- Clean Water Act, 40 CFR 122-125
- Porter Cologne Water Quality Control Act, California Water Code Div. 7
- California State Safe Drinking Water Act, Title 22 California Code of Regulations 64431 and 64444
- California Hazardous Waste Control Regulations, Title 22 California Code of Regulations
- State Board Resolution 68-16
- Water Quality Control Plan for San Francisco Basin Plan
- Bay Area Quality Management District, Reg 8,Rule 47
- Bay Area Quality Management District, Reg 8,Rule 40
- EPA's Office of Solid Waste and Emergency Response dir. 9355.0-28

6.3.2. Human Health Risk Assessment Review

A human health risk assessment, called in this case the Baseline Public Health Evaluation, was completed for the Site in 1990 as part of RWB Order 90-119. The risk assessment identified the exposure pathways at the Site, and characterized them as current or future risks. The current exposure risks included consumption of water from a nearby City of Santa Clara drinking water well, inhalation of VOCs from use of this water, and inhalation of chemicals volatilizing directly from on-site soils. Based on information about the contaminant concentrations, and information on the risks associated with these exposure pathways, it was determined at that point that current exposure scenarios presented risks well below acceptable levels.

Potential future use exposures included direct contact with on-site soils, ingestion of shallow and deeper zone groundwater, inhalation of VOCs from the use of this same groundwater, and inhalation of chemicals volatilized from on-site soils.

The risk assessment was reviewed to identify any changes in exposure or toxicity that would impact protectiveness. No new exposure scenarios or pathways were identified that could have an impact on the protectiveness of the remedy. While vapor intrusion was not originally considered in the ROD, investigations in the last five years have concluded that there was no evidence that unacceptable vapor intrusion was occurring, and the RWB and EPA recommended no further action in 2014.

Toxicity Values

EPA's Integrated Risk Information System (IRIS) has a program to update toxicity values used by the agency in risk assessment when newer scientific information becomes available. Groundwater-CVOC levels are compared to EPA's Regional Screening Levels (RSLs) as a first step in determining whether response actions may be needed to address potential human health exposures. The RSLs are chemical-specific concentrations for individual contaminants that correspond to an excess cancer risk level of $1x10^{-6}$ (or a Hazard Quotient [HQ] of 1 for noncarcinogens). The RSLs have been developed for a variety of exposures scenarios (e.g. residential, commercial/industrial). RSLs are not de facto cleanup standards for a Superfund site, but they do provide a good indication of whether actions may be needed (See Table 7.)

A review of IRIS information indicates that there have been several recent toxicity value revisions for many of the groundwater COCs, with notable recent revisions for TCE and PCE. The impact of toxicity value revisions on protectiveness is evaluated by comparing ROD cleanup standards to the January 2015 EPA tapwater multi-pathway RSLs in Table 7.

Table 7. Comparison of ROD Cleanup Standards to January 2015 RSLs

COC	ROD Cleanup Level (mg/L)	EPA RSLs, Residential Tapwater All Pathways (mg/L)			State MCL (mg/L)	Federal MCL (mg/L)	ROD Cleanup Level Protective?
		Cancer	Protective Cancer Risk Range	Noncancer (HQ=1)			
TCE	0.005	0.00049	0.00049 to 0.049	0.0028	0.005	0.005	Yes
PCE	0.005	0.011	0.011 to 1.1	0.041	0.005	0.005	Yes

COC	ROD Cleanup Level (mg/L)	EPA RSLs, Residential Tapwater All Pathways (mg/L)			State MCL (mg/L)	Federal MCL (mg/L)	ROD Cleanup Level Protective?
1,1-DCE	0.006	-	-	0.28	0.006	0.007	Yes
cis-1,2-DCE	0.006	-	-	0.036	0.006	0.07	Yes
trans-1,2-DCE	0.01	-	-	0.36	0.01	0.1	Yes
1,1,1-TCA	0.2	-	-	8.0	0.2	0.2	Yes
Freon 113	1.2	-	-	55	0.2	-	Yes
Toluene	0.15	-	-	1.1	0.15	1.0	Yes

For cancer risk, EPA uses a lifetime excess cancer risk range between 10^{-4} and 10^{-6} for assessing potential exposures. The ROD cleanup levels for TCE and PCE are within this protective risk range and are therefore considered protective of cancer risks.

For noncancer risk, a ROD cleanup level below the noncancer RSL indicates that no adverse health effect from exposure is expected. In this case, all contaminants of concern (COCs) except for TCE are below the RSL, and are therefore considered protective of noncancer risks.

In 2011, EPA conducted an updated assessment for TCE which included a risk of fetal cardiac malformations due to short-term *in utero* exposures to TCE as a result of inhalation - September 2011 *Toxicological Review of Trichloroethylene in Support of the Integrated Risk Information System* (2011 Toxicological Review for TCE). The 2011 Toxicological Review for TCE set a reference concentration (RfC) of 2 µg/m3. In 2014 EPA Region 9 issued a memorandum regarding *EPA Region 9 Interim Action Levels and Response Recommendations to Address Potential Developmental Hazards Arising from Inhalation Exposures to TCE in Indoor Air from Subsurface Vapor Intrusion* and EPA's Office Of Superfund Remediation and Technology Innovation issued a memorandum to the EPA Regional Superfund offices on *Compilation of Information Relating to Early/Interim Actions at Superfund Sites and the TCE IRIS Assessment*. Due to the lower action levels recommended to address a vapor intrusion risk, follow-up vapor intrusion sampling was conducted in both on- and Off-Property areas, which concluded that there is no unacceptable risk from vapor intrusion.

EPA's 2011 Toxicological Review for TCE also developed safe levels that include at least a 10-fold margin of safety for health effects other than cancer. Any concentration below the noncancer RSL indicates that no adverse health effect from exposure is expected. Concentrations significantly above the RSL may indicate an increased potential of noncancer effects. The noncancer screening level for TCE is 0.0028 mg/L. EPA considers the TCE MCL of 0.005 mg/L protective for both cancer and noncancer effects.

6.3.3. Ecological Review

To date, no ecological risk assessment of the Site has been completed. However, the ROD issued in September 1990 as it applies to the former Intersil property states that the potential for ecological impacts from the remedy is low, due to the lack of critical habitats or endangered species in the area, and the low potential for contaminant migration to Calabazas Creek. These assumptions still hold true, and the decrease in industrial activity since 1990 shows that the risk of future ecological impacts is still low.

6.4. Data Review

6.4.1. Ground Water

Groundwater Elevations and Gradients

The most recent groundwater elevation levels were measured from extraction and monitoring wells, and from piezometers. Measurements were taken quarterly on January 13, April 14, July 14, and October 7, 2014. (Table 13) as part of the self-monitoring program. Table 13 is in Appendix E Groundwater Data Review Tables and Figures. Four quarters of groundwater elevation measurements are used to show if there are any seasonal changes in groundwater gradient directions. The groundwater elevation measurements for A, B, and C Zones showed very little groundwater directional change throughout the entire year, and are consistent with historical observations.

- The A1 Zone groundwater elevation contours in October 2014 are shown on Figure 2 (Appendix E). The groundwater for the A1 Zone flows to northeast of the former Intersil and Siemens properties.
- The A2 Zone did not produce enough groundwater to install monitoring wells.
- The A3 Zone groundwater elevation contours in October 2014 are shown on Figure 3 (Appendix E). The groundwater for the A3 Zone flows to northwest of the former Intersil and Siemens properties.
- The A4 Zone groundwater elevation contours in October 2014 are shown on Figure 4. The groundwater for the A4 Zone flows to north of the former Intersil and Siemens properties.
- The B Zone groundwater elevation contours in October 2014 are shown on Figure 5. The groundwater for the B Zone flows to north of the former Intersil and Siemens properties.
- The C Zone groundwater elevation contours in October 2014 are shown on Figure 6. The groundwater for the C Zone flows to northeast of the former Intersil and Siemens properties.

Groundwater Quality

In 2011, a groundwater investigation was conducted in the Off-Property Study Area, including a membrane interface probe (MIP) survey and collection of grab groundwater samples from the A1 through A4 Zones with the goal of further characterizing the potential presence and distribution of residual VOCs in that zone. Grab groundwater samples and soil vapor samples were taken from 10 MIP borings and five hydropunch borings. The groundwater grab samples were typically collected within interbedded and finer-grained materials to help quantify residual contamination. In general, elevated concentrations of VOCs were detected in grab groundwater samples; the highest off-property TCE levels were detected at 1.6 mg/L in the A1 depth interval, 0.016 mg/L in the A2 depth interval, 0.054 mg/L in the A3 depth interval, and 0.001 mg/L in the A4 depth interval.

The results for the latest sampling event in October 2014 are presented in Table 14 (Appendix E). The primary VOC detected is TCE. There were 72 wells sampled, with 13 wells showing increased TCE concentrations as compared with the last sampling event in 2013. Fifty-four wells exceeded the remediation standard of 0.005 mg/L for TCE. Four wells exceeded the remediation standard of 0.006 mg/L for 1,1-DCE. Eight wells exceeded the remediation standard of 0.070 mg/L for 1,2–DCE. There were no 1,1,1-TCA, PCE, Freon 113, and toluene levels over the cleanup standard.

Historically, the A Zone has been viewed as one zone. Since the groundwater elevation increased in the 1990s, new off-property A1-, A3- and A4-Zone wells have been installed, and each zone is now being evaluated separately for TCE. See Figures 7- 9 (Appendix E). Overall the TCE concentrations and the size of the plume have remained similar to conditions described in the 2010 FYR except that the downgradient northeast extent of VOCs in the A zones may not be completely defined.

Ten new monitoring wells were installed in the A1, A3 and A4 Zones. Analytical results for groundwater samples collected from nine of these wells in August 2014 (baseline event following well installation) and October 2014 (annual groundwater sampling event) were similar and consistent in concentrations as compared with past sampling events, as seen in Table 15 (Appendix E). Well MW-OS-A1 has been dry since the baseline sampling event in August 2014. The October 2014 sampling event for the nine wells exceeded the remediation goal of 0.005 mg/L TCE. Concentration trends will be evaluated as new data are collected.

The highest concentrations from the October 2014 sampling event in each A Zone Depth Interval are listed below.

- The highest concentrations of TCE in the A1 Zone are in Well MW-OS-2A1 (installed in 2014) at 1.5 mg/L. See Figure 7 (Appendix E).
- The highest concentrations of TCE in the A3 Zone are in Well SW-6S at 0.63 mg/L. See Figure 8 (Appendix E).
- The highest concentrations of TCE in the A4 Zone are in Well W-22A at 0.6 mg/L.

The overall TCE concentrations in the B Zone have been slightly reduced compared to the 2010 FYR. The B-Zone TCE plume has reduced in size in the north, downgradient of the site. The TCE plume has remained relatively the same since the 2010 FYR. Results from the October 2014 sampling event indicate that the highest concentration of TCE in the on-property B Zone is in well H-5B at 0.11 mg/L, however this is lower than the 1999 sampling event of 0.25 mg/L. See Figure 10 (Appendix E).

Only three wells were sampled in 2014 in the C Zone and the TCE concentrations were below the remediation goal of 0.005 mg/L. The TCE concentrations overall decreased since the 2010 FYR. See Figure 11 (Appendix E).

Statistical Trend Analysis

Trend analysis (using Mann-Kendall statistical analysis) for TCE concentrations was conducted on 12 monitoring locations that were good representatives for location and for the three water-bearing zones. These monitoring locations were based on available data provided by the potentially responsible party (PRP). The Mann-Kendall statistic (S) is a non-parametric statistical procedure that is well suited for analyzing increasing or decreasing trends in data over time. Positive values indicate an increase in contaminant concentrations over time, whereas negative values indicate a decrease in contaminant concentrations over time. Trend analysis is useful in determining the effectiveness of the extraction well system.

Results are summarized in Table 8 and Figure 12 through Figure 15 (Appendix E) and indicate that most of the wells are stable or decreasing. Two of the three wells located in the A Zone have a stable trend exceeding the MCL and the third has a decreasing trend (well H-XA-S). Two of the wells located in the B Zone showed an increasing trend (Wells H-3B and W18-B) exceeding the MCL. In addition, one well in the B Zone showed a probability of an increasing trend (PL-1B). Three of the four wells were noted as stable and above the MCL (Wells S-1A, F-1A, and KR-1B). Trend analysis conducted on three wells in the C Zone have one with a stable trend (well RK-2C), one with a decreasing trend (well S-4C), and the last without a significant trend (well LR-3C). Minor increasing trends in some B-Zone wells may indicate that either the extraction wells are not effectively performing as designed and/or that the extraction wells lack full control of the TCE plume. However, this is based on several B-Zone wells at low multiples of the MCL.

Table 8. Summary of Mann-Kendall Trend Analysis

Well	Zone	Trend	Mann-Kendal Statistic (S)	Confidence	Coefficient of Variation
S-1A	A	Stable	-9	68.4%	0.29
F-1A	A	Stable	-4	58.0%	0.45
H-XA-S	A	Decreasing	-36	99.8%	0.20
IQ-1B	B	Decreasing	-113	99.9%	1.52
KR-1B	B	Stable	-17	89.1%	0.23
LQ-2B	B	Decreasing	-83	99.7%	0.16
PL-1B	B	Prob. Increasing	22	94.9%	0.27
H-3B	B	Increasing	25	98.7%	0.75
W18-B	B	Increasing	29	97.0%	0.25
RK-2C	C	Stable	-3	56.0%	0.53
S-4C	C	Decreasing	-26	97.5%	0.18
LR-3C	C	No Trend	11	77.7%	0.33

Removal of Contaminants from Extracted Groundwater

Former Intersil: At the Intersil property, total VOC concentrations in the influent (extracted) groundwater to the treatment system fluctuated from 0.041 mg/L (2011) to 0.070 mg/L (2009), with an average of approximately 0.054 mg/L. The average mass removal rate has decreased to 0.024 pounds per day in June 2014 from 0.14 pounds per day in 1995, 0.11 pounds per day in 1999, and 0.04 pounds per day in 2004, and 0.027 pounds per day in June 2009. Approximately 43.75 pounds of total VOCs were removed from groundwater beneath the former Intersil facility during 2014, and approximately 557.8 pounds of total VOCs have been removed since system startup in 1987.

Former Siemens: At the former Siemens property, total VOC concentrations in the influent (extracted) groundwater to the treatment system have fluctuated from 0.105 mg/L in September and December 2011 to 0.079 mg/L in September and December 2012, with an average of approximately 0.098 mg/L. The average mass removal rate has decreased to 0.16 pounds per day in June 2014 from 0.19 pounds per day in June 2009.

The groundwater extraction and treatment (GWET) system at the former Siemens facility has removed approximately 2,774 pounds of VOCs from on-property and off-property groundwater since 1991 and 3,577 pounds of VOCs since system startup in 1986. The removal efficiency of the treatment system decreased from 2.63 pounds of total VOCs removed per million gallons extracted in 1999 to 1.3 pounds per million gallons extracted in 2004, then further to 1.18 pounds per million gallons extracted in 2009. Approximately 268 pounds of total VOCs were removed from the groundwater beneath the former Siemens facility from July 2009 to June 2014 and approximately 1,913 pounds of total VOCs have been removed from groundwater beneath the former Siemens facility since 1999.

Off-Property: From July 2009 to June 2014, approximately 145.9 million gallons of water were extracted and approximately 111 pounds of total VOCs were removed from the Off-Property Study Area. (AMEC & ERM, December 2014). Table 9 shows the quantity of VOCs removed by the GWET system from January to December 2014. Figure 16 (Appendix E) shows TCE concentrations over time for groundwater extraction wells E9AR, W10A, W12A, and W18MA. In general, the concentrations in these extraction wells have decreased overtime.

Table 9. VOCs Removed from Groundwater in January to December 2014

Site	Total Pounds of VOCs Extracted	Gallons of Groundwater Extracted (in millions)	Extraction Wells
Former Intersil	13	23.6	LR-1B, LQ-2B
Former Siemens	34	38.6	2EP, 2EPa, LF-6A, H-5B, LF-12A, SW-7, EV-1-RL, H-1A
Off-Property Study Area	8.2	18.9	E9AR, W10A, W12A, W18MA

6.4.2. Soil Gas/Indoor Air

During the last Five-Year period, Siemens and GE evaluated the risk of potential vapor intrusion on the former Intersil property, the former Siemens property, and the Off-Property Study Area.

The results of these studies vary across the three properties but overall no evidence of unacceptable vapor intrusion was found.

On-Property

At the former Intersil property, no TCE or TCE degradation byproducts were detected, possibly because of the vapor barrier voluntarily constructed in 2008 by the building owner. At the former Siemens property, TCE and PCE were detected below ESLs.

Off-Property

The Off-Property residential area had indoor air TCE and tetrachloroethene (PCE) concentrations slightly above ESLs in two residences. Based on information obtained during the building surveys at these residences, it is likely that the indoor air VOC levels detected originated from indoor sources.

One of these two residences had a slight exceedance (up to 0.53 micrograms per cubic meter or ug/m^3 in indoor air) of EPA's long-term residential screening level (Regional Screening Level or RSL) of 0.48 ug/m^3 for TCE. A letter was sent to this resident, summarizing the sampling results and recommending further follow-up evaluation, which was declined. The remainder of the residential sampling did not yield any evidence of unacceptable vapor intrusion occurring.

At the off-property commercial building on Homestead Road, no detectable levels of TCE, PCE or their degradation products were detected.

In November of 2014 the RWB and EPA recommended no further action.

6.5. Site Inspection

A Site inspection for both the former Intersil and former Siemens properties was conducted on March 10, 2015. The inspection Trip Report and checklists are included in Appendix D.

The remedy on both properties was found to be in adequate condition and functioning as intended. The electrical components and extraction wells are inspected weekly, and the carbon in the treatment vessels is changed out twice per year due to corrosion. At the time of the Site inspection, several extraction wells at the former Siemens property were turned off due to the implementation of the Phase II ERD Pilot Study.

No inspection of the Off-Property Study Area was completed.

6.6. Interviews

During the FYR process, an interview was conducted with the consultant to the Responsible Party of the former Siemens site. The purpose of the interview was to document the perceived status of the Site and any perceived problems or successes with the phases of the remedy that have been implemented to date. The interview was conducted during the Site visit on March 10, 2015. The participants in the Site inspection were Bridget Floyd, U.S. Army Corps of Engineers (USACE); Melanie Morash, EPA; Roger Papler, RWB; Heather Balfour, ERM (Siemens technical consultant); and Susan Colman, AMEC Foster Wheeler (General Electric's [GE's] technical consultant). The interview is summarized below and is included in its entirety in Appendix C.

The interviewee, Heather Balfour has a positive view of the remedy overall, mainly because the remedy has significantly reduced VOC concentrations in groundwater. However, there still remains a concern that the remedy will not be able to lower VOC concentrations to the cleanup standards in a reasonable amount of time, and whether it is technically feasible at all to reach the cleanup standards. This concern is the driver behind the Phase II ERD Pilot Study and other remediation technology explorations.

6.7. Institutional Controls

No institutional controls were mandated by the original 1990 ROD or by the RWB Order 90-119, and the RAO of the ROD was to restore the groundwater to its beneficial use.

However, several deed restrictions were filed subsequent to the ROD and RWB order, and these remain in place for both the former Intersil and former Siemens properties. In 2005, GE recorded a deed restriction that limited the future use of the former Intersil property. The property cannot be used for residential development, hospitals, schools, or day cares, and no excavation can occur on the property.

Similarly, in 2010 Siemens recorded a deed restriction for the former Siemens portion of the Site with virtually the same restrictions and limitations as the former Intersil property.

Table 10. IC Summary Table – Former Intersil Property

Media	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Instrument in Place	Notes
Groundwater	Prohibits use of groundwater for water supply	Intersil property	Prevent exposure to groundwater contaminants through direct contact or ingestion	DR Article III Section 3.1.i: Prohibits use of groundwater for water supply	On property only
Indoor Air	Prohibits construction of building without evaluating potential vapor intrusion	Intersil property	Prevent exposure to soil vapor through indoor air vapor intrusion	DR Article III Section 3.1.g: Prohibits construction of building without evaluating potential vapor intrusion	On property only

Media	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Instrument in Place	Notes
Soil	Prohibits soil excavation without notifying the Regional Water Board	Intersil property	Prevent exposure to soil contaminants through direct contact or ingestion	DR Article III Section 3.1.f: Prohibits soil excavation without notifying the Regional Water Board	On property only

DR: Deed Restriction

Table 11. IC Summary Table – Former Siemens Property

Media	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Instrument in Place	Notes
Groundwater	Prohibits use of groundwater	Siemens property	Prevent exposure to groundwater contaminants through direct contact or ingestion	DR Article III Section 3.1.h: Prohibits use of groundwater	On property only
Indoor Air	Prohibits construction of building without evaluating potential vapor intrusion	Siemens property	Prevent exposure to soil vapor through indoor air vapor intrusion	DR Article III Section 3.1.f(2): Prohibits construction of building without evaluating potential vapor intrusion	On property only
Soil	Prohibits soil excavation without notifying RB2	Siemens property	Prevent exposure to soil contaminants through direct contact or ingestion	DR Article III Section 3.1.f(1): Prohibits soil excavation without notifying RB2	On property only

7. Technical Assessment

7.1. Question A: Is the Remedy Functioning as Intended by the Decision Documents?

Remedial Action Performance

The initial soil excavation and soil vapor extraction worked as intended to reduce the VOC levels in soil vapor on the Intersil/Siemens . Since then, the GWET systems deployed in both the former Intersil and former Siemens properties continue to operate and function as designed, although VOC levels have begun to stop declining at levels that exceed the MCL (See Opportunities for Optimization, below). The extracted off-property groundwater is treated at the treatment plant located on the former Siemens property. The 14 total extraction wells across the three parts of the Site operate continuously, except for stoppages related to maintenance and the ongoing Phase II ERD Pilot Study. Extracted groundwater is treated in carbon vessels and discharged in Calabazas Creek under a current National Pollutant Discharge Elimination System (NPDES) permit. There were no exceedences or violations, and the GWET operated in compliance with the NPDES permit during the 5 year reporting period.

In general, TCE concentration in groundwater sampled from wells in the A and B Zones are above the TCE cleanup standard. However, at several locations the TCE concentrations appear to be stabilizing above the cleanup standards. Trend analysis was conducted on 12 wells, and results from 3 of the wells show an increasing trend in TCE concentrations. In addition, TCE in groundwater from the 13 wells sampled in 2014 had increased concentrations compared with the prior sampling event in 2013.

In the C Zone, samples from all three wells were below the TCE cleanup standards. TCE in groundwater from Well LR-3C was slightly above the cleanup standard in 2013 at 0.0052 mg/L, but in 2014 dropped below the cleanup standards to 0.0017 mg/L.

System Operations/Operations and Maintenance

In general, current operating procedures are maintaining the effectiveness of the remedy. Both GWET systems are inspected weekly. The costs of system O&M are generally as expected, although the rapid corrosion of and frequent changing of the carbon treatment vessels was unexpected and contributed to slightly higher costs.

Opportunities for Optimization

Since the remedy began, groundwater-TCE levels have reached asymptotic conditions with the extraction efficiency of the system decreasing dramatically. The 2010 FYR documented this, subsequent to which Siemens began the Phase II ERD Pilot Study.

However, the ROD recognized that the use of the GWET remedy may not be able reduce COCs to cleanup levels. Expectations for restoration timeframes were laid out explicitly, with groundwater completion at 45 to 85 years. Given this timeframe, the asympototic trends of TCE concentrations are slightly less concerning, given our current understanding of aquifer remediation. Although exploring additional technologies and approaches (such as the Phase II ERD Study) is important to optimize the remedy, there are other options to address the issue of asymptotic VOC levels. The ROD left open the possibility of reevaluating the entire site remedy if VOC levels remained constant above cleanup levels. The RAO of restoring groundwater to beneficial use could be reevaluated as well.

There have been no early indicators of potential issues related to Site contaminants of concern (COCs). However, uncertainty concerning the boundaries of the TCE plume in the A Zone in the Off-Property Study Area may continue to limit the protectiveness of the remedy.

Early Indicators of Potential Issues

As mentioned above, if the VOC levels in groundwater continue to remain stable, the remedy, the technologies and approaches in the remedy, or even the RAOs need to be reevaluated in the future.

Implementation of Institutional Controls and Other Measures

Although the Record of Decision (ROD) did not initially identify institutional controls as part of the remedy, deed restrictive covenants have been filed for both the former Intersil and former Siemens properties. These deed restrictions restricted the use of the properties to industrial, commercial, office space, and recreational uses. No residences or sensitive land use facilities can be located on the properties.

7.2. Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of Remedy Selection Still Valid?

There have been no changes to cleanup standards or Applicable or Relevant and Appropriate Requirements (ARARs) that have affected the protectiveness of the remedy since the time of remedy selection.

The current and future exposure pathways identified in the ROD are still valid. Toxicity revisions have occurred for several of the Site COCs including TCE, although these changes do not affect protectiveness.

There have been no changes in land use since the last FYR and deed restrictions have been put in place that should restrict the potential for future exposure.

Although vapor intrusion was noted as a potential change in the exposure assumptions used at the time of remedy selection, the extensive vapor intrusion assessment conducted in the last five years has concluded that there is no unacceptable risk to indoor air on any areas of the Site, including the residential Off-Property Study Area.

7.3. Question C: Has Any Other Information Come to Light That Could Call Into Question the Protectiveness of the Remedy?

It is known that 1,4-Dioxane is a synthetic industrial chemical that is used as a stabilizer in industrial solvents, paint strippers, and greases. In recent years, research has shown that 1,4-Dioxane is a likely contaminant at many sites contaminated with chlorinated solvents, such as 1,1,1-TCA (EPA, 2014). 1,4-Dioxane may readily leach into groundwater, where it is highly mobile and resistant to subsurface degradation. It is classified by EPA as “likely to be carcinogenic to humans” by all routes of exposure, and may cause kidney and liver damage in long term exposure scenarios. Given the Intersil/Siemens site has 1,1,1-TCA as a COC, further exploration should be done to check for the presence of 1,4-Dioxane.

7.4. Technical Assessment Summary

The entire Site remedy, including the past soil excavation, past soil vapor extraction, and ongoing groundwater extraction and treatment is functioning as designed. However, TCE concentration in groundwater sampled from wells in the A and B Zones are above the TCE cleanup standard and the TCE levels appear to be stabilizing above the cleanup standards at several locations. Trend analysis was conducted on 12 wells, and results from 3 of the wells show an increasing TCE trend. Toxicity value revisions have occurred for several COCs, but these changes do not affect protectiveness. Land use and exposure pathways have not changed since the last FYR, and deed restrictive covenants are in place for the former Intersil and former Siemens properties. Vapor intrusion was evaluated in the past five years, and concluded that there is no unacceptable risk to indoor air from subsurface VOCs. The presence of 1,4-Dioxane has not been determined.

8. Issues

Table 12 summarizes the current issues for the Intersil Inc./Siemens Components Superfund Site (Site).

Table 12. Current Issues for the Site

Issue	Affects Current Protectiveness (Yes or No)	Affects Future Protectiveness (Yes or No)
The boundary of the A1- and A3- Zone TCE plumes in the Off-Property Study Area have not been delineated to the MCL level. This issue was presented in the previous FYR, but was not fully resolved.	No	Yes
A minor increasing trend was observed in three B-Zone wells and a stable trend above cleanup standards was observed in two A-Zone wells and one B-Zone well. Increasing trends may preliminarily indicate a lack of full control of the TCE plume by the selected remedy (extraction wells) and stable trends may preliminarily indicate ineffectiveness of the current remedy in achieving cleanup standards.	No	Yes
Research has shown that 1,4-dioxane is an emerging contaminant that can be found at sites where 1,1,1-TCA is a COC. However, there is no information regarding the presence and distribution of 1,4-dioxane in the subsurface.	No	Yes

9. Recommendations and Follow-up Actions

Table 13 provides recommendations to address the current issues at the Intersil Inc./Siemens Components Superfund Site (Site).

Table 13. Recommendations to Address Current Issues at the Site

Issue	Recommendations & Follow-Up Actions	Party Respon-sible	Over-sight Agency	Mile-stone Date	Affects Protectiveness? (Yes or No)	
					Current	Future
Boundary of TCE plume in the Off-Property Study Area has not been sufficiently defined.	Install more monitoring wells in the Off-Property Study Area and further evaluate and define TCE concentrations across the A Zone.	PRP	EPA/State	09/2016	No	Yes
A minor increasing trend was observed in three B-Zone wells and stable trend above cleanup standards was observed in two A-Zone wells and one B-Zone well . Increasing trends may preliminarily indicate a lack of full control of the TCE plume by the selected remedy (extraction wells) and stable trends may preliminarily indicate ineffectiveness of the current remedy in achieving cleanup standards.	Improve the efficiency of the current groundwater remediation and/or develop alternative methods of remediation.	PRP	EPA/State	09/2020	No	Yes
Research has shown that 1,4-dioxane is an emerging contaminant that can be found at sites where 1,1,1-TCA is a COC. However, there is no information regarding the presence and distribution of 1,4-dioxane in the subsurface.	Add 1,4-dioxane to the list of contaminants to be monitored for in regular groundwater sampling and assess whether it should be considered a site COC.	PRP	EPA/State	09/2020	No	Yes

The following are recommendations that do not affect protectiveness.

- Trend analysis was conducted on only 12 wells. Trend analysis should be conducted on additional wells beyond the 12 wells evaluated, including the new wells installed in 2014 in the A Zone.

- Between 2011 and 2014 vapor intrusion was evaluated on the former Intersil and Siemens properties, as well as throughout the Off-Property Study Area. Buildings showed either no evidence of vapor intrusion or low level vapor intrusion that does not pose an unacceptable health risk. Significant changes in Site conditions that may occur, such as a rise in shallow groundwater levels or significant on- or Off-Property development, should prompt a re-evaluation of the need to assess the vapor intrusion pathway.

10. Protectiveness Statement(s)

The remedy at the Intersil Inc,/Siemens Components Superfund Site, including the former Intersil property, former Siemens Property, and Off-Property Study Area, currently protects human health and the environment because all exposure pathways and scenarios are being controlled, including the vapor intrusion pathway. In order for the remedy to be protective in the long-term, additional evaluations of the A Zone in the Off-Property Study Area must be conducted, the groundwater remedy needs to be optimized so as to be more effective, or an alternative remedy selected, and 1,4-dioxane should be analyzed in future site sampling to determine its distribution and whether it should be considered a site COC.

11. Next Review

This is a policy Site that requires ongoing FYRs as long as waste is left on site that does not allow for unlimited use and unrestricted exposure. The next FYR will be due within five years of the signature date of this FYR.

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Appendix A: List of Documents Reviewed

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List of Documents Reviewed

AMEC. Report of Results – Evaluation of Potential Vapor Intrusion, 2013.

AMEC. Addendum to Report of Results – Evaluation of Potential Vapor Intrusion, 2014.

AMEC & ERM. Five Year Status Report for the Period July 2009 through June 2014, 2014.

AMEC Foster Wheeler. NPDES Self-Monitoring Report Combined Annual Summary and Calendar Quarter October – December 2014, 2015.

AMEC Foster Wheeler and ERM. Annual Self-Monitoring Report, January 1 through December 31, 2013, 2014.

AMEC Foster Wheeler and ERM. Annual Self-Monitoring Report, January 1 through December 31, 2014, 2015.

AMEC Geomatrix and ARCADIS. Hydrogeologic Framework Report – Intersil/Siemens Site, 2011.

AMEC Geomatrix and LFR Inc. Five Year Status Report for the Period January 2005 Through June 2009, 2009.

ARCADIS. Northside Investigation Report, 2011.

Beak Consultants Limited. Remedial Investigation Report, 1990.

California Regional Water Quality Control Board, San Francisco Bay Region. Board Order # 90-119, 1990.

California Regional Water Quality Control Board, San Francisco Bay Region. Intersil/Siemens Cupertino, Santa Clara County, Status Report on Five-Year Effectiveness Evaluation [First Five-Year Review Report], 1995.

California Regional Water Quality Control Board, San Francisco Bay Region. Five-Year Review (Type I) Former Intersil Site, 10900 North Tantau Avenue, and Former Siemens Site, 19000 Homestead Road, Cupertino, Santa Clara County [Second Five-Year Review Report], 2000.

California Regional Water Quality Control Board, San Francisco Bay Region. Third Five-Year Review, Intersil/Siemens Site [Third Five-Year Review Report], 2005.

California Regional Water Quality Control Board, San Francisco Bay Region. Fourth Five-Year Review, Intersil Inc./Siemens Components Superfund Site [Fourth Five-Year Review Report], 2010.

California Regional Water Quality Control Board, San Francisco Bay Region. Approval of Vapor Intrusion Reports and No Further Action Letter, 2014.

EPA. EPA Superfund Record of Decision: Intersil Inc./Siemens Components, 1990.

EPA. Technical Fact Sheet – 1,4-Dioxane. 2014.

ERM. Report of Results – Potential Vapor Intrusion Evaluation at the Former Siemens Facility, 2014.

ERM. Phase II Enhanced Reductive Dechlorination Pilot Study Work Plan, 2014.

General Electric. NPDES Remit Renewal Notice of Intent, 2014.

Pristine Earth, Inc., and ARCADIS. Off-Property Study Area Investigation Report, 2011.

Appendix B: Press Notices

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PUBLIC NOTICE
FIFTH FIVE-YEAR REVIEW OF INTERSIL-SIEMENS SUPERFUND SITE CLEANUP

The California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board) and the U.S. Environmental Protection Agency (USEPA) began the fifth Five-Year Review (FYR) of cleanup actions at the Intersil-Siemens Superfund Site (Site), 10900 North Tantau Avenue and 19000 Homestead Road, Cupertino, CA. The review evaluates whether cleanup actions for the Site remain protective of human health and the environment.

FYR Process: When a cleanup remedy leaves some waste in place or a remedy takes longer than five years to complete, Superfund law requires evaluation of the protectiveness of remedy every five years. The FYR process continues until the Site has been cleaned up to allow unrestricted access. The purpose is to understand how the remedy operates and to measure progress towards achieving the Site's cleanup standards.

The Regional Water Board and USEPA reviews the movement and breakdown of remaining contaminants at the Site; operation of the groundwater treatment systems; the application and monitoring of the deed restrictions; and changes in scientific knowledge about the Site contaminants and exposure pathways. Company representatives, other regulatory authorities, and interested members of the public are also interviewed. The review will be completed by September 30, 2015.

Cleanup Remedy: To achieve Site cleanup, both Intersil and Siemens were originally required to build and operate a soil vapor extraction and groundwater treatment system; file a deed restriction to prohibit any use of the groundwater and institute a long-term groundwater monitoring program. More recently, Siemens voluntarily conducted two pilot studies to evaluate the feasibility of enhanced reductive dechlorination and Intersil's successor General Electric implemented focused groundwater extraction and treatment.

Get Involved: The Regional Water Board and USEPA are interested in hearing from the public. As part of the FYR process, we are interviewing people who would like to discuss any issues or information about the Site cleanup. Please contact Roger Papler, Regional Water Board at roger.papler@waterboards.ca.gov or call 510-622-2435 or Melanie Morash, USEPA at morash.melanie@epa.gov or 415-972-3050 no later than September 15, 2015.

For a copy of the report and other Site documents, go to the Regional Water Board's website at https://Geotracker.waterboards.ca.gov, click on 'Advanced Search' and input file numbers 43S0064 for the former Intersil site and 43S0110 for the former Siemens site. If you wish to be added to the Regional Water Board and USEPA's mailing lists, please contact us at the emails above.

CNS#2783706

CALENDAR

Special Events

Silicon Valley Fall Festival: This multicultural festival highlights local businesses and the work of local artists. It features an educational fair, food, dance performances, a petting zoo, crafts for kids and emergency preparedness information. Sept. 12, 10 a.m.-6 p.m. Memorial Park, Stevens Creek Boulevard and Mary Avenue, Cupertino. sites.google.com/site/cupfallfestival.

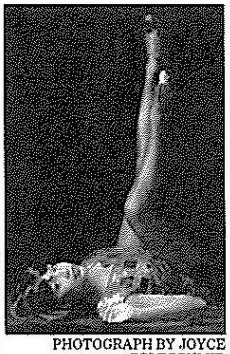
Dane's Friends Benefit Concert: The fourth annual Dane's Friends for FIRSTconcert and silent auction benefiting the Foundation for Ichthyosis and Related Skin Types features "America's Got Talent" Season 9 finalists Sons of Serendip. Sept. 12, 6:30 p.m. Flint Center for the Performing Arts, 21250 Stevens Creek Blvd., Cupertino. $29 and up. danesfriendsforfirst.com.

Seniors

Yoga with Savitha: Discover how yoga can strengthen your core, improve posture and cultivate awareness of your body. Tuesdays through Sept. 22, 4-5 p.m., 5:15-6:15 p.m.; Wednesdays through Sept. 23, 5:15-6:15 p.m.; Thursdays through Sept. 24, 4-5 p.m. Cupertino Senior Center, 21251 Stevens Creek Blvd., Cupertino. Member fee $40 for each afternoon class, $46 for each evening class. 408-777-3150, cupertino.org.

Theater/Arts

The Country House: TheatreWorks Silicon Valley stages the regional premiere of this recent Broadway hit by Donald Margulies, the Pulitzer Prize-winning playwright of "Dinner with Friends." Through Sept. 20. Mountain View Center for the Performing Arts, 500 Castro St., Mountain View. $19-$80. theatreworks.org, 650-463-1960.



PHOTOGRAPH BY JOYCE GOLDSCHMID

Janelle LaSalle as Velma Kelly in the Palo Alto Players' production of 'Chicago,' running Sept. 12-27.

Dead Man's Cell Phone: Los Altos Stage Company presents a surrealistic comedy that confronts our assumptions about morality, redemption and the need to connect in a technologically obsessed world. Sept. 3-27. Bus Barn Theater, 97 Hillview Ave., Los Altos Hills. $18-$36. losaltosstage.org, 650-941-0551.

Chicago: It's the roaring '20s, and everybody is talking about a string of femme fatales on trial for murder, including Velma Kelly and Roxie Hart, in Palo Alto Players' production of this popular musical. Sept. 12-27, times vary. Lucie Stern Theater, 1305 Middlefield Road, Palo Alto. $32-$46. paplayers.org, 650-329-0891.

Acoustic Open Mike: The South Bay Folks Acoustic Open Mike is open to all acoustic musicians, singers and songwriters. A number of traditions have evolved over the years to ensure that everyone gets an equal chance to play and to keep the evening running at a brisk pace. Thursdays, 6:45 p.m. Village Falafel, 20010 Stevens Creek Blvd., Cupertino. southbayfolks.org/calendars/giglist.html.

Fine Arts League of Cupertino: The group meets the second Monday of the month, 7-9 p.m., and welcomes visitors. Quinlan Community Center, 10185 N. Stelling Road, Cupertino. Visit falc.org or call Janki at 408-863-9991.

Lectures/Learning/Meetings

Chess Fest: Free recreational event for chess players and would-be chess players of all ages. Limited instruction provided. Children should be accompanied by parent. Sundays, Sept. 13 and Oct. 11; 2-5 p.m. Stocklmeir School lunch area, 592 Dunholme Way, Sunnyvale. 408-736-7138.

Cupertino Morningmasters: Improve your speaking and networking skills at this Toastmasters club. Thursdays, 7:30 a.m. Bethel Lutheran Church, 10181 Finch Ave., Cupertino.

Military Officers Association of America: The Silicon Valley chapter holds a luncheon meeting on the third Thursday of the month. For more information, visit siliconvalleymoaa.org or call 408-245-2217.

Midpeninsula Widow and Widower Association: Meets Tuesdays, 7:30 p.m. Los Altos Lutheran Church, 460 S. El Monte, Los Altos. 408-246-4642.

Sons In Retirement: The organization holds a buffet luncheon meeting on the fourth Wednesday of each month. This month's guest speaker will discuss the history of Silicon Valley companies. Aug. 26, 11:30 a.m.-1:30 p.m. Michael's Shoreline, 2460 N. Shoreline Blvd., Mountain View. Contact Foster Kinney at 650-299-9479.

Submit a listing by emailing information about your event to cal@communitynewspapers.com. Deadline is noon, eight days prior to Friday's publication.

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Appendix C: Interview Forms

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Interview Forms

Five-Year Review Interview Record			
Site:	Former Siemens Facility	**EPA ID No:**	CAD041472341
Interview Type: *Pre-Inspection Record Response* Location of Visit: Cupertino, California Date: Scheduled for 10 March 2015 Time: Scheduled for noon			

Interviewers		
Name	**Title**	**Organization**

Interviewees				
Name	**Organization**	**Title**	**Telephone**	**Email**
Heather Balfour	ERM	Partner	916 999-8944	Heather.balfour@erm.com

Summary of Conversation

1) What is your overall impression of the project?

The remedy has significantly reduced VOC concentrations in groundwater. The groundwater extraction and treatment system continues to operate in accordance with the approved remediation plan and applicable permit requirements. It is unlikely that (or it does not appear that) the current groundwater cleanup objectives defined by the Order can be achieved within a reasonable time frame.

SMI and GE are supportive of exploring options to optimize the system to achieve realistic objectives and improve efficiency. A comprehensive Phase II Enhanced Reductive Dechlorination Pilot Study is currently being implemented at the former SMI Facility. Following completion of performance monitoring, SMI will evaluate the use of this technology or other technologies if they are determined to be able to address the VOCs in fine-grained material and have the ability to restore the groundwater to its beneficial use.

2) Is the remedy functioning as expected? How well is the remedy performing?

As presented in the *Five-Year Status Report for the Period of July 2009 through June 2014* (Five-Year Report) (AMEC and ERM, December 2014) (Section 3.6), while VOC concentrations in the groundwater have been significantly reduced at the former Siemens facility, the final cleanup objectives have not been achieved and may not be technically feasible to achieve. As discussed by the National Research Council (NRC, 1994) [*Alternatives for Ground Water Cleanup*, National Academy Press, 1994], the effectiveness of groundwater extraction for removal of chemicals from aquifers is dependent on hydrogeologic properties, including the heterogeneity of the affected media, and physical properties of the chemicals and subsurface. TCE sorbs and desorbs from soil particles, and relatively low concentrations of residual TCE in fine-grained materials within an aquifer can present an ongoing source of dissolved TCE above 0.005 mg/L for a very long period of time. Therefore, it is unclear at the present time whether the current groundwater cleanup objectives defined by the Order can be achieved in a reasonable time frame.

The Water Board, in issuing the Order, recognized that reaching the cleanup standards may be unachievable and consideration of factors including technical practicality and cost effectiveness in determining whether additional actions are appropriate and necessary (Paragraphs 23 and 20 of the

Order). These previous Five-Year Reviews (Water Board, 1995a, 2000c, 2005b, and 2010) recognized that the groundwater extraction system has reached asymptotic conditions and that the amount of VOC mass being removed has declined considerably. This observation of an initial significant reduction in VOC concentrations followed by a leveling off of the reduction in VOC concentrations has been occurring at many other sites in the area and around the country. Based on this trend, the groundwater extraction system may not be able to restore the groundwater to its beneficial use as a potential drinking water source. A more comprehensive Phase II ERD pilot study has been proposed as described in Section 3.2.1. The Water Board approved the proposed work plan on July 24, 2014 and work began in August 2014. If ERD or other technologies advance to better address VOCs in fine-grained material, and they are determined to be able to restore the groundwater to its beneficial use as a potential drinking water source, they will be re-evaluated in the future for use in targeted areas.

The indoor air evaluation demonstrated that vapor intrusion from VOCs presents no unacceptable risk; the Water Board and U.S. EPA issued a No Further Action (NFA) letter on November 19, 2014 (Water Board, 2014).

3) What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

As presented in the Five-Year Report (AMEC and ERM, December 2014) (Section 3.1.1), although several compounds remain above the remedial goals, the VOCs in groundwater samples from the A- and B-zone wells have generally decreased to asymptotic concentrations. The TCE isoconcentration maps for the A4 depth interval for and B-zone in 1999, 2004, 2008, and 2013 are shown in Appendix A, Figures A-7 through A-10 of the Five-Year Status Report. The extent of TCE for both the A- and B-zones appears similar between 2004 and 2013 for the former Siemens facility.

TCE and daughter compound cis-1,2-DCE are the predominant compounds in A- and B-zone groundwater at the former Siemens facility. Additionally, 1,1-DCE has been detected at concentrations above remedial goals at several wells (VM-8S, 4BP, H-2A-S, H- XA-S, LF-10A, and W-21A). During the 5-year reporting period trans-1,2-DCE has also been detected at the remedial goal of 0.010 mg/L twice (VM-2S and LF-13A). In addition, vinyl chloride was detected above the MCL of 0.0005 mg/L at three locations within the northern portion of the property (2-EP, VM-2S, and VM-2D) and two locations in the southern portion of the property (F-1A, and W-22A).

4) Is there a continuous O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

The treatment plant is continuously monitored by Programmable Logic Controller (PLC) based control system. Prior to March 2015, the PLC control system included an autodialer to contact O&M staff in an alarmed condition. In March 2015, ERM installed a C- more touchscreen human machine interface on the system, which contacts O&M staff via email and text in an alarmed condition. The O&M staff for the project include:

- Partner/Engineer of Record: Review of all O&M activities and deliverables.
- Project Manager: Manages all aspects of project planning and execution.
- O&M Task Manager: Responsible for operations, maintenance, compliance, continuous improvement, communications, documentation, permit compliance, and safety.
- Field Safety Officer: Responsible for implementation and monitoring of the safety program.
- O&M Field Staff: Responsible for collection of field data and monitoring the system.

ERM staff complete weekly site visits to confirm operation and collect system readings. These weekly visits include inspection of each of the extraction wells. ERM will also visit the site in the event of unanticipated system shutdowns.

5) Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines in the last five years? If so, do they affect protectiveness of the remedy? Please describe changes and impacts.

There have not been any significant changes in O&M requirements, maintenance schedules or sampling routines in the last 5 years. The RWQCB adopted a new permit to discharge for the treatment system on 25 August, Waste Discharge Requirement Order No. R2-2012-0012, NPDES No. CAG912002. There is no significant change to the O&M requirements, maintenance schedules or sampling routines in this revised permit.

6) What are the annual operating costs for your organization's involvement with the site?

This information is provided on Tables 3-1 and 4-1 of the Five-Year Report (AMEC and ERM, December 2014).

7) Have there been unexpected O&M difficulties or costs at the site in the last five years? If so, please give details.

Routine inspections during media change outs observed corrosion on the interior of the granular activated carbon vessels in 2013. Based on further inspection and discussions with vessel experts, it was determined that the likely cause of the corrosion was electrolysis and vessel replacement was [the] preferred solution. One of the two vessels was replaced in December 2014. The second vessel is schedule[d] for replacement by mid-April.

Additional unexpected costs have included additional investigation and document requests from the RWQCB and USEPA. See Section 3.2 of Five-Year Review Report.

8) Have there been opportunities to optimize O&M or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.

Previously, the Kabis Sampler™ was used to collect groundwater quality samples from monitoring wells at the former Siemens facility. On 19 March 2014, GE and SMI recommended changing the sampling method used at the Intersil/Siemens Site to the HydraSleeve passive method to make sampling at all areas consistent, more reliable, more cost effective, and less wasteful. The Water Board approved use of the HydraSleeve for the Site in an email dated March 24, 2014.

The following items were installed in March 2015 to optimize O&M at the site:

- Installed C-more touchscreen human machine interface (HMI) on the system. The benefits of this system are: ability to monitor the system remotely through mobile phones; specific alarm conditions identified in notifications to simplify troubleshooting; and operation through internet which is cheaper than telephone service.

- Updated the controls for the transfer pump in the system to allow for more efficient operation. Over the last year, the majority of the system shutdowns were caused by the transfer pump within the treatment system not being balanced appropriately. This caused the high water level sensor to trip in the tank before the pump could catch up. The updated controls have resolved this problem.

9) Are you aware of any changes in Federal/State/County/Local laws and regulations that may impact the protectiveness of the remedy?

No.

10) Do you have any comments, suggestions, or recommendations regarding the project?

No additional comments.

Appendix D: Site Inspection Report and Checklists

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Site Inspection Report

FINAL Trip Report
Intersil Inc./Siemens Components Superfund Site, Cupertino, California

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1. INTRODUCTION

a. Date of Visit: 10 March 2015

b. Location: Cupertino, California

c. Purpose: A site visit was conducted to visually inspect and document the conditions of the remedy, the site, and the surrounding area for inclusion into the fifth Five-Year Review Report.

d. Participants:

Bridget Floyd	USACE Sacramento District	(916) 557-7328
Melanie Morash	EPA Remedial Project Manager	(415) 972-3050
Roger Papler	SFRWQCB Caseworker	(510) 508-3679
Heather Balfour	ERM	(916) 924-9378
Susan G. Colman	AMEC Foster Wallace Project Team Member	(831) 336-8155

2. SUMMARY

A site visit to the Intersil Inc./Siemens Components Superfund Site was conducted on 10 March 2015. The participants toured the groundwater treatment plants. The site consists of two areas contributing to a comingled TCE plume—the Intersil (GE) site and the Siemens site. Each site has its own groundwater treatment plant (GWTP), with the Siemens plant treating the off-site extraction wells in addition to the wells on site.

3. DISCUSSION

On 10 March, Bridget Floyd drove to Cupertino, California and met the rest of the site visit participants at the site. The weather was partly cloudy and warm (temperature in the 60s). The site is accessed from Tantau Avenue and is located in Cupertino adjacent to the border with Sunnyvale in the heart of the Silicon Valley.

Ms. Floyd arrived in Cupertino around 11:00 am and met the other participants at the Intersil groundwater treatment plant.

After a brief safety meeting, the team proceeded to inspect the Intersil groundwater treatment plant. The property is currently occupied by an office building housing Panasonic Corp. and Apple, Inc. The system is enclosed in a fence with a locked gate. Inside, the electrical systems are kept in a small, metal shed. The influent water passes through a bag filter and totalizer amplifier before entering the granulated activated carbon (GAC) vessels. The effluent water is discharged to a storm drain which subsequently drains to Calabazas Creek. An AMEC Foster Wallace team member noted that if not for the effluent water discharged to the stream from both the Intersil and Siemens site, there would be no water in the stream channel.

The electrical shed contained the O&M manual and electrical components for the system. The system is inspected weekly and the forms are completed via tablet and sent directly to the system engineer.

Overall, the system is old but in good repair.

One of the four extraction wells (W12A) for the system was then inspected. The well appeared to be in good working order. The extraction wells are also inspected weekly. “No Parking” stripes are painted over the extraction wells to ensure maintenance staff can access them in the busy parking lot.

A monitoring well was also inspected and appeared to be in good repair.

The team then walked to the Siemens site to inspect the second groundwater treatment plant. The Siemens site is currently occupied by a Kaiser medical office. The system is behind a large wall that contains both the groundwater treatment equipment and equipment for the building. Similar to the Intersil system, the influent water passes through a bag filter and GAC vessels before being discharged to the storm drain and subsequently Calabazas Creek. According to ERM personnel, during the last carbon change out, corrosion damage was noted in both of the carbon vessels. As a result, one of the vessels was replaced in December and the other is scheduled to be replaced in April. A few of the extraction wells are currently off due to the ongoing ERD Pilot Study.

A monitoring well was inspected and appeared to be in good repair.

Extraction well H-5B was inspected and was off. ERM was unsure why it was not operating. The site of the ERD pilot study was then viewed. The injection work took place in 2014 and the results of the study were still pending. The pavement was adequately repaired.

All components of the remedial action appear to be in good condition and operating as intended. The site visit ended at approximately 1:30 PM.

4. ACTIONS

The USACE will incorporate information obtained from the site visit into the Five Year Review report.

Site Visit Photos

Photo 1: Intersil GWET Influent Piping

Photo 2: Intersil GWET GAC Vessels

Photo 3: Intersil GWET Piping and Totalizer Amplifier

Photo 4: Intersil Electronic Shed

Photo 5: Siemens GWET Piping

Photo 6: Siemens GWET Equipment and Equalizer Tank

Photo 7: Siemens GWET GAC Vessels

Photo 8: Siemens GWET GAC Vessels and Sampling Ports

Photo 9: Siemens Monitoring Well

Photo 10: Siemens Extraction Well H-5B (off)

Photo 11: Siemens GWET Entrance and Signage

Inspection Checklists

I. SITE INFORMATION	
Site name: Intersil	**Date of inspection:** 10 March 2015
Location: 10900 N Tantau Ave. Cupertino, CA	**EPA ID:** CAD041472341
Agency, office, or company leading the five-year review: USACE	**Weather/temperature:** Partly cloudy, 65°

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☒ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other: Groundwater Monitoring
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☒ Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____
   _____

2. **O&M staff** _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____
   _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency:
Contact: _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. **Other interviews** (optional) ☒ Report attached.

Project Team, AMEC Foster Wallace, via Email

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A
☒ As-built drawings	☒Readily available	☒ Up to date	☐ N/A
☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A

Remarks: Maintenance logs and inspection forms saved electronically in office. Inspections conducted weekly.

2. **Site-Specific Health and Safety Plan** ☒ Readily available ☒ Up to date ☐ N/A
☒ Contingency plan/emergency response plan ☒ Readily available ☒ Up to date ☐ N/A

Remarks: Auto dialer in place in case of emergency. Site-Specific Health and Safety Plan and Emergency Response plan updated annually. No emergencies in last 5 years.

3.	**O&M and OSHA Training Records**	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: 8 hour HAZWOPER renewal certificates on site; 40 hour HAZWOPER certificates in office.			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
	☒ Effluent discharge	☒ Readily available	☒ Up to date	☐ N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: New NPDES permit as of 2014—combined VOCs and fuels into one permit			
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks_____			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks_____			
7.	**Groundwater Monitoring Records**	☐ Readily available	☒ Up to date	☐ N/A
	Remarks: Groundwater Monitoring reports kept in office. Wells mostly sampled annually, 3 wells sampled semi-annually.			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks_____			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	☒ N/A
	☒ Water (effluent)	☐ Readily available	☐ Up to date	☐ N/A
	Remarks: Discharge compliance reports kept in the office.			
10.	**Daily Access/Security Logs**	☒ Readily available	☒ Up to date	☐ N/A
	Remarks_____			

IV. O&M COSTS

1.	**O&M Organization**	
	☐ State in-house	☐ Contractor for State
	☐ PRP in-house	☒ Contractor for PRP
	☐ Federal Facility in-house	☐ Contractor for Federal Facility
	☐ Other_____	

2. **O&M Cost Records**

☐ Readily available ☒ Up to date

☐ Funding mechanism/agreement in place

Original O&M cost estimate_____ ☐ Breakdown attached

Total annual cost by year for review period if available

From 1982 To June 2014 19.1 million ☐ Breakdown attached
Date Date Total cost

From July 2009 To June 2014 1.75 million ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

_____

_____

_____

_____

_____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☐ N/A

Remarks_____

_____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks_____

_____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☒ N/A
Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ☐ N/A
Other problems or suggestions: ☐ Report attached
Institutional Controls include deed restrictions—no drinking water wells on site, no residential buildings on site—and no parking paint markings over extraction wells.

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident
Remarks_____
_____

2. **Land use changes on site** ☒ N/A
Remarks_____
_____

3. **Land use changes off site** ☒ N/A
Remarks: Very large new Apple Inc. headquarters complex being built across the street. Formerly the site was an IBM campus, so no use change.

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A
Remarks: Parking lot in good repair.

B. Other Site Conditions

Remarks _____
_____
_____
_____
_____
_____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
Areal extent_____ Depth_____
Remarks_____
_____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
Lengths_____ Widths_____Depths_____
Remarks_____
_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent_____ Depth_____
Remarks_____
_____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
Areal extent_____ Depth_____
Remarks_____
_____

5. **Vegetative Cover** ☐ Grass ☐Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks_____
_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
Remarks_____
_____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
Areal extent_____ Height_____
Remarks_____
_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐Location shown on site map Areal extent_____
Remarks_____
_____

9.	**Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability Areal extent_____ Remarks_____ _____
B. Benches	☐ Applicable ☐ N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)
1.	**Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay Remarks_____ _____
2.	**Bench Breached** ☐ Location shown on site map ☐ N/A or okay Remarks_____ _____
3.	**Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay Remarks_____ _____
C. Letdown Channels	☐ Applicable ☐ N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)
1.	**Settlement** ☐ Location shown on site map ☐ No evidence of settlement Areal extent_____ Depth_____ Remarks_____ _____
2.	**Material Degradation** ☐ Location shown on site map ☐No evidence of degradation Material type_____ Areal extent_____ Remarks_____ _____
3.	**Erosion** ☐ Location shown on site map ☐ No evidence of erosion Areal extent_____ Depth_____ Remarks_____ _____
4.	**Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting Areal extent_____ Depth_____ Remarks_____ _____
5.	**Obstructions** Type_____ ☐ No obstructions ☐ Location shown on site map Areal extent_____ Size_____ Remarks_____ _____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____
_____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A
Remarks_____
_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable ☐N/A

1. **Gas Treatment Facilities**
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition G Needs Maintenance
Remarks_____
_____

2. **Gas Collection Wells, Manifolds and Piping**
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks_____
   _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks_____
   _____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident
   Remarks_____
   _____

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____
   _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent_____ Depth_____
Remarks_____
_____

4. **Discharge Structure** ☐ Functioning ☐ N/A
Remarks_____
_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Areal extent_____ Depth_____
Remarks_____
_____

2. **Performance Monitoring** Type of monitoring_____
☐ Performance not monitored
Frequency_____ ☐ Evidence of breaching
Head differential_____
Remarks_____
_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☒ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
☒ Good condition ☒ All required wells properly operating ☐ Needs Maintenance ☐ N/A
Remarks_____
_____
_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☒ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Spare Parts and Equipment**
☒ Readily available ☒ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks_____
_____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks_____
_____

C. Treatment System ☐ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☒ Carbon adsorbers
☒ Filters: Bag filter
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☒ Good condition ☐ Needs Maintenance
☒ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☒ Equipment properly identified
☒ Quantity of groundwater treated annually: see report
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☒ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☒ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks: Carbon change out 2x per year.

4. **Discharge Structure and Appurtenances**
☐ N/A ☒ Good condition ☐ Needs Maintenance
Remarks: Discharge to storm drain underground, not visible.

5. **Treatment Building(s)**
☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair
☒ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☒ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☒ Is routinely submitted on time ☒ Is of acceptable quality

2. Monitoring data suggests:
☒ Groundwater plume is effectively contained ☒ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).
The Remedy is functioning as designed to contain the plume. However, the system has become asymptotic and there are questions as to whether or not it will be able to reduce contamination to cleanup levels.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.
The O&M procedures are adequate for continued operation of the system. The system is currently protective of human health and the environment but it may not be able to reduce contamination to cleanup levels.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.
No issues or observations.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.
AMEC Foster Wallace is unsure whether the system is currently providing a better remedy than natural attenuation. A meeting of stakeholders (AMEC, GE, EPA, SFWQCB, etc.) to discuss the future of remedy is warranted.

I. SITE INFORMATION	
Site name: Siemens	**Date of inspection:** 10 March 2015
Location: 10950 N Tantau Ave. Cupertino, CA	**EPA ID:** CAD041472341
Agency, office, or company leading the five-year review: USACE	**Weather/temperature:** Partly cloudy, 65°

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☒ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other: Groundwater Monitoring, ERD pilot
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☒ Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Heather Balfour _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☒ Report attached _____
   Interview via email

2. **O&M staff** _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency:
Contact: _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. **Other interviews** (optional) ☐ Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A
☒ As-built drawings	☒Readily available	☒ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks: Inspections conducted weekly.

2. **Site-Specific Health and Safety Plan** ☒ Readily available ☒ Up to date ☐ N/A
☒ Contingency plan/emergency response plan ☒ Readily available ☒ Up to date ☐ N/A
Remarks: Auto dialer in place in case of emergency. New technology where status of system can be check from mobile device. Site-Specific Health and Safety Plan and Emergency Response plan updated annually. No emergency power to system.

3.	**O&M and OSHA Training Records**	☐ Readily available	☒ Up to date	☐ N/A
	Remarks: Training records available in office.			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
	☒ Effluent discharge	☒ Readily available	☒ Up to date	☐ N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: New NPDES permit as of 2014—combined VOCs and fuels into one permit			
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks_____			
	_____			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks_____			
	_____			
7.	**Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: Groundwater monitoring forms since system was handed over from Arcadis available on site.			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks_____			
	_____			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	☒ N/A
	☒ Water (effluent)	☐ Readily available	☐ Up to date	☐ N/A
	Remarks: Discharge compliance reports kept in the office.			
10.	**Daily Access/Security Logs**	☒ Readily available	☒ Up to date	☐ N/A
	Remarks_____			
	_____			

IV. O&M COSTS

1.	**O&M Organization**	
	☐ State in-house	☐ Contractor for State
	☐ PRP in-house	☒ Contractor for PRP
	☐ Federal Facility in-house	☐ Contractor for Federal Facility
	☐ Other_____	
	_____	

2. **O&M Cost Records**

☐ Readily available ☒ Up to date

☐ Funding mechanism/agreement in place

Original O&M cost estimate_____ ☐ Breakdown attached

Total annual cost by year for review period if available

From 1982 To June 2014 10.6 million ☐ Breakdown attached
Date Date Total cost

From July 2009 To June 2014 2.25 million ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

_____

_____

_____

_____

_____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☐ N/A

Remarks_____

_____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks On system gates _____

_____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☒ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☐ N/A

Other problems or suggestions: ☐ Report attached

Only Institutional Control is deed restrictions—no drinking water wells on site, no residential buildings on site.

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks_____

_____

_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks_____

_____

2. **Land use changes on site** ☒ N/A

Remarks_____

_____

3. **Land use changes off site** ☒ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A

Remarks: Parking lot in good repair.

B. Other Site Conditions

Remarks _____
_____
_____
_____
_____
_____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
Areal extent_____ Depth_____
Remarks_____
_____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
Lengths_____ Widths_____Depths_____
Remarks_____
_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent_____ Depth_____
Remarks_____
_____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
Areal extent_____ Depth_____
Remarks_____
_____

5. **Vegetative Cover** ☐ Grass ☐Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks_____
_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
Remarks_____
_____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
Areal extent_____ Height_____
Remarks_____
_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐Location shown on site map Areal extent_____
Remarks_____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map
☐ No evidence of slope instability
Areal extent_____
Remarks_____
_____

B. Benches ☐ Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks_____
_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks_____
_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks_____
_____

C. Letdown Channels ☐ Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____
_____

2. **Material Degradation** ☐ Location shown on site map ☐No evidence of degradation
Material type_____ Areal extent_____
Remarks_____
_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____
_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____
_____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A
Remarks_____
_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable ☐N/A

1. **Gas Treatment Facilities**
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition G Needs Maintenance
Remarks_____
_____

2. **Gas Collection Wells, Manifolds and Piping**
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks_____
   _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks_____
   _____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident
   Remarks_____
   _____

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____
   _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent_____ Depth_____
Remarks_____
_____

4. **Discharge Structure** ☐ Functioning ☐ N/A
Remarks_____
_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Areal extent_____ Depth_____
Remarks_____
_____

2. **Performance Monitoring** Type of monitoring_____
☐ Performance not monitored
Frequency_____ ☐ Evidence of breaching
Head differential_____
Remarks_____
_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☒ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
☒ Good condition ☒ All required wells properly operating ☐ Needs Maintenance ☐ N/A
Remarks: A few extraction wells are turned off sue to the ERD pilot study

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☒ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Spare Parts and Equipment**
☒ Readily available ☒ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks_____
_____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks_____
_____

C. Treatment System ☐ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   ☐ Metals removal ☐ Oil/water separation ☒ Bioremediation
   ☐ Air stripping ☒ Carbon adsorbers
   ☒ Filters: Bag filter
   ☐ Additive (*e.g.*, chelation agent, flocculent)_____
   ☐ Others_____
   ☒ Good condition ☐ Needs Maintenance
   ☒ Sampling ports properly marked and functional
   ☒ Sampling/maintenance log displayed and up to date
   ☒ Equipment properly identified
   ☒ Quantity of groundwater treated annually: see report
   ☐ Quantity of surface water treated annually_____
   Remarks_____
   _____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☐N/A ☒ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Tanks, Vaults, Storage Vessels**
   ☐N/A ☒ Good condition ☐ Proper secondary containment ☒ Needs Maintenance
   Remarks: In the process of replacing carbon tanks because of corrosion—one is brand new and one will be replaced in April.

4. **Discharge Structure and Appurtenances**
   ☐ N/A ☒ Good condition ☐ Needs Maintenance
   Remarks: _____

5. **Treatment Building(s)**
   ☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair
   ☒ Chemicals and equipment properly stored
   Remarks: System is in good repair but messy and unorganized. Many tripping hazards. Dead bird near carbon tanks.

6. **Monitoring Wells** (pump and treatment remedy)
   ☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒Good condition
   ☒ All required wells located ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

D. Monitoring Data

3. Monitoring Data
   ☒ Is routinely submitted on time ☒ Is of acceptable quality

4. Monitoring data suggests:
   ☐ Groundwater plume is effectively contained ☒ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction. ERD pilot study. See 07/2014 REVISED PHASE II ERD PILOT STUDY WORK PLAN.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).
It is unknown if the remedy is containing the plume because the north edge of the plume is not adequately defined. Further work is in process to define the plume. Low efficiency in the GWET system has motivated a ERD pilot study which is still in process.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.
The O&M procedures are adequate for continued operation of the system. To meet long-term clean up goals, additional remedies may need to be implemented.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.
No issues or observations.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.
The ERD pilot study is an opportunity for optimizing the operation of the remedy. To optimize monitoring, additional wells must be installed north of the site—a project ERM is currently undertaking with pushback from the City of Sunnyvale.

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Appendix E: Groundwater Data Review Tables and Figures

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Table 10: Groundwater Elevation Data

GROUNDWATER ELEVATION DATA [1]
JANUARY THROUGH DECEMBER 2014
Intersil/Siemens Site
Cupertino, California

Well	Well Elevation	Water Level Elevations			
		1/13/2014	4/14/2014	7/14/2014	10/7/2014
Former Intersil Facility					
A3 Depth Interval (Approximately 69 or 74 to 80 feet bgs)					
W18MA*	146.94	82.43	81.93	77.96	73.25
W19MA	146.94	85.73	85.67	82.02	76.70
A4 Depth Interval (Approximately 90 to 120 feet bgs)					
E-17A	148.25	85.94	85.77	82.04	77.28
E-9AR*	146.10	81.84	81.39	79.45	72.61
P-23A	147.83	89.26	88.67	84.40	80.38
P-24A	147.45	85.92	85.76	82.02	77.26
P-25A	147.46	85.86	85.69	81.99	77.21
P-26A	147.85	85.84	85.64	81.89	77.06
P-27A	145.90	85.76	85.64	81.97	77.13
P-28A	148.72	86.40	86.24	82.48	77.65
P-29A	149.33	86.62	86.42	82.63	77.87
W-10A*	147.25	56.41	54.42	50.27	57.93
W-12A*	146.64	62.00	61.08	56.19	56.71
W-14A	150.74	88.51	87.18	80.78	76.30
W-4A	148.35	86.82	86.74	82.95	77.98
W-5A	148.61	86.32	86.07	82.25	77.53
W-7A	151.52	91.36	88.41	84.34	79.63
W-9A	146.55	85.72	85.52	81.87	77.01
B Zone					
W-11B	148.15	87.24	85.68	79.00	74.67
W-14B	150.74	87.85	86.31	79.57	75.23
W-14P	150.65	--	--	--	--
W-18B	147.79	87.34	85.78	79.08	74.77
W-8B	145.94	87.45	85.95	79.18	74.84
Former Siemens Facility					
A1 Depth Interval (Approximately 40 to 60 feet bgs)					
1D	143.14	--	--	--	--
1L	143.69	85.69	85.44	82.89	79.32
2-EP*	139.84	87.66	87.83	89.26	88.66
4BP	141.92	86.01	86.09	83.88	83.07
IP-1	142.73	90.66	90.05	91.54	89.01
IP-2	143.55	90.83	90.26	89.53	85.76
IP-3	143.58	91.07	90.61	90.23	89.10
LF-13A	141.60	89.90	88.98	86.35	85.24
MW-01A1[4]	141.46	--	--	--	88.54
MW-02A1[4]	142.58	--	--	--	88.80
MW-1-RU	141.18	86.02	85.92	84.09	--

GROUNDWATER ELEVATION DATA [1]
JANUARY THROUGH DECEMBER 2014
Intersil/Siemens Site
Cupertino, California

Well	Well Elevation	Water Level Elevations			
		1/13/2014	4/14/2014	7/14/2014	10/7/2014
A1 Depth Interval (Approximately 40 to 60 feet bgs [cont'd])					
VM-1S	144.16	90.96	90.45	89.47	--
VM-2S	142.22	88.55	87.81	85.51	--
VM-3S	143.07	90.99	90.69	90.17	89.59
VM-4S	142.26	90.35	89.86	89.39	88.94
VM-5S	141.49	90.37	89.69	89.12	88.45
VM-6S	141.59	89.37	89.03	88.71	88.28
VM-7S	141.44	89.46	89.23	88.86	88.53
VM-8S	141.14	85.68	85.83	84.10	83.97
A2 Depth Interval (Approximately 58 or 60 to 70 feet bgs)					
SW-3	143.98	86.17	85.58	82.17	78.25
1K	142.93	85.61	85.38	82.08	77.54
HMSA-1S	143.48	86.47	86.49	83.12	79.34
2D	141.77	85.13	84.97	84.83	77.27
A3 Depth Interval (Approximately 70 or 74 to 90 feet bgs)					
1H-S	143.80	85.73	85.52	82.11	77.60
2-EPA*	139.87	83.66	83.27	80.05	75.59
EX-1-RL*	144.84	83.88	83.03	79.75	63.15
G-1A	143.40	84.42	84.21	81.59	76.38
H-1A*	141.64	83.46	83.07	80.79	75.36
HMSA-2S	143.35	85.88	85.85	82.99	77.87
LF-12A*	141.36	84.65	84.23	84.42	76.50
MW-01A3[4]	141.57	--	--	--	77.25
MW-03A3[4]	142.99	--	--	--	77.32
MW-04A3[4]	142.75	--	--	--	77.29
SW-5S	144.47	86.19	86.07	82.78	77.79
SW-6S	146.08	86.12	85.91	86.26	77.72
SW-7*	143.28	85.78	85.64	78.19	77.67
VM-1D	144.25	85.72	85.51	81.69	77.59
VM-2D	141.96	85.52	85.31	80.09	77.46
VM-3D	143.00	85.38	85.19	82.07	77.37
VM-4D	142.28	85.29	85.13	81.79	77.48
VM-5D	141.65	85.28	85.14	79.67	77.39
VM-6D	141.24	85.00	84.97	77.56	77.51
VM-7D	141.48	85.14	85.11	80.96	77.42
VM-8D	141.90	85.49	85.33	80.79	77.47
A4 Depth Interval (Approximately 90 to 120 feet bgs)					
2B-S	142.48	81.52	84.75	82.58	77.14
3-DD	142.54	80.63	80.40	81.42	72.45
3-XA	145.09	85.22	84.78	82.13	76.41
F-1A	146.86	85.76	85.61	82.26	77.07

GROUNDWATER ELEVATION DATA [1]
JANUARY THROUGH DECEMBER 2014
Intersil/Siemens Site
Cupertino, California

Well	Well Elevation	Water Level Elevations			
		1/13/2014	4/14/2014	7/14/2014	10/7/2014
A4 Depth Interval (Approximately 90 to 120 feet bgs [cont'd])					
H-2A-S	140.87	84.38	83.98	80.91	75.68
H-XA-S	141.31	85.10	84.72	81.35	76.35
LF-10A	140.75	83.43	83.01	79.66	74.59
LF-11A	142.95	84.04	82.44	78.77	72.92
LF-2A	140.75	85.67	85.03	80.53	75.87
LF-4A	142.95	85.73	85.12	80.77	76.15
LF-6A*	140.75	70.01	68.00	80.81	61.87
LF-9A	142.95	85.66	85.09	80.71	76.06
P-1A	142.57	82.08	81.36	77.17	72.05
P-2A	143.28	82.28	81.49	77.41	72.27
P-3A	141.76	82.96	82.48	80.68	74.05
P-4A	142.25	83.97	83.54	80.67	75.03
T-2A	146.23	85.72	85.51	81.99	76.97
W21A	143.20	85.35	84.93	81.17	76.31
W22A	145.02	85.48	85.33	81.75	76.92
B Zone					
3-EB	143.53	84.65	--	76.30	72.03
H-3B	140.39	84.78	83.44	76.98	72.95
H-5B*	140.95	27.73	21.47	42.44	56.72
LF-1B	143.10	84.96	83.52	76.15	73.02
B Zone (cont'd)					
LF-3B	143.87	84.89	83.56	77.14	73.11
LF-5B	142.46	82.61	81.45	75.09	71.25
LF-7B	143.20	82.76	81.85	75.39	71.67
P-5B	143.41	84.42	82.13	83.58	70.62
P-6B	142.00	85.13	83.63	77.21	73.08
W-19B	145.22	87.39	85.76	79.19	74.79
W-20B	144.14	87.10	85.19	77.91	73.41
C Zone					
H-4C	141.57	82.43	79.68	71.16	67.56
Intersil/Siemens Off-Site Study Area					
A1 Depth Interval (Approximately 40 to 60 feet bgs [cont'd])					
MW-OS-1A1[4]	141.24	--	--	--	--
MW-OS-2A1[4]	140.69	--	--	--	97.4
MW-OS-3A1[4]	136.38	--	--	--	78.82
A3 Depth Interval (Approximately 70 or 74 to 90 feet bgs)					
MW-OS-2A3[4]	140.53	--	--	--	77.47
MW-OS-3A3[4]	136.42	--	--	--	77.39
MW-OS-4A3[4]	134.87	--	--	--	76.25
MW-OS-5A3[4]	132.93	--	--	--	76.97

GROUNDWATER ELEVATION DATA [1]
JANUARY THROUGH DECEMBER 2014
Intersil/Siemens Site
Cupertino, California

Well	Well Elevation	Water Level Elevations			
		1/13/2014	4/14/2014	7/14/2014	10/7/2014
A4 Depth Interval					
LF-8A	141.54	86.13	85.31	80.57	75.95
LS-1A	135.84	84.81	83.33	76.76	72.93
MW-OS-2A4[4]	140.52	--	--	--	75.74
MW-OS-3A4[4]	136.35	--	--	--	75.62
MW-OS-4A4[4]	134.52	--	--	--	75.86
QH-1A	139.91	83.70	82.93	78.56	74.00
S-1A	137.39	83.99	83.29	79.94	75.44
T-3A	143.97	84.53	83.59	78.46	74.23
W-15AR[5]	146.39	91.48	91.35	87.64	77.64
W-16A	146.71	88.32	88.32	84.21	79.91
B Zone					
BM-1B	128.10	82.44	80.49	73.40	69.73
HN-1B	150.39	--	--	74.98	71.59
IP-1B	139.62	81.64	79.03	71.97	68.72
IQ-1B	133.99	80.41	78.01	70.81	67.52
KB-1B	129.02	83.47	81.77	75.06	71.31
KB-2B	129.19	82.03	80.10	73.28	69.71
KL-1B	147.26	83.69	81.27	74.65	71.43
KP-1B	140.50	82.10	79.63	72.56	69.22
KR-1B	133.13	80.11	77.87	70.64	67.21
LQ-1B	132.56	79.00	76.78	68.39 [2]	66.12
LQ-2B*	132.55	73.51	71.14	63.05 [2]	60.82
LR-1B*	136.55	54.84	50.66	47.85	44.23
LS-2B	135.72	84.92	83.40	76.78	72.74
PG-1B	132.67	80.44	77.81	70.71	67.47
PH-1B	140.52	81.90	79.53	72.57	69.18
PL-1B	139.70	81.82	79.41	72.36	69.09
RK-1B	130.92	80.42	78.12	71.13	67.76
S-2B	137.21	81.19	79.52	73.05	69.24
S-3B	129.75	80.00	77.57	70.37	67.08
S-5B	130.45	83.80	82.19	75.40	71.35
VM-1B	129.06	83.51	81.74	75.03	73.39

GROUNDWATER ELEVATION DATA [1]
JANUARY THROUGH DECEMBER 2014
Intersil/Siemens Site
Cupertino, California

Well	Well Elevation	Water Level Elevations			
		1/13/2014	4/14/2014	7/14/2014	10/7/2014
C Zone					
KR-2CP	133.02	80.79	--	69.71	66.45
LH-1C	127.73	79.70	76.88	67.88	64.55
LQ-3CP	133.72	81.38	78.22	69.75	66.53
LR-3C	136.70	81.58	78.76	70.48	66.99
PL-2C	139.77	81.72	78.73	70.69	67.72
RK-2C	130.98	80.47	77.43	69.06	65.70
S-4C	130.10	79.30	76.22	67.95	64.68
S-6C	130.47	80.15	76.95	68.01	64.61

Notes
1. Elevations in feet, National Geodetic Vertical Datum (NGVD). Water levels for the former Siemens facility were measured by ERM, unless otherwise noted. Water levels for the former Intersil facility and Intersil/Siemens Off-Site Study Area were measured by AMEC, unless otherwise noted.
2. Water level measured by ERM.
3. Water level measured by Shaw Environmental on behalf of AMI.
4. A Zone wells installed in July 2014.
5. Well W15A replaced by well W15AR in September 2013.

Abbreviations
* indicates groundwater extraction well
-- = no measurement available
bgs = below ground surface
NA = not available; well was not accessible

Table 11: Summary of VOC Concentrations in Groundwater Monitoring Wells

SUMMARY OF VOC CONCENTRATIONS IN GROUNDWATER MONITORING WELLS [1]
JANUARY THROUGH DECEMBER 2014
Intersil/Siemens Site
Cupertino, California

All results in milligrams per liter (mg/L)

Well No.		Date Sampled	1,1-DCE	1,2-DCE (cis/trans)	1,1,1-TCA	TCE	PCE	Freon 113	Chloroform	Toluene
Former Intersil Facility										
A3 Depth Interval (69 or 74 to 80 feet bgs)										
W18MA*		10/7/2014	<0.00050	<0.00050	<0.00050	0.064	<0.00050	<0.0020	<0.00050	NA
W19MA		10/8/2014	<0.00050	<0.00050	<0.00050	0.28	0.00061	<0.0020	<0.00050	NA
A4 Depth Interval (90 to 125 feet bgs)										
E9AR*		10/7/2014	<0.00050	<0.00050	<0.00050	0.014	<0.00050	0.0084	<0.00050	NA
E17A		10/8/2014	<0.00050	0.0081	<0.00050	0.033	<0.00050	0.0062	<0.00050	NA
W4A		10/8/2014	<0.00050	<0.00050	<0.00050	0.0046	<0.00050	<0.0020	<0.00050	NA
W5A		10/13/2014	<0.00050	<0.00050	<0.00050	0.0033	<0.00050	0.0087	<0.0010	NA
W10A*		10/7/2014	<0.00050	<0.00050	<0.00050	0.04	<0.00050	0.0075	<0.00050	NA
W10A*	Dup	10/7/2014	<0.00050	<0.00050	<0.00050	0.041	<0.00050	0.0079	<0.00050	NA
W12A*		10/7/2014	0.00079	<0.00050	0.001	0.1	<0.00050	0.013	<0.00050	NA
B Zone										
W8B		10/8/2014	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.0020	<0.00050	NA
W11B		10/8/2014	<0.00050	<0.00050	<0.00050	0.0087	<0.00050	0.0074	<0.00050	NA
W18B		10/8/2014	<0.00050	<0.00050	<0.00050	0.016	<0.00050	0.0034	<0.00050	NA
Former Siemens Facility										
A1 Depth Interval (Approximately 40 to 60 feet bgs)										
2EP		10/9/2014	< 0.01	0.41 / < 0.01	< 0.01	0.26	< 0.01	< 0.01	< 0.02	NA
4BP		10/8/2014	0.07	3.3 / 0.013	< 0.0050	0.42	< 0.0050	0.0080	< 0.01	NA
IP-2		10/9/2014	< 0.0025	0.017 / 0.0036	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0050	NA
IP-3		10/9/2014	< 0.00050	0.015 / 0.0076	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.0010	NA
VM-5S		10/9/2014	< 0.00050	0.18 / 0.00067	< 0.00050	0.099	< 0.00050	0.00072	< 0.0010	NA
VM-5S	Dup	10/9/2014	< 0.00050	0.18 / 0.00073	< 0.00050	0.099	< 0.00050	0.00074	< 0.0010	NA
VM-6S		10/9/2014	< 0.0050	0.59 / 0.0090	< 0.0050	0.83	< 0.0050	0.0085	< 0.01	NA
VM-8S		10/8/2014	0.04	0.21 / 0.0034	0.022	0.24	0.0015	0.0013	< 0.0010	NA
A3 Depth Interval (Approximately 70 or 74 to 90 feet bgs)										
2EPa		10/8/2014	0.0030	0.012 / < 0.0025	< 0.0025	0.13	< 0.0025	< 0.0025	< 0.0050	NA
EX-1-RL		10/8/2014	0.0017	< 0.00050 / < 0.00050	0.00099	0.17	< 0.00050	0.0024	< 0.0010	NA
SW-7		10/7/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	0.052	< 0.00050	0.00065	< 0.0010	NA
G-1A		10/9/2014	< 0.0050	0.39 / < 0.0050	< 0.0050	0.34	< 0.0050	0.0061	< 0.01	NA
H-1A		10/9/2014	0.0025	0.0017 / < 0.00050	0.0019	0.16	< 0.00050	0.0077	< 0.0010	NA
LF-12A		10/8/2014	< 0.00050	0.0016 / < 0.00050	< 0.00050	0.0069	< 0.00050	0.00065	< 0.0010	NA
SW-5S		10/9/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	0.074	< 0.00050	0.00081	< 0.0010	NA
SW-6S		10/9/2014	< 0.01	< 0.01 / < 0.01	< 0.01	0.63	< 0.01	< 0.01	< 0.02	NA
VM-2D		10/9/2014	< 0.50	5.7 / < 0.50	< 0.50	0.015	< 0.50	0.94	< 1.0	NA
VM-8D		10/8/2014	0.0016	< 0.00050 / < 0.00050	0.00090	0.13	< 0.00050	0.0016	< 0.0010	NA

SUMMARY OF VOC CONCENTRATIONS IN GROUNDWATER MONITORING WELLS [1]
JANUARY THROUGH DECEMBER 2014
Intersil/Siemens Site
Cupertino, California

All results in milligrams per liter (mg/L)

Well No.		Date Sampled	1,1-DCE	1,2-DCE (cis/trans)	1,1,1-TCA	TCE	PCE	Freon 113	Chloroform	Toluene
VM-8D	Dup	10/8/2014	0.00090	< 0.00050 / < 0.00050	0.00091	0.097	< 0.00050	0.0012	< 0.0010	NA
A4 Depth Interval (Approximately 90 to 120 feet bgs)										
3-XA		10/9/2014	0.0030	0.00051 / < 0.00050	< 0.00050	0.09	< 0.00050	0.0039	< 0.0010	NA
F-1A		10/8/2014	< 0.0050	< 0.0050 / < 0.0050	< 0.0050	0.32	< 0.0050	< 0.0050	< 0.01	NA
F-1A	Dup	10/8/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	0.41	0.00064	0.0018	< 0.0010	NA
H-2A-S		10/8/2014	0.02	0.00097 / < 0.00050	0.013	0.15	< 0.00050	0.0061	< 0.0010	NA
H-XA-S		10/8/2014	0.017	0.00072 / < 0.00050	0.013	0.2	< 0.00050	0.0095	< 0.0010	NA
LF-6A		10/9/2014	< 0.0050	0.0054 / < 0.0050	< 0.0050	0.18	< 0.0050	0.0058	< 0.01	NA
LF-9A		10/8/2014	0.00067	< 0.00050 / < 0.00050	0.0012	0.068	< 0.00050	0.015	< 0.0010	NA
P-1A		10/8/2014	< 0.00050	0.00077 / < 0.00050	< 0.00050	0.0071	< 0.00050	0.00071	< 0.0010	NA
W21A		10/7/2014	0.0046	< 0.00050 / < 0.00050	< 0.00050	0.037	< 0.00050	0.0045	< 0.0010	NA
W22A		10/8/2014	0.00075	0.0045 / < 0.00050	0.00062	0.6	< 0.00050	0.00081	< 0.0010	NA
B Zone (Approximately 130-150 feet bgs)										
H-3B		10/8/2014	< 0.00050	< 0.00050 / < 0.00050	0.00062	0.049	< 0.00050	0.0080	< 0.0010	NA
H-5B		10/8/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	0.11	< 0.00050	0.0025	< 0.0010	NA
LF-3B		10/8/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	0.0022	< 0.00050	< 0.00050	< 0.0010	NA
LF-5B		10/9/2014	< 0.00050	0.0013 / < 0.00050	< 0.00050	0.035	< 0.00050	0.00075	< 0.0010	NA
W19B		10/8/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	0.033	< 0.00050	0.0019	< 0.0010	NA
W20B		10/9/2014	0.0023	< 0.00050 / < 0.00050	< 0.00050	0.035	< 0.00050	0.0046	< 0.0010	NA
W20B	Dup	10/9/2014	0.0015	< 0.00050 / < 0.00050	0.00071	0.036	< 0.00050	0.0056	< 0.0010	NA
Blanks										
EB-100914	EB	10/9/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.0010	< 0.00050	NA
TB1-100714	TB	10/7/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.0010	< 0.00050	NA
TB2-101814	TB	10/8/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.0010	< 0.00050	NA
TB3-100914	TB	10/9/2014	< 0.00050	< 0.00050 / < 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.0010	< 0.00050	NA
Intersil/Siemens Off-Site Study Area										
A1 Depth Interval										
MW-OS-2A1		8/13/2014	0.00053	0.560/0.0018	<0.0005	1	0.001	0.0051	0.0051	NA
MW-OS-2A1		10/7/2014	<0.010	0.870	<0.010	1.5	<0.010	<0.04	<0.010	NA
MW-OS-3A1		8/13/2014	0.003	0.0046/<0.0005	0.0047	0.026	<0.00050	0.0018	<0.001	NA
MW-OS-3A1		10/7/2014	0.0042	0.0056	0.0047	0.025	<0.00050	<0.002	<0.00050	NA
A3 Depth Interval										
MW-OS-2A3		8/13/2014	0.0046	0.0033/<0.0005	0.0026	0.084	<0.00050	0.002	<0.001	NA
MW-OS-2A3		10/7/2014	0.0034	0.0016	0.0028	0.091	<0.00050	0.0031	<0.00050	NA
MW-OS-3A3		8/13/2014	0.0016	0.002/<0.0005	0.0022	0.120	<0.00050	0.0013	<0.001	NA
MW-OS-3A3		10/7/2014	0.0015	0.0024	0.0019	0.086	<0.00050	<0.0020	<0.00050	NA
MW-OS-4A3		8/13/2014	<0.0005	<0.0005/<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.001	NA
MW-OS-4A3		10/7/2014	<0.0005	<0.0005	<0.0005	<0.00050	<0.00050	<0.0020	<0.00050	NA

SUMMARY OF VOC CONCENTRATIONS IN GROUNDWATER MONITORING WELLS [1]
JANUARY THROUGH DECEMBER 2014
Intersil/Siemens Site
Cupertino, California

All results in milligrams per liter (mg/L)

Well No.		Date Sampled	1,1-DCE	1,2-DCE (cis/trans)	1,1,1-TCA	TCE	PCE	Freon 113	Chloroform	Toluene
MW-OS-5A3		8/13/2014	0.00057	0.0012/<0.0005	0.00086	0.011	<0.00050	0.00071	<0.001	NA
MW-OS-5A3	Dup	8/13/2014	0.00052	0.0012/<0.0005	0.00087	0.011	<0.00050	0.00065	<0.001	NA
MW-OS-5A3		10/7/2014	0.00062	0.0017	0.0013	0.015	<0.00050	<0.002	<0.00050	NA
A4 Depth Interval										
MW-OS-2A4		8/13/2014	0.010	0.0011/<0.0005	0.0083	0.046	<0.00050	0.0042	<0.001	NA
MW-OS-2A4		10/7/2014	0.011	0.001	0.0086	0.047	<0.00050	0.0046	<0.00050	NA
MW-OS-3A4		8/13/2014	0.0067	0.00068/<0.0005	0.006	0.029	<0.00050	0.0059	<0.001	NA
MW-OS-3A4		10/7/2014	0.0085	0.00065	0.0073	0.028	<0.00050	0.0077	<0.00050	NA
MW-OS-4A4		8/13/2014	0.00088	<0.00050/<0.00050	0.0013	0.019	<0.00050	0.002	<0.001	NA
MW-OS-4A4		10/8/2014	0.00059	<0.00050	0.0012	0.012	<0.00050	<0.0020	<0.00050	NA
LF-8A		10/8/2014	0.0019	<0.00050	<0.00050	0.0013	<0.00050	<0.0020	<0.00050	NA
LS-1A		10/8/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
QH-1A		10/8/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
S-1A		10/8/2014	<0.00050	<0.00050	0.00065	0.0089	<0.00050	0.0027	<0.00050	NA
B Zone										
IQ-1B		4/14/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050
IQ-1B	Dup	4/14/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050
IQ-1B		10/8/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
IQ-1B	Dup	10/8/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
KR-1B		10/8/2014	<0.00050	<0.00050	0.00057	0.019	<0.00050	0.0029	<0.00050	NA
LQ-2B*		4/14/2014	<0.00050	<0.00050	<0.00050	0.067	<0.00050	0.0016	<0.0010	<0.00050
LQ-2B*		10/8/2014	<0.00050	<0.00050	<0.00050	0.07	<0.00050	0.0022	<0.00050	NA
LR-1B*		4/14/2014	0.00063	<0.00050	0.00055	0.09	<0.00050	0.0067	<0.0010	<0.00050
LR-1B*		10/8/2014	0.0007	<0.00050	0.0011	0.09	<0.00050	0.0081	<0.00050	NA
LR-1B*	Dup	10/8/2014	0.00069	<0.00050	0.0011	0.09	<0.00050	0.0075	<0.00050	NA
LS-2B		10/8/2014	0.0035	0.0011 J	<0.00050	0.0045	<0.00050	<0.0020	<0.00050	NA
LS-2B	Dup	10/8/2014	0.0018	0.00057 J	<0.00050	0.0024	<0.00050	<0.0020	<0.00050	NA
PG-1B		10/8/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
PL-1B		10/8/2014	<0.00050	<0.00050	<0.00050	0.014	<0.00050	<0.0020	<0.00050	NA
RK-1B		10/8/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
S-3B		10/7/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050
S-5B		10/8/2014	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0052	<0.00050	NA
C Zone										
LR-3C		10/8/2014	<0.00050	<0.00050	<0.00050	0.0017	<0.00050	<0.0020	<0.00050	<0.00050
RK-2C		10/8/2014	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	<0.0020	<0.00050	NA
S-4C		10/7/2014	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.0020	<0.00050	NA

SUMMARY OF VOC CONCENTRATIONS IN GROUNDWATER MONITORING WELLS [1]
JANUARY THROUGH DECEMBER 2014
Intersil/Siemens Site
Cupertino, California

All results in milligrams per liter (mg/L)

Well No.		Date Sampled	1,1-DCE	1,2-DCE (cis/trans)	1,1,1-TCA	TCE	PCE	Freon 113	Chloroform	Toluene
Blanks										
EB	EB	4/14/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050
FB-1	FB	10/7/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
FB-2	FB	10/7/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
FB-3	FB	10/8/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NA
TB	TB	4/14/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
TB-1	TB	10/7/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
TB-2	TB	10/7/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA
TB-3	TB	10/8/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	NA

Notes
1. Samples were analyzed by TestAmerica of Pleasanton, California, unless otherwise noted.
   Samples were analyzed using EPA Method 8260B for EPA 8010 analyte list compounds.

Abbreviations
"<" indicates not detected above indicated detection limit
* = Active groundwater extraction well
1,1-DCE = 1,1-Dichloroethene
1,2-DCE = 1,2-Dichloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
bgs = below ground surface
Dup = Duplicate sample
EB = Equipment Blank
FB = Field Blank
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. Results are J-flagged due the laboratory reporting the results between the reporting limit and the method detection limit
NA = Not Analyzed
PCE = Tetrachloroethene
TB = Trip Blank
TCE = Trichloroethene

Table 12: Comparison of TCE Concentrations 2010 to 2014

COMPARISON OF TCE CONCENTRATIONS IN OCTOBER, 2010 THROUGH 2014 [1,2]
Intersil/Siemens Site
Cupertino, California

All results in milligrams per liter (mg/L)

Well No.	Oct-10	Oct-11	Oct-12	Oct-13	Oct-14	Number of Detects	Minimum Detection	Maximum Detection	Average[1] (Detects)	Standard Deviation[1] (Detects)	Relative Standard Deviation[1] (Detects)	Range of Detection Limits (Non-Detects)	October 2014 Within 2010-2013 Range?	Reason if Not Within Range	Relative Percent Difference (RPD) if Out of Range[2]
Former Intersil Facility															
A3 Depth Interval (69 or 74 to 80 feet bgs)															
W19MA	NA	0.084	0.037	0.12	0.28	4	0.037	0.28	0.13025	0.105	81%	NA	No	Higher	233%
A4 Depth Interval (90 to 125 feet bgs)															
E17A	0.051	0.025	0.015	0.021	0.033	5	0.015	0.051	0.029	0.014	48%	NA	Yes	--	--
W4A	0.0031	0.012	0.0021	0.0046	0.0046	5	0.0021	0.012	0.005	0.004	74%	NA	Yes	--	--
W5A	0.0035	0.003	0.0016	0.0030	0.0033	5	0.0016	0.0035	0.003	0.001	26%	NA	Yes	--	--
B Zone															
W8B	0.0011	0.0011	0.00062	0.00067	0.002	5	0.00062	0.002	0.0011	0.001	50%	NA	Yes	--	--
W11B	0.0050	0.0038	0.0022	0.0018	0.0087	5	0.0018	0.0087	0.0043	0.003	64%	NA	Yes	--	--
W18B	0.013	0.017	0.006	0.015	0.016	5	0.006	0.017	0.013	0.004	33%	NA	Yes	--	--
Former Siemens Facility															
A1 Depth Interval (Approximately 40 to 60 feet bgs)															
4-BP	0.2	0.22	0.2	0.53	0.42	5	0.2	0.53	0.314	0.152	48%	NA	Yes	--	--
IP-2	NA	<0.01	<0.005	0.011	< 0.0025	2	0.0051	0.011	0.00805	0.004	52%	0.0025 - 0.01	Yes, sample is ND	--	--
IP-3	NA	<0.01	0.00059	0.0054	< 0.00050	3	0.00059	0.0054	0.0032	0.002	76%	0.0005 - 0.01	Yes, sample is ND	--	--
VM-5S	NA	0.034	0.0048	0.016	0.099	5	0.0048	0.099	0.04136	0.037	90%	NA	No	Higher	191.2%
VM-6S	NA	0.64	0.88	1.4	0.83	6	0.6	1.4	0.852	0.289	34%	NA	Yes	--	--
VM-8S	0.25	0.26	0.27	0.26	0.24	6	0.24	0.27	0.258	0.012	5%	NA	No	Lower	< 35%
A3 Depth Interval (Approximately 70 or 74 to 90 feet bgs)															
G-1A	0.61	0.42	0.37	0.65	0.34	6	0.34	0.65	0.49	0.131	27%	NA	No	Lower	84%
SW-5S	0.0034	0.0008	0.031	0.037	0.074	5	0.0008	0.074	0.0292	0.030	102%	NA	No	Higher	100%
SW-6S	0.74	0.25	0.78	1.1	0.63	5	0.25	1.1	0.7	0.306	44%	NA	Yes	--	--
VM-2D	0.019	0.013	0.013	0.023	0.015	5	0.013	0.023	0.017	0.004	26%	NA	Yes	--	--
VM-8D	0.16	0.11	0.1	0.077	0.13	6	0.077	0.16	0.115	0.028	25%	NA	Yes	--	--
A4 Depth Interval (Approximately 90 to 120 feet bgs)															
3-XA	0.063	0.073	0.082	0.066	0.09	5	0.063	0.09	0.0748	0.011	15%	NA	No	Higher	< 35%
F-1A	0.13	0.21	0.38	0.11	0.32	5	0.11	0.38	0.23	0.118	51%	NA	Yes	--	--
H-2A-S	0.061	0.057	0.082	0.077	0.15	5	0.057	0.15	0.085	0.038	44%	NA	No	Lower	119%
H-XA-S	0.17	0.17	0.17	0.17	0.2	5	0.17	0.2	0.176	0.013	8%	NA	No	Higher	< 35%
LF-9A	0.08	0.074	0.077	0.072	0.068	5	0.068	0.08	0.0742	0.005	6%	NA	No	Lower	< 35%
A4 Depth Interval (Approximately 90 to 120 feet bgs)															
P-1A	0.0031	0.0074	0.0037	0.023	0.0071	4	0.0031	0.023	0.0102	0.009	87%	NA	Yes	--	--
W-21A	0.017	0.0069	0.038	0.039	0.037	5	0.0069	0.039	0.0276	0.015	53%	NA	Yes	--	--
W-22A	0.23	0.0038	0.33	0.52	0.6	5	0.0038	0.6	0.3368	0.237	70%	NA	No	Higher	< 35%
B Zone (Approximately 130-150 feet bgs)															
H-3B	0.0096	0.06	0.062	0.053	0.049	5	0.0096	0.062	0.0467	0.021	46%	NA	Yes	--	--
LF-3B	0.0015	0.0026	0.0026	0.0025	0.0022	5	0.0015	0.0026	0.0023	0.000	20%	NA	Yes	--	--
LF-5B	0.015	0.0021	0.021	0.023	0.035	5	0.0021	0.035	0.0192	0.012	63%	NA	No	Higher	52%
W-19B	0.032	0.03	0.048	0.051	0.033	5	0.022	0.051	0.037	0.012	32%	NA	Yes	--	--
W-20B	0.048	0.006	0.039	0.03	0.035	5	0.006	0.048	0.032	0.016	50%	NA	Yes	--	--

TABLE 3B

COMPARISON OF TCE CONCENTRATIONS IN OCTOBER, 2010 THROUGH 2014 [1,2]

Intersil/Siemens Site
Cupertino, California

All results in milligrams per liter (mg/L)

Well No.		Oct-10	Oct-11	Oct-12	Oct-13	Oct-14	Number of Detects	Minimum Detection	Maximum Detection	Average[1] (Detects)	Standard Deviation[1] (Detects)	Relative Standard Deviation[1] (Detects)	Range of Detection Limits (Non-Detects)	October 2014 Within 2010-2013 Range?	Reason if Not Within Range	Relative Percent Difference (RPD) if Out of Range[2]
Intersil/Siemens Off-Site Study Area																
A1 Depth Interval																
MW-OS-2A1		NA	NA	NA	NA	1.5	--	--	--	--	--	--	--	--	--	--
MW-OS-3A1		NA	NA	NA	NA	0.025	--	--	--	--	--	--	--	--	--	--
A3 Depth Interval																
MW-OS-2A3		NA	NA	NA	NA	0.091	--	--	--	--	--	--	--	--	--	--
MW-OS-3A3		NA	NA	NA	NA	0.086	--	--	--	--	--	--	--	--	--	--
MW-OS-4A3		NA	NA	NA	NA	<0.00050	--	--	--	--	--	--	--	--	--	--
MW-OS-5A3		NA	NA	NA	NA	0.015	--	--	--	--	--	--	--	--	--	--
A4 Depth Interval																
MW-OS-2A4		NA	NA	NA	NA	0.047	--	--	--	--	--	--	--	--	--	--
MW-OS-3A4		NA	NA	NA	NA	0.028	--	--	--	--	--	--	--	--	--	--
MW-OS-4A4		NA	NA	NA	NA	0.012	--	--	--	--	--	--	--	--	--	--
LF-8A		<0.0005	0.00077	<0.0005	0.00086	0.0013	3	0.00077	0.0013	0.0010	0.0003	29%	NA	No	Higher	151%
LS-1A		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	--	--	<0.0005	Yes	--	--
QH-1A		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	--	--	<0.0005	Yes	--	--
S-1A		0.060	0.049	0.036	0.049	0.0089	5	0.0089	0.06	0.04058	0.020	48%	NA	No	Lower	18%
B Zone																
IQ-1B		0.0052	<0.0005	<0.0005	<0.0005	<0.0005	1	0.0052	0.0052	0.0052	--	--	<0.0005	Yes	--	--
KR-1B		0.062	0.052	0.047	0.050	0.019	5	0.019	0.062	0.046	0.016	35%	NA	No	Lower	31%
LS-2B		0.0047	0.0043	0.0029	0.0034	0.0045	5	0.0029	0.0047	0.0040	0.001	20%	NA	Yes	--	--
LS-2B	Dup	0.0049	0.0045	0.0028	0.0033	0.0024	5	0.0024	0.0049	0.0036	0.001	30%	NA	No	Lower	49%
PG-1B		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	--	--	<0.0005	Yes	--	--
PL-1B		0.017	0.020	0.017	0.016	0.014	5	0.014	0.02	0.0168	0.002	13%	NA	Yes	--	--
RK-1B		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	--	--	<0.0005	Yes	--	--
S-3B		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	--	--	<0.0005	Yes	--	--
S-5B		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	--	--	<0.0005	No	--	--
C Zone																
LR-3C		0.006	0.0065	0.0056	0.0052	0.0017	5	0.0017	0.0065	0.005	0.002	38%	NA	No	Lower	26%
RK-2C		0.0037	0.0007	0.00062	0.0016	0.0019	5	0.00062	0.0037	0.0017	0.001	73%	NA	Yes	--	--
S-4C		0.0012	0.0011	0.00072	0.00093	0.0012	5	0.00072	0.0012	0.0010	0.0002	20%	NA	Yes	--	--

Notes

1. Samples were analyzed by TestAmerica of Pleasanton, California, unless otherwise noted. Samples were analyzed using EPA Method 8260B for EPA 8010 analyte list compounds.
2. Samples were collected using the following methods: low-flow method in 2012 and 2013 and HydraSleeve in 2014 at the Former Intersil Facility and Off-Site Study Area; Kabis in 2010 and 2013 and HydraSleeve in 2014 at the former Siemens facility.
3. Samples were collected at IP-1, -2 and -3 (1" piezometers) using a bailer; and from the extraction wells via the groundwater sampling port at each wellhead.

[1] Average, standard deviation and coefficient of variation were calculated using detects only.

[2] Relative percent difference of October 2014 detected value to maximum detected value in 2010-2013

Abbreviations

"<" indicates not detected above indicated detection limit
* = Active groundwater extraction well
bgs = below ground surface
Dup = Duplicate sample
NA = Not analyzed or not applicable
RPD = Relative percent difference
TCE = Trichloroethene

Figure 2: A1 Zone Groundwater Elevation Contours October 2014

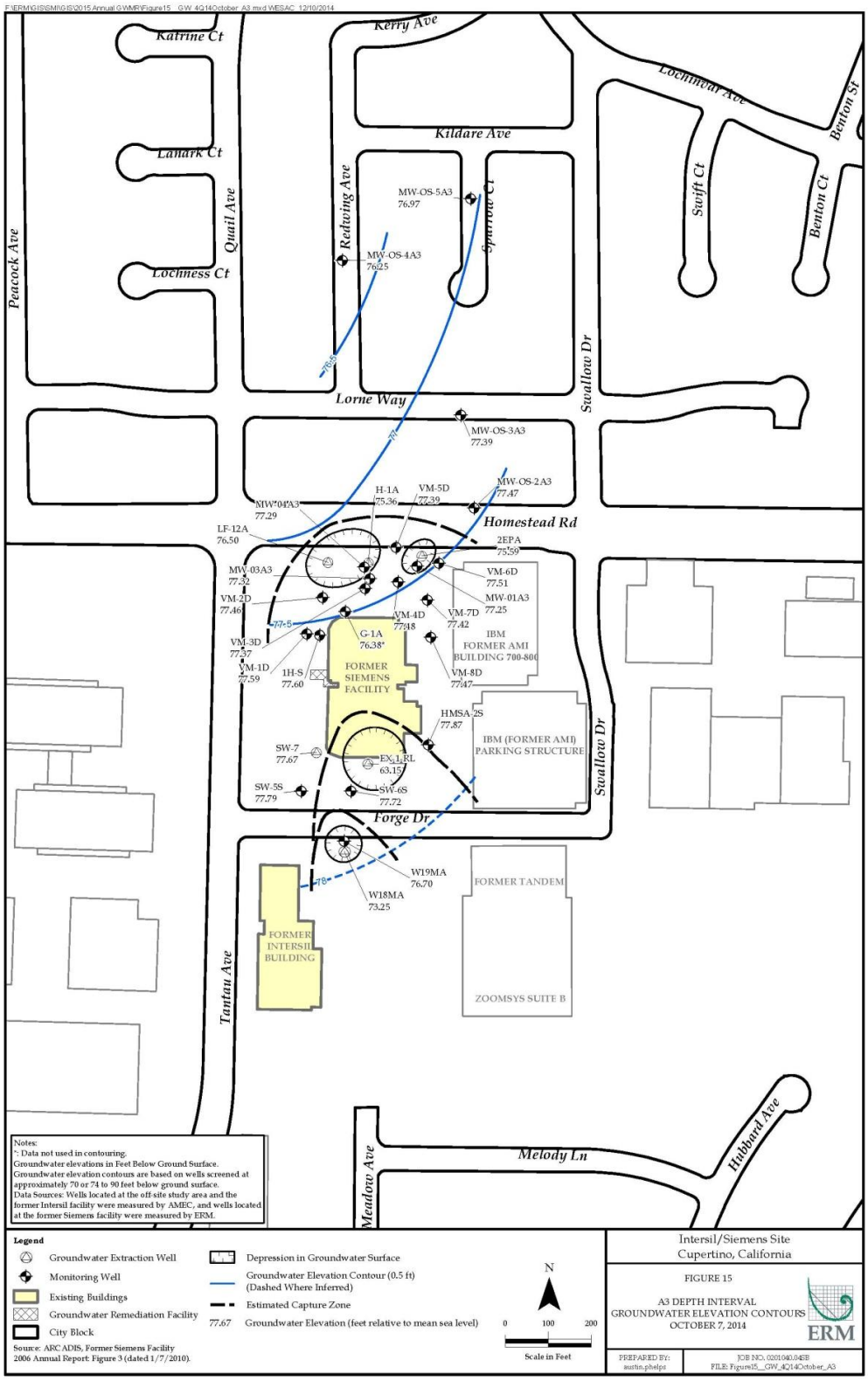


Figure 3: A3 Zone Groundwater Elevation Contours April 2014

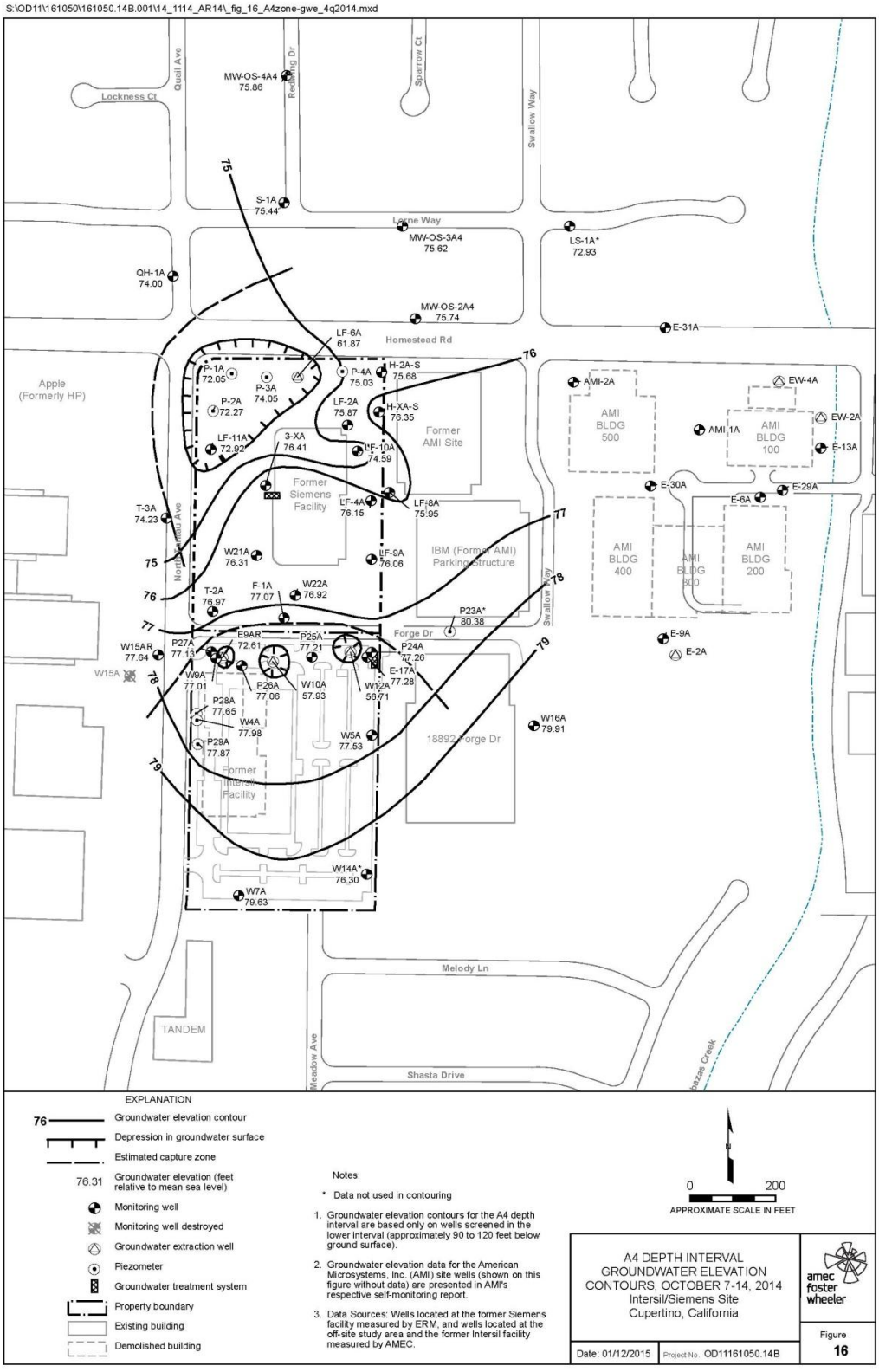


Figure 4: A4 Zone Groundwater Elevation Contours October 2014

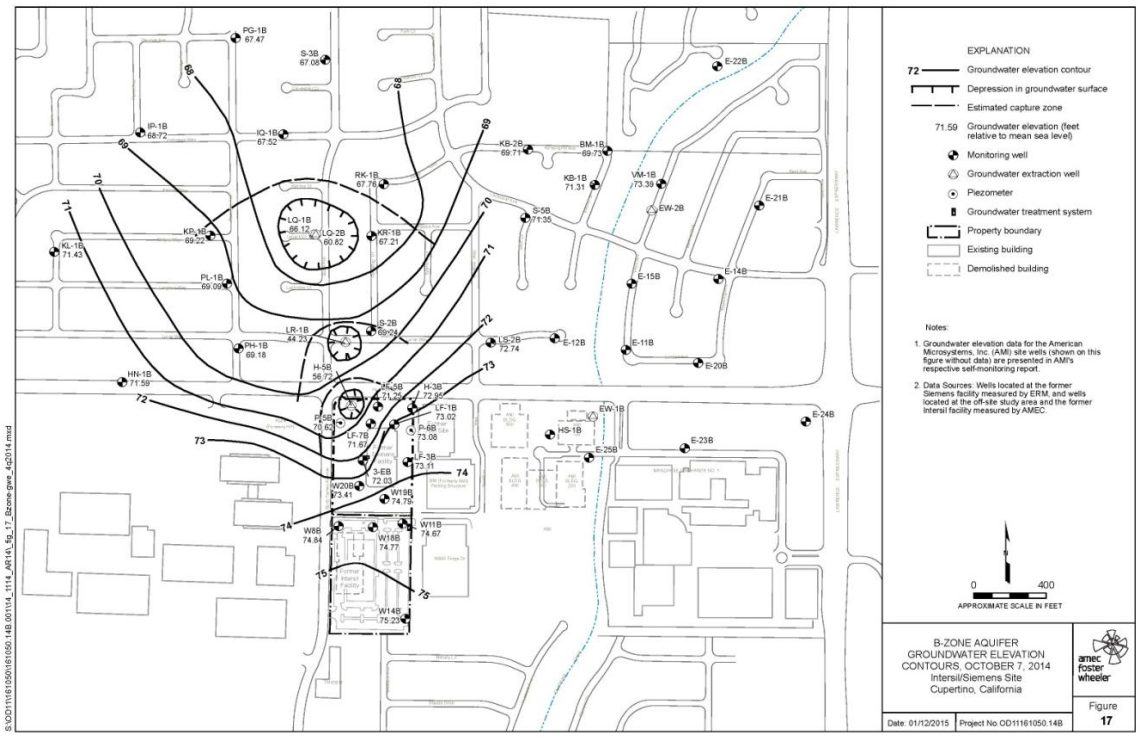


Figure 5: B Zone Groundwater Elevation Contours October 2014

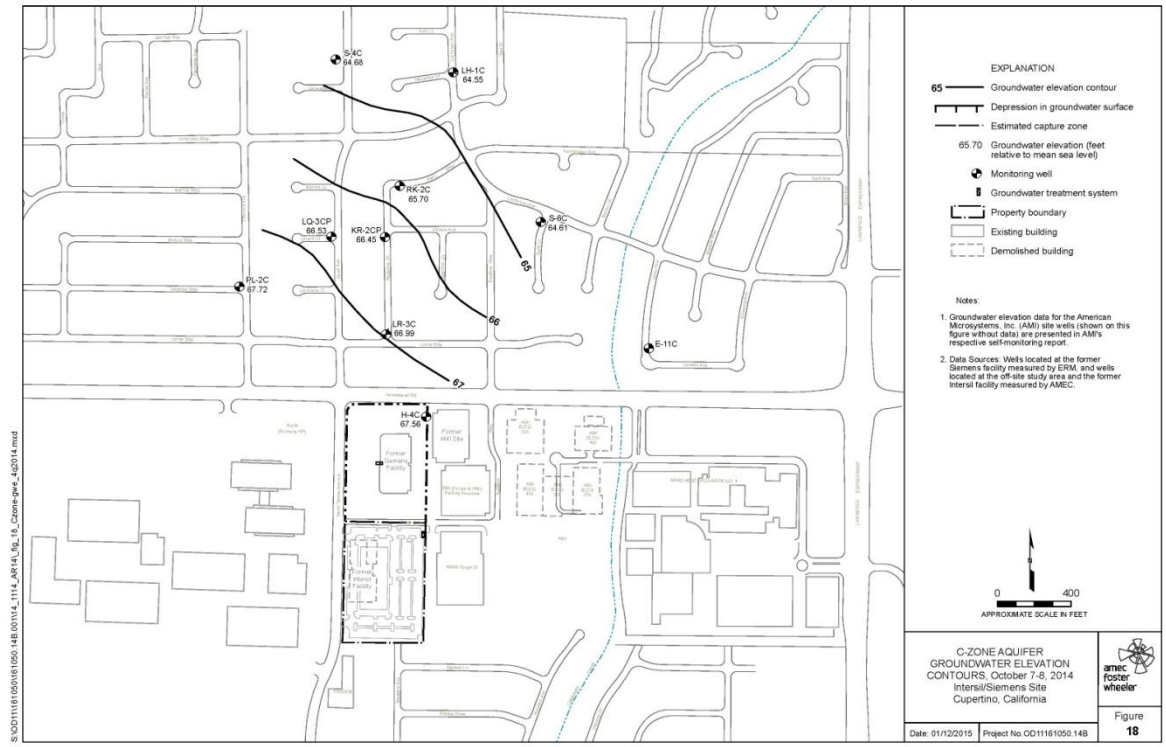


Figure 6: C Zone Groundwater Elevation Contours October 2014

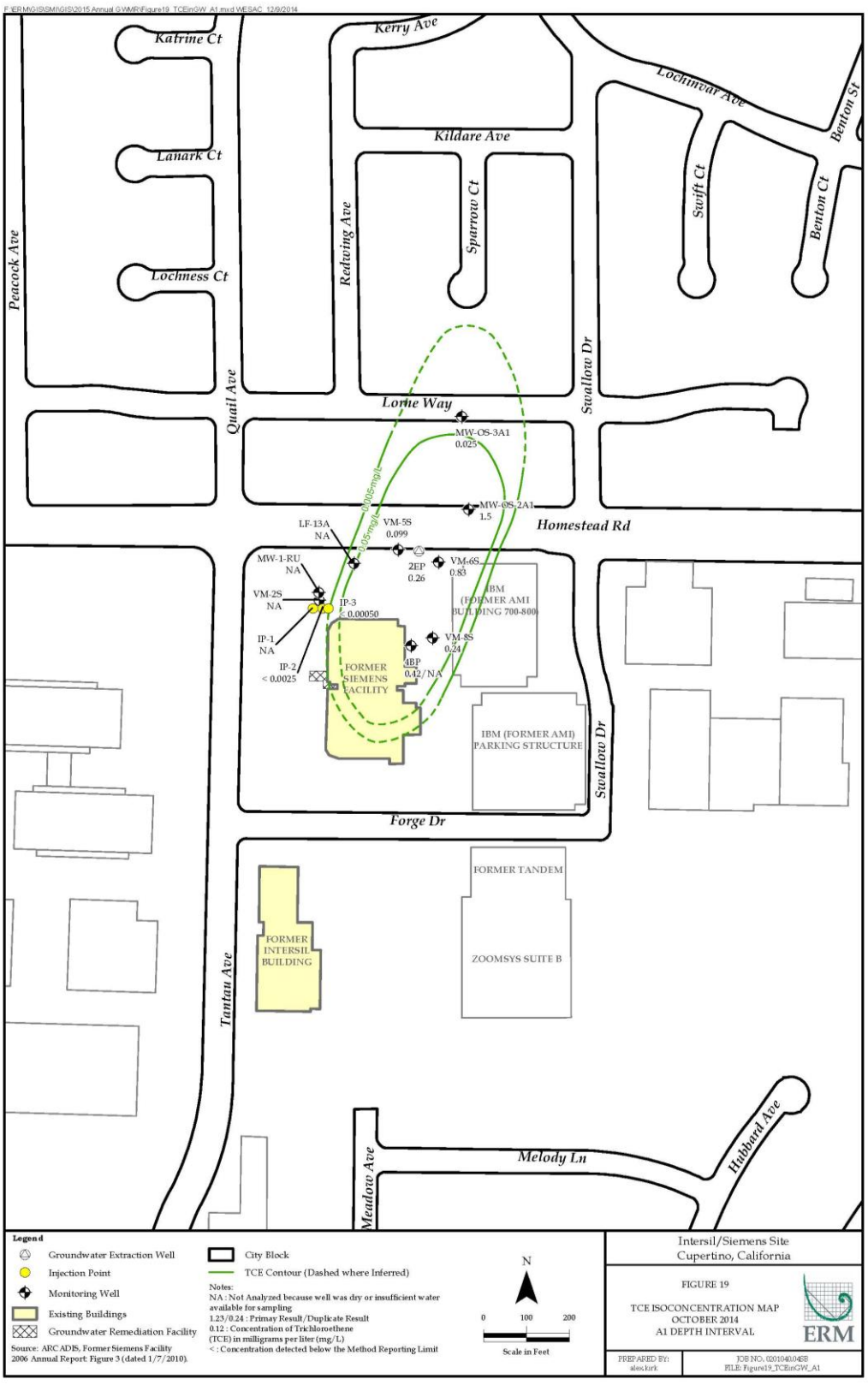


Figure 7: A1 Zone TCE Isoconcentration Maps October 2014

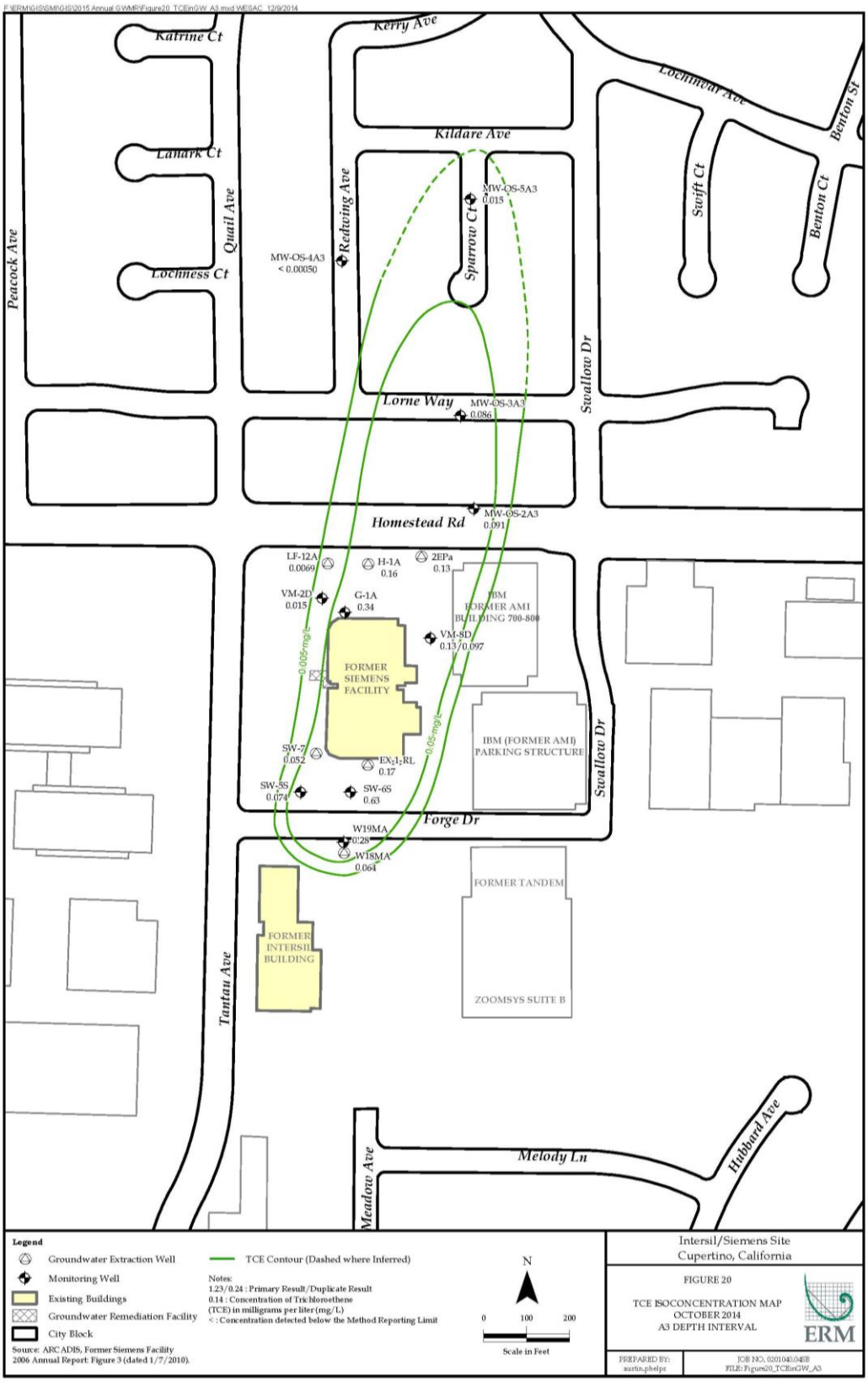


Figure 8: A3 Zone TCE Isoconcentration Maps October 2014

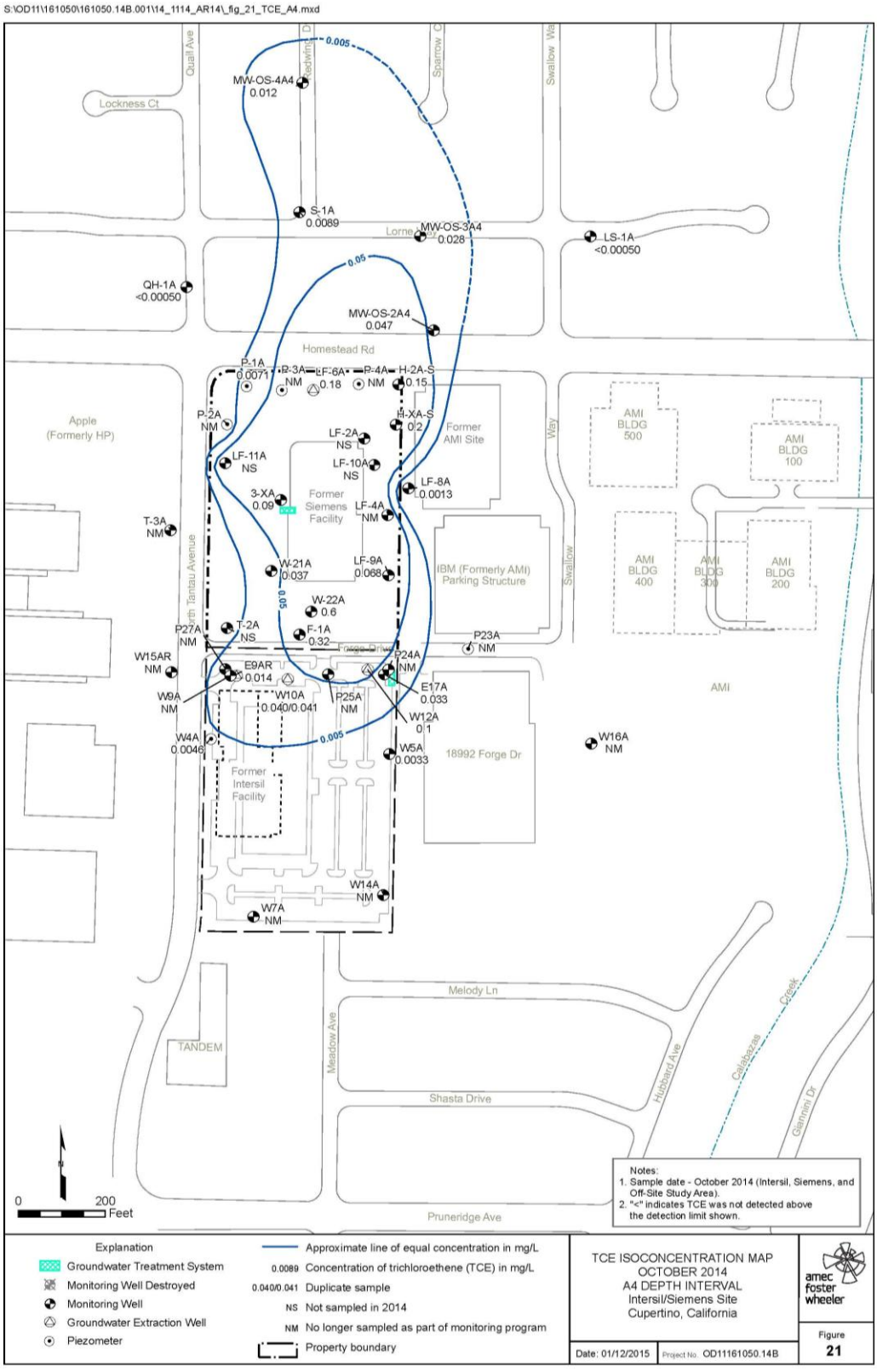


Figure 9: A4 Zone TCE Isoconcentration Maps October 2014

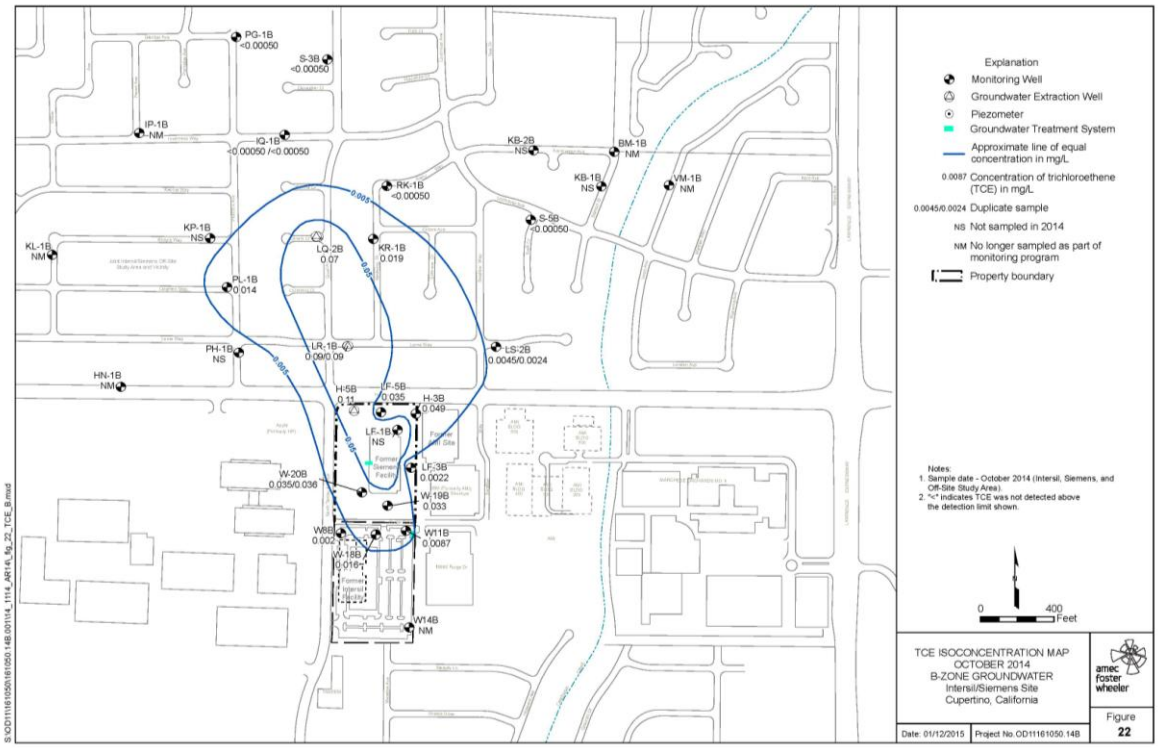


Figure 10: B Zone TCE Isoconcentration Maps October 2014

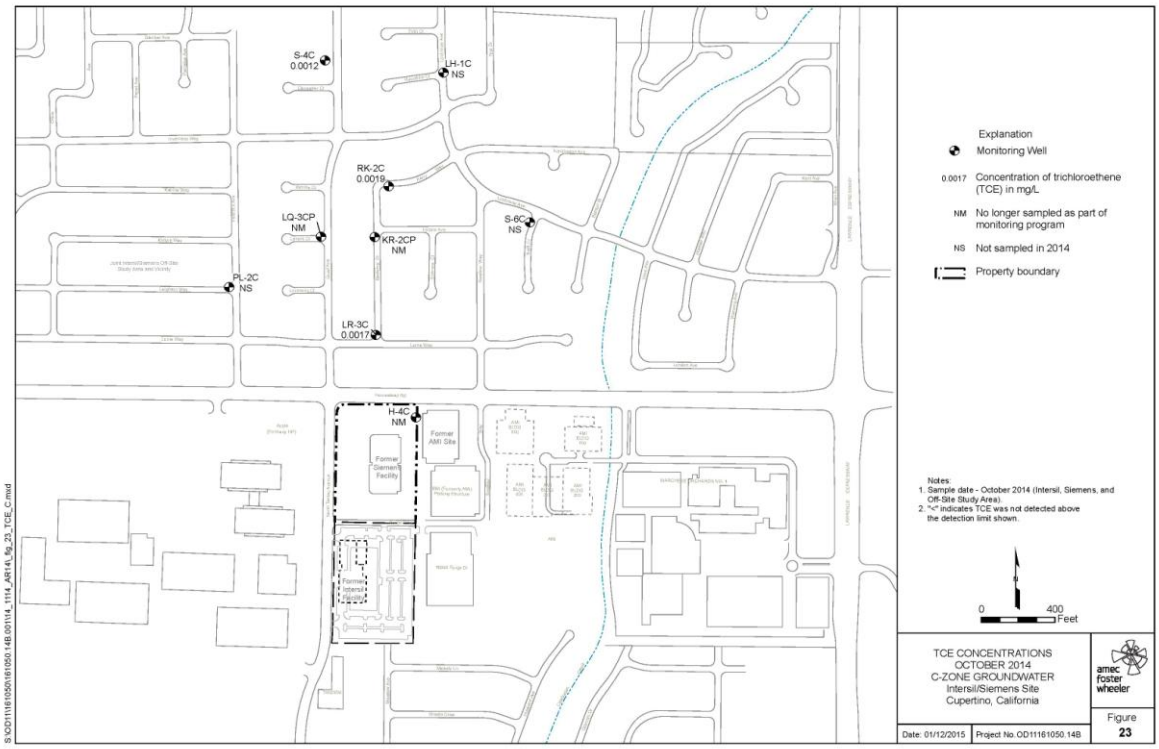


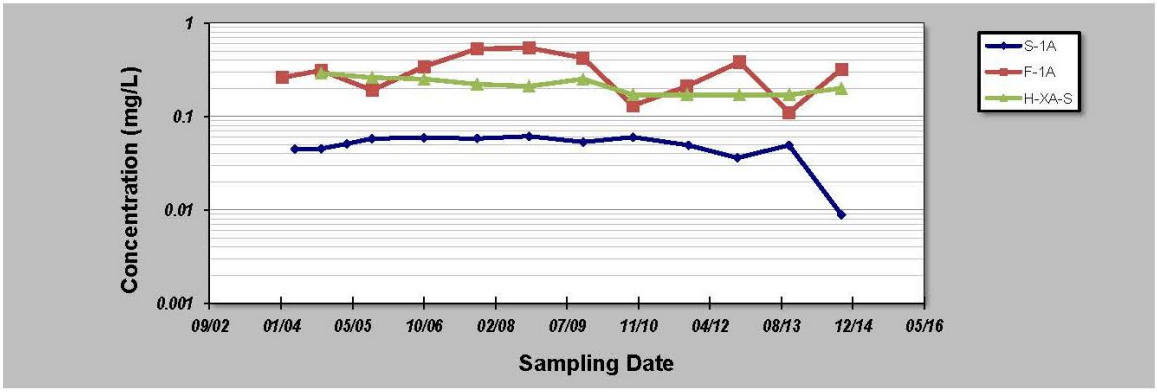
Figure 11: C Zone TCE Concentrations October 2014

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 4-Mar-15
Facility Name: Intersil/Siemens
Conducted By: L.Scott

Job ID: 9999
Constituent: TCE
Concentration Units: mg/L

Sampling Point ID:	S-1A	F-1A	H-XA-S				
Sampling Event	Sampling Date	TCE CONCENTRATION (mg/L)						
1	23-Jan-04		0.26					
2	20-Apr-04	0.045						
3	20-Oct-04	0.045	0.31	0.29				
4	19-Apr-05	0.051						
5	12-Oct-05	0.058	0.19	0.26				
6	10-Oct-06	0.059						
7	11-Oct-06		0.34	0.25				
8	16-Oct-07	0.058						
9	18-Oct-07		0.53	0.22				
10	14-Oct-08	0.061	0.54	0.21				
11	27-Oct-09	0.053	0.42	0.25				
12	11-Oct-10			0.17				
13	12-Oct-10	0.06	0.13					
14	25-Oct-11		0.21	0.17				
15	2-Nov-11	0.049						
16	10-Oct-12	0.036						
17	25-Oct-12		0.38	0.17				
18	8-Oct-13	0.049						
19	9-Oct-13		0.11	0.17				
20	8-Oct-14	0.0089	0.32	0.2				
21								
22								
23								
24								
25								
Coefficient of Variation:		0.29	0.45	0.20				
Mann-Kendall Statistic (S):		-9	-4	-36				
Confidence Factor:		68.4%	58.0%	99.8%				
Concentration Trend:		Stable	Stable	Decreasing				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

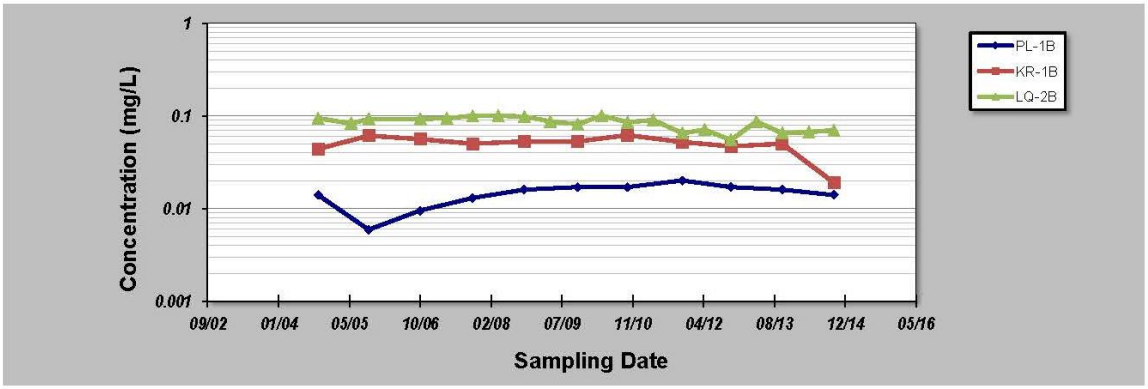
Figure 12: Mann-Kendall Trend Analysis, A Zone Wells S-1A, F-1A, and H-XA-S

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 4-Mar-15
Facility Name: Intersil/Siemens
Conducted By: L.Scott

Job ID: 9999
Constituent: TCE
Concentration Units: mg/L

Sampling Point ID:	PL-1B	KR-1B	LQ-2B				
Sampling Event	Sampling Date	TCE CONCENTRATION (mg/L)						
1	20-Apr-04							
2	20-Oct-04	0.014	0.044	0.094				
3	19-Apr-05							
4	24-May-05							
5	10-Jun-05			0.083				
6	12-Oct-05	0.0059	0.061	0.093				
7	10-Oct-06	0.0095	0.056	0.093				
8	16-Apr-07			0.094				
9	16-Oct-07	0.013	0.05	0.1				
10	14-Apr-08			0.1				
11	14-Oct-08	0.016	0.053	0.098				
12	16-Apr-09			0.087				
13	26-Oct-09	0.017	0.053	0.081				
14	12-Apr-10			0.1				
15	13-Oct-10	0.017	0.062	0.085				
16	11-Apr-11			0.09				
17	3-Nov-11	0.02	0.052	0.065				
18	9-Apr-12			0.071				
19	11-Oct-12	0.017	0.047	0.055				
20	8-Apr-13			0.087				
21	9-Oct-13	0.016	0.05	0.065				
22	14-Apr-14			0.067				
23	8-Oct-14	0.014	0.019	0.07				
24								
25								
Coefficient of Variation:		0.27	0.23	0.16				
Mann-Kendall Statistic (S):		22	-17	-83				
Confidence Factor:		94.9%	89.1%	99.7%				
Concentration Trend:		Prob. Increasing	Stable	Decreasing				



Notes:

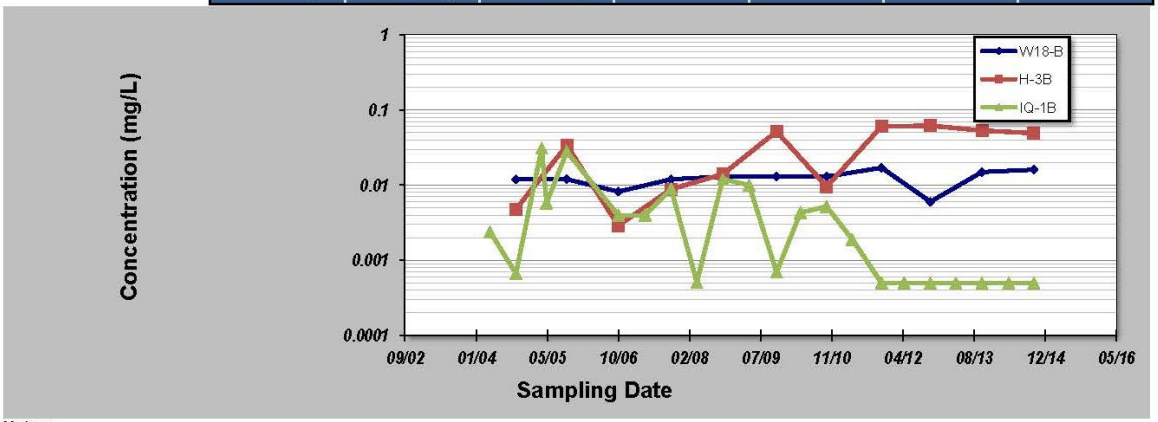
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure 13: Mann-Kendall Trend Analysis, B Zone Wells PL-1B, KR-1B, and LQ-2B

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	4-Mar-15	Job ID:	9999
Facility Name:	Intersil/Siemens	Constituent:	TCE
Conducted By:	L.Scott	Concentration Units:	mg/L

Sampling Point ID:	W18-B	H-3B	IQ-1B				
Sampling Event	Sampling Date	TCE CONCENTRATION (mg/L)						
1	20-Apr-04			0.0024				
2	20-Oct-04	0.012	0.0048	0.00067				
3	19-Apr-05			0.031				
4	24-May-05			0.0058				
5	10-Jun-05							
6	12-Oct-05	0.012	0.034	0.028				
7	10-Oct-06	0.0082	0.0029	0.004				
8	16-Apr-07			0.004				
9	16-Oct-07	0.012	0.0088	0.0089				
10	14-Apr-08			0.00051				
11	14-Oct-08	0.013	0.014	0.012				
12	16-Apr-09			0.01				
13	26-Oct-09	0.013	0.052	0.0007				
14	12-Apr-10			0.0043				
15	13-Oct-10	0.013	0.0096	0.0052				
16	11-Apr-11			0.0019				
17	3-Nov-11	0.017	0.06	0.0005				
18	9-Apr-12			0.0005				
19	11-Oct-12	0.006	0.062	0.0005				
20	8-Apr-13			0.0005				
21	9-Oct-13	0.015	0.053	0.0005				
22	14-Apr-14			0.0005				
23	8-Oct-14	0.016	0.049	0.0005				
24								
25								
Coefficient of Variation:		0.25	0.75	1.52				
Mann-Kendall Statistic (S):		25	29	-113				
Confidence Factor:		97.0%	98.7%	99.9%				
Concentration Trend:		Increasing	Increasing	Decreasing				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

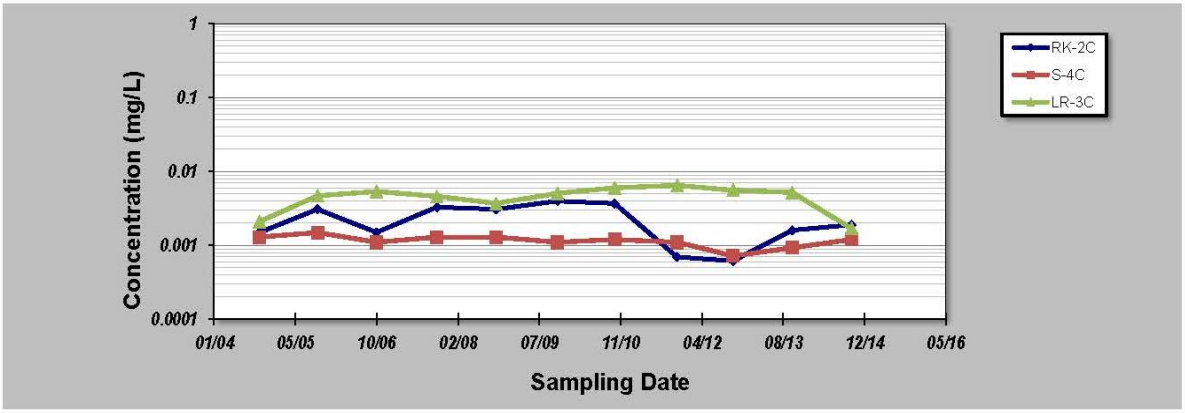
Figure 14: Mann-Kendall Trend Analysis, B Zone Wells W18-B, H-3B, and IQ-1B

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 4-Mar-15
Facility Name: Intersil/Siemens
Conducted By: L.Scott

Job ID: 9999
Constituent: TCE
Concentration Units: mg/L

Sampling Point ID:	RK-2C	S-4C	LR-3C				
Sampling Event	Sampling Date	TCE CONCENTRATION (mg/L)						
1	20-Oct-04	0.0015	0.0013	0.0021				
2	11-Oct-05	0.0031	0.0015	0.0047				
3	9-Oct-06	0.0015	0.0011	0.0054				
4	15-Oct-07	0.0033	0.0013	0.0046				
5	13-Oct-08	0.0031	0.0013	0.0037				
6	26-Oct-09	0.004	0.0011	0.0051				
7	12-Oct-10	0.0037	0.0012	0.006				
8	1-Nov-11	0.0007	0.0011	0.0065				
9	10-Oct-12	0.00062	0.00072	0.0056				
10	8-Oct-13	0.0016	0.00093	0.0052				
11	8-Oct-14	0.0019	0.0012	0.0017				
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.53	0.18	0.33				
Mann-Kendall Statistic (S):		-3	-26	11				
Confidence Factor:		56.0%	97.5%	77.7%				
Concentration Trend:		Stable	Decreasing	No Trend				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure 15: Mann-Kendall Trend Analysis, C Zone Wells RK-2C, S-4C, and LR-3C

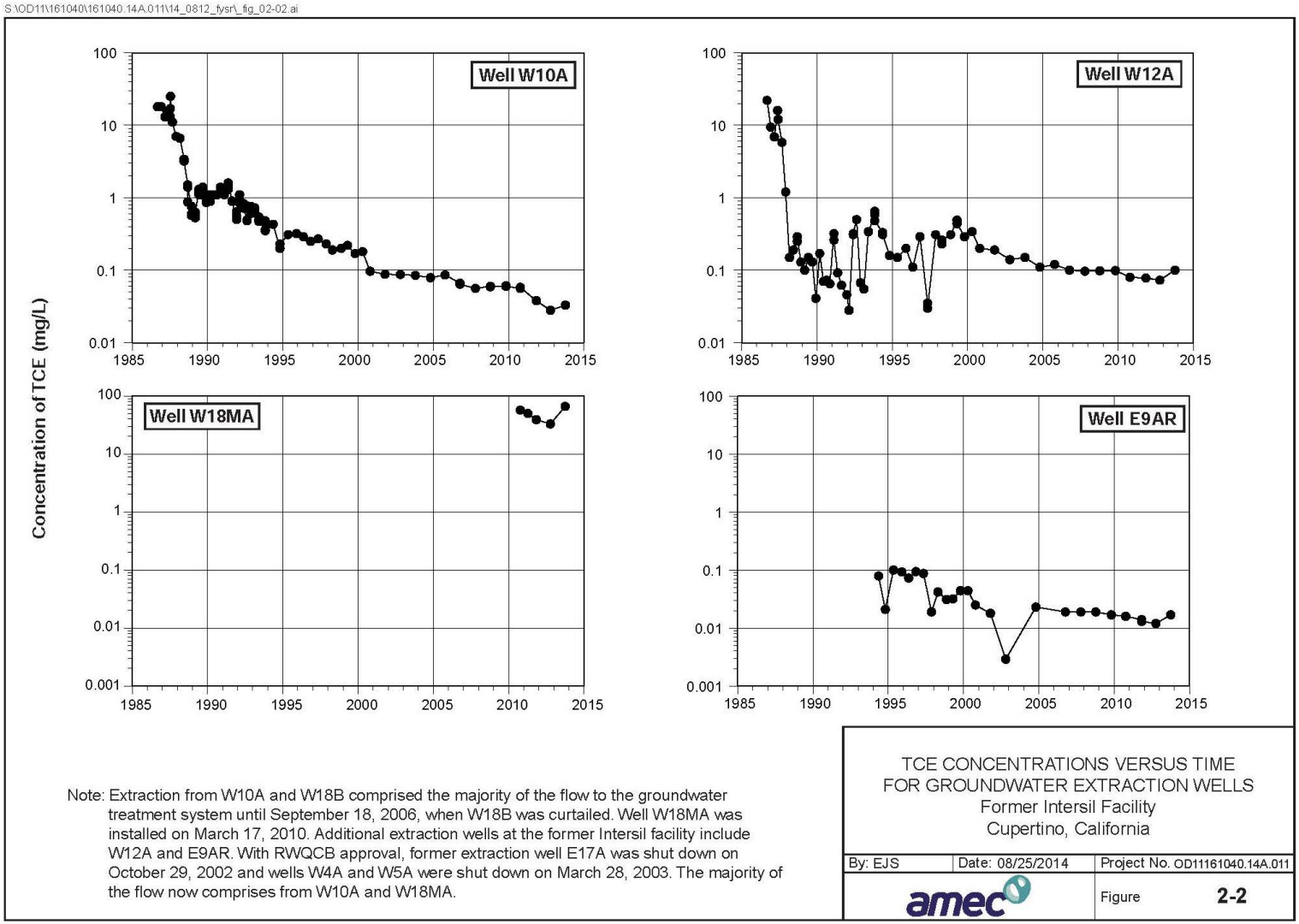


Figure 16: Former Intersil Facility; TCE Concentrations verses Time for Groundwater Extraction Wells