SIXTH FIVE-YEAR REVIEW REPORT FOR

INTERSIL INC./SIEMENS COMPONENTS SUPERFUND SITE

SANTA CLARA COUNTY, CALIFORNIA

PREPARED BY

United States Corps of Engineers, Seattle District

FOR

U.S. Environmental Protection Agency, Region IX

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Executive Summary

This is the sixth Five-Year Review of the Intersil Inc./Siemens Components Superfund Site (Site) located in Cupertino, Santa Clara County, California. The purpose of this Five-Year Review is to review information to determine if the remedy is and will continue to be protective of human health and the environment.

The California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) and the U.S. Environmental Protection Agency (EPA) worked together to select the final remedy for the Site, which was presented in the Final Site Cleanup Requirements Board Order No. 90-119, on August 15, 1990. The September 27, 1990 Record of Decision (ROD) incorporated the Final Site Cleanup Requirements Board Order No. 90-119 and provided a summary of the selected final remedy, documented comments and questions received during remedial planning, and required further investigation in the Study Area located downgradient from the two source properties described below. The selected final cleanup remedy consisted of modifications to two existing groundwater extraction and treatment (GWET) systems and two soil vapor extraction and treatment (SVET) systems. The following three areas that include the two source properties are associated with the Site:

- Former Intersil, Inc. (Intersil) facility, located at 10900 North Tantau Avenue, Cupertino, California.
- Former Siemens Components, Inc. (Siemens) facility, located at former 10950 North Tantau Avenue (currently 19000 Homestead Road), 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 goal of the selected final cleanup remedy is to restore groundwater to beneficial use. The selected remedy addressed the principal threats posed by the Site. Contaminants removed from both soil and groundwater were captured and permanently destroyed, significantly reducing the toxicity, mobility, and volume of the hazardous substances in both media. Both SVET systems were shut down following a rise in groundwater levels and following subsequent shutdown approval by the RWQCB. Further soil vapor extraction would have resulted in relatively insignificant reductions in contaminants due to asymptotic mass removal. Both GWET systems continue to operate, containing the groundwater contaminant plumes and removing contaminants in groundwater from the Site.

Land use and exposure pathways have not changed since the last Five-Year Review. Land use covenants as deed restrictions are in place for the former Intersil and former Siemens properties, effectively preventing land use changes that would result in contaminant exposure to Site contaminants. Multiple vapor intrusion assessments have been completed for buildings within the Site and vapor intrusion was shown to not pose an unacceptable current human health risk.

The remedy, including the past soil excavation, past soil vapor extraction, and ongoing groundwater extraction and treatment are functioning as designed. TCE concentrations above ROD cleanup standards are present in the furthest downgradient wells to the north for the Upper Aquifer water-bearing A and B zones, TCE concentrations are decreasing in the majority of monitoring wells and the plume is decreasing overall. Decreasing TCE concentration trends are due, in part, to additional methods of alternative

remediation that Siemens has implemented in recent years as part of pilot study activities. The Site contaminants are not above the California drinking water Maximum Contaminant Level (MCL) standards in the C Zone.

Some of the highest TCE concentrations in groundwater at the Site have been detected within the A Zone Resaturated Interval along Forge Drive between the former Intersil and former Siemens properties. This may indicate relatively shallow contamination in this location and may be a continuing source of contamination downgradient. Without an understanding of the magnitude of contamination within the Resaturated Interval south of Forge Drive on the former Intersil property site, analysis for understanding of when cleanup timeframes will be met under the current methods of remediation may be incomplete.

The remedy at the Intersil Inc./Siemens Components Superfund Site currently protects human health and the environment by maintaining capture of the contaminant plume and eliminating on- and off-property exposure pathways. Institutional controls eliminate exposure pathways on the former Intersil and Siemens properties. In order for the remedy to be protective in the long-term, additional delineation of the Resaturated Interval of the A Zone should be completed.

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List of Abbreviations

1,1,1-TCA	1,1,1-trichloroethane
AMI	American Microsystems, Inc.
bgs	below ground surface
EPA	The U.S. Environmental Protection Agency
ERD	enhanced reductive dechlorination
gpm	gallons per minute
GWET	groundwater extraction and treatment
Intersil	Intersil, Inc.
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MIP	membrane interface probe
NPDES	National Pollutant Discharge Elimination System
PCE	tetrachloroethene (also called tetrachloroethylene and perchloroethylene)
ROD	Record of Decision
RWQCB	The California Regional Water Quality Control Board
Siemens	Siemens Components, Inc.
SVE	soil vapor extraction
SVET	soil vapor extraction and treatment
TCE	trichloroethene
µg/L	micrograms per liter
VOC	volatile organic compound

1. Introduction

The purpose of a five-year review 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 reviews are documented in five-year review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this Five-Year Review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act Section 121, 40 Code of Federal Regulations Section 300.430(f)(4)(ii) of the National Contingency Plan and EPA policy.

This is the sixth Five-Year Review for the Intersil Inc./Siemens Components Superfund Site (Site). The triggering action for this policy review is the completion date of the previous Five-Year Review. This Five-Year Review has been prepared due to the fact that hazardous substances, pollutants, or contaminants currently remain at the site above levels that allow for unlimited use and unrestricted exposure, and cleanup levels have not yet been achieved.

The California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) is the lead agency for implementing the Site's remedy. The EPA has reviewed all supporting documentation and provided input during the Five-Year Review process. The Site consists of three distinct areas in the city of Cupertino, California. The first area is the former Intersil Inc. (Intersil) property, located at 10900 North Tantau Avenue. The second area, the former Siemens Components, Inc. (Siemens) property, lies immediately north at 19000 Homestead Road (former 10950 North Tantau Ave). Those two areas have comingled plumes of volatile organic compounds (VOCs) in both groundwater and vadose zone soils. This plume extends north from the source properties to an adjacent residential area of Sunnyvale, California which is the third area within the Site, referred to as the Off-Property Study Area.

The Intersil Inc./Siemens Components Superfund Site Five-Year Review was led by Roger Papler of the RWQCB and Michael Schulman of the EPA. Participants included Cynthia Wetmore, EPA Region 9 Superfund Five-Year Review Coordinator, and from the U.S. Army Corps of Engineers, Seattle District, Daniel J. Carlson, physical scientist; Lisa Scott, hydrogeologist; and Benino McKenna, geologist. The review began on October 2, 2019.

Table 1. 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		
National Priorities List Status: Final		
Multiple Operable Units? No	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: State ***[If "Other Federal Agency", enter Agency name]*:**		
Author names (State and Federal Project Managers): Roger Papler and Michael Schulman		
Author affiliations: San Francisco Bay Regional Water Quality Control Board (RWQCB) and United States Environmental Protection Agency		
Review period: 10/2/2019 – 9/30/2020		
Date of site inspection: 2/6/2020		
Type of review: Policy		
Review number: 6		
Triggering action date: 9/30/2015		
Due date *(five years after triggering action date)*: 9/30/2020		

1.1. Background

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 (i.e., 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. This was replaced with 1,1,1-trichloroethane (1,1,1-TCA), which was used until closure of the facility in 1988. Because Intersil's processes were acid- and water-intensive, rather than solvent-intensive, the facility had multiple in-groundwater wastewater neutralization systems and sumps, with the acids processed in the North and East Neutralization Systems.

The East and North Neutralization Systems consisted of five 1,000-gallon subsurface vaulted concrete tanks with polypropylene liners, five in-ground vaulted 1,000-gallon plastic tanks (later replaced by two stainless steel compartment tanks), and one 1,000-gallon steel gravity separator tank. The neutralized wastewater was then discharged to the municipal sanitary sewer system. In 1976, the East Neutralization System was moved further to the east and installed as a 8,500-gallon, stainless steel compartment tank within subsurface concrete vaults. In 1980, a 250-gallon, steel waste solvent storage task was added to the East Neutralization System concrete vault. Wastes from the 250-gallon waste tank were pumped out monthly by a recycling company. Other wastewater treatment handling areas included the North and East scrubber sumps that consisted of 500-gallon, epoxy-lined concrete sumps.

Intersil conducted investigations of the property between 1983 and 1988, which involved drilling soil borings and installing groundwater monitoring wells. The investigations 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 aquifer. Groundwater samples collected from the deeper aquifer indicated that it had not been significantly impacted.

Initial response actions included the removal of inactive industrial systems components in 1986 and 1988. Furthermore, a groundwater extraction and treatment system (GWET) was installed in 1987 and a soil vapor extraction and treatment system (SVET) was installed in 1988.

General Electric is the successor to Intersil, Inc. and retains responsibility for the operation and maintenance of the GWET system. The former Intersil property is now occupied by Panasonic Corporation and Apple, Inc.

Former Siemens Facility

From approximately 1970 to 1982, Litronix used the facility for semiconductor manufacturing operations. In 1978 Litronix was purchased by Siemens, and from 1982 to 1995 Siemens used the facility for semiconductor manufacturing operations to produce light emitting diode products using a variety of organic and inorganic solutions and compressed gasses. The solvents TCE and 1,1,1-TCA were used for cleaning of the bulk and wafer fabrication processes to remove a wax coating that were used to hold the wafer in place for polishing. The bulk use of TCE and 1,1,1-TCA were phased out through 1980 to 1983

with the elimination of wax from the polishing process. To store liquid wastes, five underground storage tanks were installed between 1971 and 1974, which were removed by 1982. From 1982 until closure of facility operations in 1986, liquid wastes were temporarily stored on site in 55-gallon drums for later off-site disposal or recycling.

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 VOCs and semi-volatile organic compounds had occurred and impacted soil and groundwater at levels requiring remediation. The groundwater contamination from Siemens comingled with the contamination from the former Intersil property.

Initial response actions included the installation of a SVET system in 1983 and a GWET system in 1986. The purpose of the GWET system was to provide hydraulic control and remediation of the affected groundwater.

The building on the former Siemens property is now occupied by Kaiser Permanente.

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 1980s investigations, groundwater in the uppermost zone of the Upper Aquifer (A Zone; see Hydrology in Section 1.3) in this area was not found to be impacted and remediation was not required under RWQCB Order 90-119 (Order). The off-property investigation indicated that the B Zone of the Upper Aquifer was the most contaminated. The C Zone of the Upper Aquifer had much lower levels of contamination than the B Zone, and concentrations are below California drinking water Maximum Contaminant Level (MCL) standards.

Initial response actions included the installation of three groundwater extraction wells and incorporating them into the GWET system on the former Siemens property.

1.2. Physical Characteristics

The former Intersil facility is located at 10900 North Tantau Avenue and the former Siemens facility is located at 19000 Homestead Road, formerly 10950 North Tantau Avenue, in Cupertino, California (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 60,000, is located on the west side of Santa Clara Valley in Santa Clara County, and is part of the San Francisco Bay Metropolitan Region.

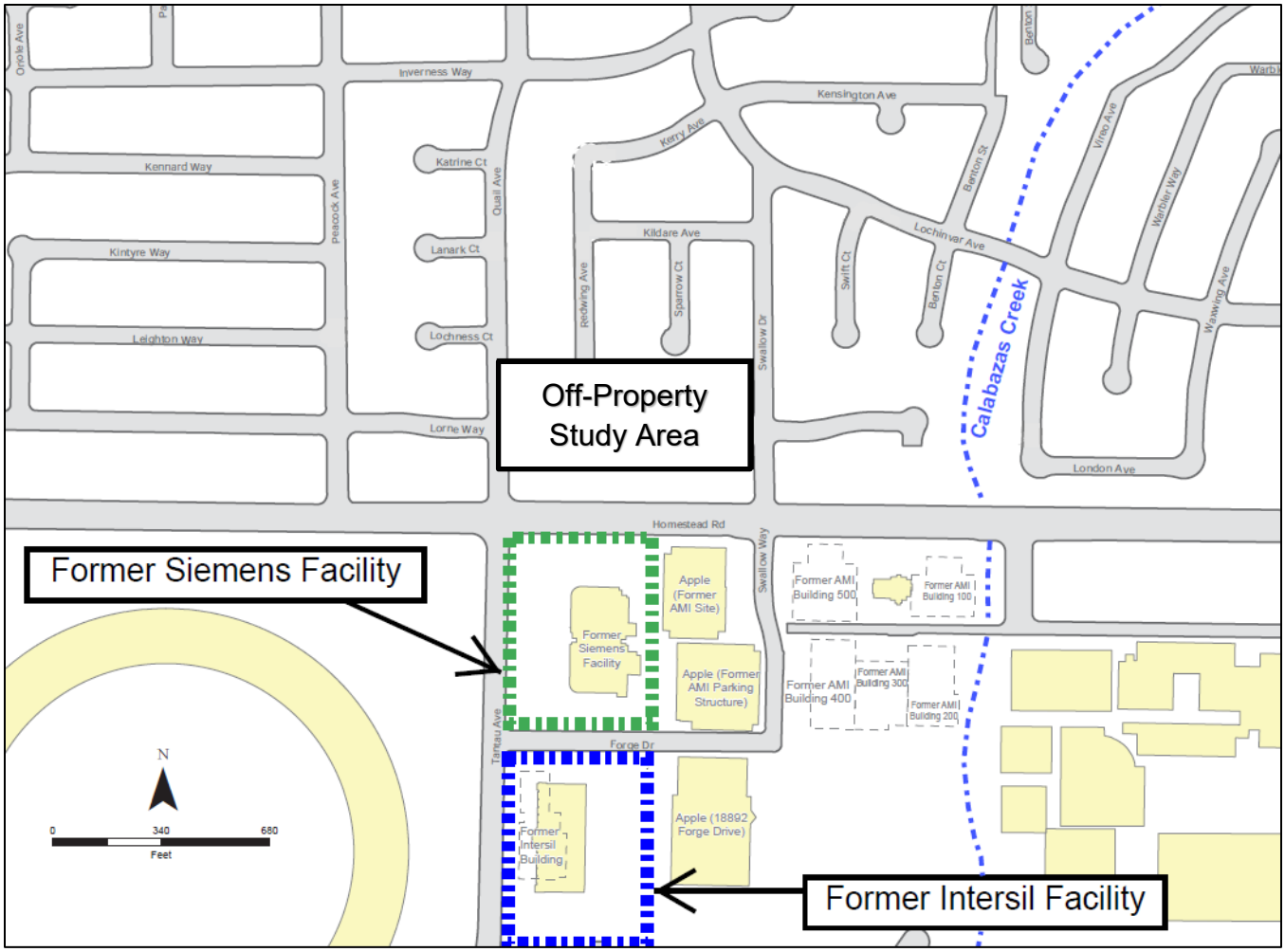


Figure 1. Detailed Site Map

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. The building on the former Siemens property is used for commercial purposes and land use in the Off-Property Study Area is residential.

The former American Microsystems, Inc. (AMI) site is located northeast of the former Intersil facility and adjacent to and east of the former Siemens facility. The AMI site contains VOCs in groundwater and is managed under a separate Board Order than the Site. The Board Order and initial remedial investigations of the AMI site do not cite the immediately adjacent AMI property to the west of the AMI site as a source of VOC contamination.

The Site overlies the Santa Clara Valley Basin, groundwater from which provides up to 50 percent of the municipal drinking water for over 1.9 million residents of the Santa Clara County, as of 2018. Within the Santa Clara Subbasin, the Site overlies the Santa Clara Plain Confined Area. Approximately 99 percent of groundwater pumped from the Santa Clara Plain is used for municipal and industrial purposes. 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. No private wells exist on properties located within the Off-Property Study Area. There are five active municipal wells within a 1-mile radius of the Site. The nearest downgradient municipal supply wells are City of Santa Clara Wells No. 24 and No. 17-02, respectively located approximately 3,700 feet north-northeast and 3,900 feet east-northeast from the northern border of the former Siemens property. Both wells are active municipal groundwater supply wells for domestic supply as of April 2020, producing approximately 1,500 gallons per minute (gpm) from Well # 24 and 2,000 gpm from Well #17-02.

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

1.3. Hydrology

The Site is located in Northern California, along the southern edge of the San Francisco Bay within the Santa Clara Valley. 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 geologic setting at the Site consists of coarse-grained sand and gravel interbedded with fine grained silt and clay, representing alluvial stream channel and associated overbank deposits. The Remedial Investigation Reports for Intersil (Beak Consultants, 1990) and for Siemens (Levine-Fricke, 1990) present an overview of the geology, hydrogeology, groundwater quality for the Site. The hydrology of the Site is composed of two primary water-bearing units, the Upper Aquifer (A, B and C Zones) and the Deep Aquifer.

Historically and in current analyses, the Upper Aquifer is divided into three water-bearing zones which are generally separated by fine-grained sediments that act as semi-confining aquitards, as follows:

Upper Aquifer Water-Yielding Zones:

- A Zone (top of the groundwater table to 115 to 125 feet below ground surface [bgs])
- B Zone (approximately 130 to 150 feet bgs)
- C Zone (approximately 180 to 210 feet bgs)

The Deep Aquifer (the regional aquifer) is a confined 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 (Levin-Fricke, 1990; AMEC Geomatrix and ARCADIS, 2011). The groundwater flow direction in the A, B, and C Zones and the regional aquifer is generally northward to northeast beneath the former Intersil and Siemens facilities, generally towards the Off-Property Study Area and San Francisco Bay (Beak Consultants, 1990).

The groundwater elevations rose approximately 50 to 55 feet between 1993 and 1998 due to reductions in agricultural pumping. The rise in groundwater from historical groundwater levels at approximately 100 feet bgs created the originally designated Upper Aquifer Resaturated Interval in the A Zone that extended from 45 to 90 bgs. At the former Siemens property, the Resaturated Interval was divided into two intervals: the Upper Resaturated Interval that extends from approximately 45 to 60 feet bgs, and the

Lower Resaturated Interval that extends from approximately 60 to 90 feet bgs. The Resaturated Interval was later divided into four depth intervals, A1 through A4 (see below).

The Hydrogeologic Framework Report (AMEC Geomatrix and ARCADIS, 2011) discussed and reclassified the A Zone into the four depth zones: A1, A2, A3, and A4 to clarify the hydrogeologic relationship between the two source properties. Former vadose zone wells in the Resaturated Interval are now designated as A1, A2, or A3 Zone wells based on the depths of their screened intervals. The former saturated A Zone is now referred to as the A4 Zone (see Table 2). The A1 through A4 Zones 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 and is not evaluated as a water bearing zone. In some locations, the A1 Zone does not produce enough water to collect groundwater samples or extract groundwater. The depth ranges for the A1, A2, A3, and A4 Zones at the former Intersil and Siemens facilities are shown below in Table 2.

Table 2. A Zone Subdivided Depth Intervals

Water-Bearing Zone	Former Intersil Facility Approximate Depth (feet bgs)	Former Siemens Facility Approximate Depth (feet bgs)
A1	38 to 58-60	40 to 58-60
A2	58-60 to 69-74	58-60 to 70-74
A3	69-74 to 80-90	70-74 to 90
A4	80-90 to 125	90 to 125

The groundwater plume originating from the former Siemens and former Intersil properties is managed as one commingled plume by SMI Holding, LLC (Siemens) and General Electric, the successor to Intersil. The groundwater plume in the A Zone extends approximately 800 feet downgradient to the north of the former Siemens property and east of Swallow Way. The groundwater plume in the B Zone extends approximately 1,400 feet downgradient to the north into the Off-Property Study Area.

2. Remedial Actions Summary

2.1. Basis for Taking Action

In the 1980s, the municipal water supply well City of Santa Clara Well No. 24 (located approximately 3,700 feet downgradient of the former Siemens property) showed signs of minor impact from chemical releases of Freon-113 and 1,1,1-TCA into soil and groundwater from the Site. The primary threats to human health were future risks posed by ingestion of groundwater and inhalation of volatilized chemicals, should residential development occur on the Site or if untreated shallow zone groundwater was used for human consumption.

2.2. Remedy Selection

The RWQCB and the EPA worked together to select the final remedy for the Site, which was presented in the Final Site Cleanup Requirements Board Order No. 90-119, on August 15, 1990. The September 27, 1990 Record of Decision (ROD) incorporated the Final Site Cleanup Requirements Board Order No. 90-119, provided a summary of the selected final remedy, and required further off-property investigation. The selected final cleanup remedy consists of the following elements:

- Former Intersil property: Expanding pre-existing groundwater and soil vapor extraction and treatment systems by adding three groundwater extraction wells, with two converted from groundwater monitoring wells, and four soil vapor extraction wells.
- Former Siemens property: Expanding the pre-existing groundwater and soil vapor extraction and treatment systems by adding one groundwater extraction well and 12 soil vapor extraction wells, and the excavation of approximately 40 cubic yards of contaminated soil.
- Off-Property Study Area: Installing groundwater extraction wells and connecting them to the Siemens property groundwater extraction and treatment systems.

The ROD stated that the goal of the remedy is to restore groundwater to its beneficial use based on California drinking water MCL standards. The ROD also stated that continued monitoring of groundwater and soil would be conducted to verify containment of the contaminated groundwater and attainment of cleanup levels.

Table 3. ROD Soil Cleanup Standards

Chemical	Former Intersil Facility Cleanup Standards (mg/kg)	Former Siemens Facility Cleanup Standards (mg/kg)	Basis of Cleanup
Total VOCs	1	1	Not specified*
Semivolatile Organic Compounds	None	10	Not specified*

Notes: mg/kg = milligrams per kilogram; * The Final Site Cleanup Requirements Board Order No. 90-119 states within the remedy selection rationale that soil is remediated to a level that will protect groundwater from future solvent contamination.

Table 4. ROD Groundwater Cleanup Standards

Chemical*	Former Intersil and Former Siemens Facilities Cleanup Standards (µg/L)	Basis of Cleanup
TCE	5	CA MCL
Tetrachloroethylene (PCE)	5	CA MCL
1,1-Dichloroethylene	6	CA MCL
cis-1,2-Dichloroethylene (cis-DCE)	6	CA MCL
trans-1,2-Dichloroethylene (trans-DCE)	10	CA MCL
1,1,1-TCA	200	CA MCL
Freon-113	1,200	CA MCL
Toluene	100	CA RDWAL

Notes: µg/L = micrograms per liter; CA MCL = California Department of Health Services Maximum Contaminant Level
CA RDWAL = California Department of Health Services Recommended Drinking Water Action Levels; The ROD states that "the goal of this remedial action is to restore groundwater to its beneficial use"; therefore, cleanup standards apply to all contaminants resulting from the Site with applicable standards, including TCE breakdown products such as vinyl chloride.

2.3. 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 twelve wells, and the GWET was expanded to seven wells. The SVET system operated from 1988 to 1993, when 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 vessels. Groundwater was treated using air strippers, although these were replaced by granular activated carbon vessels in 2007.

Former Siemens Facility

Siemens expanded the pre-ROD remediation systems at the former Siemens property to twelve SVET wells and seven GWET wells. The remedy also included excavating approximately 40 cubic yards of contaminated soil on the property. The SVET system operated from 1983 to 2005 when the system approached asymptotic conditions. Groundwater was treated using air strippers that were replaced by granular activated carbon vessels in 2007.

Off-Property Study Area

The remedy implemented at the Off-Property Study Area included extracting groundwater from the three existing extraction wells and regular groundwater monitoring, similar to the monitoring required for the former Siemens property.

2.4. Operation and Maintenance

The remedy for the former Intersil property, former Siemens property, and Off-Property Study Area requires operating and modifying the existing GWET systems at each property. Regular groundwater and soil vapor monitoring is also required for each system. Monitoring requirements include groundwater monitoring of the Upper Aquifer A, B, and C Zones, and additional delineation of the contaminant plume if monitoring results show evidence of plume migration.

Upgrades and modifications have been made to each GWET system for adapting to changes in site conditions, including the 50-foot rise in groundwater that occurred between 1993 and 1998, and for performance optimizations. Upgrades and modifications continue to be made to each GWET system to optimize remedy performance.

Treated effluent from both the GWET systems are discharged to Calabazas Creek under a National Pollutant Discharge Elimination System (NPDES) general permit. General Electric and Siemens continue monitoring groundwater conditions, operating the GWET systems, and reporting to the RWQCB in accordance with the August 15, 1990 Board Order No. 90-119 and the January 2013 amended Board Order R2-2013-0002.

3. Progress Since the Last Five-Year Review

3.1. Previous Five-Year Review Protectiveness Statement and Issues

The protectiveness statement from the 2015 Five-Year Review for the Intersil Inc./Siemens Components Superfund Site stated the following:

> *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 contaminant of concern.*

The 2015 Five-Year Review included three issues and recommendations.

Table 5. Status of Recommendations from the 2015 Five-Year Review

Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
The boundary of the 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.	Ongoing	Groundwater investigations were completed in the Off-Property Study Area in 2015 and 2016 (ERM, 2016c). Detected VOCs were below MCLs within the A1 and A4 Zones downgradient of the former Siemens property; however, TCE was detected above MCLs and not defined in the A3 Zone to the northeast of the Siemens Site, to the east of the roads Swallow Drive and Swift Court.	N/A

Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
In the former Siemens property, a minor increasing trend was observed in three B Zone wells [PL-1B, H-3B, W18B] and a stable trend above cleanup standards was observed in two A Zone wells [S-1A, F-1A] and one B Zone well [KR-1B]. 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.	Ongoing	In the former Siemens property, three phases of enhanced reductive dechlorination (ERD) pilot studies have been completed to explore additional remediation options. ERD pilot study mitigation measures included targeted Soil Vapor Extraction (SVE) and chemical oxidant injections completed in April 2019 to address vinyl chloride in groundwater and support ongoing remediation enhancement efforts. Performance monitoring for the 2017 Phase III ERD pilot study and mitigation measures are ongoing. For the former Intersil property, no wells are screened in the A1 Zone and only a paired groundwater extraction well and monitoring well are located within the A3 Zone and therefore the statistical evaluation of TCE concentration trends for the Intersil property could not be conducted. The delineation of TCE impacts in the A1 and A3 Zones as a source area is currently not defined. Since the 2015 Five-Year Review no improvements to the current groundwater remediation have been made nor development of alternative methods of remediation.	N/A
Research has shown that 1,4-dioxane is an emerging contaminant that can be found at sites where 1,1,1-TCA is a contaminant of concern. 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 contaminant of concern.	Completed	Thirteen wells from the former Intersil, former Siemens, and Off-Property Study Area were sampled for 1,4-dioxane in October 2018. Only one well (4BP) on the former Siemens property was slightly above the California drinking water notification level[1] indicating that there was not a significant source or release from the former Intersil/Siemens properties.	October 2018

[1] Notification levels are health-based advisory levels established by the California Division of Drinking Water for chemicals in drinking water that lack MCLs. The notification level is not an enforceable regulatory cleanup standard.

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

Former Intersil Property

The GWET system at the former Intersil property extracted from four extraction wells during this Five-Year Review period; one within the A3 Zone of the Resaturated Zone and three within the A4 Zone. The wells pumped a total volume of approximately 58 million gallons of groundwater and removed approximately 34 pounds of VOCs between 2015 and 2019. The system was occasionally shut down to facilitate maintenance activities but was operating approximately 99 percent of the time.

At the RWQCB's request, General Electric collected samples for sulfate analysis in 2018 to evaluate discharge of sulfate to Calabazas Creek by the GWET system. Samples were collected from on-property groundwater wells, from GWET system effluent, and from outfall piping downgradient of the system that discharges to Calabazas Creek. The sulfate concentrations were within the allowable sulfate ranges under the NPDES general permit (Wood, 2018).

Former Siemens Property

GWET system: The GWET system at the former Siemens property extracted from five on-property Upper Aquifer extraction wells; three within the A3 Zone, one within the A4 Zone, and one within the B Zone. The wells pumped a total volume of approximately 134 million gallons of groundwater and removed approximately 110 pounds of VOCs between 2015 and 2019. Off-property wells pumped as part of the GWET system are discussed in the Off-Property Study Area subsection. Two on-property extraction wells were not operated during this Five-Year Review period due to ongoing ERD pilot study activities. The GWET system was occasionally shut down to facilitate maintenance activities but operated approximately 99 percent of the time. Upgrades to the GWET system included installing a new remote accessible totalizer that provided real-time system flow data. Additional upgrade and maintenance activities included installing a human-machine interface, replacement of failing equipment (e.g., extraction pumps, transfer pump), and redevelopment of several extraction wells. This has reportedly increased the system runtime in recent years (Appendix G).

Phase III ERD: In February and March 2017, Phase III ERD pilot study activities included injecting a carbon/zero valent iron product and emulsified vegetable oil into groundwater. in February, June, July, and August 2018, the pilot study also included injecting KB-1 ® Primer and/or emulsified vegetable oil (ERM, 2018a). In April 2019, subsequent mitigation measures included targeted SVE and injecting potassium permanganate to address the increased vinyl chloride in groundwater on the north side of the former Siemens property and to support ongoing remediation enhancement efforts (ERM, 2019d). Groundwater, soil vapor, and extraction well performance monitoring associated with the 2017 Phase III ERD pilot study and mitigation measures are ongoing.

Vapor Extraction Investigation: In April 2018, a soil vapor investigation evaluated potential residual VOC sources in deep vadose soil under the building and the potential impact of those VOCs on the pace of groundwater restoration. Existing soil vapor extraction wells on one side of the building were

pressurized with tracer gas (helium) and subsequently vented to allow atmospheric airflow underneath the building to corresponding extraction wells on the opposite side. A trailer-mounted SVET system was used to implement and measure induced flow of soil vapor under the building. Air samples were collected for VOCs upon detection of the tracer gas and confirmation that lateral transport underneath the building had occurred. This study concluded that an insignificant residual VOC source likely exists beneath the building (ERM, 2018b).

Well Evaluation: In April and July 2018, a well evaluation survey in April 2018 verified screen depth and total well depth on select wells and updated well construction datasets. In February and June 2018, a water level logging study involved single-well pumping tests at extraction wells on the former Siemens property. Changes in groundwater elevation were monitored in the A, B, and C Zones of the upper aquifer using water level data loggers on the former Siemens property and in the Off-Property Study Area. The results of those data extraction wells performance and guided future remedy enhancements.

TOC Evaluation: In 2018, a total organic carbon (TOC) data study from A1 Zone wells within the former Siemens property and from B Zone Off-Property Study Area wells gathered additional data to support potential remedial activities. The A1 Zone was found to have higher total organic carbon than the B Zone aquifer (Wood and ERM, 2019).

Residual Source Evaluation: In May and June 2018, a sub-building investigation evaluated residual VOCs beneath the building on the former Siemens property. Direct-push borings equipped with a membrane interface probe and hydraulic profiling tool were advanced at 11 locations and standard direct-push borings were advanced at four locations. After reviewing the data, this study concluded that significant residual VOCs are not present beneath the on-property building (ERM, 2019b).

Monitoring Well Installation: In January and February 2019, 14 additional monitoring wells were installed, mostly along Forge Drive between the former Intersil and Siemens properties, as well as within the Off-Property Study Area (see below) within Swallow Way and Tantau Avenue south and east of the former Siemens facility (six wells in each of the A1 and A3 depth intervals, one well in the A4 depth interval, and one well in the B Zone) (ERM, 2018c). Soil and groundwater samples were collected during the well installation process. TCE was detected in groundwater above MCLs in the A1 and A3 Zones (ERM, 2019a).

Shallow Soil and Groundwater Investigation: A well evaluation survey was conducted in April 2018 with a down-well camera used to verify screen depth and total well depth on select wells. Another camera survey was completed in July 2018 to update well construction datasets. A water level logging study was conducted between February and June 2018, which involved single-well pumping tests at extraction wells on the former Siemens property. Changes in groundwater elevation were monitored in the A, B, and C Zones of the upper aquifer using water level data loggers on the former Siemens property and in the Off-Property Study Area. The results of those data were used to optimize extraction wells performance and guide future remedy enhancements.

A shallow soil and groundwater investigation was completed at the southern portion of the former Siemens property in June and July 2019 to determine the extent of chlorinated VOCs within the

unsaturated zone and shallow A1 Zone of the Upper Aquifer (ERM, 2019c). Direct-push borings using a membrane interface probe and hydraulic profiling tool were advanced at three locations. Standard direct-push borings were advanced at nine locations and soil and grab groundwater samples were collected from those borings. Chlorinated VOCs were not detected in the upper soils, only in soils in periodic contact with groundwater at depths 30 feet bgs or greater. All groundwater samples contained chlorinated VOCs, with TCE as the predominant contaminant.

Off-Property Study Area

GWET System: In addition to the on-property wells, the GWET system at the former Siemens property extracted from two B-Zone extraction wells in the Off-Property Study Area. The wells pumped a total volume of approximately 124 million gallons of groundwater and removed approximately 67 pounds of VOCs from those two wells.

Groundwater Investigation: In November 2015, a groundwater investigation further characterized the extent of Site contaminants in groundwater in the Resaturated Interval (ERM, 2016b) by advancing Membrane interface probe/cone penetration test borings at seven locations within the A3 Zone. Samples were not collected within the A1 Zone due to absence of a water-bearing zone. Groundwater levels decreased significantly across all areas of the Site since 2011, with some wells screened in the Resaturated Interval going dry (see also Section 4.2.1). Elevated VOCs were encountered in borings near the intersections of Swallow Way and Homestead Road, and Swallow Way and Lorne Way. The RWQCB requested that General Electric and Siemens attempt to collect groundwater samples from the A1 Zone following the rainy season and to further investigate the A3 Zone northeast of borings that contained elevated VOCs.

Additional Groundwater Investigation: In 2016, an additional groundwater investigation further defined VOC contamination in the Resaturated Interval northeast of the 2015 investigation area by advancing membrane interface probe/cone penetration test borings within the A1, A3, and A4 Zones (ERM, 2016c). Groundwater samples were also collected from three AMI monitoring wells adjacent to the Off-Property Study Area. Elevated concentrations of VOCs were found in the A3 Zone north of the western side of the former AMI properties located east of and adjacent to the former Siemens property (see also Appendix C for additional data review). A groundwater sample could not be collected from the 55 to 60 feet bgs interval from MIP-OS-16 in 2015 and 2016. However, a grab groundwater sample was collected from the A1 Zone in 2016 from MIP-OS-28 at 55 to 60 feet bgs located approximately 500 feet northeast of MIP-OS-16. A boring log was not available to review soil type at the bottom of the borehole. The A1 Zone is as between 38 to 60 feet bgs between the former Intersil and Siemens properties; however, it was not defined in the Off-Property Study Area.

Sitewide Work

GWET System: Due to the shutdown of three extraction wells on the former Siemens property in 2014 to facilitate the ERD pilot studies, there was a significant reduction in total VOC mass removed from the two GWET systems between the 2015 and 2020 Five-Year Review periods (422 pounds VOCs removed over 2010-2015 versus 211 pounds VOCs removed over 2015-2020) relative to the smaller reduction in

VOC mass between the 2010 and 2015 Five-Year Review periods (471 pounds VOCs removed over 2005-2010 versus 422 pounds VOCs removed over 2010-2015).

Nuclear Magnetic Resonance and Passive Flux Meter Study: In February and April 2019, nuclear magnetic resonance and passive flux meter study evaluated potential preferential pathways of groundwater flow within the Upper Aquifer A though C zones. The study also evaluated contaminant transport and contaminant storage zones. The investigation results assessed groundwater flow direction, where TCE mass is the most mobile, and evaluated optimization of the groundwater extraction remedy (ERM, 2020).

1,4-Dioxane Study: A1,4-dioxane study evaluated 1,4-dioxane in groundwater from wells within the former Intersil and Siemens properties, the Off-Property Study Area, and for effluent and influent samples collected from the two GWET systems. All results were below the California drinking water notification level for 1,4-dioxane of 1 µg/L (see also Table 5, above) with the exception of one groundwater sample from the former Siemens property (well 4BP), within which 1,4-dioxane was detected at 1.8 µg/L (Wood and ERM, 2019).

4. Five-Year Review Process

4.1. Community Notification, Involvement and Site Interviews

The *Cupertino Courier* published a public notice on March 13, 2020. It stated the RWQCB and the EPA were conducting a five-year review and invited the public to submit any comments to the EPA. The results of the review and the report will be available at the Sunnyvale Public Library, located at 665 West Olive Avenue, Sunnyvale, California 94086, and at the RWQCB, located at 1515 Clay Street, Suite 1400, Oakland, California 94612.

During the Five-Year Review process, the U.S. Army Corp of Engineers (USACE) conducted interviews with Wood PLC and ERM, consultants for General Electric and Siemens, respectively. General Electric is responsible for the former Intersil property and Siemens is responsible for the former Siemens property. The purpose of the interviews was to document the Site's perceived status and any perceived problems or successes with the phases of the remedy that have been implemented to date. Wood PLC and ERM submitted written responses to interview questions via email on March 10, 2020.

The overall impression of the interviewees at both properties was that the remedy is functioning as designed and continues to provide hydraulic containment and some mass removal of VOC-impacted groundwater. Due to significant reductions in mass removal rates since the GWET's startup, the interviewees recommended determining whether GWET cessation and changing the remedy to monitored natural attenuation would also be protective of human health and the environment.

4.2. Data Review

4.2.1. Ground Water

Groundwater levels decreased significantly over the last several years since 2011 and probably impacted the GWET effectiveness, affected Site contaminant concentrations, and influenced vertical contaminant migration. The decreased groundwater levels are probably related to the severe drought in California from December 2011 to March 2019. Between 2011 and 2016, water levels decreased by approximately 17 feet in the A4 Zone, 10 feet in the B Zone, and 12 feet in the C Zone. Additionally, several wells became dry within the Resaturated Interval (A1 and A3 Zone wells). Groundwater levels decreased significantly across all areas of the Site since approximately 2011, with certain permanent wells screened in the Resaturated Interval going dry. During increased rainfall during the winter of 2018-2019, decreasing groundwater levels reversed and groundwater levels increased approximately 5 feet in the Resaturated Interval, 6 feet in the A4 Zone, 7 feet in the B Zone, and 10 feet in the C Zone. Groundwater gradients are still generally to the north.

For this Five-Year Review, USACE conducted a groundwater-TCE trend analysis to evaluate increasing, decreasing, stable, or no trend using the nonparametric (i.e., data does not Mann-Kendall statistical analysis). In total, 19 monitoring locations where selected as good lateral and vertical representatives of Site TCE concentrations. Groundwater data for TCE over the previous 5-year period (2015 through 2019) were used. The Mann-Kendall analysis can demonstrate the statistical existence of an increasing, decreasing, stable, or no trend for each monitoring location. The trends combined with the locations of monitoring wells within a plume can be used for interpreting plume stability (expanding, stable, or decreasing). For example, decreasing trends at the downgradient extent of a plume generally indicate a decreasing plume. Plume stability can then be used as part of evaluating the effectiveness of remedial action. Mann-Kendall, while a powerful statistical tool, may not account for long time-periods initial increasing trends followed by a long-period of declining trends, or vice versa (e.g., the test may determine an increasing trend, despite a recent long-period of declining concentration trends).

The trend analyses indicate that the TCE plume is decreasing overall at the Site. The Mann-Kendall analysis results are summarized on Table 6 and calculations are presented in Appendix C. Eight wells show decreasing trends, one well shows a probably decreasing trend, three wells show stable trends, six wells show no trends, and one well shows an increasing trend. The comparison of trend analyses for those 12 wells shows that most wells that previously had either stable or increasing trends now have decreasing trends. Median concentrations are displayed for reference in relation to the trends. In general, monitoring wells with very low constituent concentrations may exhibit a trend through Mann-Kendall analysis that is not necessarily indicative of true plume behavior, but instead a product of the natural variability of the sampling and testing procedures.

Table 6. Summary of Mann-Kendall Trend Analysis

TCE Mann-Kendall Analysis			2015-2019			2004-2014 (previous Five-Year Review)	
Well	Zone	Location in Plume	Median TCE Conc. (µg/L)	Trend	Confidence	Trend	Confidence
VM-3S	A1	Mid-Plume Well (On-Property)	0.65	No Trend	75.8%	Mann-Kendall not completed	
LF-13A	A1	Mid-Plume Well (On-Property)	5.3	Decreasing	99.5%	Mann-Kendall not completed	
MW-OS-3A1	A1	Furthest Downgradient Toe Well (Off-Property)	13	No Trend	87.5%	Mann-Kendall not completed (Well installed in 2014)	
MW-05A3	A3	Mid-Plume Well (On-Property)	67	Stable	76.5%	Mann-Kendall not completed (Well installed in 2016)	
VM-3D	A3	Mid-Plume Well (On-Property)	14	**Increasing**	99.6%	Mann-Kendall not completed	
MW-OS-5A3	A3	Furthest Downgradient Toe Well (Off-Property)	8	Decreasing	99.5%	Mann-Kendall not completed (Well installed in 2014)	
F-1A	A4	Plume Source Area Well (On-Property)	670	No Trend	76.5%	Stable	58.0%
H-XA-S	A4	Mid-Plume Well (On-Property)	150	Decreasing	97.2%	Decreasing	99.8%
S-1A	A4	Downgradient Toe Well (Off-Property)	1.6	Decreasing	99.2%	Stable	68.4%
MW-OS-4A4	A4	Furthest Downgradient Toe Well (Off-Property)	9.7	No Trend	80.1%	Mann-Kendall not completed (Well installed in 2014)	
W18B	B	Upgradient Toe Well (On-Property)	17	Stable	71.9%	**Increasing**	97.0%
H-3B	B	Mid-Plume Well (On-Property)	29	Decreasing	99.5%	**Increasing**	98.7%
KR-1B	B	Mid-Plume Well (Off-Property)	32	Decreasing	96.5%	Stable	89.1%
LQ-2B*	B	Mid-Plume Well (Off-Property)	56	Probably Decreasing	93.3%	Decreasing	99.7%
PL-1B	B	Side gradient / Downgradient Toe Well (Off-Property)	16	No Trend	80.9%	**Probably Increasing**	94.9%
IQ-1B	B	Furthest Downgradient Toe Well (Off-Property)	0.775	No Trend	58.0%	Decreasing	99.9%
LR-3C	C	Mid-Plume Well (Off-Property)	4	Stable	59.2%	No Trend	77.7%
RK-2C	C	Downgradient Toe Well (Off-Property)	0.64	Decreasing	95.8%	Stable	56.0%
S-4C	C	Furthest Downgradient Toe Well (Off-Property)	0.86	Decreasing	99.2%	Decreasing	97.5%

Upgradient or downgradient well within the outer extent of the plume for the aquifer Zone; *Extraction well

TCE Plume Evaluation: TCE concentrations for wells within the Resaturated Interval 1990s (A1 and A3 Zones) have generally decreased within the last five years and downgradient wells to the north show decreasing or no trends, especially within the former Siemens site along Homestead Rd where ERD pilot studies have been conducted.

However, on the northern side of the former Intersil property, the TCE plume is not fully delineated within the Resaturated Interval A zones. In January 2019, five new A1 Zone wells (MW-OS-08A1 through MW-OS-12A1) were installed on the former Siemens property along Forge Drive at the boundary of the former Intersil property. Currently, there are no wells screened within the A1 or A2 zones on the former Intersil property. Elevated TCE concentrations detected in the five newly installed wells, suggests the plume is not fully delineated upgradient in the A1 Zone for the former Intersil property. The five new wells had the some of highest TCE concentrations of all former Intersil/Siemens property wells (excluding the Off-Property Study Area) in the A1 zone, ranging up to 370 µg/L. Additional evidence of a shallow localized contaminant mass on the former Intersil property was documented in the 2011 Hydrogeologic Framework Report, which identified a single, high concentration of TCE (9,000 µg/L) in a grab groundwater sample from the A3 Zone on the former Intersil property close to Forge Drive. These TCE concentrations within the Resaturated Interval along Forge Drive suggests that there may be a shallow contaminant mass present on the former Intersil property; however, it is unclear if this TCE mass is a previously undefined source, or is a result of historic groundwater extraction pulling groundwater contamination from the former Siemens property south to the current location along Forge Drive.

During the ERD Phase III Pilot Study in the north portion of the Siemens property, TCE concentrations decreased in the Resaturated Interval (A1 and A3 Zones), while TCE degradation daughter products increased, particularly vinyl chloride. The daughter products were addressed with additional remedy during the mitigation measures with targeted SVE and injections of potassium permanganate that took place subsequent to the ERD Phase III Pilot Study, but their effectiveness in reducing the concentrations of daughter products is inconclusive.

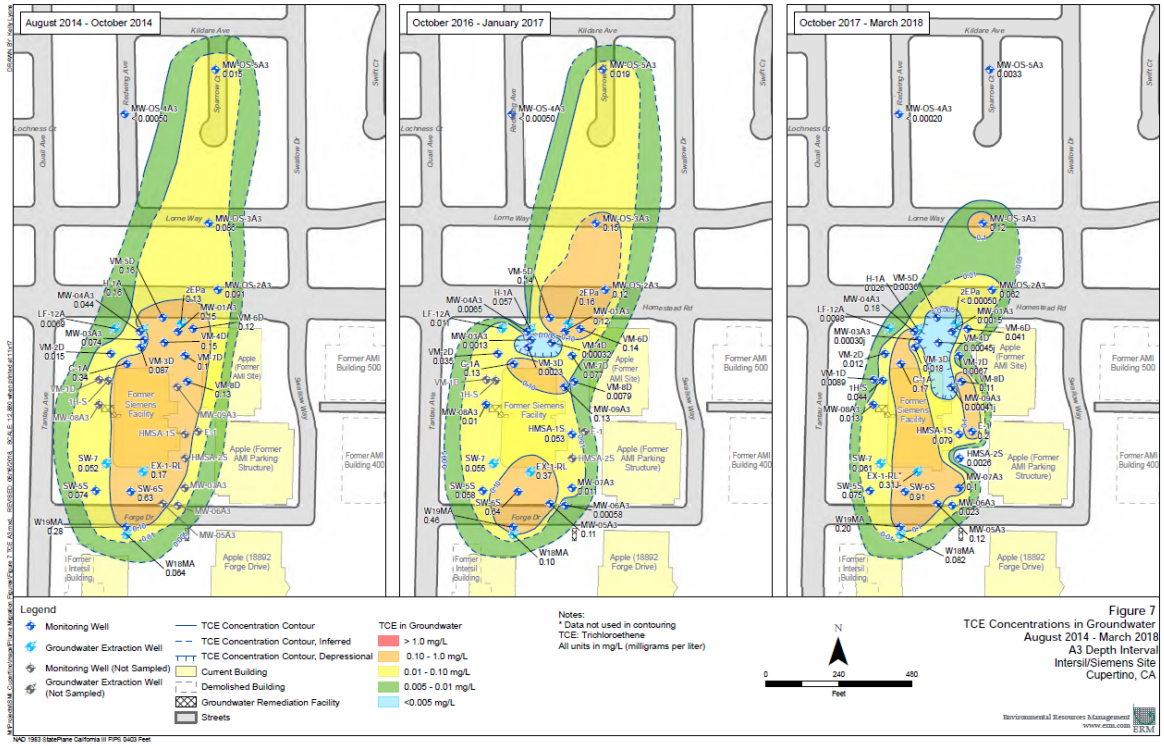
TCE concentrations within the ROD-defined A4 Zone decreased within the last five years and the plume decreased slightly. Decreasing or no trends in downgradient and mid-plume wells show that the A4 Zone plume is not migrating further downgradient into the Off-Property Study Area.

B Zone TCE mostly decreased in the last five years. The plume size is the same and the plume is not migrating further downgradient into the Off-Property Study Area. TCE shows no trend in downgradient wells. B-Zone TCE has been non-detectable in one of the wells relatively low in the other.

C Zone TCE concentrations from sampled wells over the last five years have been nondetectable or below the MCL, indicating the that plume has either decreased or stabilized.

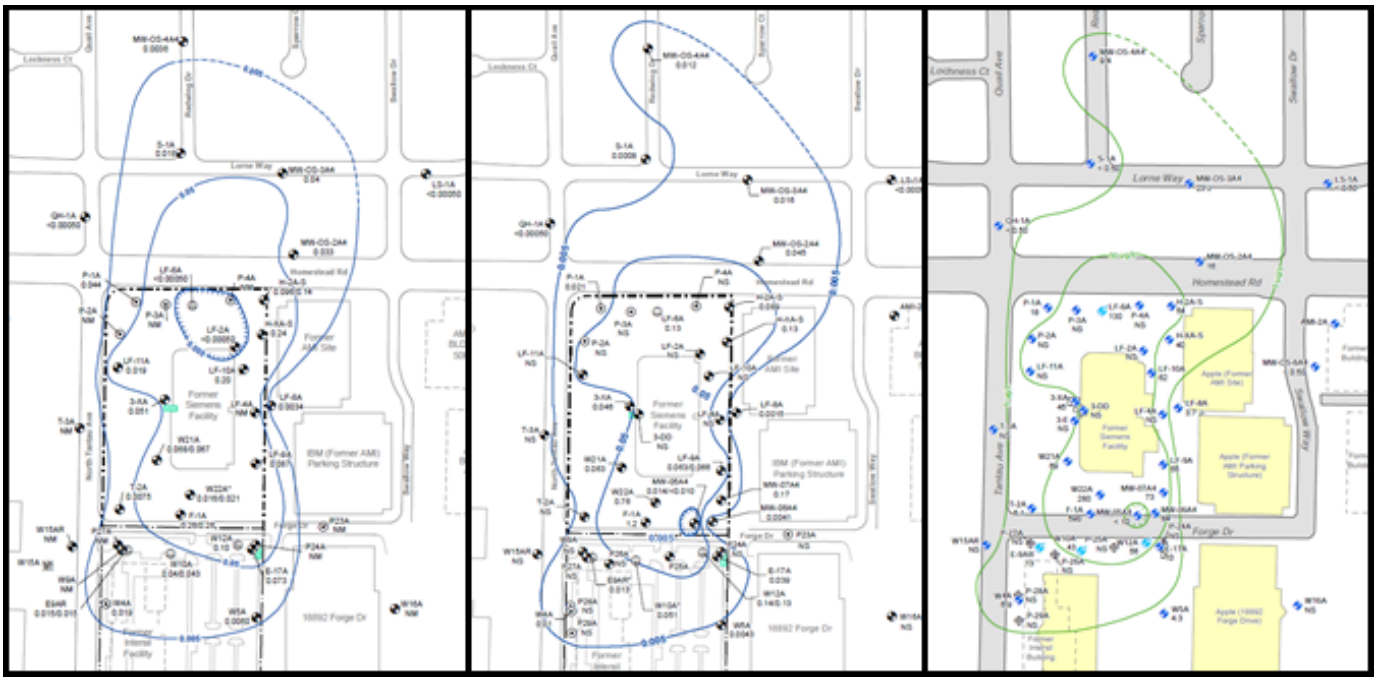
Note: Concentration units change [2015 (mg/L), 2018 (mg/L), and 2019 (µg/L)]

Figure 2. Resaturated Zone (A1/A2) TCE Concentrations Comparison 2014 to 2019



Note: Concentration units change [2015 (mg/L), 2018 (mg/L), and 2019 (µg/L)]

Figure 3. Resaturated Zone (A3) TCE Concentrations Comparison 2014 to 2019



Note: Concentration units change [2015 (mg/L), 2018 (mg/L), and 2019 (µg/L)]

Figure 4. A4 Zone TCE Concentrations Comparison 2015 to 2019

Regression Analysis: USACE performed a regression analysis using groundwater-TCE data from 2009-2019 for select wells currently above TCE ROD cleanup level of 5 µg/L. The timeframe to reach the cleanup level for wells with decreasing concentrations of TCE ranged from approximately 9 to 23 years. Not all wells have decreasing trends, however. Wells F-1A and W18B (located at the southern border of the former Siemens property and the northern border of the former Intersil property, respectively) have stable or no trend based on the Mann-Kendall analysis, but have a positive slope, and thus increasing trends based on the regression analysis.

The regression analysis is complicated by Siemens completing ERD pilot study activities and mitigation measures in recent years, which have accelerated TCE destruction and the lowering of TCE concentrations. The cleanup timeframes therefore do not strictly evaluate the number of years until meeting cleanup levels near the Siemens property. Furthermore, the regression analysis was only performed for TCE concentrations. The ERD pilot study activities on the former Siemens property also addresses relatively higher concentrations of TCE daughter products such as cis-1,2-dichloroethylene and vinyl chloride, which are being addressed under the pilot study.

4.3. Site Inspection

USEPA, USACE, and the RWQCB conducted a Site inspection on February 6, 2020. Michael Schulman (EPA), Roger Papler (RWQCB), Benino McKenna (USACE), Matt Scheeline (ERM), and Harold Rush and Grey Melgard (Wood Group) attended the inspection. The purpose of the inspection was to assess the protectiveness of the remedy.

The agencies found the remedy components on both the former Intersil and former Siemens properties to be in adequate condition and functioning as intended. GWET system components and extraction wells are inspected biweekly at former Intersil and weekly at former Siemens. GWET treatment vessels are changed out annually at the Intersil Site, and every two months at the Siemens Site. Minor corrosion was noted on the bag filtration units for the Siemens GWET system. At the time of the Site inspection, several extraction wells at the former Siemens property were temporarily shut down due to ongoing ERD pilot testing. The agencies observed that the off-property extraction wells in the Study Area were operating. Trip Report and photos of the Site are included in Appendix H.

5. Technical Assessment

5.1. Question A: Is the remedy functioning as intended by the decision documents?

Yes, the remedy is functioning as intended. The initial soil excavation and soil vapor extraction worked as intended to significantly reduce the contaminant mass in soil at the Site. Since then, the GWET systems deployed in both the former Intersil and former Siemens properties have continued to contain the TCE groundwater plume and reduce contaminant concentrations in groundwater. The GWET systems are generally operating and functioning as designed.

The ROD recognized that the use of the GWET remedy may not be able reduce Site contaminants to cleanup levels. It states that "If it becomes apparent, during implementation or operation of the system, that contaminant levels have ceased to decline and are remaining constant at levels higher than the remediation goal, that goal and the remedy may be reevaluated." The ROD goes on to state that "The selected remedy will include groundwater extraction for a period of 45 to 85 years, during which the system's performance will be carefully monitored on a regular basis and adjusted as warranted by the performance data collected during operation."

Groundwater extraction began in 1986 at the former Siemens property and 1987 at the former Intersil property with projected groundwater extraction timeframes respectively spanning from 2031 to 2071 and 2032 to 2072. The extraction efficiencies of the GWET systems have decreased dramatically since they were first started, which was expected. Asymptotic conditions have been documented in previous Five-Year Reviews and within Annual Self-Monitoring Reports. Some monitoring wells evaluated within the current Five-Year Review period show increasing, stable, or no trend for TCE with concentrations above the ROD cleanup level, but most wells show decreasing trends (many of which had shown stable or increasing trends during the previous Five-Year Review period). The positive change to more decreasing trends of TCE on the former Siemens property is due, at least in part, to the alternative in-situ ERD remediation being pilot tested by Siemens.

Monitoring wells installed in 2019, at Forge Drive in the A Zone Resaturated Interval (i.e., A1 and partially A3), contain TCE concentrations ranging up to 370 µg/L (MW-OS-10A1, MW-OS-9A1). Additionally, higher TCE concentrations within the A4 Zone are also located at the former Intersil and

Siemens property boundary at concentration of 590 µg/L (F-1A). Based on historic and current groundwater TCE sample concentration results, this suggests that there may be a contaminant mass present at the former Intersil property. Additional evidence of a relatively shallow localized contaminant mass on the former Intersil property is documented in the 2011 Hydrogeologic Framework Report, which identified a high concentration of TCE (9,000 µg/L) in a grab groundwater sample from the A3 Zone on the northern portion of the former Intersil property south of Forge Drive. Without knowing the magnitude of contamination within the Resaturated Interval, estimated cleanup timeframes using current remedial methods may be unreliable.

In general, current operating procedures are maintaining the remedy's effectiveness. Both GWET systems are inspected regularly and have remote monitoring systems, which ensure the systems remain running and any repairs are completed in a timely fashion. The GWET system on the former Siemens property needs to have the carbon treatment vessels replaced more frequently due to rapid corrosion, which contributes to slightly higher costs and more frequent maintenance but does not indicate a potential remedy problem.

Although the ROD did not initially identify institutional controls as part of the remedy, deed restrictive covenants have been recorded for both the former Intersil and former Siemens properties (Appendix E). 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 and groundwater use is restricted throughout the Site. The institutional controls are effective in preventing exposure.

5.2. Question B: Are the exposure assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives (RAOs) Used at the Time of Remedy Selection Still Valid?

Yes. The current and future exposure pathways identified in the ROD are still valid. Extensive vapor intrusion assessments have concluded that there is no unacceptable indoor air risk on any areas of the Site, including the residential Off-Property Study Area. There have been no changes in land use since the last Five-Year Review and deed restrictions have been put in place that limit future use to prevent exposure.

Toxicity data and cleanup levels are still valid. Vinyl chloride, a degradation byproduct of TCE, is not listed as a Site contaminant within the ROD. However, vinyl chloride is regularly monitored in groundwater at the Site and concentrations are compared to its respective MCL.

The remedial action objective is still valid. The remedial action objective for the Site is to "restore groundwater to its beneficial use." The Site lies within the Santa Clara Valley Subbasin, which is designated for municipal beneficial use (municipal and domestic water supply) by the RWQCB. The beneficial use designation is considered unlikely to change given the importance of groundwater to local water supplies.

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

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

The Site was identified in an October 2019 report by the U.S. Government Accountability Office to be located within an area with high flood hazard potential.

The Site is located in a seismically active region with high earthquake potential. An earthquake may cause damage to infrastructure that could affect operation of the GWET systems. A facility emergency action contingency plan is warranted under this scenario.

No other information has come to light that could call into question the protectiveness of the remedy.

6. Issues/Recommendations

Table 7. Issues and Recommendations Identified in the Five-Year Review

Issues and Recommendations Identified in the Five-Year Review:				
Operable Unit(s): 1	**Issue Category: Monitoring**			
	Issue: The contaminant plume is not fully delineated within the A1 and A3 Zones of the Resaturated Interval south of Forge Ave Drive within the former Intersil Property, where the magnitude of potential source contamination needs to be further understood for determining if cleanup timeframes will be met under the current methods of remediation.			
	Recommendation: Install additional monitoring wells to delineate groundwater contamination within the A1 and A3 Zones of the Resaturated Interval, south of Forge Drive within the former Intersil property.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	State	12/30/2024

6.1. Other Findings

The GWET system on the former Intersil property is not currently optimized to treat groundwater within the Resaturated Interval A1 Zone and possibly the A3 of the A Zone. GWET system optimization or alternative methods of remediation may be warranted, if the magnitude of remaining contamination effects projected cleanup timeframes.

Groundwater investigations were completed in the Off-Property Study Area in 2015 and 2016. Detected VOCs were below MCLs within the A1 and A4 Zones downgradient of the former Siemens property; however, TCE was detected above MCLs and not defined in the A3 Zone to the northeast of the Siemens Site, to the east of the roads Swallow Drive and Swift Court. Further investigation should be completed.

7. Protectiveness Statement

Table 8. Protectiveness Statement

Protectiveness Statement(s)		
Operable Unit: OU-1	*Protectiveness Determination:* Short-term Protective	*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The remedy at the Intersil Inc,/Siemens Components Superfund Site currently protects human health and the environment by maintaining capture of the contaminant plume and eliminating off-property exposure pathways. Institutional controls eliminate exposure pathways on the former Intersil and Siemens properties. In order for the remedy to be protective in the long-term, additional delineation of the Resaturated Interval of the A Zone should be completed.		

8. Next Review

The next five-year review report for the Intersil Inc./Siemens Components Superfund Site is required five years from the completion date of this review.

Appendix A: List of Documents Reviewed

AMEC Foster Wheeler and ERM. 2016. *Annual Self-Monitoring Report, January 1 through December 31, 2015*. January 2016.

AMEC Foster Wheeler and ERM. 2017. *Annual Self-Monitoring Report, January 1 through December 31, 2016*. January 2017.

AMEC Foster Wheeler and ERM. 2018. *Annual Self-Monitoring Report, January 1 through December 31, 2017*. January 2018.

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

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

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

ERM. 2014. *Extraction Well Trichloroethene Time-Concentration Graphs Intersil/Siemens Site, Indoor Air Study Area*. February 2014.

ERM. 2016a. *Phase II Enhanced Reductive Dechlorination – Former Siemens Facility*. April 2016.

ERM. 2016b. *Onsite Characterization Completion Report – Former Siemens Facility.* June 2016.

ERM. 2016c. *2016 Additional Off-Site Study Area Groundwater Characterization Summary Report*. December 2016.

ERM. 2018a. *Phase III Enhanced Reductive Dechlorination Pilot Study 12-Month Summary Report*. July 2018.

ERM. 2018b. *Vapor Concentration Investigation Summary Report – Former Siemens Facility*. August 2018.

ERM. 2018c. *Final Monitoring Well Installation and Bench Test Work Plan*. April 2018.

ERM. 2019a. *Monitoring Well Installation Summary Report – Former Siemens Facility*. June 2019.

ERM. 2019b. *On-site Sub-Building Soil Investigation Summary Report – Former Siemens Facility*. August 2019.

ERM. 2019c. *Shallow Soil and Groundwater Investigation Summary Report, Southern Portion of Former Siemens Property*. September 2019.

ERM. 2019d. *Mitigation Measures Summary Report – Former Siemens Facility*. October 2019.

ERM. 2020. *Nuclear Magnetic Resonance and Passive Flux Meter™ Data Summary Report*. January 2020.

Pristine Earth, Inc., and ARCADIS. *Off-Site Study Area Investigation Report – Intersil/Siemens Site*. September 2011.

Santa Clara County. 2005. *Covenant and Environmental Restriction on Property – Former Intersil Facility, 10900 North Tantau Avenue, Cupertino, Santa Clara County*. October 2005.

Santa Clara County. 2009. *Covenant and Environmental Restriction on Property – Former Siemens Facility Located At 10950 North Tantau Avenue, Cupertino, Santa Clara County, California*. December 2009.

U.S. Government Accountability Office. 2019. *SUPERFUND – EPA Should Take Additional Actions to Manage Risks from Climate Change*. October 2019.

Valley Water. 2020. *Annual Groundwater Report for Calendar Year 2018*. January 2020.

Wood. 2018. *Subject: Water Code Section 13267 Technical Report Order Requiring Submittal of Information on Sulfate in Groundwater and Calabazas Creek – Former Intersil Facility*. June 2018.

Wood and ERM. 2019. *Annual Self-Monitoring Report, January 1 through December 31, 2018*. January 2019.

Wood and ERM. 2020. *Annual Self-Monitoring Report, January 1 through December 31, 2019*. January 2020.

Appendix B: Site Chronology

Event	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 (RWQCB) issued Waste Discharge Requirements/Site Cleanup Requirements (SCR), Order No. 86-49	1986
RWQCB issued Cleanup and Abatement Order No. 87-133	1987
Intersil started groundwater extraction and treatment (GWET) system, consisting of four A Zone wells	1987
Intersil removed in-ground waste handling units and ceased operation at facility and started soil vapor extraction and treatment (SVET) system	1988
RWQCB issued SCR Order No. 89-038	1989
RWQCB 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
The final remedy included expanding the GWET system with the addition of one A Zone extraction well and one B Zone extraction well and expanding the SVET system to four well pairs.	1991
General Electric (GE), parent company of Intersil, purchased the property from Vallco Park, Ltd.	1992
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
GE decommissioned the SVET system with RWQCB approval; the long-screened SVET wells were then used as groundwater monitoring wells	1993
RWQCB and EPA complete first Five-Year Review, which includes all 3 properties	1995
Manufacturing building demolished	1997
RWQCB and EPA completed second Five-Year Review, which includes all 3 properties	2000
RWQCB and EPA completed third Five-Year Review, which includes all 3 properties	2005
GE filed a Covenant and Environmental Restriction, including a Soil Management Plan	2005
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 treatment vessels	2007
Four monitoring wells were abandoned, after showing consistently low concentrations of Site contaminants	2007
Tantau Investments constructed a commercial building on the property, including a 15-milliliter vapor barrier	2008
Membrane interface probe 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

Event	Date
RWQCB and EPA completed fourth Five-Year Review, which includes all 3 properties	2010
Hydrogeologic Framework Report written	2011
Second supplemental groundwater investigation conducted, concluding that VOC-impacted groundwater in the A1, A2, and A3 Zones along the northern boundary of the former Intersil property and in Forge Drive is captured by the current extraction well network	2011-2012
Off-Property residential soil vapor intrusion evaluation conducted	2013-2014
Evaluation of discharge of sulfate to Calabazas Creek by the GWET was completed. Sulfate concentrations were within allowable sulfate ranges under NPDES general permit	2018

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
RWQCB 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-Property extraction wells	1991
Siemens excavated soil where former underground storage tanks were located	1991
Siemens reduced the SVET system to four SVE wells	1995
Siemens curtailed groundwater extraction from Well W21A with RWQCB approval	1999
Siemens sold property to Tantau Partners, LLC. Siemens performed indoor air quality evaluation that did not reveal indoor air vapor intrusion	2000
Primary treatment of extracted groundwater was changed from an air stripper to granular activated carbon.	2002
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 Resaturated Zone, currently designated as the A1 and A2 Zones	2006

Event	Date
Current Siemens property occupant Kaiser Permanente conducted indoor air quality investigation and risk assessment indicating ambient and indoor levels of PCE slightly above, and TCE below, RWQCB commercial/industrial Environmental Screening Levels (ESLs). The study concluded that the PCE detections were probably from indoor sources.	2007
Siemens conducted membrane interface probe investigation	2007
Siemens postponed supplemental ERD Pilot Study due to decline in groundwater level elevations in the A1 Zone of the Upper Resaturated Interval	2008
Deed Restriction recorded 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
Phase III ERD Pilot Study initiated, which included injecting carbon-zero valent iron product and emulsified vegetable oil into groundwater	2017
Phase III ERD Pilot Study additional injections into groundwater of KB-1 ® Primer and/or emulsified vegetable oil were completed	2018
Soil vapor investigation under the building at the former Siemens property completed and concluded insignificant residual VOC source likely exists beneath the building.	2018
Well evaluation and data logger survey was conducted	2018
Nuclear magnetic resonance and passive flux meter data collected from existing monitoring wells in both the former Siemens property and Off-Property Study Area	2019
Mitigation measures (targeted SVE and injections of potassium permanganate) for the ERD Phase III Pilot Study were completed in April 2019 to address increases of vinyl chloride in groundwater and support ongoing remediation enhancement efforts.	2019
Sub-building investigation - completed beneath the building on the former Siemens property - determined that significant residual VOCs are not present beneath building.	2019
Shallow soil and groundwater investigation completed at the southern portion of the former Siemens property. Elevated TCE concentrations discovered in the A1 and A3 Zones for groundwater.	2019

Off-Property Study Area	
GE and Siemens began groundwater investigations	1986
GE and Siemens began groundwater extraction from two B Zone wells	1990
RWQCB 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 expanded the GWET system from two B Zone wells to three B Zone wells	1991
GE and Siemens reduced the GWET system from three B Zone wells to two B Zone wells	2004
Membrane interface probe and additional groundwater investigation conducted	2011
Vapor intrusion indoor air evaluation conducted	2013-2014
Off-property monitoring well installation completed	2014

Event	Date
Follow-up off-property monitoring well installation workplan approved.	2015
Groundwater investigation conducted to further delineate groundwater contaminants in A1 and A3 Zones. Included advancement of membrane interface probe/cone penetration test borings.	2015
Additional groundwater investigation conducted to further delineate groundwater contaminants in the A1 and A3 Zones. Included advancement of membrane interface probe/cone penetration test borings.	2016
Twelve additional monitoring wells were installed in the A and B Zones. Soil and groundwater samples were collected.	2019

Appendix C: Data Review

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 groundwater for the A1 Zone flows slightly to the northeast of the former Intersil and Siemens properties.
- The groundwater for the A3 Zone flows slightly to northwest of the former Intersil and Siemens properties.
- The groundwater for the A4 Zone flows to northwest of the former Intersil and Siemens properties.
- The groundwater for the B Zone flows to north of the former Intersil and Siemens properties, however, highly influenced by the extraction well pumping.
- The groundwater for the C Zone flows to north of the former Intersil and Siemens properties.

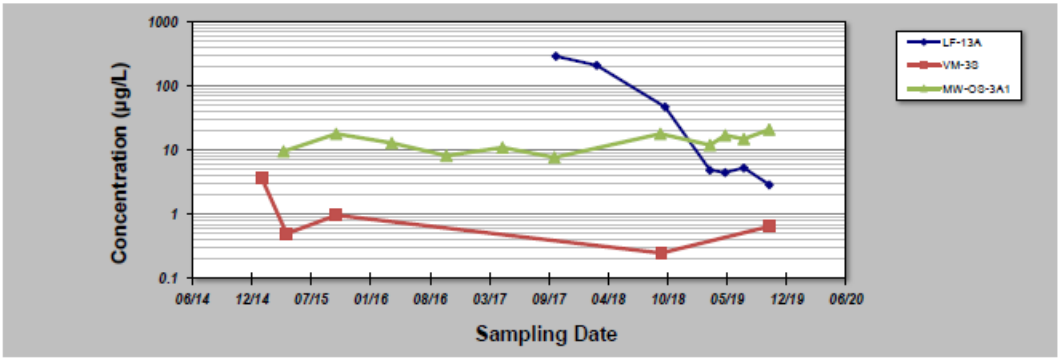
For this Five-Year Review, the U.S. Army Corps of Engineers conducted a trend analysis (using Mann-Kendall statistical analysis tool) of TCE concentrations on 19 monitoring locations that were good lateral and vertical representatives. The groundwater analytical data used for the Mann-Kendall analyses was taken from the Annual Self-Monitoring Reports, between 2015 through 2019. Estimated values were included for the analyses. If a sample had a field duplicate, the value for the field duplicate was used if it was higher. Half of the laboratory method detection limit was used for non-detect values, unless half of the non-detect value was more than other values used in the analysis, in which case the non-detect value was excluded from the analysis. Some wells had more data than others due to either a less frequent sampling schedule, the well-being dry during sampling, the well having been installed recently within the Five-Year Review period or having non-detect values excluded from the analysis.

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. The Mann-Kendal Analysis results are summarized on Table 6 and calculations are presented in this appendix (Calcs 1-5).

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	10-Jul-20	Job ID:	
Facility Name:	Intersil/Siemens	Constituent:	TCE
Conducted By:	L. Scott	Concentration Units:	µg/L

Sampling Point ID:	LF-13A	VM-3S	MW-OS-3A1				
Sampling Event	Sampling Date	TCE CONCENTRATION (µg/L)						
1	1/29/2015		3.7					
2	4/13/2015			9.6				
3	4/23/2015		0.5					
4	10/7/2015		0.97	18				
5	4/11/2016			13				
6	10/12/2016			8.2				
7	4/19/2017			11				
8	10/11/2017			7.7				
9	10/16/2017	290						
10	3/2/2018	210						
11	10/2/2018			18				
12	10/5/2018		0.25					
13	10/18/2018	47						
14	3/18/2019	4.9		12				
15	5/8/2019	4.5		17				
16	7/10/2019	5.3		15				
17	10/4/2019	2.9	0.65	21				
18								
19								
20								
Coefficient of Variation:		1.48	1.16	0.32				
Mann-Kendall Statistic (S):		-17	-4	16				
Confidence Factor:		99.5%	75.8%	87.5%				
Concentration Trend:		Decreasing	No Trend	No Trend				



Notes:

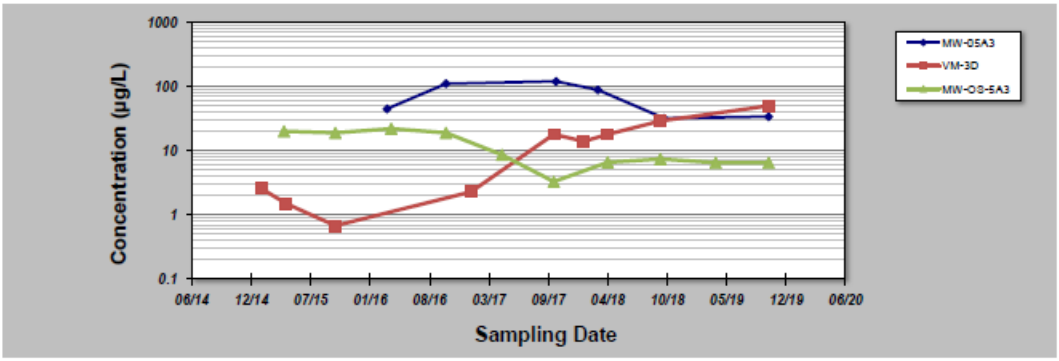
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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.

Calc. 1: Mann-Kendall Trend Analysis A1 Zone Wells LF-13A, VM-3S, & MW-OS-3A1

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 10-Jul-20
Facility Name: Intersil/Siemens
Conducted By: L. Scott
Job ID:
Constituent: TCE
Concentration Units: µg/L

Sampling Point ID:	MW-05A3	VM-3D	MW-OS-5A3				
Sampling Event	Sampling Date	TCE CONCENTRATION (µg/L)						
1	29-Jan-15		2.6					
2	16-Apr-15			20				
3	23-Apr-15		1.5					
4	6-Oct-15		0.68	19				
5	28-Mar-16	45						
6	11-Apr-16			22				
7	12-Oct-16	110		19				
8	5-Jan-17		2.3					
9	19-Apr-17			8.6				
10	10-Oct-17		18	3.3				
11	18-Oct-17	120						
12	7-Mar-18	89						
13	19-Jan-18		14					
14	10-Apr-18		18	6.6				
15	4-Oct-18		29	7.4				
16	16-Oct-18	32						
17	8-Apr-19			6.5				
18	4-Oct-19	34	50	6.5				
19								
20								
Coefficient of Variation:		0.55	1.08	0.60				
Mann-Kendall Statistic (S):		-5	25	-29				
Confidence Factor:		76.5%	99.6%	99.5%				
Concentration Trend:		Stable	Increasing	Decreasing				



Notes:

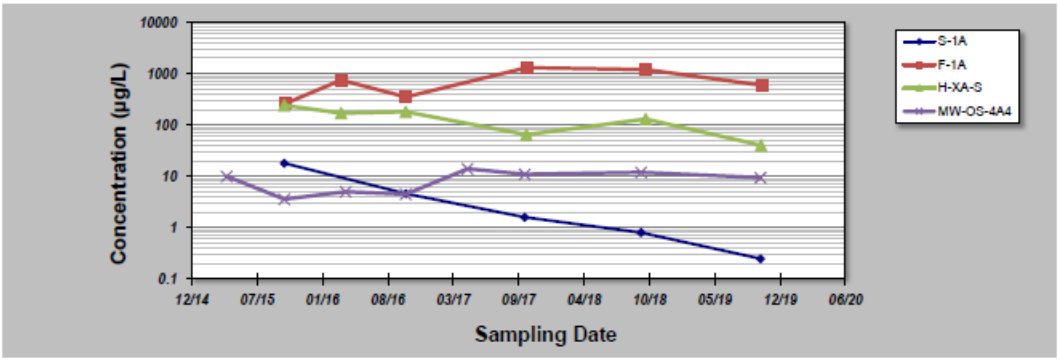
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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.

Calc. 2: Mann-Kendall Trend Analysis A3 Zone Wells MW-5A3, MW-OS-5A3, & VM-3D

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 10-Jul-20
Facility Name: Intersil/Siemens
Conducted By: L. Scott
Job ID:
Constituent: TCE
Concentration Units: µg/L

Sampling Point ID:	S-1A	F-1A	H-XA-S	MW-OS-4A4			
Sampling Event	Sampling Date	TCE CONCENTRATION (µg/L)						
1	13-Apr-15				10			
2	6-Oct-15	18		240	3.6			
3	9-Oct-15		260					
4	28-Mar-16		750	170				
5	11-Apr-16				5			
6	12-Oct-16	4.6	350	180	4.5			
7	19-Apr-17				14			
8	11-Oct-17	1.6			11			
9	16-Oct-17		1300	65				
10	2-Oct-18	0.8			12			
11	16-Oct-18		1200	130				
12	10/2/2019	0.25			9.4			
13	10/4/2019			40				
14	10/9/2019		590					
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.47	0.58	0.55	0.44			
Mann-Kendall Statistic (S):		-10	5	-11	8			
Confidence Factor:		99.2%	76.5%	97.2%	80.1%			
Concentration Trend:		Decreasing	No Trend	Decreasing	No Trend			



Notes:

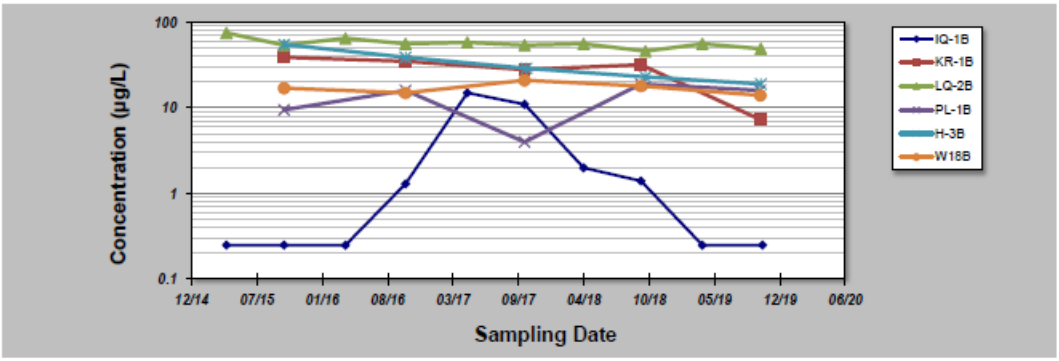
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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.

Calc. 3: Mann-Kendall Trend Analysis A4 Zone Wells S-1A, F-1A, H-XA-S, & MW-OS-4A4

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 10-Jul-20
Facility Name: Intersil/Siemens
Conducted By: L. Scott
Job ID:
Constituent: TCE
Concentration Units: µg/L

Sampling Point ID:	IQ-1B	KR-1B	LQ-2B	PL-1B	H-3B	W18B	
Sampling Event	Sampling Date	TCE CONCENTRATION (µg/L)						
1	13-Apr-15	0.25		75				
2	6-Oct-15	0.25	39	54	9.5	55	17	
3	11-Apr-16	0.25		65				
4	12-Oct-16	1.3	35	56	16	39	15	
5	19-Apr-17	15		58				
6	11-Oct-17	11	28	54	4		21	
7	17-Oct-17					29		
8	10-Apr-18	2		56				
9	2-Oct-18	1.4	32		19		18	
10	4-Oct-18							
11	16-Oct-18			46		23		
12	8-Apr-19	0.25		56				
13	2-Oct-19		7.3		16		14	
14	4-Oct-19			49		19		
15	9-Oct-19	0.25						
16								
17								
18								
19								
20								
Coefficient of Variation:		1.71	0.51	0.10	0.39	0.45	0.15	
Mann-Kendall Statistic (S):		-4	-13	-23	7	-17	-5	
Confidence Factor:		58.0%	96.5%	93.3%	80.9%	99.5%	71.9%	
Concentration Trend:		No Trend	Decreasing	Prob. Decreasing	No Trend	Decreasing	Stable	



Notes:

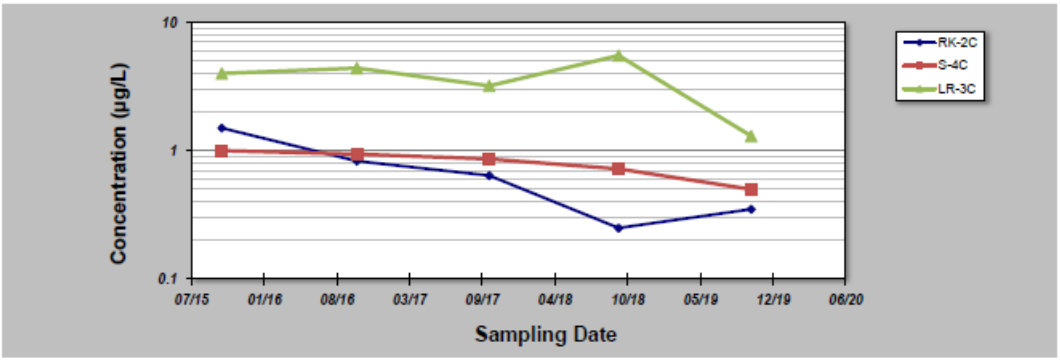
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably 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.

Calc. 4: Mann-Kendall Trend Analysis B Zone Wells W18-B, KR-1B, LQ-2B, PL-1B, H-3B & IQ-1B

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	10-Jul-20	Job ID:	
Facility Name:	Intersil/Siemens	Constituent:	TCE
Conducted By:	L. Scott	Concentration Units:	µg/L

Sampling Point ID:	RK-2C	S-4C	LR-3C				
Sampling Event	Sampling Date	TCE CONCENTRATION (µg/L)						
1	6-Oct-15	1.5	1	4				
2	12-Oct-16	0.83	0.94	4.4				
3	11-Oct-17	0.64	0.86	3.2				
4	2-Oct-18	0.25	0.72	5.5				
5	2-Oct-19	0.35	0.5	1.3				
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.69	0.25	0.43				
Mann-Kendall Statistic (S):		-8	-10	-2				
Confidence Factor:		95.8%	99.2%	59.2%				
Concentration Trend:		Decreasing	Decreasing	Stable				



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.

Calc. 5: Mann-Kendall Trend Analysis C Zone Wells RK-2C, S-4C, & LR-3C

A1 Zone

TCE isoconcentration contours for the A1 Zone of the Resaturated Interval show that the downgradient portion of the TCE plume decreased in concentrations between 2015 and 2019 (Figure C-1). While the furthest off-property downgradient well (MW-OS-3A1) shows no trend for TCE, TCE decreased in wells upgradient closer to the former Siemens property and the ERD remedy pilot studies. It is worth noting though that while the spatial distribution of monitoring wells down and side gradient into the Off-Property Study Area for each of the Resaturated Intervals A1 and A3 Zones, the A Zone has a whole as presented in the ROD is reasonably delineated. This is partially supported by a 2016 TCE groundwater grab sample collected from the A1 Zone and A4 Zone for boring MIP-OS-28 downgradient of AMI, which had a TCE concentration of 1.8 µg/L. It should also be noted that during a November 2015 investigation, grab groundwater samples in the Off-Property Study Area collected from MIP-OS-16 and MIP-OS-17 were dry to 60 feet bgs, indicating that the A1 Zone in the Off-Property Study Area may not be widespread.

In January 2019, five additional A1 Zone wells (MW-OS-8A1 through MW-OS-12A1) were installed between the former Siemens property and the former Intersil property along Forge Drive (ERM 2019a). Prior to the well installations, there were no upgradient wells from the former Siemens property in the A1 Zone of the Resaturated Interval. These new wells had some of the highest current concentrations of all the wells in the A1 zone, ranging up to 370 µg/L. The elevated TCE concentrations detected in these newly installed wells suggests the plume may not be fully delineated upgradient in the A1 Zone.

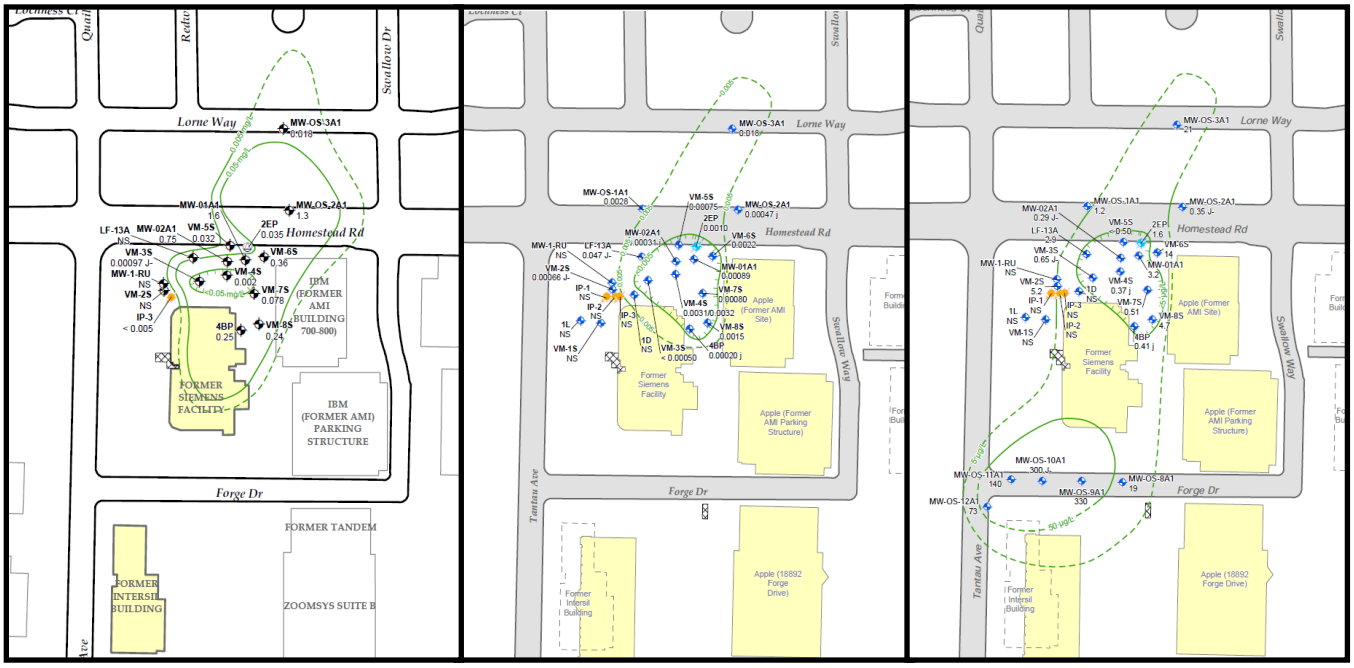


Figure C-1. Comparison A-1 zone. TCE plume 2015(mg/L), 2018(mg/L) and 2019(µg/L) (Left to Right) (AMEC Foster Wheeler and ERM, 2016; Wood and ERM, 2019 & 2020); isoconcentration images are in different units, however, the contours are equivalent (0.05 mg/L=50 µg/L). Note, TCE concentrations on the Siemens site were treated during ERD pilot studies.

A3 Zone

TCE isoconcentration contours for the A3 Zone of the Resaturated Interval show that the TCE plume decreased in concentrations in the mid- to downgradient portions of the plume from 2015 to 2019. These concentrations declines are supported by the ERD pilot study remedies in the northern portion of the Siemens site. The furthest downgradient well at the northern tip of plume (MW-OS-5A3), shows a decreasing concentration trend for TCE, indicating full capture of the contamination plume downgradient to the north. One mid-plume well has an increasing trend for TCE (VM-3D), with concentrations increasing to 50 µg/L in 2019.

In February 2019, additional A3 Zone wells (MW-OS-8A3, MW-OS-10A3, MW-OS-11A3, and MW-OS-12A3) were installed between the former Siemens property and the former Intersil property along Forge Drive in the A3 Zone (ERM 2019a). TCE groundwater concentrations in these wells ranged from 20 to 270 µg/L. Similar to the A1 zone, elevated TCE concentrations indicate there may be a larger plume upgradient of the former Siemens property (i.e., to the south of Forge Drive) that is not fully delineated.

In 2015 and 2016 a membrane interface probe (MIP) groundwater investigation was conducted in the Off-Property Study Area and grab groundwater samples were also collected. The grab groundwater data results indicate that TCE concentrations north of the AMI property at the intersection of Swallow Drive and Lorne Way were elevated, ranging from 120 µg/L to 170 µg/ L. However, further downgradient of Lorne Way, grab groundwater samples results were typically less than MCL values, indicating that the A3 Zone in the Off-Property Study Area is largely delineated, with the exception of MIP-OS-28 (bounded by MIP-OS-23 and MIP-OS-25) with a grab groundwater TCE sample result of 120 µg/L. It is noted that grab groundwater samples from borings are not as accurate as groundwater samples collected from established monitoring wells.

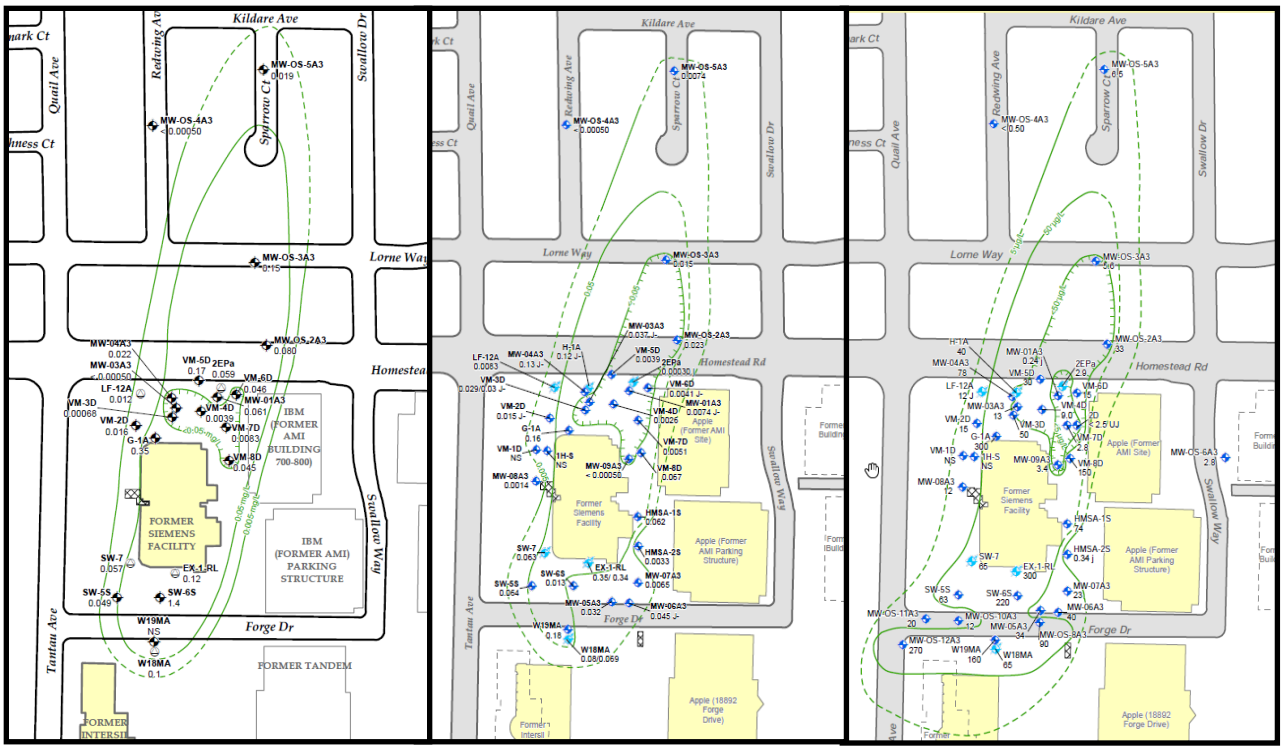


Figure C-2. TCE Plume in A3 Z**one**; 2015(mg/L), 2018(mg/L) and 2019(µg/L) (Left to Right) **(AMEC Foster Wheeler and ERM, 2016; Wood and ERM, 2019 & 2020);** isoconcentration images are in different units, however, the contours are equivalent (0.05 mg/L=**50 µg/L).**

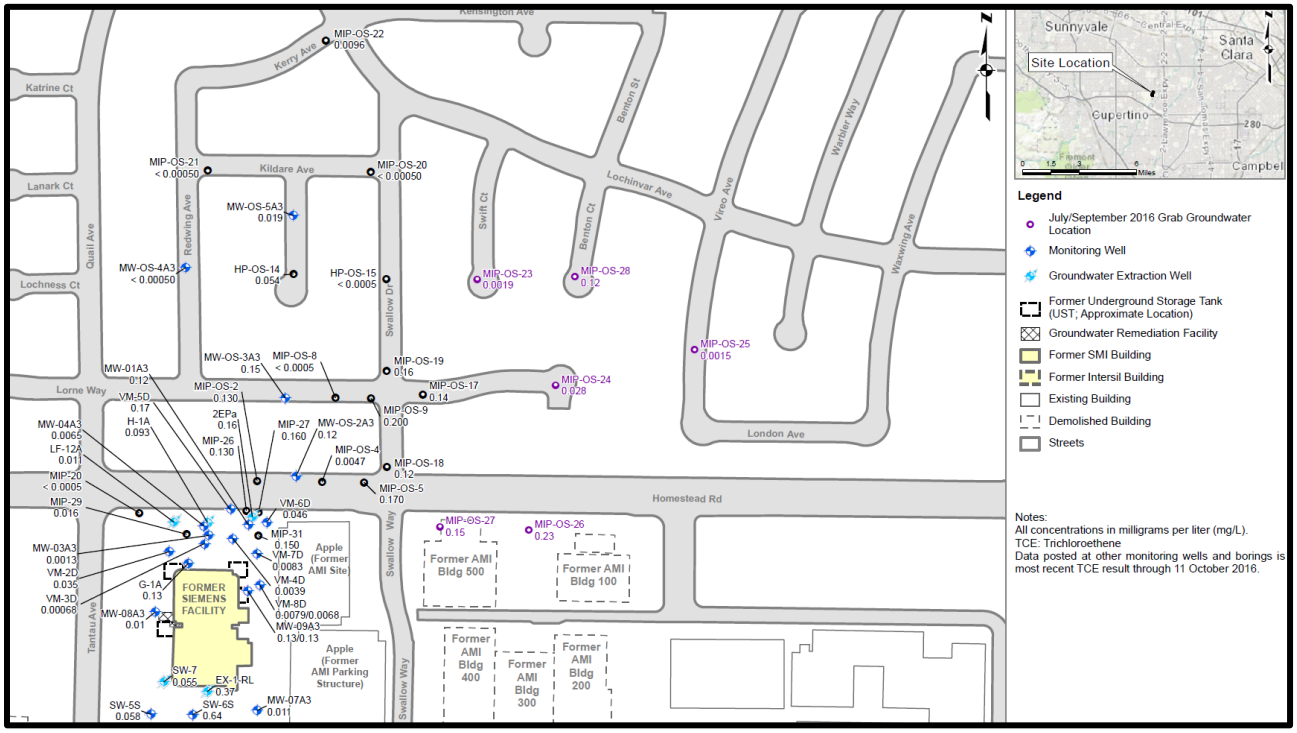


Figure C-3. 2015 **and 2016 Off-Property Study Area Groundwater TCE Concentrations in the A3 Zone** (ERM, 2016c)

A4 Zone

TCE isoconcentration contours for the A4 Zone show that the TCE plume decreased in concentrations in the mid- to downgradient portions of the plume, to the north and northwest, from 2015 to 2019 (Figure C-4). The furthest downgradient well at the northern tip of plume (MW-OS-4A4), shows no trend, with concentrations ranging between 3.6 and 14 µg/L during the current Five-Year Review period. Well S-1A, just upgradient of MW-OS-4A4, shows a significant decreasing trend, indicating capture of the contamination plume downgradient to the north.

Trend analysis for the last 5 years, shows no trend in the source zone area well F-1A, located near the center of the southern border of the former Siemens property on the north edge of Forge Drive. TCE analytical results have varied in F-1A during this Five-Review Period, with concentrations as low as 320 µg/L (October 2014) and as high as 1,300 µg/L (October 2017). TCE concentrations dropped down to 590 µg/L by October 2019. It is unclear if the changes in concentration may be related to changes in the GWET system pumping.

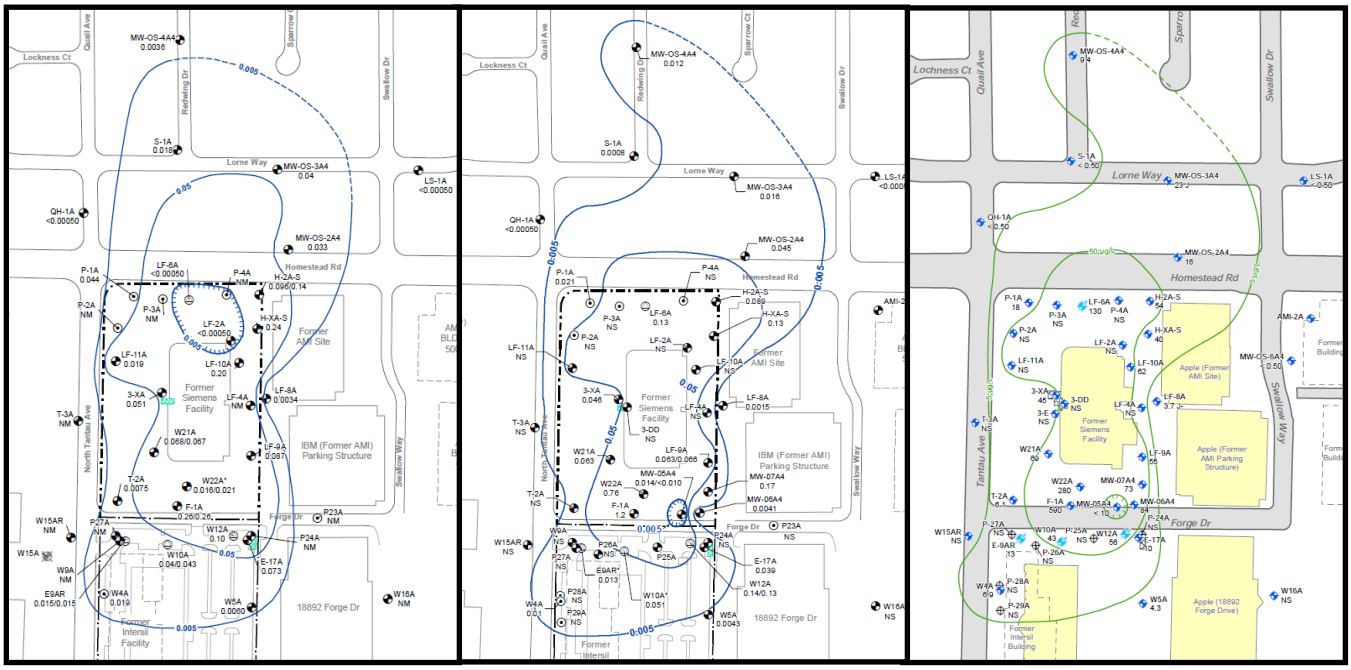


Figure C-4. Comparison A-4 zone. TCE plume 2015 (mg/L), 2018 (mg/L) and 2019 (µg/L) (Left to Right) (AMEC Foster Wheeler and ERM, 2016; Wood and ERM, 2019 & 2020); isoconcentration images are in different units, however, they contours are equivalent (0.05 mg/L=50 µg/L).

B Zone

The lateral extent of the TCE plume and concentrations within the B Zone plume have remained approximately the same in the last five years (Figure C-5). Wells within the plume show decreasing, probably decreasing, stable, and no trend for TCE concentrations. Within the last decade, TCE concentrations at the downgradient end of the B Zone plume in well IQ-1B have typically been non-detect, with minor fluctuations in 2016 to 2018 into single digit concentrations near the MCL cleanup level of 5 µg/L, and estimated concentrations of TCE above the MCL in 2017. Despite the fluctuation in TCE concentration, there is no trend for the TCE concentration in IQ-1B according to the Mann-Kendall, and it should be considered stable below detection limits since it typically has been non-detect over the last decade (Figure C-6).

The highest concentration of TCE is in the B Zone plume is in well H-5B, which decreased in concentration from 160 to 130 µg/L during the Five-Year Review period. Since the groundwater monitoring started in 1987, the TCE concentration in H-5B has declined an order of magnitude from a maximum concentration of 5,080 µg/L to 130 ug/L.

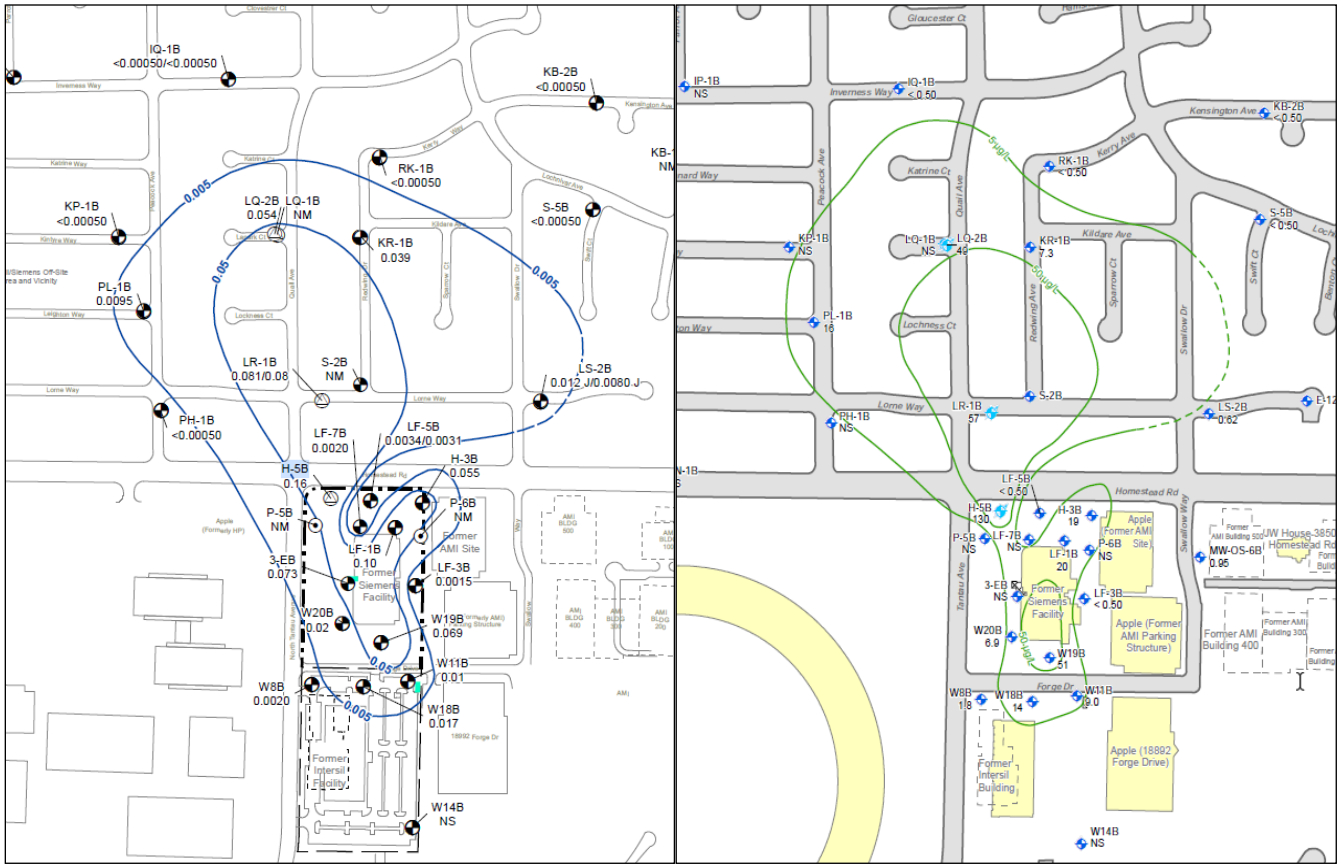


Figure C-5. Comparison **B zone. TCE plume 2015 (mg/L) and 2019 (µg/L) (Left to Right)** (AMEC Foster Wheeler and ERM, 2016; Wood and ERM, 2020); isoconcentration images are in different units, however, they contours are equivalent (0.05mg/L=50 µg/L).

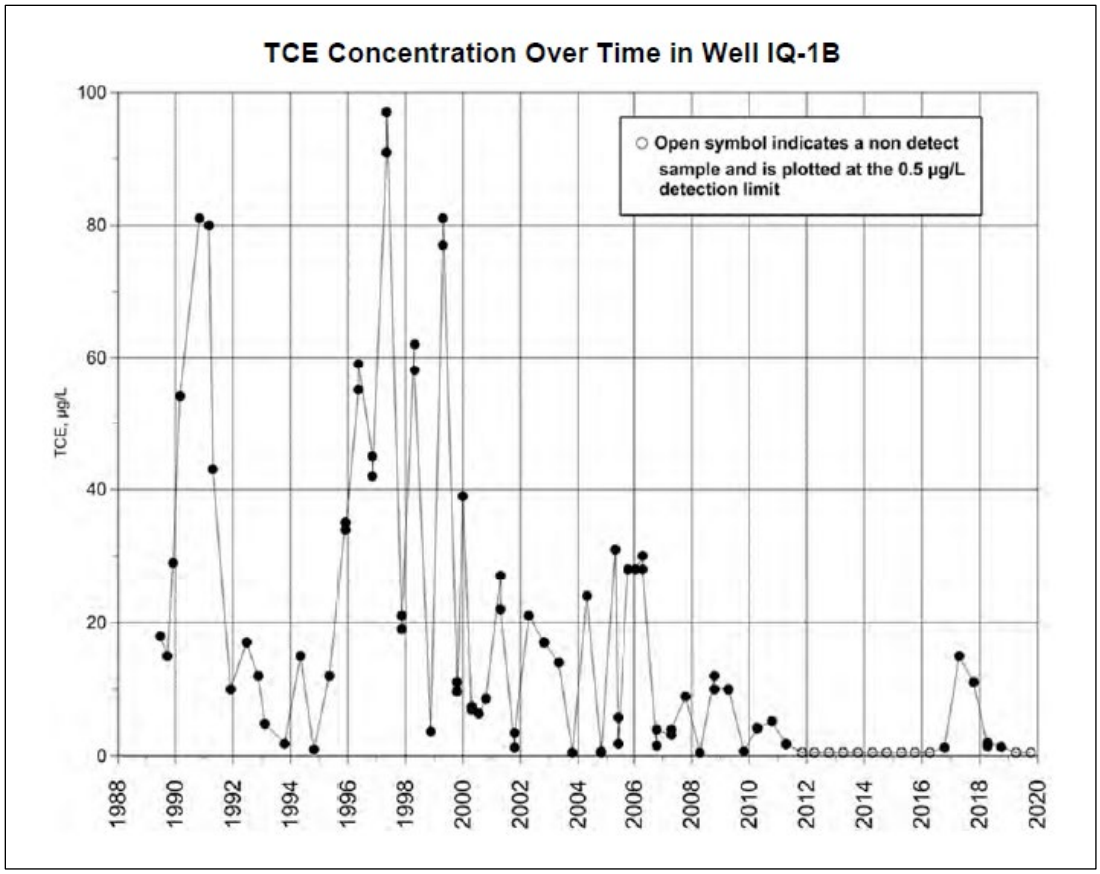


Figure C-6. TCE Concentration **Over Time in Well IQ-1B** (Wood and ERM, 2020)

Table C-1: Summary of VOC Concentrations Jan-Dec 2019 (Wood and ERM, 2020)

Table 3
Summary of VOC Concentrations in Groundwater Monitoring Wells, January through December 2019
Intersil/Siemens Site
Cupertino, California

Well ID	Sample Date	Sample Type	Zone/Depth Interval	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	PCE	Freon 113	Chloroform	Toluene	Vinyl Chloride
Former Intersil Facility													
W18MA	10/01/2019	N	A3	< 0.50	< 0.50	< 0.50	< 0.50	65	< 0.50	1.7	< 1.0	--	< 0.50
W19MA	10/01/2019	N	A3	< 0.50	< 0.50	< 0.50	< 0.50	160	0.21 j	0.87	< 1.0	--	< 0.50
E-17A	10/01/2019	N	A4	< 0.50	0.64	< 0.50	< 0.50	10	< 0.50	3.9	< 1.0	--	1.2
E-9AR	10/01/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	13	< 0.50	6.3	< 1.0	--	< 0.50
W10A	10/01/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	43	< 0.50	6.1	< 1.0	--	< 0.50
W12A	10/01/2019	N	A4	0.39 j	1.1	< 0.50	0.50	56	< 0.50	12	< 1.0	--	< 0.50
W12A	10/01/2019	FD	A4	0.37 j	1.2	< 0.50	0.50	54	< 0.50	10	< 1.0	--	< 0.50
W4A	10/01/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	6.9	< 0.50	0.24 j	< 1.0	--	< 0.50
W5A	10/03/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	4.3	< 0.50	15	< 1.0	--	< 0.50
W11B	10/01/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	9.0	< 0.50	5.7	< 1.0	--	< 0.50
W18B	10/01/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	14	< 0.50	3.3	< 1.0	--	< 0.50
W8B	10/01/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	1.8	< 0.50	< 0.50	< 1.0	--	< 0.50
Former Siemens Facility													
2EP	03/19/2019	N	A1	< 2.5	120	< 2.5	< 2.5	63	< 2.5	< 2.5	< 5.0	< 2.5	43
2EP	05/07/2019	N	A1	2.7	1,100	5.4	< 0.50	14 j	0.23 j	4.6	< 1.0	1.1	50
2EP	07/09/2019	N	A1	0.90	330	4.4	< 0.50	11	< 0.50	0.19 j	< 1.0	0.90	110
2EP	07/09/2019	FD	A1	0.92	330	4.3	< 0.50	11	< 0.50	< 0.50	< 1.0	1.0	110
2EP	10/03/2019	N	A1	< 0.50	18	1.4	< 0.50	1.6	< 0.50	< 0.50	< 1.0	0.45 j	9.0
4BP	03/18/2019	N	A1	< 0.50	0.68	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	8.6	< 0.50
4BP	03/18/2019	FD	A1	< 0.50	0.65	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	8.6	< 0.50
4BP	05/07/2019	N	A1	0.54	20	0.24 j	0.23 j	1.6	< 0.50	< 0.50	< 1.0	2.4	2.9
4BP	07/09/2019	N	A1	< 0.50	2.1	0.20 j	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	0.53	1.4
4BP	10/04/2019	N	A1	< 0.50	2.0	0.49 j	0.80	0.41 j	< 0.50	< 0.50	< 1.0	0.32 j	1.2
4BP	10/04/2019	FD	A1	< 0.50	2.5	0.44 j	0.80	0.43 j	< 0.50	< 0.50	< 1.0	0.38 j	1.3
LF-13A	03/18/2019	N	A1	< 0.50	28	< 0.50	< 0.50	4.9	< 0.50	13	< 1.0	< 0.50	70
LF-13A	05/07/2019	N	A1	< 0.50	12	0.38 j	< 0.50	4.5	< 0.50	14	< 1.0	< 0.50	30
LF-13A	07/10/2019	N	A1	< 0.50	3.9	0.63	< 0.50	5.3	< 0.50	3.1	< 1.0	< 0.50	3.3
LF-13A	10/03/2019	N	A1	< 0.50	2.4	0.74	< 0.50	2.9	< 0.50	0.29 j	< 1.0	0.43 j	1.1
MW-01A1	03/19/2019	N	A1	< 2.5	130	< 2.5	< 2.5	19	< 2.5	< 2.5	< 5.0	< 2.5	12
MW-01A1	05/07/2019	N	A1	4.0	1,200	3.5	< 0.50	290	1.2	11	0.49 j	0.42 j	93
MW-01A1	07/09/2019	N	A1	1.3	300	2.2	< 0.50	110	0.83	3.5	< 1.0	1.0	38
MW-01A1	10/03/2019	N	A1	< 2.5	110	2.4 j	< 2.5	3.2	< 2.5	1.3 j	< 5.0	< 2.5	38
MW-01A1	10/03/2019	FD	A1	< 2.5	110	2.5	< 2.5	3.5	< 2.5	< 2.5	< 5.0	< 2.5	37
MW-02A1	03/19/2019	N	A1	< 0.50	31	0.77	< 0.50	1.4	< 0.50	< 0.50	< 1.0	0.55	9.1
MW-02A1	05/07/2019	N	A1	< 0.50	7.0	1.4	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	1.3	14
MW-02A1	07/09/2019	N	A1	< 0.50	1.7	1.6	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	0.42 j	4.9
MW-02A1	10/04/2019	N	A1	< 0.50 UJ	4.4 J-	1.3 J-	< 0.50 UJ	0.29 J-	< 0.50 UJ	< 0.50 UJ	< 1.0 UJ	0.29 J-	6.0 J-
MW-02A1	10/04/2019	FD	A1	< 0.50 UJ	5.4 J-	1.2 J-	< 0.50 UJ	0.21 J-	< 0.50 UJ	< 0.50 UJ	< 1.0 UJ	0.32 J-	7.1 J-
VM-2S	10/04/2019	N	A1	< 0.50	17	3.6	< 0.50	5.2	< 0.50	< 0.50	< 1.0	< 0.50	23
VM-3S	10/03/2019	N	A1	< 0.50 UJ	2.9 J-	0.49 J-	< 0.50 UJ	0.65 J-	< 0.50 UJ	< 0.50 UJ	< 1.0 UJ	1.7 J-	< 0.50 UJ
VM-4S	10/04/2019	N	A1	< 0.50	1.1	0.55	< 0.50	0.37 j	< 0.50	< 0.50	< 1.0	0.54	0.35 j
VM-5S	03/19/2019	N	A1	< 2.5	110	< 2.5	< 2.5	15	< 2.5	< 2.5	< 5.0	< 2.5	58
VM-5S	05/07/2019	N	A1	1.1	1,000	3.0	< 0.50	19	< 0.50	9.0	< 1.0	< 0.50	120
VM-5S	07/09/2019	N	A1	< 0.50	60	1.5	< 0.50	0.25 j	< 0.50	< 0.50	< 1.0	< 0.50	47
VM-5S	10/03/2019	N	A1	< 0.50	0.66 J+	0.80	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	0.36 j	1.8
VM-6S	03/18/2019	N	A1	< 10	530	< 10	< 10	320	< 10	< 10	< 20	< 10	25
VM-6S	07/10/2019	N	A1	0.49 j	170	1.6	< 0.50	3.1	< 0.50	1.0	< 1.0	< 0.50	83

Table 3
Summary of VOC Concentrations in Groundwater Monitoring Wells, January through December 2019
Intersil/Siemens Site
Cupertino, California

Well ID	Sample Date	Sample Type	Zone/Depth Interval	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	PCE	Freon 113	Chloroform	Toluene	Vinyl Chloride
VM-6S	10/03/2019	N	A1	0.98	210	1.6	< 0.50	14	< 0.50	0.13 j	< 1.0	< 0.50	45
VM-7S	03/18/2019	N	A1	1.2	19	< 0.50	1.1	0.72	< 0.50	< 0.50	< 1.0	< 0.50	0.94
VM-7S	05/07/2019	N	A1	7.5	71	0.28 j	4.5	0.55	< 0.50	< 0.50	< 1.0	< 0.50	7.5
VM-7S	07/09/2019	N	A1	0.30 j	6.1	0.39 j	1.8	0.27 j	< 0.50	< 0.50	< 1.0	0.69	8.7
VM-7S	10/03/2019	N	A1	0.27 j	1.9	0.58	0.51	0.51	< 0.50	< 0.50	< 1.0	3.5	2.7
VM-8S	03/19/2019	N	A1	< 0.50	6.3	0.59	< 0.50	1.6	< 0.50	< 0.50	< 1.0	14	5.9
VM-8S	05/07/2019	N	A1	< 0.50	5.1	0.26 j	< 0.50	0.79	< 0.50	< 0.50	< 1.0	4.1	4.2
VM-8S	07/10/2019	N	A1	< 0.50	7.8	0.47 j	0.22 j	3.2	< 0.50	< 0.50	< 1.0	0.74	10
VM-8S	10/03/2019	N	A1	< 0.50	7.9	0.53	< 0.50	4.7	< 0.50	< 0.50	< 1.0	0.52	10
2D	03/18/2019	N	A2	< 0.50	2.7	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	4.3
2D	05/08/2019	N	A2	< 0.50	2.0	0.19 j	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	3.6
2D	07/09/2019	N	A2	< 0.50	2.0	0.24 j	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	4.6
2D	10/04/2019	N	A2	< 2.5 UJ	0.64 J-	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ	< 5.0 UJ	< 2.5 UJ	< 2.5 R
HMSA-1S	10/04/2019	N	A2	7.6	< 0.50	< 0.50	4.0	74	< 0.50	0.89	< 1.0	< 0.50	< 0.50
2EPa	03/19/2019	N	A3	< 0.50	0.98	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	0.74
2EPa	05/07/2019	N	A3	< 0.50	1.3	< 0.50	< 0.50	2.1	< 0.50	< 0.50	< 1.0	1.0	1.3
2EPa	07/09/2019	N	A3	0.25 j	83	0.35 j	< 0.50	2.2	< 0.50	0.40 j	< 1.0	0.67	12
2EPa	10/03/2019	N	A3	0.29 j	39	0.46 j	< 0.50	2.9	< 0.50	< 0.50	< 1.0	< 0.50	13
EX-1-RL	10/03/2019	N	A3	2.1 j	< 5.0	< 5.0	< 5.0	300	< 5.0	1.3 j	< 10	< 5.0	< 5.0
G-1A	10/04/2019	N	A3	1.9 j	530	2.3 j	< 2.5	300	1.0 j	5.1	< 5.0	< 2.5	13
H-1A	10/09/2019	N	A3	< 5.0	100	< 5.0	< 5.0	40	< 5.0	< 5.0	< 10	< 5.0	3.6 j
HMSA-2S	10/04/2019	N	A3	< 0.50	1.2	< 0.50	< 0.50	0.34 j	< 0.50	< 0.50	< 1.0	0.23 j	< 0.50
LF-12A	10/03/2019	N	A3	< 0.50 UJ	3.0 J	< 0.50 UJ	< 0.50 UJ	12 J	< 0.50 UJ	1.2 J	< 1.0 UJ	< 0.50 UJ	< 0.50 UJ
MW-01A3	10/04/2019	N	A3	< 0.50	0.33 j	< 0.50	< 0.50	0.24 j	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
MW-03A3	10/04/2019	N	A3	1.1	22	< 0.50	< 0.50	13	< 0.50	0.13 j	< 1.0	< 0.50	6.4
MW-04A3	10/04/2019	N	A3	2.7	290	0.91 j	< 1.0	78	< 1.0	1.2	< 2.0	< 1.0	45
MW-05A3	10/04/2019	N	A3	< 0.50	2.7	0.24 j	0.27 j	34	< 0.50	1.6	< 1.0	< 0.50	2.4
MW-06A3	10/04/2019	N	A3	0.58	4.4	< 0.50	0.25 j	40	< 0.50	0.74	< 1.0	< 0.50	0.70
MW-07A3	10/04/2019	N	A3	0.39 j	3.4	< 0.50	< 0.50	23	< 0.50	0.74	< 1.0	< 0.50	0.54
MW-08A3	10/04/2019	N	A3	< 0.50	0.11 j	< 0.50	< 0.50	12	< 0.50	0.59	< 1.0	< 0.50	0.63
MW-09A3	10/04/2019	N	A3	0.42 j	17	0.45 j	< 0.50	3.4	< 0.50	< 0.50	< 1.0	< 0.50	11
SW-5S	10/04/2019	N	A3	< 0.50	6.3	< 0.50	< 0.50	63	0.20 j	0.51	< 1.0	< 0.50	< 0.50
SW-6S	10/04/2019	N	A3	< 10	250	< 10	< 10	220	< 10	< 10	< 20	< 10	73
SW-7	10/01/2019	N	A3	< 0.50	< 0.50	< 0.50	< 0.50	65	< 0.50	0.58	< 1.0	< 0.50	< 0.50
VM-2D	10/04/2019	N	A3	< 0.50	1.9	< 0.50	< 0.50	15	< 0.50	0.72	< 1.0	< 0.50	< 0.50
VM-3D	10/03/2019	N	A3	1.6	6.2	< 0.50	0.92	50	< 0.50	0.38 j	< 1.0	< 0.50	1.2
VM-4D	10/04/2019	N	A3	0.55	30	0.49 j	< 0.50	9.0	< 0.50	< 0.50	< 1.0	< 0.50	25
VM-5D	03/19/2019	N	A3	1.2	13	< 0.50	< 0.50	20	< 0.50	< 0.50	< 1.0	< 0.50	7.5
VM-5D	05/07/2019	N	A3	< 0.50	9.9	0.25 j	< 0.50	1.6	< 0.50	< 0.50	< 1.0	< 0.50	7.5
VM-5D	07/10/2019	N	A3	1.1	12	0.31 j	< 0.50	15	< 0.50	< 0.50	< 1.0	< 0.50	7.7
VM-5D	10/04/2019	N	A3	1.4	13	0.34 j	< 0.50	30	< 0.50	< 0.50	< 1.0	< 0.50	10
VM-5D	10/04/2019	FD	A3	1.5	17	0.30 j	< 0.50	31	< 0.50	< 0.50	< 1.0	< 0.50	12
VM-6D	03/18/2019	N	A3	< 0.50 UJ	36 J-	0.55 J-	< 0.50 UJ	6.2 J-	< 0.50 UJ	< 0.50 R	< 1.0 UJ	< 0.50 UJ	13 J-
VM-6D	05/07/2019	N	A3	0.22 j	29	0.24 j	< 0.50	10	< 0.50	0.25 j	< 1.0	< 0.50	8.0
VM-6D	07/09/2019	N	A3	0.21 j	38	0.43 j	< 0.50	6.1	< 0.50	< 0.50	< 1.0	< 0.50	10
VM-6D	10/03/2019	N	A3	0.63	49	0.98	0.35 j	15	< 0.50	0.36 j	< 1.0	< 0.50	13
VM-7D	10/04/2019	N	A3	< 1.0	12	0.55 j	< 1.0	2.8	< 1.0	< 1.0	< 2.0	0.44 j	13
VM-8D	10/04/2019	N	A3	1.1	0.48 j	< 1.0	0.70 j	150	< 1.0	1.2	< 2.0	< 1.0	< 1.0

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Well ID	Sample Date	Sample Type	Zone/Depth Interval	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	PCE	Freon 113	Chloroform	Toluene	Vinyl Chloride
3-XA	10/04/2019	N	A4	1.1	0.30 j	< 0.50	< 0.50	45	< 0.50	2.0	< 1.0	< 0.50	< 0.50
F-1A	10/09/2019	N	A4	< 10	< 10	< 10	< 10	590	< 10	< 10	< 20	< 10	< 10
H-2A-S	10/04/2019	N	A4	7.5	0.88	< 0.50	4.3	54	< 0.50	1.8	< 1.0	< 0.50	0.40 j
H-2A-S	10/04/2019	FD	A4	8.2	0.87	< 0.50	4.8	59	< 0.50	2.0	< 1.0	< 0.50	0.37 j
H-XA-S	10/04/2019	N	A4	2.7	1.7	0.34 j	2.4	40	< 0.50	1.5	< 1.0	< 0.50	1.7
LF-10A	10/09/2019	N	A4	4.3	48	0.16 j	3.3	62	< 0.50	2.4	< 1.0	0.75	9.7
LF-6A	10/04/2019	N	A4	1.6	0.72	< 0.50	1.2	130	< 0.50	3.7	< 1.0	< 0.50	< 0.50
LF-6A	10/04/2019	FD	A4	< 5.0	< 5.0	< 5.0	< 5.0	130	< 5.0	3.1 j	< 10	< 5.0	< 5.0
LF-8A	10/02/2019	N	A4	0.66 J-	0.46 J-	< 0.50 UJ	0.45 J-	3.7 J-	< 0.50 UJ	0.21 J-	< 1.0 UJ	< 0.50 R	< 0.50 UJ
LF-9A	10/04/2019	N	A4	0.35 j	< 0.50	< 0.50	0.68	55	< 0.50	8.5	< 1.0	< 0.50	< 0.50
MW-05A4	10/04/2019	N	A4	< 10	290	14	< 10	< 10	< 10	< 10	< 20	< 10	33
MW-06A4	10/04/2019	N	A4	0.23 j	1.9	< 0.50	0.45 j	84	< 0.50	7.7	< 1.0	< 0.50	1.2
MW-07A4	10/04/2019	N	A4	1.1	3.6	0.18 j	1.3	73	< 0.50	2.5	< 1.0	< 0.50	< 0.50
MW-07A4	10/04/2019	FD	A4	< 2.5	1.9 j	< 2.5	< 2.5	110	< 2.5	3.1	< 5.0	< 2.5	< 2.5
P-1A	10/04/2019	N	A4	< 0.50	0.51	< 0.50	< 0.50	18	< 0.50	1.5	< 1.0	< 0.50	< 0.50
T-2A	10/04/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	6.1	< 0.50	3.0	< 1.0	< 0.50	< 0.50
W21A	10/04/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	69	< 0.50	7.4	< 1.0	< 0.50	< 0.50
W22A	10/04/2019	N	A4	< 5.0	9.7	< 5.0	< 5.0	280	< 5.0	< 5.0	< 10	< 5.0	6.4
W22A	10/04/2019	FD	A4	< 10	5.7 j	< 10	< 10	990	< 10	2.1 j	< 20	< 10	< 10
H-3B	10/04/2019	N	B	< 0.50	0.36 j	< 0.50	< 0.50	19	< 0.50	2.0	< 1.0	< 0.50	1.2
H-5B	10/03/2019	N	B	< 1.0	< 1.0	< 1.0	< 1.0	130	< 1.0	3.2	< 2.0	< 1.0	< 1.0
LF-1B	10/09/2019	N	B	1.0	46	< 0.50	0.32 j	20	< 0.50	2.9	< 1.0	< 0.50	< 0.50
LF-3B	10/04/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
LF-5B	10/09/2019	N	B	< 0.50	0.94	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	0.29 j	< 0.50
LF-5B	10/09/2019	FD	B	< 0.50	1.4	< 0.50	< 0.50	0.27 j	< 0.50	< 0.50	< 1.0	0.32 j	< 0.50
W19B	10/04/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	51	< 0.50	2.6	< 1.0	< 0.50	< 0.50
W20B	10/09/2019	N	B	0.23 j	< 0.50	< 0.50	< 0.50	6.9	< 0.50	0.51	< 1.0	< 0.50	< 0.50
Intersil/Siemens Off-Site Study Area													
MW-OS-1A1	03/18/2019	N	A1	1.1 J-	13 J-	< 0.50 UJ	0.94 J-	2.2 J-	< 0.50 UJ	2.5 J-	< 1.0 UJ	< 0.50 UJ	< 0.50 UJ
MW-OS-1A1	04/08/2019	N	A1	1.4	18	< 0.50	0.88	3.9	< 0.50	4.1	< 1.0	--	< 0.50
MW-OS-1A1	05/08/2019	N	A1	1.2	13	0.27 j	0.94	2.3	< 0.50	4.3	< 1.0	< 0.50	< 0.50
MW-OS-1A1	07/09/2019	N	A1	0.93	10	< 0.50	0.70	1.8	< 0.50	2.8	< 1.0	< 0.50	< 0.50
MW-OS-1A1	10/04/2019	N	A1	0.45 j	6.1	< 0.50	0.40 j	1.2	< 0.50	1.8	< 1.0	< 0.50	< 0.50
MW-OS-2A1	03/18/2019	N	A1	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 5.0	100	< 2.5
MW-OS-2A1	04/08/2019	N	A1	< 0.50	1.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	--	< 0.50
MW-OS-2A1	05/08/2019	N	A1	< 0.50	2.1	0.27 j	< 0.50	0.93	< 0.50	< 0.50	< 1.0	19	< 0.50
MW-OS-2A1	05/08/2019	FD	A1	< 0.50	2.0	0.19 j	< 0.50	0.82	< 0.50	< 0.50	< 1.0	17	< 0.50
MW-OS-2A1	07/09/2019	N	A1	< 0.50	1.9	0.18 j	< 0.50	0.56	< 0.50	< 0.50	< 1.0	0.58	< 0.50
MW-OS-2A1	10/04/2019	N	A1	< 0.50 UJ	2.6 J-	0.20 J-	< 0.50 UJ	0.35 J-	< 0.50 UJ	< 0.50 UJ	< 1.0 UJ	0.96 J-	< 0.50 UJ
MW-OS-3A1	03/18/2019	N	A1	2.9 J-	4.2 J-	< 0.50 UJ	2.1 J-	12 J-	< 0.50 UJ	0.86 J-	< 1.0 UJ	< 0.50 UJ	< 0.50 UJ
MW-OS-3A1	05/08/2019	N	A1	4.3	4.5	< 0.50	2.8	17	< 0.50	1.8	< 1.0	< 0.50	0.21 j
MW-OS-3A1	07/10/2019	N	A1	5.3	5.7	< 0.50	3.4	15	< 0.50	2.1	< 1.0	1.0	0.71
MW-OS-3A1	10/04/2019	N	A1	4.6	6.0	< 0.50	4.1	21	< 0.50	2.1	< 1.0	0.26 j	0.93
MW-OS-8A1	03/09/2019	N	A1	< 0.50	< 0.50	< 0.50	< 0.50	62	< 0.50	0.26 j	< 1.0	< 0.50	< 0.50
MW-OS-8A1	10/03/2019	N	A1	< 0.50	< 0.50	< 0.50	< 0.50	19	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
MW-OS-9A1	03/09/2019	N	A1	< 0.50	< 0.50	< 0.50	< 0.50	370	0.45 j	0.39 j	< 1.0	< 0.50	< 0.50
MW-OS-9A1	10/03/2019	N	A1	< 5.0	3.0 j	< 5.0	< 5.0	330	< 5.0	< 5.0	< 10	< 5.0	< 5.0
MW-OS-10A1	03/09/2019	N	A1	< 0.50	< 0.50	< 0.50	< 0.50	370	6.5	0.29 j	0.46 j	< 0.50	< 0.50

Table 3
Summary of VOC Concentrations in Groundwater Monitoring Wells, January through December 2019
Intersil/Siemens Site
Cupertino, California

Well ID	Sample Date	Sample Type	Zone/Depth Interval	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	PCE	Freon 113	Chloroform	Toluene	Vinyl Chloride
MW-OS-10A1	10/03/2019	N	A1	< 5.0 UJ	< 5.0 UJ	< 5.0 UJ	< 5.0 UJ	300 J-	6.1 J-	< 5.0 UJ	< 10 UJ	< 5.0 UJ	< 5.0 UJ
MW-OS-11A1	03/09/2019	N	A1	< 0.50	0.15 j	< 0.50	< 0.50	200	6.0	0.94	0.80 j	< 0.50	< 0.50
MW-OS-11A1	10/03/2019	N	A1	< 5.0	< 5.0	< 5.0	< 5.0	140	4.2 j	< 5.0	< 10	< 5.0	< 5.0
MW-OS-12A1	03/09/2019	N	A1	< 0.50	< 0.50	< 0.50	< 0.50	64	1.2	0.27 j	< 1.0	< 0.50	< 0.50
MW-OS-12A1	10/04/2019	N	A1	< 0.50	< 0.50	< 0.50	< 0.50	73	1.2	0.24 j	< 1.0	< 0.50	< 0.50
MW-OS-2A3	03/18/2019	N	A3	1.2 J-	12 J-	< 0.50 UJ	< 0.50 UJ	23 J-	< 0.50 UJ	< 0.50 R	< 1.0 UJ	< 0.50 UJ	13 J-
MW-OS-2A3	05/08/2019	N	A3	1.2	12	0.28 j	< 0.50	25	< 0.50	< 0.50	< 1.0	< 0.50	12
MW-OS-2A3	07/09/2019	N	A3	0.84	9.9	0.16 j	< 0.50	17	< 0.50	< 0.50	< 1.0	< 0.50	12
MW-OS-2A3	10/04/2019	N	A3	1.2	11	0.36 j	< 0.50	33	< 0.50	< 0.50	< 1.0	< 0.50	20
MW-OS-3A3	10/09/2019	N	A3	< 0.50	5.7	< 0.50	0.54	5.6	< 0.50	1.3	< 1.0	< 0.50	< 0.50
MW-OS-4A3	10/02/2019	N	A3	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
MW-OS-5A3	04/08/2019	N	A3	0.50	1.0	< 0.50	< 0.50	6.5	< 0.50	< 0.50	< 1.0	--	< 0.50
MW-OS-5A3	10/02/2019	N	A3	0.44 j	1.2	< 0.50	0.41 j	6.5	< 0.50	0.40 j	< 1.0	< 0.50	< 0.50
MW-OS-6A3	03/09/2019	N	A3	< 0.50	< 0.50	< 0.50	< 0.50	23	< 0.50	1.8	0.45 j	< 0.50	< 0.50
MW-OS-6A3	10/02/2019	N	A3	< 0.50	7.0	< 0.50	< 0.50	2.8	< 0.50	1.5	< 1.0	< 0.50	< 0.50
MW-OS-8A3	03/09/2019	N	A3	0.26 j	0.32 j	< 0.50	0.38 j	120	< 0.50	4.3	< 1.0	0.28 j	< 0.50
MW-OS-8A3	03/09/2019	FD	A3	0.27 j	0.22 j	< 0.50	0.35 j	90	< 0.50	4.5	< 1.0	< 0.50	< 0.50
MW-OS-8A3	10/03/2019	N	A3	0.28 j	< 0.50	< 0.50	0.28 j	90	< 0.50	4.6	< 1.0	< 0.50	< 0.50
MW-OS-10A3	03/09/2019	N	A3	< 0.50	< 0.50	< 0.50	< 0.50	42	< 0.50	1.1	< 1.0	< 0.50	< 0.50
MW-OS-10A3	10/03/2019	N	A3	< 0.50	14 J+	< 0.50	< 0.50	12	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
MW-OS-11A3	03/09/2019	N	A3	< 0.50	< 0.50	< 0.50	< 0.50	49	< 0.50	1.1	< 1.0	< 0.50	< 0.50
MW-OS-11A3	10/03/2019	N	A3	< 0.50	4.1	< 0.50	< 0.50	20	< 0.50	0.56	< 1.0	< 0.50	< 0.50
MW-OS-12A3	03/09/2019	N	A3	< 0.50	0.087 j	< 0.50	< 0.50	350	< 0.50	2.1	0.65 j	0.18 j	< 0.50
MW-OS-12A3	10/04/2019	N	A3	< 1.0	0.39 j	< 1.0	< 1.0	270	< 1.0	2.2	< 2.0	< 1.0	< 1.0
LS-1A	10/09/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.1	< 1.0	< 0.50	< 0.50
MW-OS-2A4	10/02/2019	N	A4	3.9	0.22 J+	< 0.50	2.4	16	< 0.50	1.9	< 1.0	< 0.50	< 0.50
MW-OS-3A4	10/09/2019	N	A4	0.41 J	18 J	< 0.50 UJ	< 0.50 R	23 J	< 0.50 UJ	< 0.50 R	< 1.0 UJ	< 0.50 R	9.5 J
MW-OS-4A4	10/02/2019	N	A4	0.42 j	< 0.50	< 0.50	0.80	9.4	< 0.50	1.5	< 1.0	< 0.50	< 0.50
MW-OS-6A4	03/09/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	0.43 j	< 0.50	4.3	< 1.0	< 0.50	< 0.50
MW-OS-6A4	10/02/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	6.1	< 1.0	< 0.50	< 0.50
QH-1A	10/02/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	0.83	< 0.50
S-1A	10/02/2019	N	A4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
IQ-1B	04/08/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	--	< 0.50
IQ-1B	04/08/2019	FD	B	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	--	< 0.50
IQ-1B	10/09/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
KR-1B	10/02/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	7.3	< 0.50	0.43 j	< 1.0	< 0.50	< 0.50
LQ-2B	04/08/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	56	< 0.50	1.6	< 1.0	--	< 0.50
LQ-2B	10/03/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	49	< 0.50	1.1	< 1.0	< 0.50	< 0.50
LR-1B	04/08/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	66	< 0.50	4.5	< 1.0	--	< 0.50
LR-1B	10/03/2019	N	B	0.44 j	< 0.50	< 0.50	0.36 j	57	< 0.50	3.3	< 1.0	< 0.50	< 0.50
LS-2B	10/09/2019	N	B	0.29 j	0.10 j	< 0.50	< 0.50	0.62	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
KB-2B	10/09/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.3	< 1.0	< 0.50	< 0.50
MW-OS-6B	03/09/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	0.65	< 0.50	4.0	< 1.0	< 0.50	< 0.50
MW-OS-6B	10/02/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	0.95	< 0.50	3.7	< 1.0	< 0.50	< 0.50
PG-1B	10/02/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	0.25 j	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
PL-1B	10/02/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	16	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
RK-1B	10/02/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
S-3B	10/02/2019	N	B	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50

Table 3
Summary of VOC Concentrations in Groundwater Monitoring Wells, January through December 2019
Intersil/Siemens Site
Cupertino, California

Well ID	Sample Date	Sample Type	Zone/Depth Interval	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1-TCA	TCE	PCE	Freon 113	Chloroform	Toluene	Vinyl Chloride
S-5B	10/02/2019	N	B	**0.34 j**	< 0.50	< 0.50	**0.51**	< 0.50	< 0.50	**2.9**	< 1.0	< 0.50	< 0.50
S-5B	10/02/2019	FD	B	**0.98 J**	< 0.50 UJ	< 0.50 UJ	**1.5 J**	< 0.50 UJ	< 0.50 UJ	**7.3 J**	< 1.0 UJ	< 0.50 UJ	< 0.50 UJ
LR-3C	10/02/2019	N	C	< 0.50	< 0.50	< 0.50	< 0.50	**1.3**	< 0.50	**0.96**	< 1.0	< 0.50	< 0.50
RK-2C	10/02/2019	N	C	< 0.50	< 0.50	< 0.50	< 0.50	**0.35 j**	< 0.50	**0.12 j**	< 1.0	< 0.50	< 0.50
S-4C	10/02/2019	N	C	< 0.50	< 0.50	< 0.50	< 0.50	**0.50**	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
S-6C	10/02/2019	N	C	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**0.26 j**	< 0.50	< 1.0	< 0.50	< 0.50
TB	03/09/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
TB	03/18/2019	TB	--	< 0.50 R	< 0.50 R	< 0.50 R	< 0.50 R	< 0.50 R	< 0.50 R	< 0.50 R	< 0.50 R	< 0.50 R	< 0.50 R
TB	03/19/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
TB	04/08/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	--	< 0.50
FB	04/08/2019	FB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	--	< 0.50
TB	05/07/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
TB	05/08/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
TB	07/09/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
TB	07/10/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
TB	10/02/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
TB	10/03/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50
TB	10/09/2019	TB	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	< 0.50	< 0.50

Notes:
< = Compound not detected. Reportable detection limit shown.
-- = Not analyzed or not applicable
Units are in µg/L = micrograms per liter
Bolded values indicate concentrations above the Reportable Detection Limit.
FD = Field Duplicate Sample
N = Normal Environmental Sample
TB = Trip Blank
FB = Field Blank
SW8260B analyses performed by TestAmerica - Pleasanton (San Francsco), CA

Abbreviations:

Abbreviation	Compound
PCE	Tetrachloroethene
cis-1,2-DCE	cis-1,2-Dichloroethene
trans-1,2-DCE	trans-1,2-Dichloroethene
1,1,1-TCA	1,1,1-Trichloroethane
1,1-DCE	1,1-Dichloroethene
Freon 113	Freon 113
TCE	Trichloroethene
VOC	Volatile organic compound

Table C-2: Summary of System Flow Rates Jan-Dec 2019 (Wood and ERM, 2020)

	January–March 2019	April–June 2019	July–September 2019	October–December 2019
Former Intersil Facility Groundwater Extraction and Treatment System[1]				
Average Quarterly Flow Rate (gallons per minute)	31	32	31	29
Total Volume Extracted (gallons)	3,862,700	4,065,600	4,075,300	3,987,200
Estimated VOC Mass Removed (pounds)	2.3	2.1	2.3	1.7
Former Siemens Facility Groundwater Extraction and Treatment System[2]				
Average Quarterly Flow Rate (gallons per minute)	38	62	65	58
Total Volume Extracted (gallons)	4,808,532	7,193,288	7,425,924	6,786,976
Estimated VOC Mass Removed (pounds)[4]	4.1	5.8	5.8	4.9
Off-Site Study Area Groundwater Extraction and Treatment System[3]				
Average Quarterly Flow Rate (gallons per minute)	30	52	52	51
Total Volume Extracted (gallons)	3,816,478	6,054,525	5,899,752	5,999,088
Estimated VOC Mass Removed (pounds)[5]	1.4	3.4	3.0	3.0

Notes:

1. *Former Intersil facility groundwater extraction and treatment system included extraction wells E9AR, W10A, W12A, and W18MA.*
2. *Former Siemens facility groundwater extraction and treatment system includes on-site extraction wells 2EP, 2EPa, H-1A, H-5B, LF-6A, LF-12A, EX-1-RL, and SW-7. Note that 2EP, 2EPa and H-1A were shut down in September/October/November 2014 facilitate the Phase II ERD Pilot Study.*
3. *Off-Site Study Area groundwater extraction system includes wells LR-1B and LQ-2B.*
4. *VOC mass removed from the former Siemens facility is calculated by subtracting the VOC mass removed from the Off-Site Study Area from the total mass removed by the treatment system. The total mass removed by the treatment system is calculated using the influent VOC concentrations and the total combined volume of groundwater extracted from the on-site and off-site extraction wells.*
5. *VOC mass removed from the Off-site Study Area is calculated by using VOC concentrations and groundwater extraction volume for the individual off-site wells.*

Abbreviations:
ERD = enhanced reductive dechlorination
VOC = volatile organic compound

Appendix D: Applicable or Relevant and Appropriate Requirements Assessment

Section 121(d)(1)(A) of the Comprehensive Environmental Response, Compensation, and Liability Act requires that remedial actions at Superfund sites attain (or justify the waiver of) any federal or state environmental standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate requirements (ARARs). Federal ARARs may include requirements promulgated under any federal environmental laws. State ARARs may only include promulgated, enforceable environmental or facility-siting laws of general application that are more stringent or broader in scope than federal requirements and that are identified by the state in a timely manner. ARARs are identified on a site-specific basis from information about the chemicals at the site, the physical characteristics of the site, and other appropriate factors. ARARs include only substantive, not administrative, requirements and pertain only to onsite activities. There are three general categories of ARARs: chemical-specific, location-specific, and action-specific.

Chemical-specific ARARs for groundwater are identified in Section 18 of Board Order No. 90-115 and are referenced in the 1990 ROD. The chemical-specific ARARs are evaluated for this Five-Year Review (Table 11). Achieving drinking water quality is an ARAR for this site.

Table D-1. Summary of Chemical-Specific ARARs

Contaminants of Concern	1990 ROD Cleanup Standard (mg/L)	Basis	Current Regulation (mg/L)		ARARs Changed since 1990 ROD?
			Federal MCL[1]	State MCL[2]	
Trichloroethene (TCE)	0.005	Federal / State	0.005	0.005	No
Tetrachloroethene (PCE)	0.005	Federal / State	0.005	0.005	No
1,1-dichloroethene	0.006	State	0.007	0.006	No
cis-1,2-dichloroethene	0.006	State	0.07	0.006	No
trans-1,2-dichloroethene	0.01	State	0.1	0.01	No
1,1,1-trichloroethane (1,1,1-TCA)	0.2	Federal / State	0.2	0.2	No
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	1.2	State	None	1.2	No
Toluene	0.15[3]	State	1.0	0.15	Yes[3]

Notes:
MCL – Maximum contaminant level
mg/L = milligrams per liter
[1] Federal MCL (*National Primary Drinking Water Regulations: Maximum Contaminant Levels and Maximum Residual Disinfectant Levels*; 40 C.F.R. §§ 141.60 – 141-66). Last amendment October 12, 2018.

[2] California Maximum Contaminant Levels (*Maximum Contaminant Levels – Organic Chemicals*; C.C.R., Title 22, Division 4, Chapter 15, Article 5.5, § 64444). Last amendment December 14, 2017.

[3] The groundwater cleanup standard for toluene was listed in Board Order No. 90-115 as the California State Recommended Drinking Water Action Level at the time of 0.1 mg/L. A footnote provided for this cleanup level stated that "If the State of California proposes or adopts a MCL for toluene, the MCL shall at that time become the cleanup standard to toluene at this Site." The cleanup standard is therefore considered as the current California MCL.

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

- Safe Drinking Water Act, 40 Code of Federal Regulations (C.F.R.) 141
- Clean Air Act, 42 U.S. Code 85
- Clean Water Act, 40 C.F.R. Part 122-125
- Porter-Cologne Water Quality Control Act, Division 7 of the California Water Code
- California Regulations Related to Drinking Water, Title 22 California Code of Regulations (C.C.R.) § 64444
- California Hazardous Waste Control Regulations, Title 22 C.C.R., Division 4.5
- State Water Resources Control Board Resolution 68-16
- Water Quality Control Plan for the San Francisco Bay Basin
- 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

Appendix E: Institutional Control Assessment

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

However, deed restrictions were filed subsequent to the ROD and RWQCB order, and these remain in place for both the former Intersil and former Siemens properties. In 2005, General Electric 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 E-1. Institutional Control Summary Table – Former Intersil Property

Media	Impacted Parcel(s)	Institutional Control Objective	Instrument in Place	Notes
Ground water	Portions of 3 parcels as described in Exhibit A of the 2005 Covenant and Environmental Restriction	Prevent exposure to groundwater contaminants through direct contact or ingestion	Covenant and Environmental Restriction on Property, Article III Section 3.1.i: Prohibits use of groundwater with exception of for existing monitoring or remediation	On property only
Indoor Air		Prevent exposure to soil vapor through indoor air vapor intrusion	Covenant and Environmental Restriction on Property, Article III Section 3.1.g: Prohibits construction of new buildings without evaluating for vapor intrusion and taking mitigation measures as needed	
Soil		Prevent exposure to soil contaminants through direct contact or ingestion	Covenant and Environmental Restriction on Property, Article III Section 3.1.f: Prohibits soil excavation without notifying the Regional Water Board	

Table E-2. Institutional Control Summary Table – Former Siemens Property

Media	Impacted Parcel(s)	Institutional Control Objective	Instrument in Place	Notes
Ground water	Portions of 2 parcels as described in Exhibit A of the 2009 Covenant and Environmental Restriction	Prevent exposure to groundwater contaminants through direct contact or ingestion	Covenant and Environmental Restriction on Property, Article III Section 3.1.h: Prohibits use of groundwater with exception of for existing monitoring or remediation	On property only
Indoor Air		Prevent exposure to soil vapor through indoor air vapor intrusion	Covenant and Environmental Restriction on Property, Article III Section 3.1.f(2): Prohibits construction of new buildings without evaluating for vapor intrusion and taking mitigation measures as needed	
Soil		Prevent exposure to soil contaminants through direct contact or ingestion	Covenant and Environmental Restriction on Property, Article III Section 3.1.f(1): Prohibits soil excavation without notifying the Regional Water Board	

Appendix F: Public Notice

The Cupertino Courier
c/o Bay Area News Group
4 N. 2nd Street, Suite 800
San Jose, CA 95113

2003193

CALIF. NEWSPAPER SVC.
BILLING DEPT.
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LOS ANGELES, CA 90060

PROOF OF PUBLICATION
State of California
County of Santa Clara

FILE NO. 3347776

I am a citizen of the United States. I am over the age of eighteen years and I am not a party to or interested in the above entitled matter. I am the Legal Advertising Clerk of the printer and publisher of the Cupertino Courier, a newspaper published in the English language in the City of Cupertino, County of Santa Clara, State of California.

I declare that the Cupertino Courier is a newspaper of general circulation as defined by the laws of the State of California as determined by court decree dated November 13, 1956, Case Number 100637. Said decree states that the Cupertino Courier is adjudged to be a newspaper of general circulation for the City of Cupertino, County of Santa Clara and State of California. Said order has not been revoked.

I declare that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

03/13/2020

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated: March 13, 2020

Public Notice Advertising Clerk

Legal No. **0006466547**

PUBLIC NOTICE

U.S. EPA BEGINS FIVE-YEAR REVIEW OF INTERSIL INC./SIEMENS COMPONENTS SUPERFUND SITE CLEANUP

The CalEPA California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board) and the U.S. Environmental Protection Agency (EPA) began the sixth Five-Year Review of cleanup actions completed at the Intersil Inc./Siemens Components Superfund site (site) located in Cupertino, CA. The review evaluates whether cleanup work at the site continues to protect human health and the environment.

The site includes two properties at 10900 and 10950 North Tantau Avenue and a groundwater plume that extends to the north. From 1967 to 1995 the two properties were used for semiconductor manufacturing. The semiconductor manufacturing involved the use of various chemicals, which were released to soil and groundwater from localized spills and from leaking underground storage tanks and piping.

Five-Year Review Process:
According to the Superfund law, if a cleanup takes more than five years to complete or hazardous wastes remain on the site, the cleanup will be reviewed every five years. The last Five-Year Review, completed in 2015, found the remedy for the site still protected human health and the environment. It also had a recommendation to improve the performance of the remedy and to improve EPA's understanding of the movement of the contaminated groundwater plume.

The 2020 Five-Year Review report will be finished no later than September 30, 2020 and will be available online and at the information repositories listed below. The Five-Year Review process continues every five years until the site has been cleaned up to allow unrestricted use. The next Five-Year Review will be done in 2025.

As part of the review, the Regional Water Board and EPA will review:
- the movement and breakdown of remaining chemicals at the site;
- the operation of the groundwater treatment systems;
- the application and monitoring of the deed restrictions; and
- the changes in scientific knowledge about the site contaminants.

Cleanup Plan (Remedy):
In the 1980s the Regional Water Board's underground storage tank leak detection program found contamination in the soil on- and off-site. The primary site contaminant of concern is trichloroethene (TCE), which was used as a degreasing solvent. The cleanup included the removal of all tanks and structures and contaminated soils, installation of a subsurface vapor extraction network system to remove TCE vapors from soil, and the operation of a groundwater extraction system with a granular activated carbon filtration system to remove and treat contaminated groundwater. The treated groundwater is discharged under a Regional Water Board permit to Calabazas Creek.

How to Get Involved:
The Regional Water Board and EPA are interested in hearing from the public through interviews how the cleanup has been working. Please contact Roger Papler, Regional Water Board project manager, at roger.papler@waterboards.ca.gov or 510-622-2435. You may also contact Michael Schulman, EPA project manager, at schulman.michael@epa.gov or 415-972-3064. Please contact either Mr. Papler or Mr. Schulman **no later than April 30, 2020**.

For a copy of reports and other site documents, please visit the Regional Water Board's website at https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SL721101218 (Siemens site) and https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SL720641214 (Intersil Inc. site). From each site link, then click on the tab "Site Maps / Documents", and then scroll down to the section: "Site Documents". You can also visit EPA's webpage at http://www.epa.gov/superfund/intersil-siemens. An information repository that contains the site's Administrative Records, project reports, documents, fact sheets and other reference material is located at:

Sunnyvale Public Library
665 West Olive Avenue
Sunnyvale, CA 94086
(408) 730-7300

San Francisco Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2300

CNS-3347776#

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Appendix G: Interview Forms

Site: Former Intersil Facility

EPA ID No: CAC001245344

Interview Type: Email

Location of Visit: N/A

Date: March 4, 2020

Time: N/A

Interviewers

Name	Title	Organization
Benino Mckenna	Geologist	U.S. Army Corps of Engineers
Roger Papler	Engineering Geologist	California Environmental Protection Agency San Francisco Regional Water Quality Control Board
Michael Schulman	NA	U.S. Environmental Protection Agency

Interviewees

Name	Organization	Title	Telephone	Email
Grey Melgard	Wood PLC	Tech. Professional II	510-388-2984	grace.melgard@woodplc.com
Harold Rush	Wood PLC	Associate Engineer	510-663-4234	harold.rush@woodplc.com
Frank Szerdy	Wood PLC	Principal Engineer	510-663-4113	frank.szerdy@woodplc.om

Summary of Conversation

What is your overall impression of the project?

The former Intersil facility (Site) groundwater extraction and treatment system (GWETS) has been operating since November 1987 and is functioning as designed and continues to provide hydraulic containment and some mass removal of VOC-impacted groundwater.

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

Yes, the remedy is functioning as expected and as designed. The GWETS removed an estimated 8.41 pounds of VOCs in 2019 with an extracted groundwater volume of 15.9 million gallons.

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

Yearly average TCE concentrations in wells W12A and W18B have decreased over 90% since system start up, from approximately 300 µg/L to 20 µg/L as described in the annual self-monitoring report for 2019. More information regarding decreasing concentrations of COCs in extraction and monitoring wells can be found in the historic annual groundwater and semiannual GETS reports.

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.

There is no continuous on-site O&M presence, but the site is remotely monitored with an alarm notification system to engineers and technicians and alarms are responded to promptly. On-site visits are conducted on a biweekly basis. The system uptime has exceeded 99 percent on an annual basis.

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 the O&M requirements for the site in the last 5 years. In order to renew the permitted monitoring exemptions for the Site under the old National Pollution Discharge Elimination System permit [(NPDES Permit) Order R2-2012-0012], additional sampling for influent containments was conducted at the beginning of 2019. All results from these additional samples were non-detect and the monitoring exemptions were reinstated for the new NPDES Permit [Order R2-2017-0048] for the Site. Monthly sampling for the effluent stream now includes volatile organic compounds (VOCs), turbidity, and total dissolved solids (TDS).

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

The 2019 annual operating and monitoring costs were approximately $300,000.

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

There have not been any unexpected O&M difficulties or costs at the site.

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

Following the approval of influent monitoring exemptions for the Site under the new NPDES Permit [Order R2-2017-0048], there is an expected estimated $15,000 in annual savings. These savings include laboratory analytical costs, on-site labor charges for sample collection, and off-site labor for monthly data validation and QA/QC evaluation activities.

Intersil conducted groundwater quality investigations of the property from 1983 through 1988, which included the installation and sampling of groundwater monitoring wells. Under the 1990 Water Board Site Cleanup Requirements (SCR) and Record of Decision (ROD), quarterly and semiannual groundwater monitoring was required. The sampling frequency was amended in 1993 to semiannual and annual monitoring and again in 2000 to annual and biennial sampling. No changes to sampling frequency have been made in the last five years.

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

Wood is not aware of any changes in applicable laws and regulations that would impact the protectiveness of the remedy.

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

Since 1986, site remediation has consisted of:

1. A soil vapor extraction (SVE) system operated from May 1988 to August 1993, when it was decommissioned with Water Board approval. The SVE system removed approximately 3,000 pounds of VOCs, based on the findings described in the May 1993 *Proposal to Curtail Soil Vapor Extraction* prepared by Geomatrix Consultants, Inc.
2. Groundwater extraction and treatment has removed approximately 600 pounds of VOCs since system startup and achieved significant reduction in VOC concentrations. Over time, the influent concentrations and mass removal rates have decreased significantly. To provide for a more sustainable remediation approach, we recommend assessing if cessation of the extraction and treatment system and changing the remedy to monitored natural attenuation would also be protective of human health and the environment.

Five-Year Review Interview Record

Site:	Former Siemens Facility	**EPA ID No.:**	CAD053236212
Interview Type:	Email		
Location of Visit:	Cupertino, California (6 February 2020)		
Date:	10-Mar-20		
Time:	N/A		

Interviewers

Name	Title	Organization
Benino McKenna	Geologist	US Army Corp of Engineers
Roger Papler	Engineering Geologist	San Francisco Regional Water Quality Control Board
Michael Schulman	Remedial Project Manager	US Environmental Protection Agency - Region 9

Interviewees

Name	Organization	Title	Telephone	Email
Matt Scheeline	ERM	Senior Geologist	916-396-8528	Matt.Scheeline@erm.com
Heather Balfour	ERM	Principal Engineer	916-296-5132	Heather.Balfour@erm.com

Summary of Conversation

1) What is your overall impression of the project?

The former Siemens facility (Site) groundwater extraction and treatment (GWET) system has been operating since 1986, is functioning as designed, and continues to provide hydraulic containment and mass removal of VOC-impacted groundwater.

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

Yes, the remedy is functioning as expected and as designed. The GWET system removed an estimated 31.4 pounds of VOCs in 2019 with an extracted groundwater volume of 48 million gallons (from the former Siemens facility and the Intersil/Siemens Off-Site Study Area).

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

Monitoring data for TCE concentrations (the primary COC monitored for the site) indicated a stable or decreasing trend for the majority of wells in 2019. More information regarding concentrations of COCs in extraction and monitoring wells is presented in the annual groundwater and semiannual NPDES reports.

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.

There is no continuous on-site O&M presence, but the site is remotely monitored with an alarm notification system to engineers and technicians, and alarms are responded to promptly. On-site visits are typically conducted on a weekly basis. The system uptime is typically approximately 99 percent on an annual basis in recent years.

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

A new National Pollution Discharge Elimination System (NPDES) permit (General Waste Discharge Requirements for the Discharge or Reclamation of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds, Fuel Leaks, Fuel Additives, and Other Related Wastes [VOC and Fuel General Permit] under Order No. R2-2017-0050, NPDES No. CAG912002, which was adopted by the RWQCB on 14 November 2018) became effective on 1 January 2019 and is an amendment of VOC and Fuel General Permit Order R2-2017-0048, which was adopted by the RWQCB on 13 December 2017. Additional sampling for influent contaminants applies. The protectiveness of the remedy is not affected, and NPDES Reports are submitted to RWQCB semiannually.

A new totalizer was installed in November 2018. The totalizer is remote-accessible and provides real-time system flow data. Additional activities include installation of an HMI, replacement of failing equipment (e.g., extraction pumps, transfer pump), and redevelopment of several extraction wells. This has increased the system runtime in recent years.

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

The 2019 annual operating and monitoring costs were approximately $630,000.

7) Have there been unexpected O&M difficulties or costs at the site in the last 5 years? If so, please give details.

The GWET system consists of two 5,000-pound carbon vessels in series. The vessels were upgraded/replaced in December 2014 (lead vessel) and June 2015 (other vessel). Various other upgrades (extraction well redevelopment) and replacement activities (transfer pump, extraction well pumps) have taken place over the past 5 years.

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

Siemens is in the process of optimizing the site remedy and has conducted several phases of pilot testing (using EHC in the NE portion of the site where the GWET system has reduced effectiveness in the shallow zones). Several extraction wells are temporarily shut down while pilot testing is ongoing.

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

ERM is not aware of any changes in applicable laws and regulations that would impact the protectiveness of the remedy.

10) Do you have any comments, suggestions, or recommendations regarding the project?
Groundwater extraction and treatment has removed over 3,700 pounds of VOCs since system startup and achieved significant reduction in VOC concentrations. Over time, the influent concentrations and mass removal rates have decreased. To provide for a more sustainable remediation approach, we recommend assessing if cessation of the extraction and treatment system and changing the remedy to monitored natural attenuation would also be protective of human health and the environment.
Additional Site-Specific Questions

Appendix H: Site Inspection Report and Photos

Trip Report
Intersil-Siemens Superfund Site, Cupertino, California

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1. INTRODUCTION

a. Date of Visit: 6 February 2020

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 Five-Year Review Report.

d. Participants: *List all attendees*

Michael Schulman	USEPA Region 9 Remedial Project Manager (RPM)	(415) 972-3064
Roger Papler	California Regional Water Quality Control Board	(510) 622-2435
Benino McKenna	USACE Seattle District Hydrogeologist	(206) 764-3803
Matt Schoeline	ERM, Project Manager	(916) 999-8939
Harold Rush	Wood Group, Project Manager	(510) 663-4234
Grey Melgard	Wood Group, System Engineer	(510) 663-4192

2. SUMMARY

A site visit to the combined Intersil-Siemens Superfund Site was conducted on 6 February 2020. All participants met on site for preliminary briefings and health and safety check in. The Intersil site is currently comprised of commercial business office buildings and customer parking. The Siemens site is currently comprised of a hospital building and customer parking. The Off property study area consists of a residential neighborhood north of the sites. The Active groundwater extraction and remediation is currently being conducted on all sites. Participants toured the site and observed the remediation compounds, groundwater treatment systems and extraction well networks.

3. DISCUSSION

On 3 February, Ben McKenna flew to San Jose, California to meet with multiple parties for five Year Review Site Visits at multiple sites. On 6 February Ben McKenna met the Intersil-Siemens participants at the site. The weather was sunny and cool (temperature approximately 58° F). The site is accessed from Interstate 280 West and North Wolfe Road and is located approximately 6.5 miles west of downtown San Jose.

Mr. McKenna arrived at the site at 1030 and did a preliminary walk around the site to note the locations of the remediation compounds and existing wells in the parking lots. The other participants arrived at 1100 and met at the Intersil remediation compound. USEPA gave an overview of the objectives of the site visit and the representing consultants provided a health and safety briefing.

After the briefing the team proceeded to inspect the Intersil groundwater extraction and treatment (GWET) system. Extracted groundwater is passed through a bag filtration unit and then treated via two granular activated carbon (GAC) vessels. Treated groundwater is then discharged to

Calabazas Creek under an existing National Pollutant Discharge Elimination System (NPDES) permit. All components of the GWET system were operational and appeared in good condition. After viewing the Intersil GWET system the participants proceeded to inspect the onsite groundwater extraction well network. All existing wells were secured, locked and in good condition.

After inspecting the remedy components for the Intersil Site the participants proceeded to inspect the Siemens GWET system. Extracted groundwater is passed through two 50-micron bag filtration units and then treated via two GAC vessels. Treated groundwater is then discharged to Calabazas Creek under an existing NPDES permit. All components of the GWET system were operational and appeared in good condition. Minor corrosion was noted on the bag filtration units. After viewing the Siemens GWET system the participants proceeded to inspect the onsite groundwater extraction well network. All existing wells were secured, locked and in good condition.

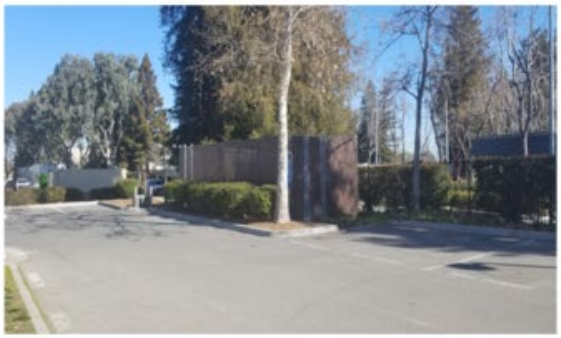
After inspecting the Siemens extraction well network participants walked to the adjacent Off Site Study Area to document the extraction wells for this area. Extraction wells installed along Lorne Way for the Off Site Study Area supply groundwater to the Siemens GWET system. Participants viewed extraction well LR-1B and all observable components appeared in good condition.

After viewing the Off Site Study Area the site inspection was concluded and the representing consultants left the site by 1330. USACE, EPA and Regional Water Board participants elected to remain at the site for additional discussions.

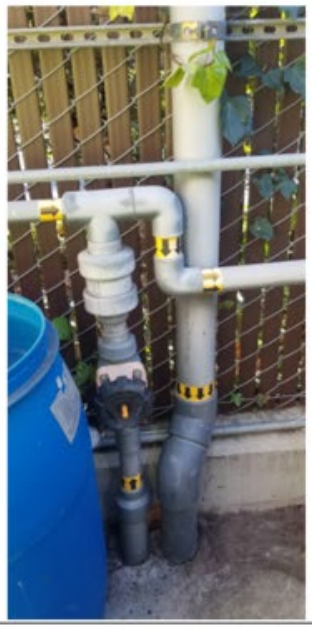
4. ACTIONS

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

Benino McKenna, P.G.
Geologist/Hydrogeologist
CENWS-ENT-G



Intersil GWET Compound



Intersil GWET Influent & Effluent Manifolds

Intersil GWET Influent Bag Filtration Unit

Intersil GWET GAC Vessels

	
Intersil Extraction Well 12A	Intersil Extraction Well 12A Interior
	
Siemens Remediation Compound	Siemens GWET Bag Filtration Units
	
Siemens GWET GAC Vessels	Siemens GWET Influent Sample Port

	
Siemens GWET System Control Panel	Siemens Extraction Well LF-12A
	
Siemens Extraction Well LF-12A Detail	Siemens Extraction Well LR-1B (Off Site Study Area)