Health Consultation

Evaluation of Groundwater Contamination
BSB Diversified/Hexcel Corporation
8202 South 200th Street and 19819 84th Avenue South
Kent, King County, Washington

EPA Facility ID: WAD076655182

August 23, 2006

Prepared by

The Washington State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

DOH 334-010 August 2006

Foreword

The Washington State Department of Health (DOH) has prepared this health consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste. This health consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

The purpose of this health consultation is to identify and prevent harmful human health effects resulting from exposure to hazardous substances in the environment. Health consultations focus on specific health issues so that DOH can respond to requests from concerned residents or agencies for health information on hazardous substances. DOH evaluates sampling data collected from a hazardous waste site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health. The findings in this report are relevant to conditions at the site during the time of this health consultation, and should not necessarily be relied upon if site conditions or land use changes in the future.

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For more information about ATSDR, contact the ATSDR Information Center at 1-888-422-8737 or visit the agency's Web site: www.atsdr.cdc.gov/.

Glossary

Aquifer	An underground formation composed of materials such as sand, soil, or gravel that can store and/or supply groundwater to wells and springs.
Comparison value	Calculated concentration of a substance in air, water, food, or soil that is unlikely to cause harmful (adverse) health effects in exposed people. The CV is used as a screening level during the public health assessment process. Substances found in amounts greater than their CVs might be selected for further evaluation in the public health assessment process.
Contaminant	A substance that is either present in an environment where it does not belong or is present at levels that might cause harmful (adverse) health effects.
Indeterminate public health hazard	The category used in ATSDR's public health assessment documents when a professional judgment about the level of health hazard cannot be made because information critical to such a decision is lacking.
Model Toxics Control Act (MTCA)	The hazardous waste cleanup law for Washington State.
Monitoring wells	Special wells drilled at locations on or off a hazardous waste site so water can be sampled at selected depths and studied to determine the movement of groundwater and the amount, distribution, and type of contaminant.
Parts per billion (ppb)/Parts per million (ppm)	Units commonly used to express low concentrations of contaminants. For example, 1 ounce of trichloroethylene (TCE) in 1 million ounces of water is 1 ppm. 1 ounce of TCE in 1 billion ounces of water is 1 ppb. If one drop of TCE is mixed in a competition size swimming pool, the water will contain about 1 ppb of TCE.
Plume	A volume of a substance that moves from its source to places farther away from the source. Plumes can be described by the volume of air or water they occupy and the direction they move. For example, a plume can be a column of smoke from a chimney or a substance moving with groundwater.
Volatile organic compound (VOC)	Organic compounds that evaporate readily into the air. VOCs include substances such as benzene, toluene, methylene chloride, and methyl chloroform.

Summary and Statement of Issues

The Washington State Department of Health (DOH) conducted this health consultation in response to a Site Hazardous Assessment by the Washington State Department of Ecology (Ecology) regarding shallow and intermediate aquifer contamination discovered beneath the BSB Diversified (BSB) and Hexcel Corporation (Hexcel) properties in Kent, Washington. The purpose of the health consultation is to evaluate whether contaminants found in the soil, and groundwater below the BSB, Carr and Hexcel properties pose a health threat. DOH prepares health consultations under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR).

Background

Chemicals, including volatile organic compounds (VOCs), were discovered in groundwater, soil gas, and soil during environmental investigations performed between 1988 and 2005 at the BSB property Hexcel and Carr properties. The BSB property is located at 8202 South 200th Street in Kent, Washington (Figure 1). It is a 4.2-acre parcel and is currently a fenced, vacant lot, which is bounded by South 200th Street to the north and commercial and industrial properties to the east, west, and south. The Hexcel property is located at 19819 84th Avenue South, immediately north of the BSB property. It is bounded on the south by South 200th Street, on the west by 81st Avenue South, on the north by South 196th Street, and on the east by 84th Avenue South (Figure 1). The Carr property is located at 8311 South 200th Street, immediately east of the BSB property; it is bounded by South 200th Street to the north, 84th Avenue South to the east, and commercial and industrial properties to the South (Figure 1).

The Hytek Finishes Company (Hytek), a division of Criton Technologies operated a metal finishing and electroplating plant on the southwest portion of the current Hexcel property and on the current BSB property. Criton technologies also had an adjacent composite product manufacturing division named Heath Tecna Aerospace Company on the remaining portion of the current Hexcel property and the property currently owned by Carr property at 8311 South 200th Street. The Hytek division ceased treatment, storage, and disposal (TSD) operations regulated under Resource Conservation and Recovery Act (RCRA) in 1985. In 1987, BSB obtained both the Hytek and Heath Tecna Aerospace divisions, including the properties currently owned by BSB, Hexcel, and Carr. In 1988, BSB sold the Heath Tecna Aerospace division and all property but that currently owned by BSB to the Phoenix Washington Corporation. The Phoenix Washington Corporation subsequently changed its name to Heath Tecna Aerospace Company. BSB relocated Hytek's operations off-site and sold the division in 1989, retaining ownership of its current property. By mid 1996, Hexcel had acquired Heath Tecna Aerospace Company, including the current Hexcel and Carr properties, and had assumed all obligations of Heath Tecna regarding the current Hexcel and Carr properties. Carr purchased its current property from Hexcel in August 2003.[1]

The BSB and Hexcel properties are located in a predominantly industrial/commercial area. However, there are some single family homes in the area. One home is located in the northwest quadrant of the intersection of South 200th Street and 81st Avenue South, across from the

northwestern portion of the BSB property (Figure, 2). A few homes are also located across from the Hexcel property, along 84th Avenue South.

Past industrial processes at the site (current Hexcel and Carr properties) generated a wide range of liquid and solid wastes. Liquid wastes from the metal finishing and electroplating processes that occurred in the Hytek building located on the current Hexcel property were collected in floor drains, trenches, and sumps. Hytek liquid waste was also handled in a sanitary drain field and a septic tank for the paint department. Waste handling reportedly occurred on the current BSB property between the mid 1950s, when electroplating operations began on the property north of South 200th Street, and 1985, when Hytek TSD activities ceased. Wastewater generated on the current Hexcel property was transferred by pipe to a holding lagoon on the BSB property south of South 200th Street. Untreated wastewater contained metals, cyanide, and certain volatile and semi-volatile organics.[1] Wastewater treatment occurred in large tanks and the treated wastewater released to unlined settling ponds before it was discharged to the sanitary sewer. The settling pond sludge was periodically placed in nearby drying beds. A drum storage area was also located on the BSB property south of South 200th Street, and raw materials and hazardous wastes awaiting shipment to disposal facilities or recyclers were also stored here. Releases of contaminants into the subsurface during spills occurred on the property during these operations. The hazardous materials stored in the drum storage area contained organic and inorganic compounds. The BSB remedial investigation report indicates that the former drum storage area is the source of VOC contamination on the BSB property. The former holding lagoons, sludge settling lagoons, and sludge drying beds contained mainly inorganic waste materials.[1] Other potential sources of VOC contamination exist on the Hexcel property.

Water supply wells located within one mile radius from the BSB property

BSB conducted a groundwater and surface water beneficial use survey and concluded that "20 likely existing water supply wells were found within a 1-mile radius of the site. None are downgradient of the site, all but one are located east of Highway 167, the location of one is questionable, and none are likely completed in the same hydrogeologic unit as the units investigated and monitored at the site".[1] Ecology confirmed that the nearby community receives its drinking water from the City of Kent.[2] There is a low probability that contaminated groundwater associated with the BSB, Hexcel and Carr properties will be used for water supply in the future. Therefore, the contaminated groundwater below the BSB, Hexcel, and Carr properties does not pose a current or future threat to drinking water. The VOCs in the groundwater, however, pose a potential indoor air health threat to nearby building occupants because the VOCs can volatilize from the contaminated groundwater, move through the overlying unsaturated soil, and enter building indoor air.

Environmental Investigations

Numerous environmental investigations have been conducted at or adjacent to BSB and Hexcel properties to characterize soil, groundwater, and surface water quality in the area. Groundwater samples were collected and analyzed for VOCs and metals from numerous monitoring wells located in the shallow, intermediate, and deep aquifers from 1981 through 2000.[1] Soil samples

were also collected and analyzed for VOCs and metals. Two soil gas surveys were conducted in 1986 on the BSB property. An additional soil gas survey was also conducted in February 2003 at the Hexcel and Carr properties, which are located north and east of BSB property, respectively.

Soil Gas

The 1986 and 2003 soil gas surveys confirmed the presence of VOC hot spot locations in the shallow groundwater. However, the 1986 soil gas data were highly variable and difficult to interpret because of high water table and soil saturation. These conditions apparently limited VOC detections to areas of residual contamination.[3] The purpose of the soil gas 2003 survey was to determine if sources of VOCs exist on Hexcel property at levels that impact the quality of groundwater and indoor air. The 2003 soil gas samples were collected from the unsaturated zone beneath the floor of the Hexcel property (in the southern portion) at 12 locations. The results of this soil gas sampling confirmed the presence of VOCs in soil gas beneath the southern end portion of the Hexcel property. The origin of the VOCs, whether from soil or groundwater, is uncertain.[4] One air sample was reportedly collected from the inside of the former Hytek building. Twelve VOCs were detected in the indoor air sample, including tetrachloroethene (PCE, 5.8 µg/ m^3).[4]

The 1986 soil VOC gas survey results indicated high levels of TCEs, and cis-1,2-DCE at various locations. The intent of the soil gas survey was to evaluate the extent and sources of the VOC groundwater plume on-site and off-site of the area. However, there is some uncertainty regarding the soil gas data quality.[3] Therefore, it is unknown whether the elevated levels of volatile chemicals detected during past soil gas screening investigations posed an indoor air health threat to indoor workers and residents near impacted areas. The 2003 soil gas survey results indicated the presence of high levels of VOCs. The highest VOC concentrations (28,000 to 138,000 µg/m^3) were located in the unsaturated zone beneath the floor the north-central portion of the former Hytek building, located on the south end portion of the Hexcel property. TCE concentrations ranged from 3.8 to 19,000 µg/m^3 in soil gas samples collected beneath the floor of the Hexcel property building. The highest TCE concentration was found in the south end portion of the Hexcel building. The 2003 soil gas collected for the source investigation and characterization at the Hexcel and Carr properties did not detect sources of VOCs that can be responsible for the extent of the groundwater plume. VOCs identified at the Hexcel and Carr properties appear to be of limited extent and high concentration [4] No more soil gas surveys have been conducted off-site to address the indoor air health threat to residents or workers living in the vicinity of the contaminated groundwater.

Soil

Soil sampling was conducted on the BSB property to evaluate the extent of VOCs in unsaturated and saturated soil. Soil VOC samples were collected above and below the water table in the former drum storage area during 1984, 1987, and 2000. During the 1984 and 1987 sampling events, the highest VOC concentrations were located in the former drum storage area. Trichloroethene (TCE) concentrations ranged from 0.002 to 2,000 mg/kg, 1,1,1-trichloroethane (TCA) ranged from 0.002 to 61 mg/kg, trans-1,2-dichloroethene (DCE) ranged from 0.011 to 21

mg/kg, vinyl chloride (VC) ranged from 0.012 to 3.7 mg/kg, methylene chloride ranged from 0.012 to 0.084 mg/kg, toluene ranged from 0.010 to 60 mg/kg, and total xylenes ranged from 0.10 to 40 mg/kg.

The primary VOCs found during the source investigation in 2000 were (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride. Total VOC concentrations above 10 mg/kg were found in the soil in the former drum storage area between depths of 17 and 34 feet below grade. The highest soil laboratory VOC results indicate the potential presence of dense non-aqueous phase liquids (DNAPLs).[1]

Unsaturated, contaminated soil from the former drum storage area was excavated and removed from the site in October and November 1988. This area since has been paved.[1] Former equalizing lagoons, sludge settling lagoons, and sludge drying beds were also excavated, removed and disposed off-site; geotextile was installed to stabilize several areas of the settling basin, and replaced with new soil.[1] Since unsaturated VOC contaminated soils have been removed from the BSB property, they are not considered a future or potential source of indoor air contaminants.

Soil testing was conducted in saturated and/or unsaturated soil on the Hexcel and Carr properties in June of 1987 and March of 2003 to characterize potential sources of VOCs. The 1987 soil samples, collected on the north and south sides of the former metal finishing and electroplating building, detected 11 VOCs, including PCE (0.010 to 0.022 mg/kg), TCE (0.002 to 0.24 mg/kg), and vinyl chloride (0.030 to 0.110 mg/kg).[13] The 2003 unsaturated soil samples at the Hexcel and Carr properties had no detectable TCE, cis-1,2-DCE, or vinyl chloride.[4] Additional soil samples will be collected beneath and around the former metal finishing and electroplating building on the current Hexcel property in a forthcoming focused remedial investigation.[14]

Groundwater

The primary environmental concern at the BSB property and the Hexcel facility is volatilization of VOCs from groundwater. Groundwater samples were collected on a regular basis from most available monitoring wells on the present BSB, and Hexcel properties between 1988 through 2006. Groundwater monitoring at both facilities consists of measuring water levels and collecting groundwater samples for analysis of VOCs, arsenic and water quality indicators parameters (pH, dissolved oxygen, electrical conductivity, oxidation-reduction potential, temperature, and turbidity).

The former drum storage area has been identified as the predominant source of VOCs in the groundwater on the BSB property. The VOC plume extends from the former drum storage area to the northeast, which is the direction of the local groundwater flow. The plume currently covers the northern half of BSB property, the northwest corner of the Carr Property, and the southeastern portion of the Hexcel property (Figures 3 and 4).[1] The continued presence of cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC) beyond the northern boundary of the BSB property (where groundwater is captured by recovery wells HYR-1 and HYR-2, Figures 3 and 4) is currently unexplained, but is likely due to 1) dissolution or desorption into groundwater

of secondary source material north of the current BSB property, 2) undiscovered sources on the Hexcel property, and/or 3) the off-site VOC source southwest of the BSB property.[1]

VOC concentrations in (shallow and intermediate aquifer zone) monitoring wells have decreased since the activation of the groundwater recovery (extraction) system in August 1992. However, residual VOC concentrations (mainly cis-1,2-DCE and vinyl chloride) in groundwater remain in the primary source area of the BSB property and extends through the Hexcel property, and VOC concentrations within the groundwater capture zone at the downgradient property boundary remain above potentially applicable cleanup and levels of health concern.[1]

The October 2004 and April 2005 groundwater data results at the BSB and Hexcel properties indicate that the contaminant plume extends beyond the unsaturated zone source, and high levels of VOCs in the groundwater still remain at the site. The February and October 2004 groundwater sampling data at the BSB property indicate the presence of high levels of VOCs. Cis-1,2-DCE levels ranged from 0.55 to 6500 µg/L, levels of VC ranged from 2.5 to 690 µg/L, and TCE levels ranged from <0.5 to 4,100 µg/L (Figures 3, 4 and 5). Shallow groundwater results at the Hexcel property showed cis-1,2-DCE levels ranged from <0.12 to 780 µg/L, levels of VC ranged from <0.22 to 575 µg/L, but levels of TCE were below the detection limit (Figures 3, 4, and 5). This suggests that there is a potential that VOCs in groundwater can volatilize and vapor can migrate up through the soil and enter nearby residential, commercial, and industrial buildings. Therefore, a potential exposure pathway exists. New soil gas, and possibly indoor air data are needed to evaluate the vapor intrusion pathway associated with impacted areas.

Downgradient area shallow groundwater monitoring well samples were collected in February 2006 in order to determine the presence of off-site VOC contamination. The concentrations of vinyl chloride in monitoring wells east of the 84th Avenue South (wells Ki, Ks, HY-9, HY-12s, HY-13s, HY-14s, and HY-15s) ranged from less than 0.042 in several wells to 1.4 µg/L at HY-13s. The concentrations of cis-1,2-DCE was less than 0.12 µg/L in all wells but HY-13s where it was detected at an estimated concentration of 0.13 µg/L.[5] The downgradient area groundwater investigation (wells located east of 84th Avenue South) results conducted on February 2006 indicate that only one well is impacted by the presence of vinyl chloride. The concentration of this well (1.4 µg/L) exceeds the MTCA Method A clean up standard for groundwater of 0.2 µg/L.

Shallow groundwater from the BSB/Hexcel site discharges to the 196th East Valley Highway Drainage Ditch, which is the closest surface water body to the site and is located about 2,000 feet northeast of the BSB property. The ditch discharges to Springbrook Creek about 2,800 feet northeast of the BSB site. In November 2003, October 2004, and April of 2005, samples were collected in the 196th East Valley Highway Drainage Ditch and analyzed for VOCs; the 2004 sampling event samples were also analyzed for chloride and metals. The VOC levels found in the ditch are below conservative health based screening levels (MTCA Method A cleanup level for groundwater and EPA's maximum contaminant level (MCL)) that are intended to be protective of human health.[6] It is unlikely that someone will drink or swim in this ditch.

Except for the uncertainty in the quality methods mentioned earlier regarding the 1986 soil gas data, appropriate analytical methods were used and adequate quality assurance and quality control measures were followed with regard to sampling procedures, chain-of-custody, laboratory procedures, and data reporting at BSB and Hexcel properties.[1,6,7] The soil gas field testing laboratory protocols conducted in 1986 included testing of known gas standards, sample blanks, replicate (or repeat) samples, duplicate analysis, time series tests, and special concurring testing of groundwater by direct or head space analysis.[3] The 2003 soil gas sampling event used the EPA Method TO-14A using gas chromatography mass spectrometry (GC/MS). No data limitations were found for this sampling event and the results appear to be of good quality.[4,8] The validity of the analyses and the conclusions drawn for this health consultation are determined by the availability and reliability of the referenced information.

Ongoing cleanup actions at BSB and Hexcel properties

The presence of active containment systems at BSB and Hexcel properties have facilitated the removal of VOCs. For instance, during the 2003, 2004, and 2005 monitoring periods, approximately 24.8, 21.6, and 23.2 million gallons of water, respectively was pumped by the recovery system. Approximately 432, 387 and 337 pounds of VOCs were removed from the site in 2003, 2004, and 2005 respectively.[9,10] Operation and monitoring efforts will continue during 2006. No information is available for this sampling year.

Discussion

Extensive environmental investigations conducted at or adjacent to BSB and Hexcel properties indicate that the shallow aquifer and saturated and unsaturated soil in the area has been impacted by the presence of VOCs (primarily trichloroethene (TCE), cis-1,2-dichloro ethene (DCE), and vinyl chloride) from past site operations. TCE was only detected in recovery well HYR-1, which is located in the northeast corner of the former drum storage on the BSB property (Figure, 5). No TCE was detected at other locations on the BSB and Hexcel properties. Figure 6 shows TCE levels have been fairly consistent for the last 9 years. The presence of TCEs in the former drum storage area of the BSB property indicates the likelihood of an upgradient dense non-aqueous phase liquid (DNAPL) source.[1] Other VOCs such as cis-1,2-DCE and VC are present in shallow groundwater in and around the former drum storage area as well as the Hexcel property (Figures 3 and 4).[1] The lateral and vertical extent of VOC contamination in the groundwater has been well characterized on the BSB and Hexcel properties.[1,11] The maximum extent of the VOC plume in shallow groundwater is depicted in the cis-1,2-dichloroethene, vinyl chloride, and TCE plots (Figures 3, 4 and 5).

VOC concentrations in the shallow aquifer zone monitoring wells have decreased significantly since activation of the groundwater recovery system in August 1992 at the BSB and Hexcel properties.[1] April 2005 and October 2004 analytical results for cis-1,2-DCE, and VC in groundwater samples were compared with March 2003 and October 2003 analytical results for the same wells, which led to the following conclusions:

a) Concentrations of cis-1,2-DCE in shallow groundwater samples decreased in all monitoring wells except HYR-2 recovery well located at the BSB property, in which concentrations slightly increased from 18 to 19 µg/L. Hex 8 monitoring well levels (780 µg/L) still remain high at the Hexcel property (Figure, 3).

b) Concentrations of VC in shallow groundwater samples decreased in all monitoring wells except HYR-1 and HYR-2 recovery wells located at the BSB property, in which concentrations increased from 370 to 690 µg/L and 19 to 21 µg/L, respectively. Hex 8 monitoring well levels (575 µg/L) still remain high at the Hexcel property (Figure, 4).

Potential Groundwater to Indoor Air Exposure pathway

The shallow VOC contaminated groundwater poses a potential indoor air exposure pathway to workers and residents in buildings near impacted areas. The VOC contaminated groundwater also poses an inhalation health risk to construction or utility workers who might encounter VOC vapors in excavations affected by the contaminated groundwater.

Currently the groundwater to indoor air pathway is not an exposure pathway at the BSB property because no structures exist on the property. However, there is a potential that future BSB development could include commercial or industrial buildings making this a potential future exposure pathway that would have to be addressed during building construction.

A potential indoor air exposure pathway exists for residents and commercial/industrial facilities located near impacted areas of the BSB, Carr, and Hexcel properties and workers at the Carr and Hexcel facilities. There is currently one residence adjacent to BSB diversified, which is located on the west corner of 81st Avenue South (Figure, 2). About 5 residences are located across from the Hexcel property on the east along 84th Avenue South. A number of commercial/industrial facilities are located north, south, east, and west of the BSB/Hexcel facilities where the VOC contaminated groundwater exists.

Health implications of VOCs in indoor air

Human health risks from exposure to VOCs via the groundwater to indoor air pathway are possible at BSB, Carr and Hexcel properties as well as at nearby businesses and residences. In addition to cancer health effects, long-term exposures to VOCs and related compounds can also pose a risk of non-cancer health effects including damage to the liver, kidneys, blood, and nervous system.[12] However, without adequate data, this pathway cannot be assessed.

Child Health Concerns

Children could potentially be exposed to contaminants migrating from contaminated groundwater into indoor air. Children can be uniquely vulnerable to the hazardous effects of environmental contaminants. When compared to adults, pound for pound of body weight, children drink more water, eat more food, and breathe more air. These facts lead to an increased exposure to contaminants. Additionally, the fetus is highly sensitive to many chemicals,

particularly with respect to potential impacts on childhood development. For these reasons, DOH considers the specific impacts that contaminated groundwater, like that found associated with the BSB, Carr and Hexcel sites, might have on children, as well as other sensitive populations.

Conclusions

The BSB, Carr and Hexcel properties pose an *indeterminate public health hazard* because there is inadequate information to determine whether the groundwater contaminant plume and soil gas levels found on these properties pose a threat to workers and/or residences from migration of VOCs to indoor air.

High concentrations of VOCs have been detected in the shallow aquifer but no current soil gas data has been collected to determine whether the VOC contaminated soil or groundwater poses a threat to indoor air quality.

- People that live or work in the vicinity of the BSB, Carr and Hexcel properties could be exposed to contaminants migrating from the contaminated groundwater into overlying or adjacent buildings through cracks and/or around utility pipes. Construction and utility workers could also be exposed to VOCs migrating from contaminated soil and groundwater during excavation work. Future development at the BSB site could also be affected by the contaminated soil and groundwater.

- Groundwater contamination is not expected to impact drinking water wells within 1 mile of the BSB, Carr and Hexcel properties.

Recommendations

DOH recommends taking the following actions to begin assessing whether the VOC contaminated groundwater poses a health risk to workers and the nearby residential and commercial community:

- Within 60 days, prepare a work plan for assessing whether VOC-contaminated groundwater poses an indoor air health risk. Possible assessment techniques could include vapor intrusion modeling, collection of soil gas samples below buildings and within utility corridors to assess possible exposure pathways, and indoor and outdoor air sampling if significant levels of VOCs are present in soil gas.

Public Health Action Plan

1. Copies of this health consultation will be provided to Ecology, BSB Diversified, Hexcel, Carr Properties, and PES Environmental Inc. Engineering and Environmental Services.

2. DOH is available to review the indoor air sampling work plan, subsequent sampling data, and any reports generated as a result of the above recommendations. DOH will evaluate health risks posed by the site when the future investigation data becomes available.

3. DOH will post this health consultation report on its web site to make it available to the general public.

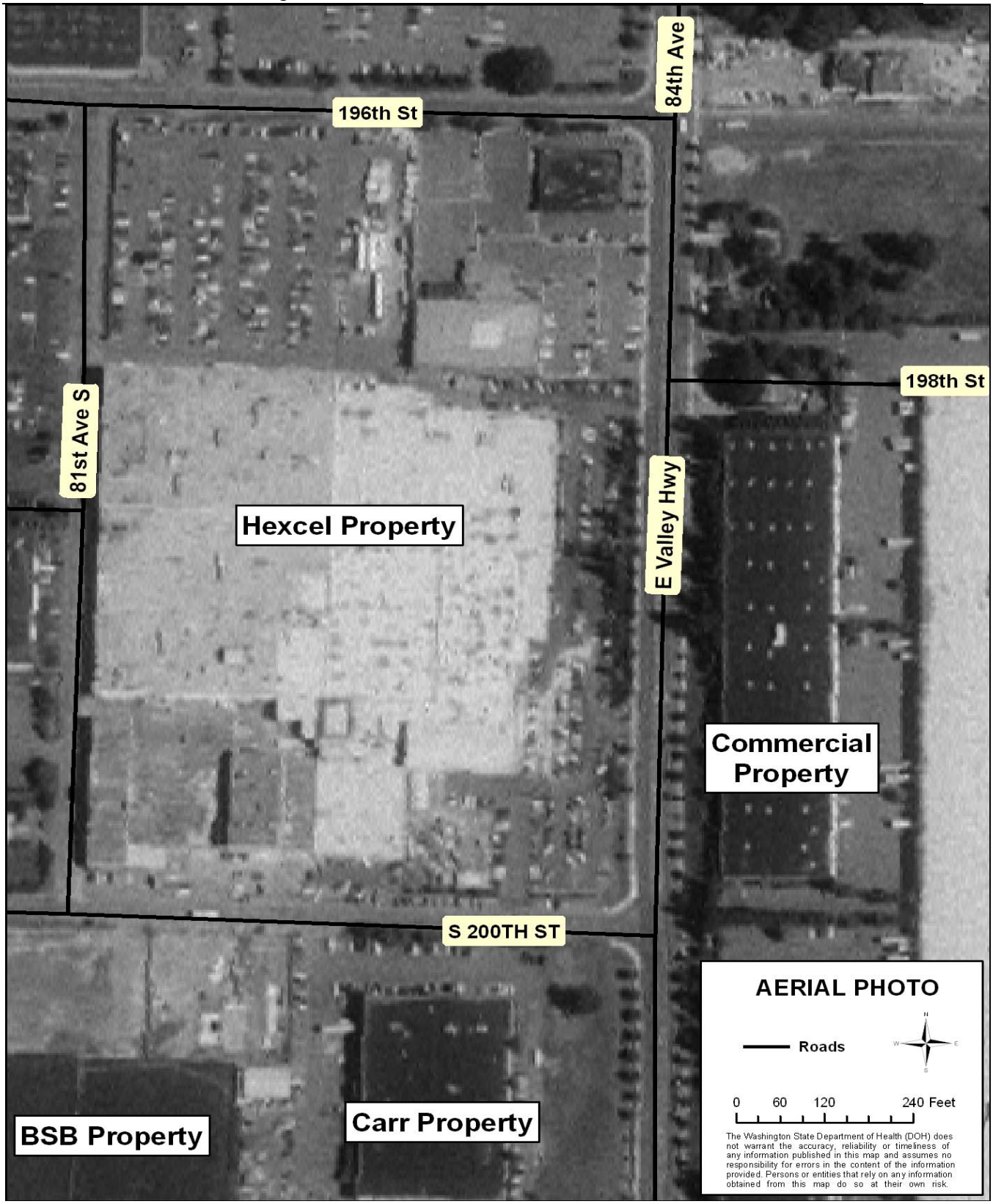

Figure 1. Site location map, BSB Diversified and Hexcel properties, Kent, Washington.

Figure 2. Residential home located in the northwest quadrant of the intersection of South 200th Street and 81st Avenue South, across from the northwestern portion of the BSB property, Kent, Washington.

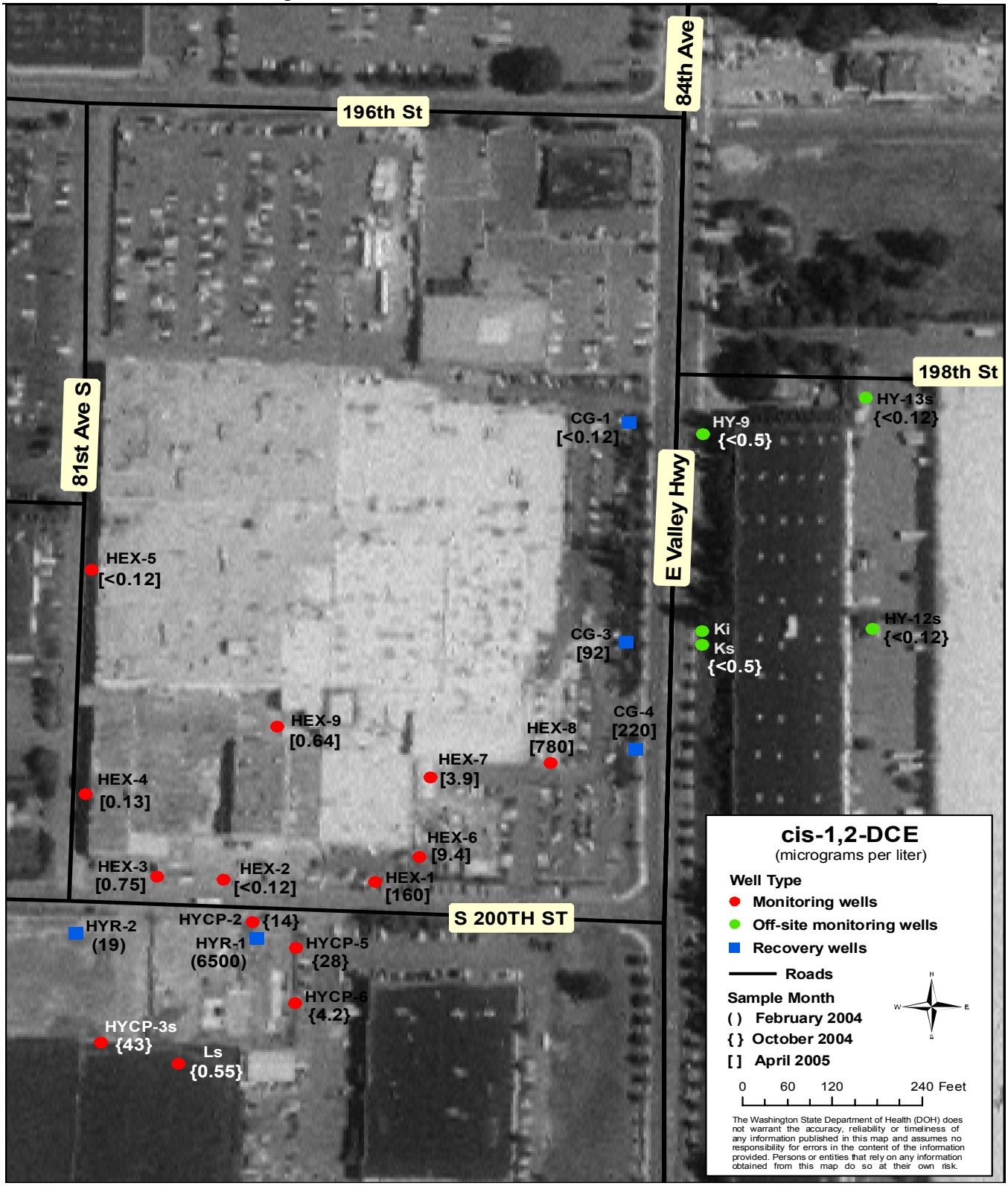

Figure 3. Cis-1,2-dichloroethene concentrations in shallow groundwater at BSB Diversified and Hexcel properties, Kent, Washington. October 2004 and April 2005 monitoring well data were used at BSB and Hexcel properties, respectively.

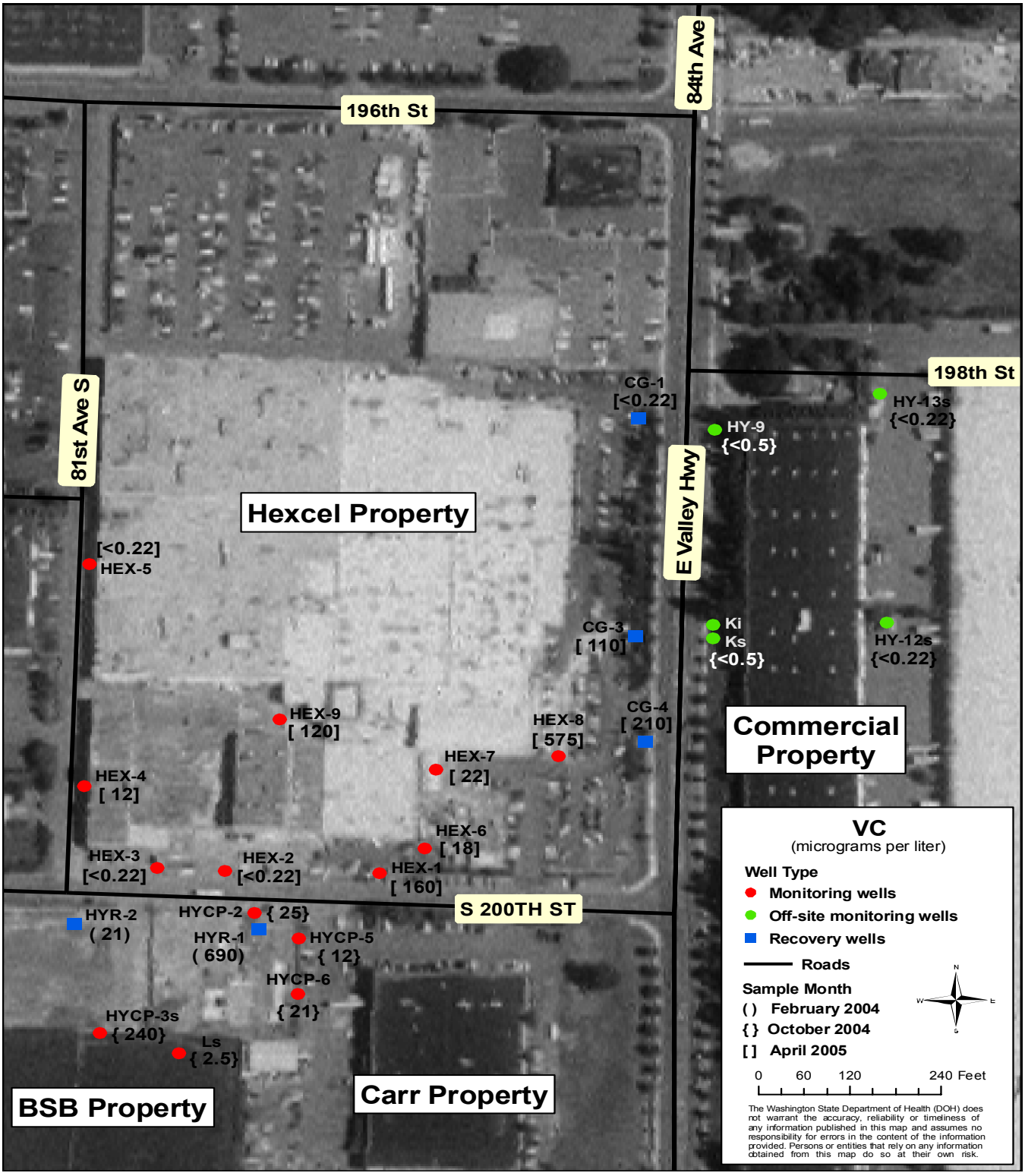

Figure 4. Vinyl chloride concentration in shallow groundwater at BSB Diversified and Hexcel properties, Kent, Washington. October, 2004 and April, 2005 monitoring well data were used at BSB and Hexcel properties, respectively.

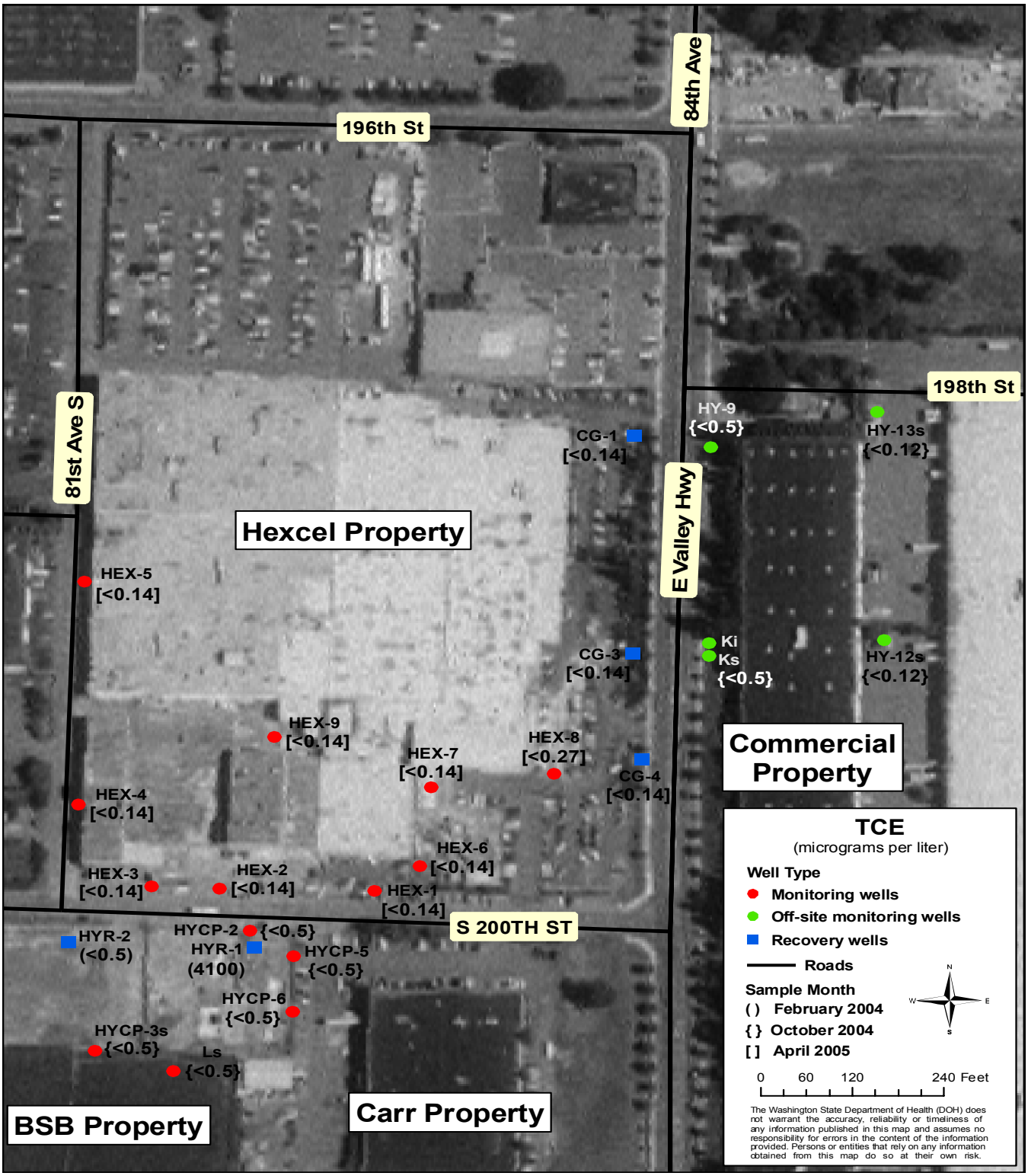

Figure 5. TCE concentration in shallow groundwater at BSB Diversified and Hexcel properties, Kent, Washington. October, 2004 and April, 2005 monitoring well data were used at BSB and Hexcel properties, respectively.

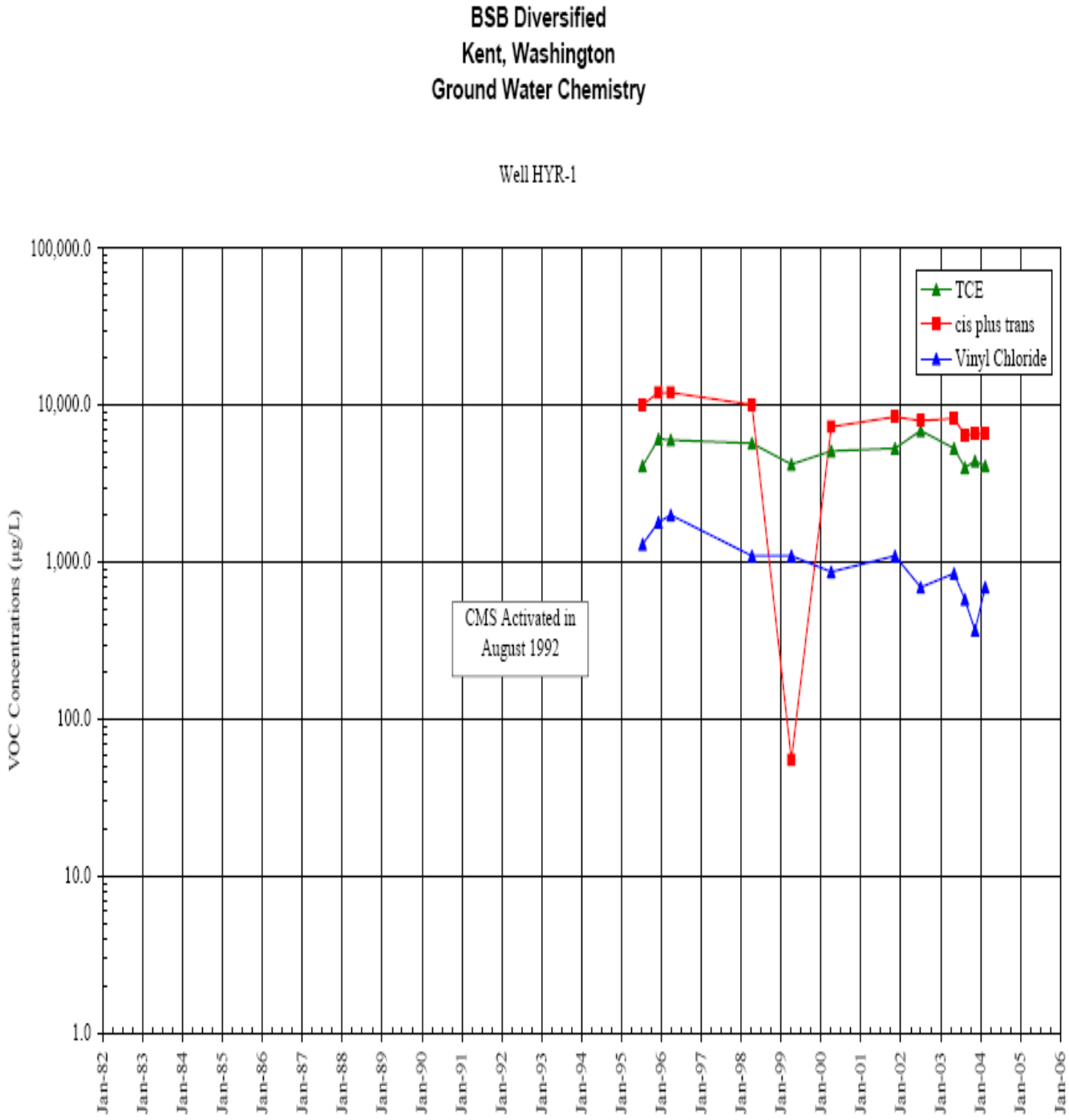

Figure 6. Presence of VOC concentrations (µg/L) in recovery well HYR-1 from 1995 to 2004 at BSB property, Kent, Washington (source BSB Diversified draft remedial investigation (RI) report).[1]

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Certification

This Contaminated Groundwater Evaluation of the BSB diversified site, Kent, Washington Public Health Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodology and procedures existing at the time the health consultation were initiated. Editorial review was completed by the Cooperative Agreement partner.

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Technical Project Officer, CAT, SPAB, DHAC

The Division of Health Assessment and Consultation (DHAC) ATSDR, has reviewed this health consultation and concurs with the findings.

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Team Lead, CAT, SPAB, DHAC, ATSDR