Visualization of Geologic and Contamination Data at the East Multnomah County Groundwater Contamination Site

by

Thomas S. Lowry, M. S.

Robert L. Annear Jr., M. S.

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Department of Civil Engineering

P. O. Box 751
Portland State University
Portland, Oregon 97207-0751

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Website: http://www.ce.pdx.edu/~wellss/pubs/fairview

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Introduction

The Friends of Blue and Fairview Lake (FBFL), a citizen activist group, applied for and received an EPA Technical Assistance Grant (TAG) and contracted with Portland State University faculty and staff to serve as the Technical Advisor and provide a review of the issues related to contamination in East Multnomah County, Portland, Oregon. A description of this site and the remedial and study actions to date are noted at http://www.ce.pdx.edu/~wellss/pubs/fairview.

The contents of this report are designed to satisfy the following agreed upon tasks.

- Create a graphical visualization tool of the aquifer system for the site region
- Generate a graphical visualization of the contaminant plume for the contamination region.

It should be noted that this report is designed to be a snapshot of the current conditions involving the community's ground and surface water systems and the surrounding contamination areas. The intent is for this to be an educational tool for displaying the geology, hydrogeology, and contamination threats to the FBFL water systems. There is no attempt to form conclusions beyond the available data other than to outline possible scenarios that may be inferred from the present conditions. As more data become available and as the site is better understood through further study and observation, some of the observations and conclusions contained herein may change.

Site Location

The groundwater contamination is located in the Cities of Fairview and Gresham in East Multnomah County, Oregon, which is in the eastern part of the Portland metropolitan area (Appendix A - Figure 1). The region of groundwater contamination can be found within a 2.5 square mile region bounded by NE Halsey Blvd. to the south and the Columbia River to the north. The study region is also bounded by NE 178th to the west and by NE 223rd Ave. to the east.

Site History

(Excerpted from PSU Technical Report EWR-5-97)

The Boeing of Portland Site

In 1963, the first manufacturing building was constructed by Electronic Specialty Company (ES Co.) a major subcontractor to The Boeing Company at the time. In 1969 the ES Co. was acquired by International Controls Corporation, which in turn transferred the Portland plant to a Boeing subsidiary, Radiation International, Inc. By 1979 Boeing was the sole owner of the facility property and improvements. In 1979 and 1980, Boeing constructed a wastewater pre-treatment plant, employee recreation areas, and building 85-105, used for parts assembly and storage.

From 1981 to 1984, Boeing utilized a surface impoundment for the temporary storage of rinseate from electroplating and metal finishing operations prior to transfer to the

wastewater treatment plant. Upon closure of the impoundment in 1985, a Detection Monitoring Program was implemented as required by DEQ. Six groundwater-monitoring wells, installed around the perimeter of the impoundment, were monitored from January 1986 to July 1987. Contaminated groundwater was found with high levels of trichloroethylene (TCE), 1,1,1-trichloroethane (TCA), and methyl ethyl ketone (MEK). The monitoring program revealed that other point sources were suspected due to the elevated levels of contaminants detected in upgradient monitoring wells.

The Cascade Corporation Site

The Cascade facility was constructed from 1955 to 1956 for the purpose of manufacturing forklift truck attachments. At the time the facility included a waterfall paint booth, a parts assembly area, a maintenance shop, an assembly area for hydraulic cylinders, two underground storage tanks (USTs) for gasoline storage, and offices. In 1961, Cascade installed a vapor degreaser near the hydraulic assembly area for the purpose of cleaning metal parts with TCE. The degreaser was used continuously until 1975 when it was removed, and TCE usage was discontinued.

Operations expanded to include nickel and chrome electroplating in 1963. Chrome and nickel plating operations were discontinued in 1978, but nickel plating was resumed from 1982 through 1986. In 1966, another facility expansion included carburizing of forklift attachments, which continued until 1985, when carburizing was replaced by purchasing tempered steel.

In 1971, two underground storage tanks were installed to store waste coolant and oils. Cascade installed a cutting bin drainage system in 1979 that collected coolant lubricant drippings from metal cuttings for transfer to the waste coolant tanks. The waste coolant tanks and cutting bin drainage system were decommissioned in 1988 under the supervision of DEQ. At that time, approximately 50 cubic yards of contaminated soil was removed and disposed of at an off site facility. In the fall of the same year Cascade received a Consent Order from DEQ to conduct additional investigations into the nature and extent of contamination.

The Problem

As of the date of this report, no contamination has been found in either the Interlachen community wells or the Portland Water Bureau wellfield. The concern of groundwater contamination at the Boeing and Cascade sites is the possibility of contaminant migration towards the wells and the prospect of contaminating the underlying aquifers used for drinking water purposes. As a well is pumped, it creates a 'cone of depression' in the water surface elevation around the well. This is usually measured as feet of drawdown coupled with the radius of influence for each well. Large scale pumping such as that by the PWB wells (capacity of the PWB well field is approximately 90 million gallons per day) can cause considerable drawdown and thus influence the migration of any contaminant plume in its radius of influence. The general influence on the migration of any contaminant plume is to draw the plume closer to the well.

Current remediation efforts involve several pump and treat systems on the Boeing and Cascade sites, soil extraction and removal, a contamination cutoff trench north of the Cascade site, and pumping wells to control the hydraulic gradient within the plume to help slow the spreading of the contamination. A complete discussion of the remediation efforts to date can be found in PSU Technical Report EWR-5-97.

Chemicals of Concern

(Summarized from PSU Technical Report EWR-5-97)

The following compounds are listed as Chemicals of Concern (COC) for the groundwater contamination at the project site indicating they may pose a threat to the community's health. The original chemicals are chlorinated solvents, such as PCE and TCE, which were used at both sites in vapor degreasers or to clean metal parts. Some chemicals listed are degradation products of PCE and TCE (for more information on the chemicals of concern for the study region, refer to Appendix A of EWR-5-97).

- Tetrachloroethylene (PCE) has been detected in groundwater samples and a few of the surface water samples. Where detected, most exceed the Maximum Concentration Limit (MCL) of 5 ppb.

- Trichloroethylene (TCE) is the major concern and has been detected more often than any other chemical. It can be found in high concentrations (>100ppb) in the groundwater, both on and off the Boeing and Cascade sites.

- Cis-1, 2-dichloroethene (DCE) has been detected in some of the groundwater samples and in the surface water samples including local surface springs.

- Vinyl chloride, the most toxic of the degradation products of PCE and TCE, has been detected in a small percentage of the groundwater samples, frequently above the MCL of 2 ppb, but has not been detected in several local surface springs.

- Chromium, a heavy metal, has been found in groundwater samples and in the soil at the site, but local surface springs do not seem to be impacted.

- Manganese, also a heavy metal, has been found in groundwater samples, and can be found mainly in areas where volatile organic compounds have been detected.

- Other Compounds such as TCA, MEK, Toluene were used extensively on-site, but have not been classified as a COC since these are based only on groundwater concentration and not soil concentrations.

Public Health Concerns

(Excerpted from PSU Technical Report EWR-5-97)

Public health concerns related to the site involve the potential exposure in the area to the chemicals of concern through three pathways. The first is from ingestion of drinking water pumped from aquifers that are contaminated with some of these compounds. The

second pathway involves exposure to the compounds through direct contact with the soil or surface water bodies. Many local residents use the surface water bodies in the area for swimming, fishing and water recreation in general. The third, and most common, pathway is inhalation of the compounds from either volatilization from surface water bodies, through cleanup measures that involve volatilizing the compounds using air strippers, or through the domestic use of contaminated water. Community members have also been concerned about ecological risks to wildlife and aquatic life.

Geologic Visualization

Site Geology

This section outlines briefly the geology at the EMC site and the Interlachen community area. For a thorough discussion on the geology, the reader is referred to EMCON and Landau and Associates, RI/FS, 1995. A more qualitative discussion can be found in PSU Technical Report EWR-5-97.

The Interlachen Community and the entire East Multnomah County area sit at the base of the Cascade Mountain Range at the west end of the Columbia Gorge, just south of the Columbia River. The geology is described by a series of flood plain deposits with each unit ranging from 0 to 600 feet thick directly below the area. All of the sediments and sedimentary rocks underlying the Fairview Lake area are fluvial deposits of the Columbia River, deposited on top of the Columbia River Basalt group lava flows over the past 15 million years. Sequencing the layers from top to bottom are the Unconsolidated Sedimentary Aquifer (USA), the Troutdale Gravel Aquifer (TGA), the Confining Unit 1 (CU1), the Troutdale Sandstone Aquifer (TSA), the Confining Unit 2 (CU2), the Sand and Gravel Aquifer (SGA), and the Columbia River Basalts (CRB). Another important unit, which is not part of the top to bottom sequence (it exists laterally to the layered sequence), is the Blue Lake Aquifer (BLA). The order and composition of the sequence is very important in shaping the hydrodynamics of the aquifer system. A brief description of each unit is given below.

Proceeding downward through the sequence of sediment layers, the USA, directly above the TGA, is mainly unsaturated and is mostly a conduit for rainfall infiltration to the lower aquifers. It consists mainly of fine, overbank deposits of sandy silts. The TGA, which is comprised mainly of uncemented gravels, is the first significant aquifer in the sequence and is separated from the TSA by the CU1. The CU1 consists mainly of fine overbank deposits and is considered a leaky aquitard. A leaky aquitard has a much lower ability to transmit water than the layers above and below it, but it is not completely impermeable. The TSA, directly below the CU1, comprises two distinct layers, both of which are fairly permeable. The lower third of the unit is dominantly conglomerate and the upper two-thirds is mainly vitric (glass-like) sandstone. Below the TSA is the CU2 which is very similar in character to the CU1 and results from the same processes (overbank deposits) as the CU1. The SGA is the oldest and deepest aquifer in the sequence and was created from channel deposits from the Columbia River. It consists mainly of sands and gravels with the upper portion tending more towards vitric sandstone. It is highly permeable and is used extensively for water supply purposes. The

BLA is not considered part of the sequence since it lies in a lateral path to the layered sediments, cutting through the investigation area almost directly below the Interlachen community (Appendix A - Figure 2). It is considered a young deposit and is the result of cataclysmic floods as the glacial Lake Missoula in Northeast Washington, Northern Idaho, and Western Montana was filled and then quickly and catastrophically drained in response to advancing and retreating ice movements from the last ice age. Because it consists of high-energy flood deposits, the BLA is largely devoid of finer grained materials and thus is the most permeable aquifer in the area. Like the SGA, it is used extensively for water supply purposes.

Methodology

Characterization of groundwater contamination sites is extremely difficult since the only data available are those from point measurements at the drilling sites of wells and piezometers. Even a site as well studied as the EMC site, which has hundreds of wells in the area, has data that are sparse when compared to the overall extent of the aquifer system. Data are concentrated mainly on the Boeing and Cascade sites, allowing for good geologic representation on those sites. Away from the sites, data become sparser and thus the geologic representation is subject to more interpolation error. The complicated geology below the site adds to the complexity of plume migration.

The methodology was to derive the geology directly from well-borehole data by using the data to define contact elevations between each geologic unit (Appendix A - Figure 3). No data from gamma logs were included. Areas with a high density of wells are better characterized than those with a lower density of wells. In addition, the upper layers have more data points since not all wells penetrate all layers in the sequence, thus the upper layers will have a more accurate characterization than the lower layers. The Department of Defense Groundwater Modeling System (GMS) is used to assist in performing the geologic characterization.

Once the elevations for all the contacts are known, a triangular irregular network (TIN) is created by linearly interpolating between each like contact point from each borehole. Each TIN is a surface representation of the top of each geologic unit (Appendix A - Figure 4). TIN's are created in this manner for each geologic unit in sequence, including a TIN for the ground surface elevations. Since none of the wells used here completely penetrate the SGA, an assumed bottom elevation of -600 ft MSL is used for the bottom boundary of the geologic representation. In order to create cross-sections, three-dimensional representations of each geologic unit are constructed by extruding the space between successive TINS (Appendix A - Figure 5). With the solid representation of each geologic unit, cross-sections can be made to view the geology at any point.

Data Requirements

For each borehole used in the characterization, an x and y coordinate (state plane coordinates), a ground elevation, and a depth below the surface for each geologic contact is needed. An MS ACCESS database was created to help with the organization of the vast amounts of data and is coupled with the concentration data as described below. Many data points were inaccurate (i.e., top of the SGA is above the ground level surface)

or indefinable (the geology was poorly defined). The latter problem is especially true of wells that were drilled prior to agreed upon definitions of the geology of the basin.

Approximately two-thirds of the borehole data is from Appendix E of EMCON and Landau and Associates (1995) while the rest was pieced together from many different sources. The final form of the collected geologic data are shown in Appendix B. Some errors were found and corrected when they could be verified with other reports or drillers logs. No attempt is made to interpret poorly defined units in the drillers logs. Wells whose geology could not be readily interpreted were excluded from the database. In some cases, geology data are available for certain wells that have no x and y coordinate noted (many drillers logs use a street address for example). For wells such as this, well coordinates are found by placing wells on a map in GMS and noting the x and y coordinate (digitizing). For this reason, and due to the scale of the map used, some wells may be slightly off from their actual coordinates. This was done for about 30 of the 325 wells in the plume area. It is thought that for this visualization project, the relative position of those wells are close enough as to not cause discernable errors in the geologic or plume representations.

Results

The geologic representations agree well with other models and interpretations. The EMC site is very near a geologic 'high', where the layered sequence is arched upward from all directions (Figure 7 through Figure 11). This high area causes a groundwater mound, which retards the plume from migrating in that direction. Consequently, contaminant migration from the Cascade and Boeing sites is mainly north to northeast (Landau and Associates, Prowell Environmental, Pegasus Geoscience, 1998), with some migration approximately eastward around the groundwater mound. Flow direction will vary depending upon the time of the year and the pumping stresses induced in the aquifers.

The Cascade site sits on a thin layer of overbank deposits (USA) on top of the TGA at the edge of where the TGA and CU1 terminate (Figure 11). There is concern for contaminate migration from the Cascade site moving northward and 'spilling over' into the lower aquifers at the point where the CU1 is no longer present to protect the TSA. This line, where the TGA is no longer present, is the approximate location of the contaminate collection trench installed to help control this problem. South of the Cascade site, the CU1 is thick enough to effectively isolate the TGA and the TSA from one another. It is where the CU1 and eventually the TGA terminate that causes the numerous springs along the Columbia flood scarp on the north side of I-84.

Figure 7 through Figure 10 are cross sections directly through the Boeing site at different angles. The Boeing site sits on a thin layer of the USA, which sits directly on top of the CU1. The CU1 is thin here and does not provide much protection from downward contaminant migration to the TSA. The TSA is known to be contaminated directly below the Boeing site, with TCE concentrations ranging from 0 to about 140 parts per billion (ppb - EMCON and Landau and Associates, RI/FS, 1995). Like the Cascade site, concern for offsite migration via regional flow or pumping induced gradients is high. As contaminant generally moves towards the Columbia River in response to the regional

flow from the effects of pumping, contaminated water from the TSA may enter the SGA through a 'hole' in the CU2. Elsewhere, the CU2 is thick enough to protect the SGA from contaminant migration downward from the TSA. It has been shown that in the area of the CU2 hole, the upper SGA is hydraulically connected to the TSA, showing the same magnitude and response to pumping stresses as the TSA (Landau and Associates, Prowell Environmental, Pegasus Geoscience, 1998). Away from the CU2 hole, the SGA acts more independently from the TSA indicating the hydraulic connection is diminished as the CU2 thickens.

Contaminant Plume Visualization

Visualization is different from modeling in that visualization has no ability to factor in the effects of geology on contaminant plume migration. Any attempt to interpolate between data points will not allow for the discontinuities and effects caused by different layering in the geological sequence. Approximately 3000 concentration data points exist over time and space. This report looks only at TCE concentrations since TCE is the only contaminant to be found so far in the SGA (Landau and Associates, Prowell Environmental, Pegasus Geoscience, 1998).

Methodology

Update reports and databases supplied by DEQ (see references) were used for the contamination data. The maximum concentration from each well sampled from 1996 to the present was used to try and give a better look at the worst case, present scenario of the contaminant plume. Originally, the intent was to visualize a three-dimensional plume, showing both the lateral and vertical extent of the contaminant migration. Since three-dimensional interpolation cannot take into account the effects of the varying geology as mentioned above, it was decided that the contaminant plume would be visualized as a two-dimensional plume in each aquifer.

It was also hoped that the contaminant plume could be shown as it moved over time, however, as sampling frequencies, and the spatial collection of the data changed over time, the coverage area of available data changed also. This produced plumes that were unrealistic, thus using the maximum value for each well from 1996 to the present was the adopted strategy as discussed above.

Ordinary Kriging was used for the two-dimensional interpolation of the plume.

Data Requirements

Periodic data reports are issued (usually quarterly) which list the results from the previous periods sampling efforts. Depending upon the source of the report, well names and numbers vary so the consistent matching of data for a single well over time is difficult. To help with this, a unique well number was assigned to each well. Where possible, the PMX number was used. If this was not available, then a number greater than 7000 and less than 8000 was assigned. This set of numbers was used to prevent confusion with existing PMX numbers or numbering from the USGS system. The concentration data is kept in a separate database from the geology data, which was also

assigned the same unique well numbers. This allowed flexibility in the query and use of the data.

Because of the large number of data points (>3000), not each data point can be explicitly plotted. Instead, simplifying assumptions needed to be made to reduce the number of data points used in the visualization. To construct the two-dimensional plume for each aquifer (see *results* section), the maximum concentration 'hit' in each well was used from the period of January 1, 1996 to May 31, 1998. Also, to prevent interpolation from 'rounding' the plume south of the Cascade site, interpolation boundaries were set to truncate the plume along an east/west line just south of the Cascade site. For the time series plots, the average concentration in each well is used for each year plotted.

Results

Figure 12 and Figure 13 show the contaminant plume in the TSA and the SGA respectively. Not surprisingly, the extent of the contamination in the TSA is much greater than in the SGA due to the fact that the TSA is a shallower aquifer and the CU2 provides a protective layer to help prevent contaminant migration from the TSA to the SGA. The sources of contamination into the SGA are most likely: 1) downward vertical migration from the TSA through the hole in the CU2, and 2) leakage down existing boreholes and well casings from contaminated units above (Landau and Associates, Prowell Environmental, Pegasus Geoscience, 1998).

The contamination data exist as a three dimensional scatter point system meaning each data point has an x, y, z, and concentration attribute associated with it. Projections of the scatter data onto selected cross sections are shown in Figure 14 and Figure 15. From these plots, the extent and magnitude of the concentration plume can be easily seen.

Figure 16 through Figure 27 in Appendix A shows the time averaged concentration in each well sampled for each year from 1986 to 1997. From these plots, the spatial change in sampling can be seen as well as growth in the number of sampling points. These data are shown in tabular form in Appendix C. In most cases, each point is sampled many times over the course of a year.

It is not possible to accurately represent a three dimensional plume on a two-dimensional surface. Different projections can give different views, none of which are entirely accurate. To help overcome this, the three-dimensional data was converted to a two-dimensional image. This was done by ordering the data first on its X coordinate and then on its Y coordinate. The distance between each data point was calculated and then used as the X coordinate in the two dimensional representation. This is shown in Appendix A, Figure 28 and Figure 29. Figure 28 shows the order and the line of data used and Figure 29 shows each data point, the boreholes, and the stratigraphy. Figure 30 and Figure 31 show close ups of the left-hand side and the right-hand side respectively, of Figure 29. It can be seen that the majority of the sampling points are in the TSA, with only a small percentage in the SGA. Also note that the lower SGA is shown to be below detection limits for TCE.

Conclusion

The intent of this visualization project is to provide a graphical and visual tool for the education and interpretation of the conditions at the EMC site and the surrounding vicinity. Any conclusions or interpretations are stated to help in the overall understanding of the dynamics at the site and may change as future data and work become available. The complicated geology makes direct interpolation of the data impossible since direct interpolation will not allow for the effects of geology on the plume shape. Reconstructing the history and modeling the plume migration given the known geology would reproduce the actual three-dimensional shape of the plume better than direct visualization of the data.

Direct visualization of the data is useful however, in the education and understanding of the site. From this visualization we can see:

1) The importance of site geology on plume dynamics and plume cleanup.

2) Data show that most of the contamination is contained within the TSA, with only a few 'hits' located in the SGA.

3) The extent of the plume appears to agree with previous interpretations.

4) The majority of the collected data is in the TSA and TGA, with relatively less data in the SGA.

Appendix A

Figures and Plots

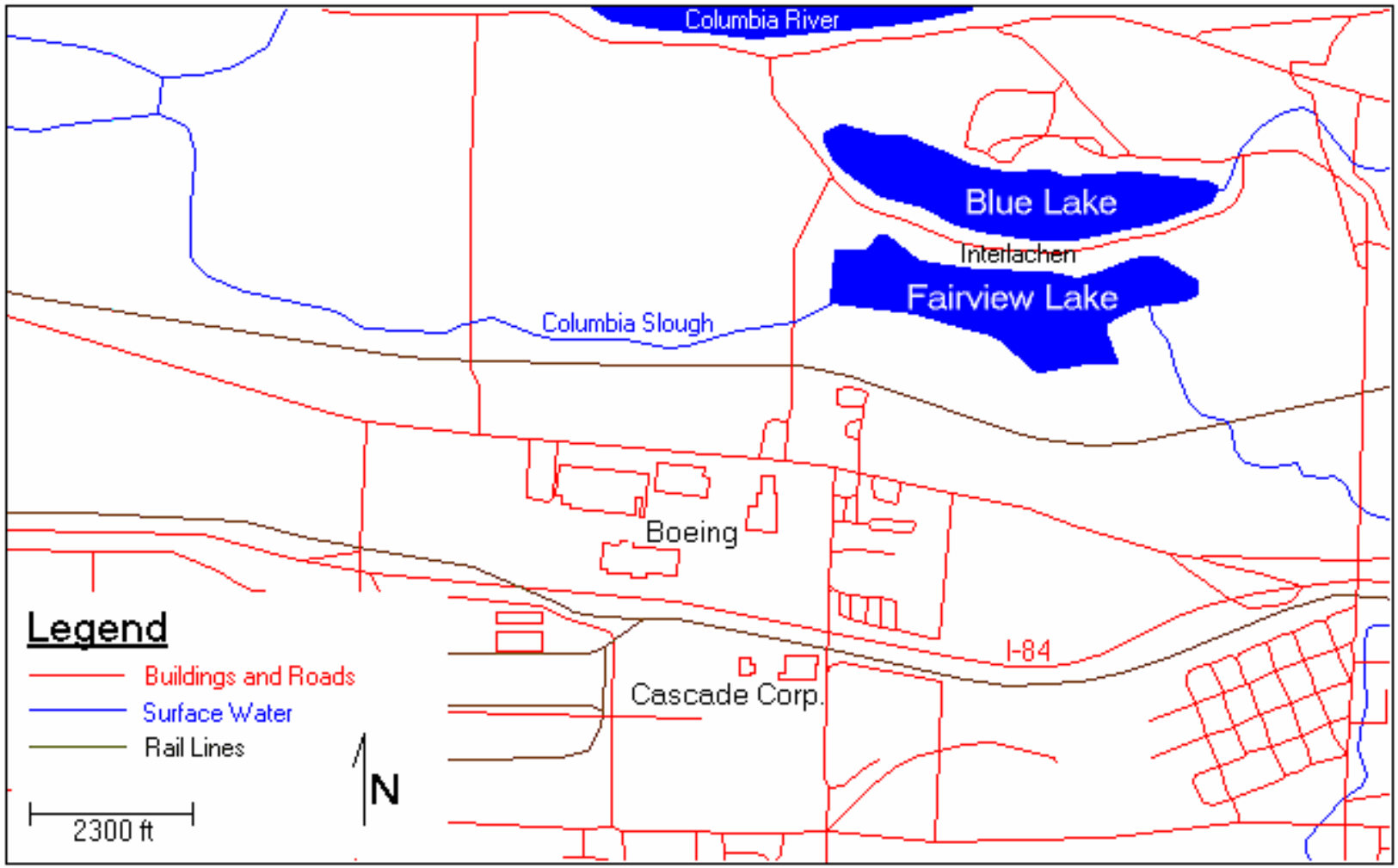

Figure 1 - Map of East Multnomah County contamination site showing the location of the potential responsible parties (Boeing and Cascade Corp.), and the Interlachen community.

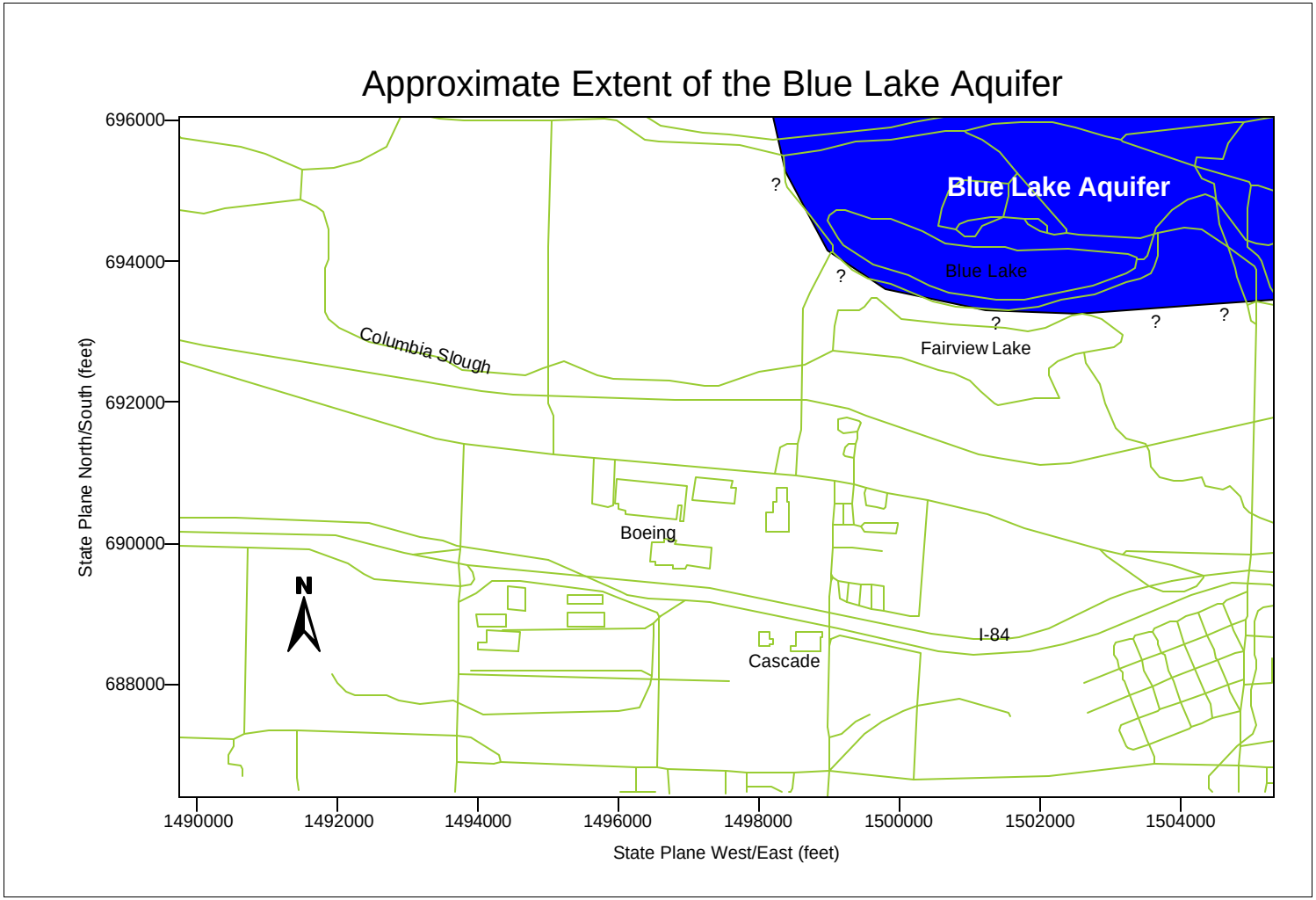

Figure 2 - Plan view of East Multnomah County Site showing the approximate extent of the Blue Lake Aquifer (BLA). The BLA is a comparatively young deposit being the result of scouring and deposition during the high-energy Missoula floods. The actual contact point between the BLA and the rest of the aquifer/aquitard system is not exactly known.

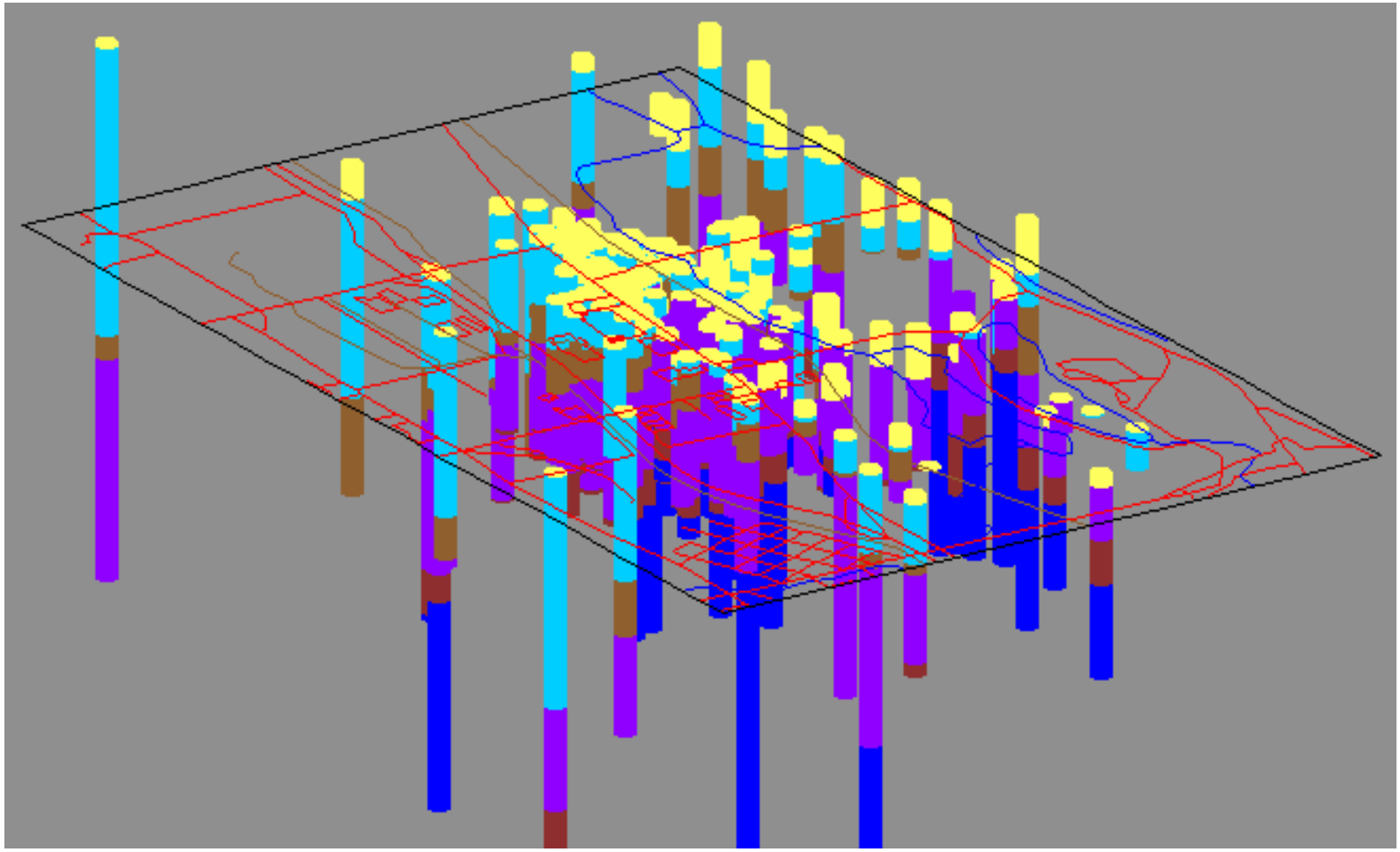

Figure 3 - Oblique view of borehole data used to delineate the EMC stratigraphy. Each contact elevation between successive geologic layers is used to create a surface representation of each geologic unit. Fairview and Blue Lakes are in the right hand corner of the tilted map. Yellow - USA, Light Blue - TGA, Light Brown - CU1, Purple - TSA, Dark Brown - CU2, Bright Blue - SGA.

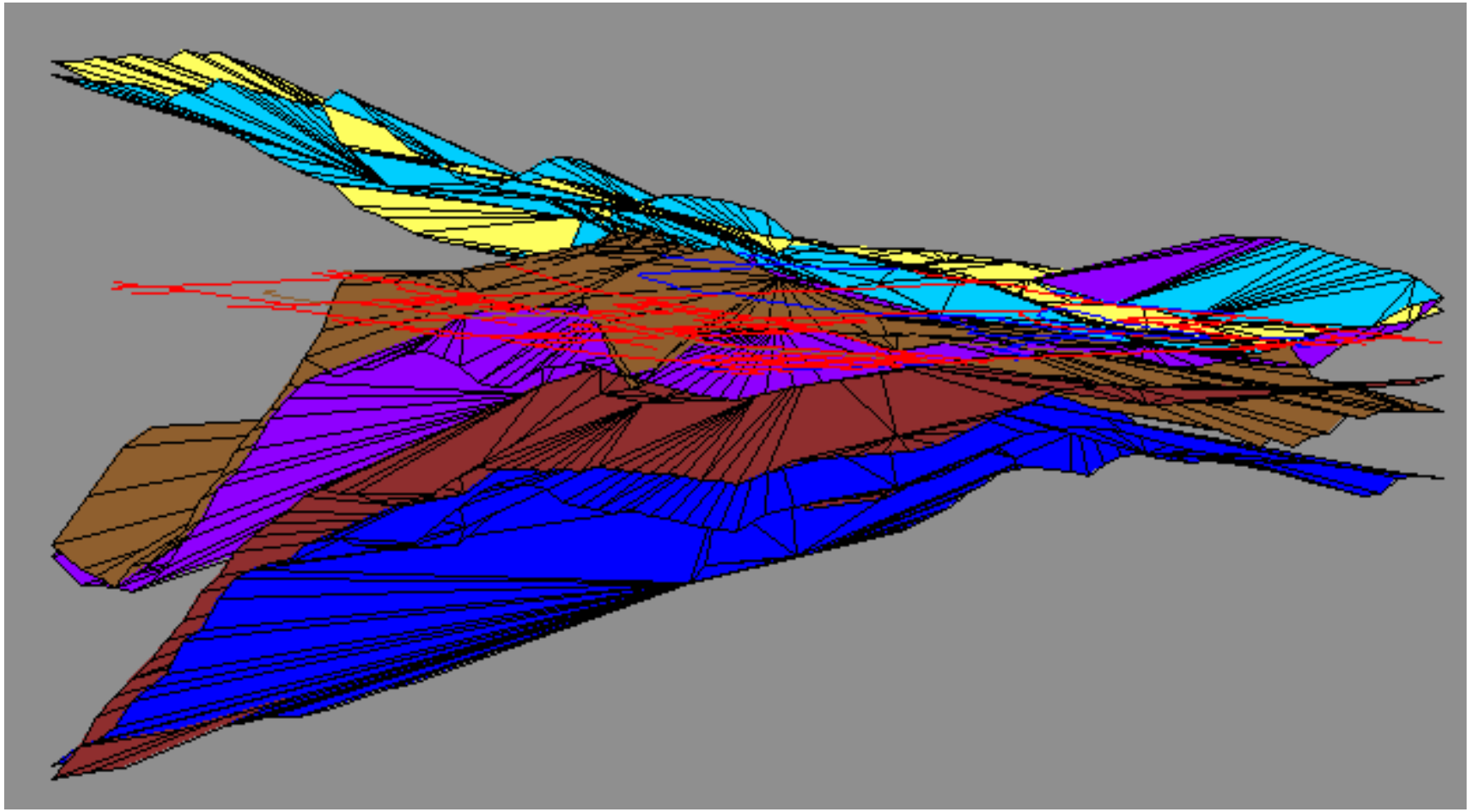

Figure 4 - The Triangular Irregular Network (TIN) for each geologic unit as constructed from the borehole data (see Figure 3). Each TIN represents the surface elevation of each geologic unit. Yellow - USA, Light Blue - TGA, Light Brown - CU1, Purple - TSA, Dark Brown - CU2, Bright Blue - SGA.

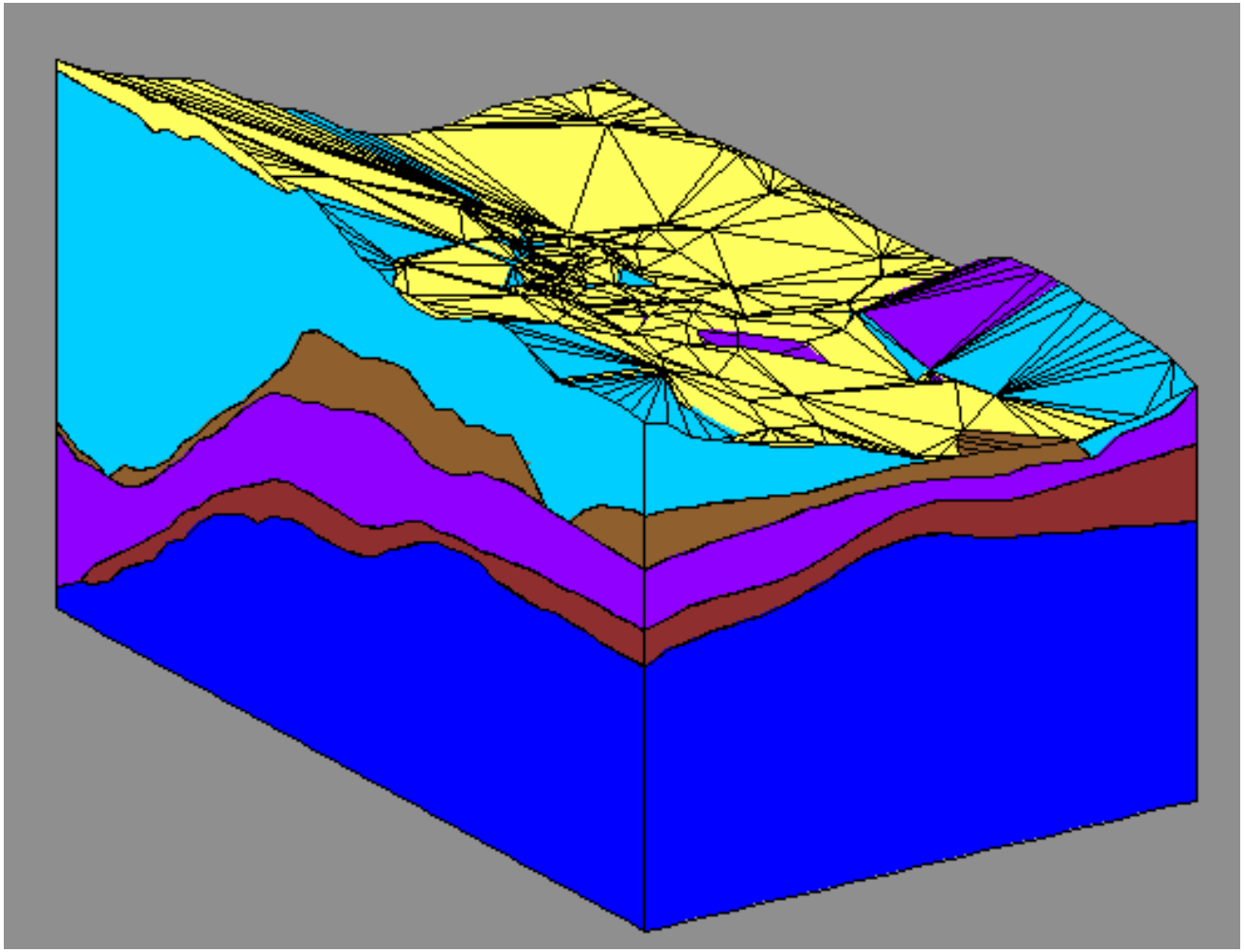

Figure 5 - Solids view of the EMC site. Each TIN (Figure 4) is extruded downward to the next TIN to create a solid representation of the geology of the area. Fairview and Blue Lakes are lie in the right hand corner of the solid. Yellow - USA, Light Blue - TGA, Light Brown - CU1, Purple - TSA, Dark Brown - CU2, Bright Blue - SGA.

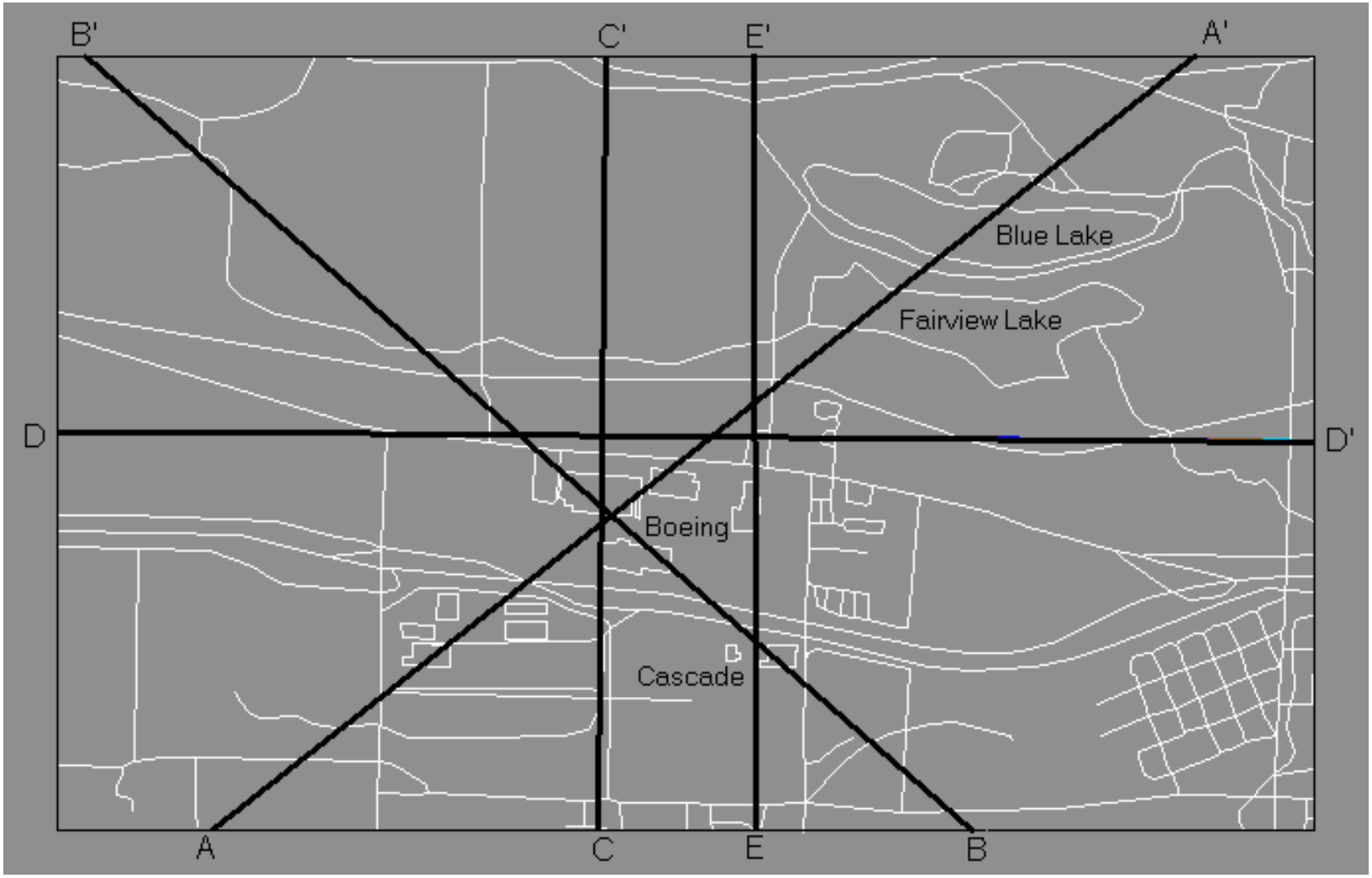

Figure 6 - Plan view of EMC site showing cross section locations for Figure 7 through Figure 11. See Figure 2 for scale.

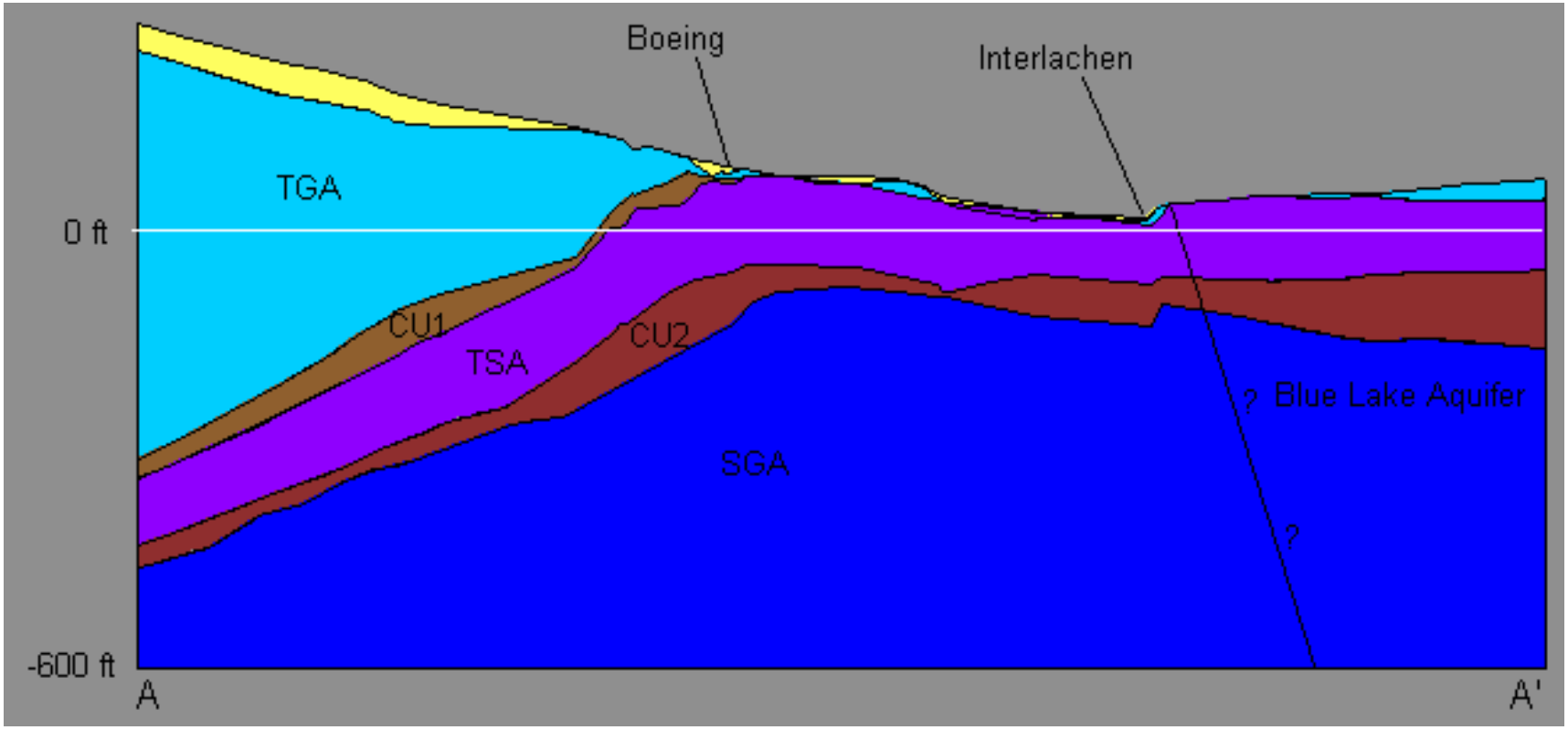

Figure 7 - Cross section along A-A' (see Figure 6). Representation of geology to the right of the Blue Lake Aquifer interface does not reflect reality since this area has been scoured away and filled with high-energy flood deposits. Note the upward sloping geology in all directions below the Boeing site. The CU2 shows thinning between the Boeing site and the Interlachen community which may create a pathway for contamination to move between the TSA and the SGA.

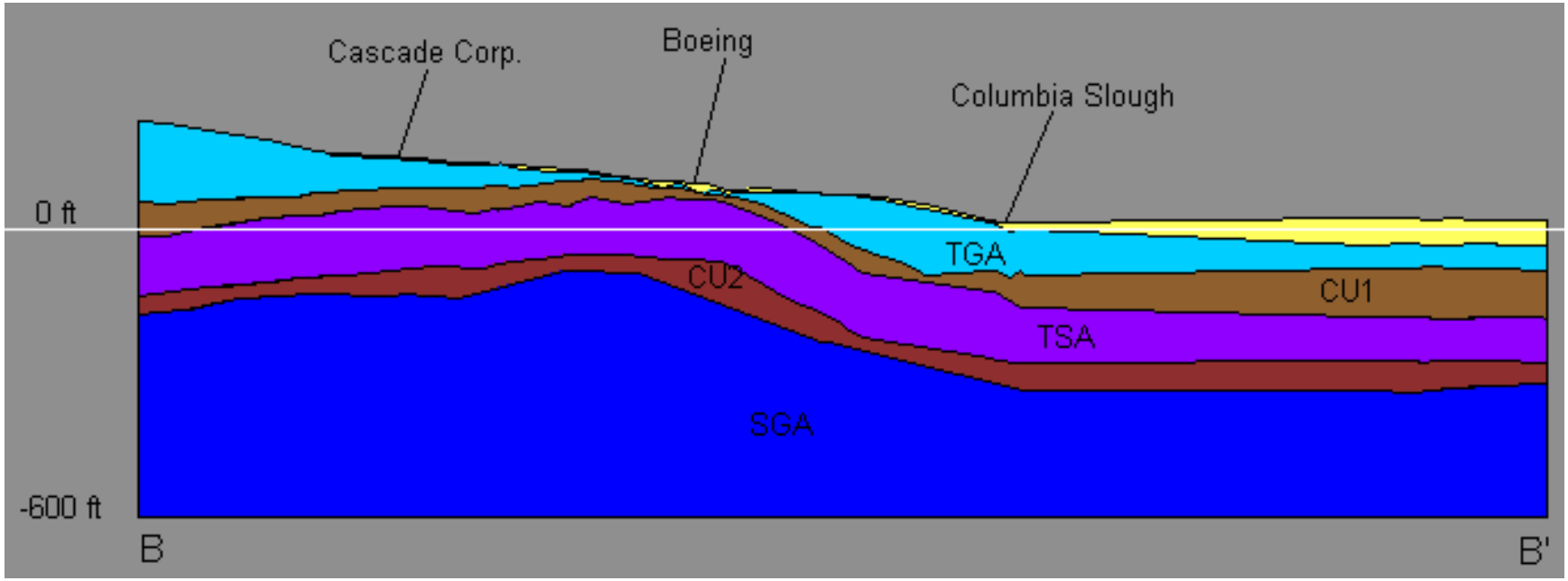

Figure 8 - Cross section along B-B' (see Figure 6) through the Cascade and Boeing sites. Note that the USA (yellow), TGA, and CU1 are thinning between the Cascade site and the Boeing site. This may create pathway for contaminants from the TGA to enter the TSA. The geologic 'high' can be seen by the general upward sloping strata from all directions underneath the Boeing site.

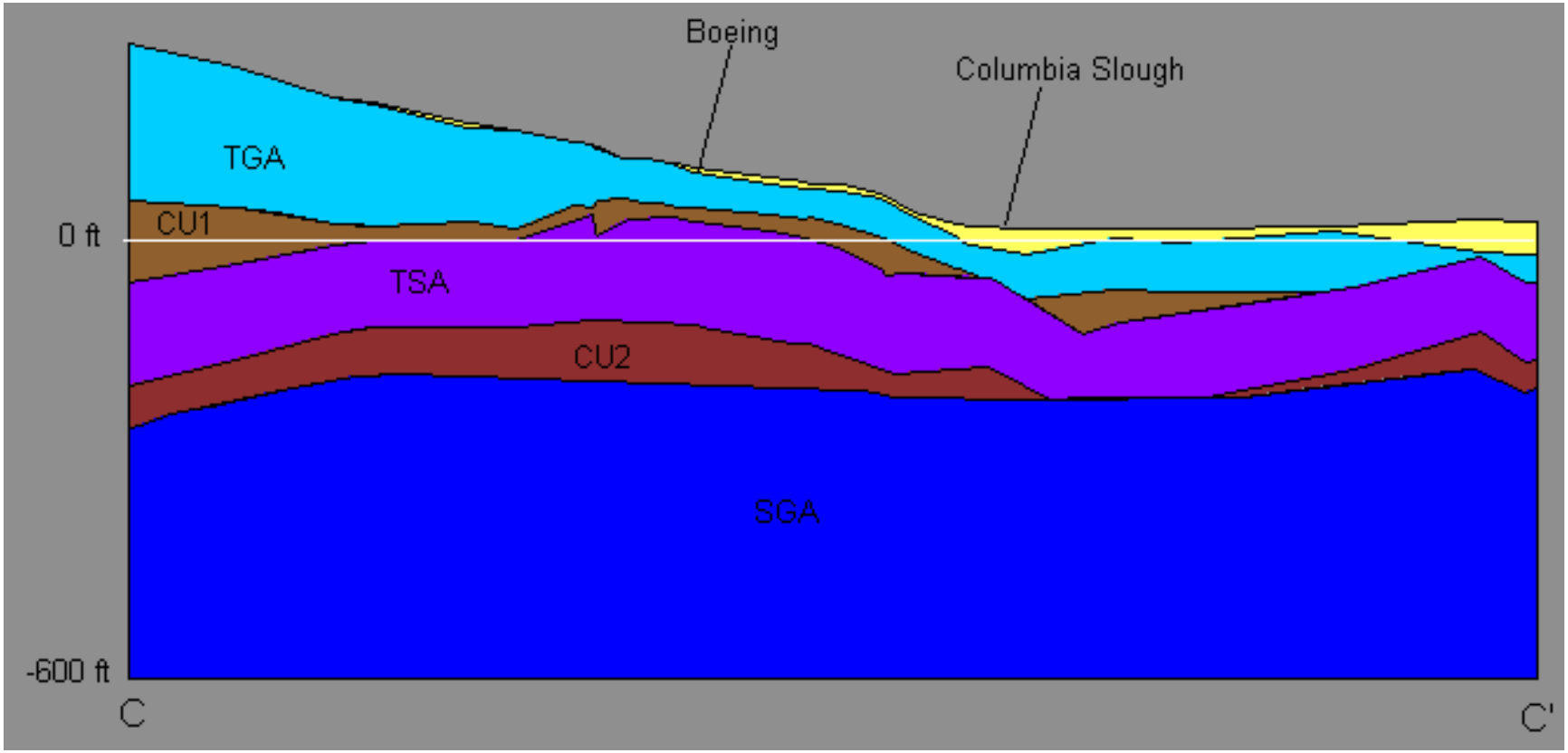

Figure 9 - Cross section along C-C' (see Figure 6) on a North/South line through the Boeing site. Note where the CU2 thins and becomes non-existent, creating an area of communication between the TSA and the SGA. This may have large implications on long term plume migration.

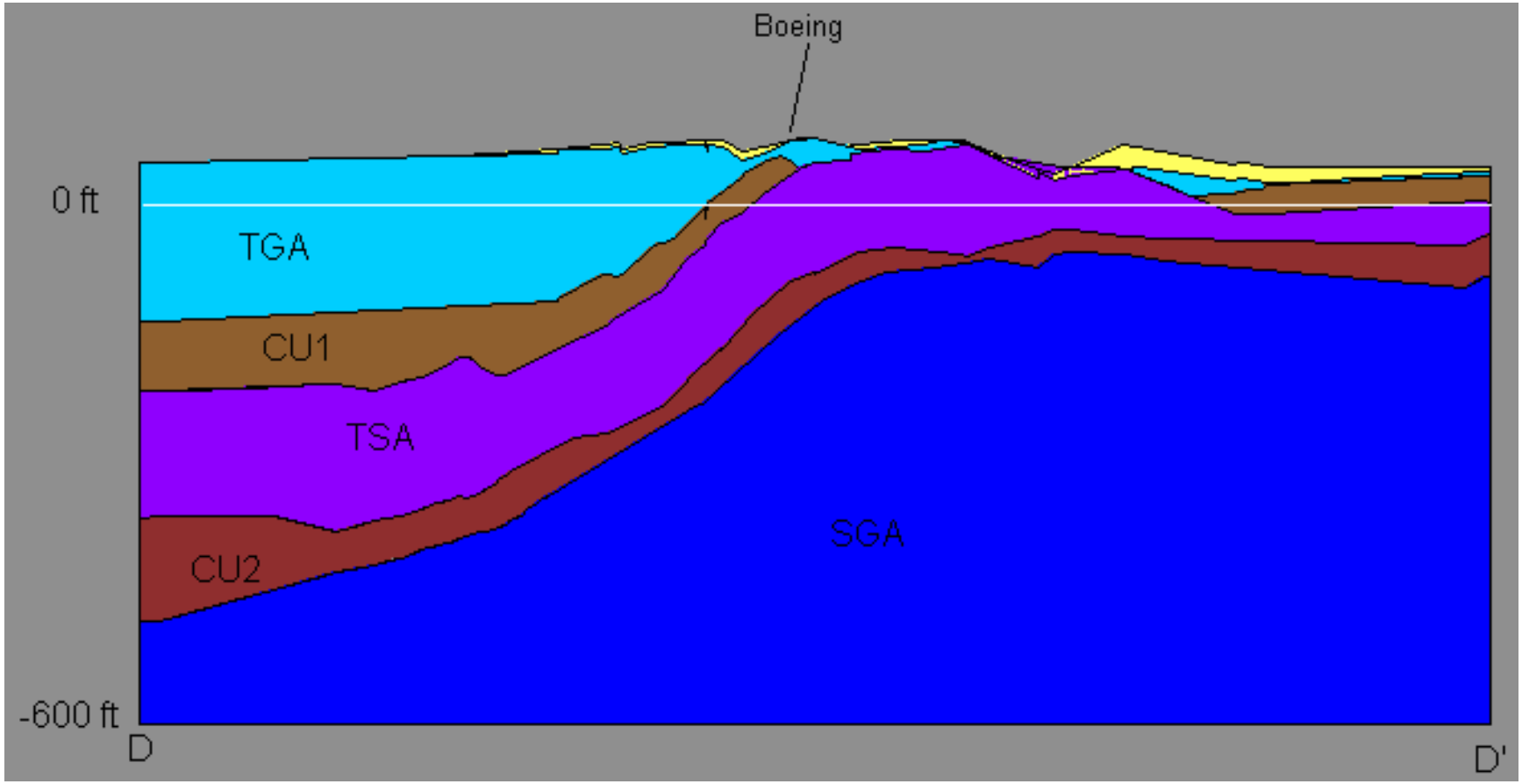

Figure 10 - Cross section along D-D' (see Figure 6) along an west/east line through the plume area. The 'pinching' out of the TGA and the TSA is evident here. This may allow for a more direct pathway for contamination to enter the lower aquifers.

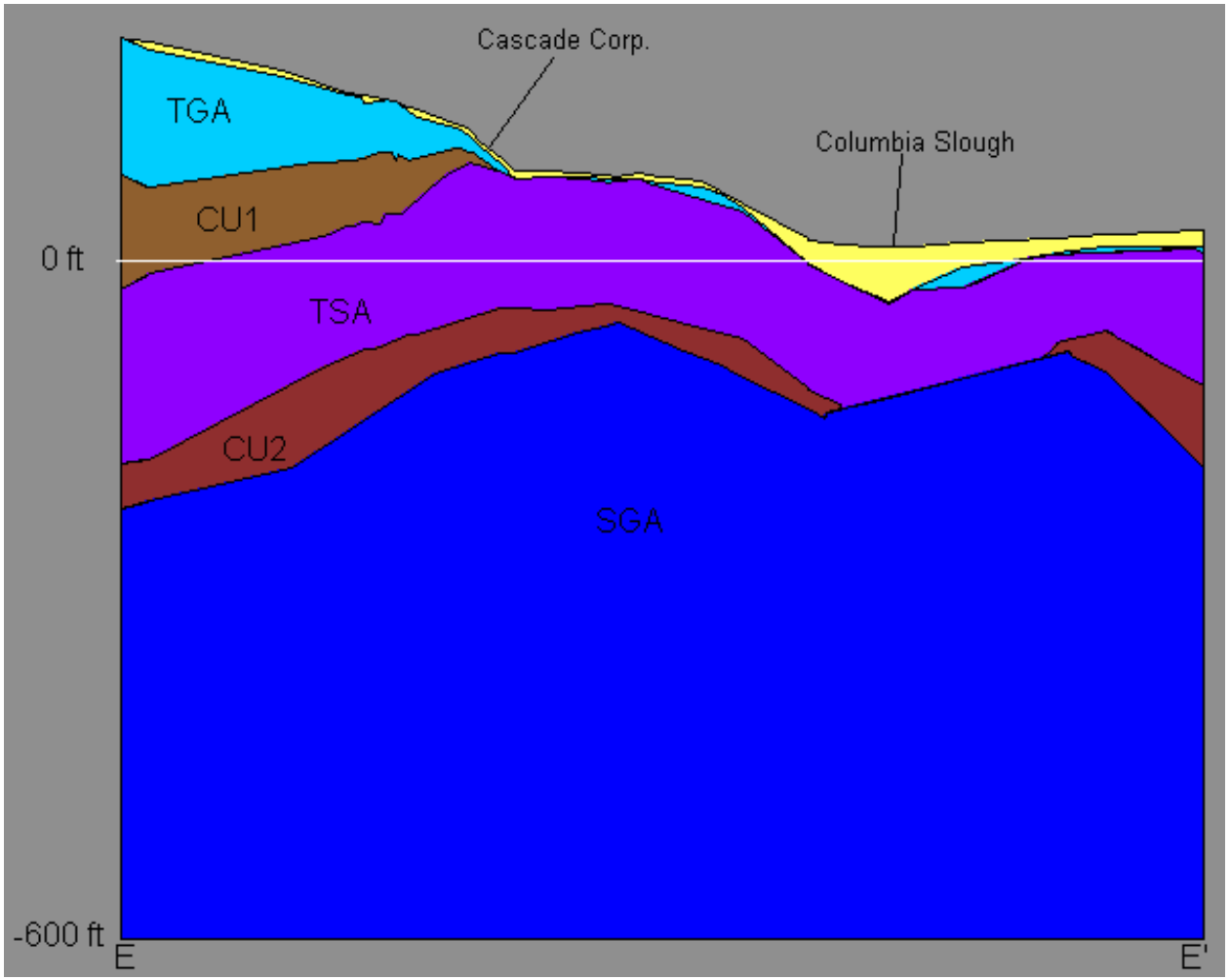

Figure 11 - Cross section along E-E' (see Figure 6) on a north/south (E'/E) line directly through the Cascade Corp. site. The site sits on the edge where the TGA and the CU1 pinch out, which creates a direct pathway for contamination to enter the TSA and the lower aquifer system.

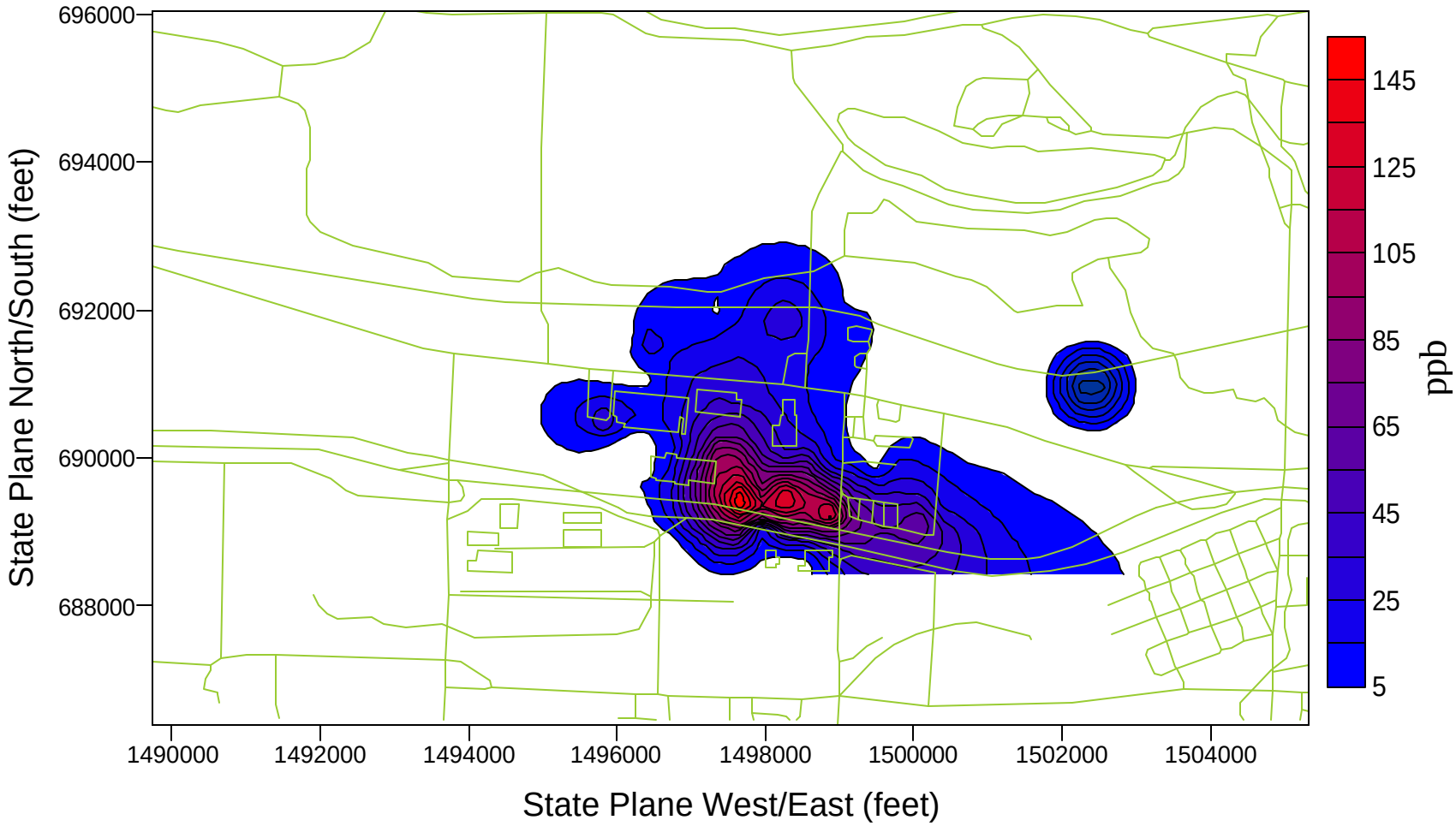

Figure 12 - Two-dimensional plume in the TSA. Multiple completion wells use the maximum concentration for all data points. The isolated plume to the right of the main plume is from a 5/7/98 sampling of PMX-189 (Fairview RV Park - 57 ppb) and appears to be discontinuous from the main plume at this point. The extent of the plume around PMX-189 is strictly from interpolation and should not be construed as reality.

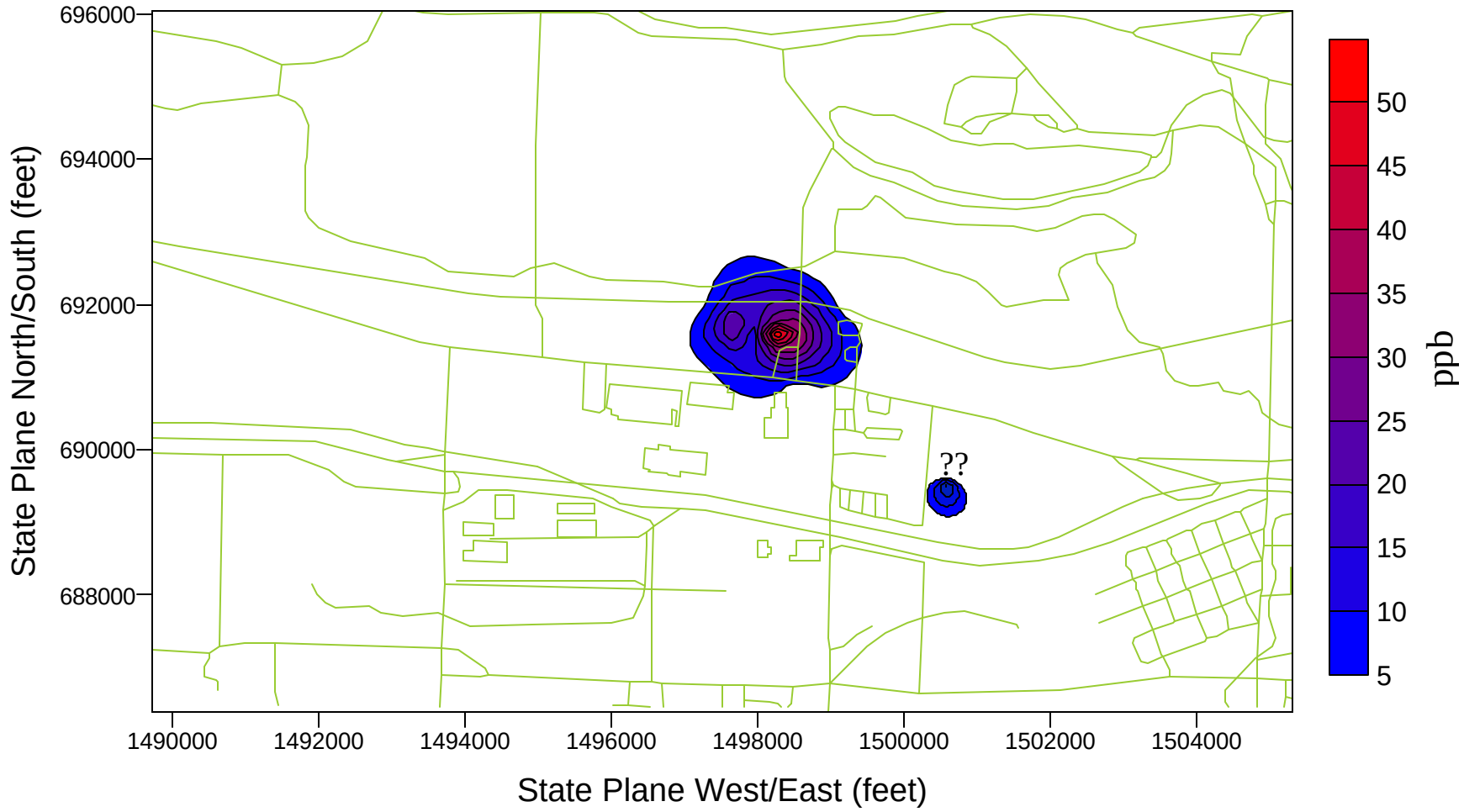

Figure 13 - Two-dimensional plume in the SGA. Multiple completion wells use the maximum concentration for all data points. The isolated small plume to the lower right is from a single hit in MW-37(usg) on 12/3/96 of 23 ppb. This has not been detected before or since. With the exception of DEQ-3(usg) in the hot spot of the main plume (59 ppb), all other hits are below 16 ppb, with most being below 7 ppb.

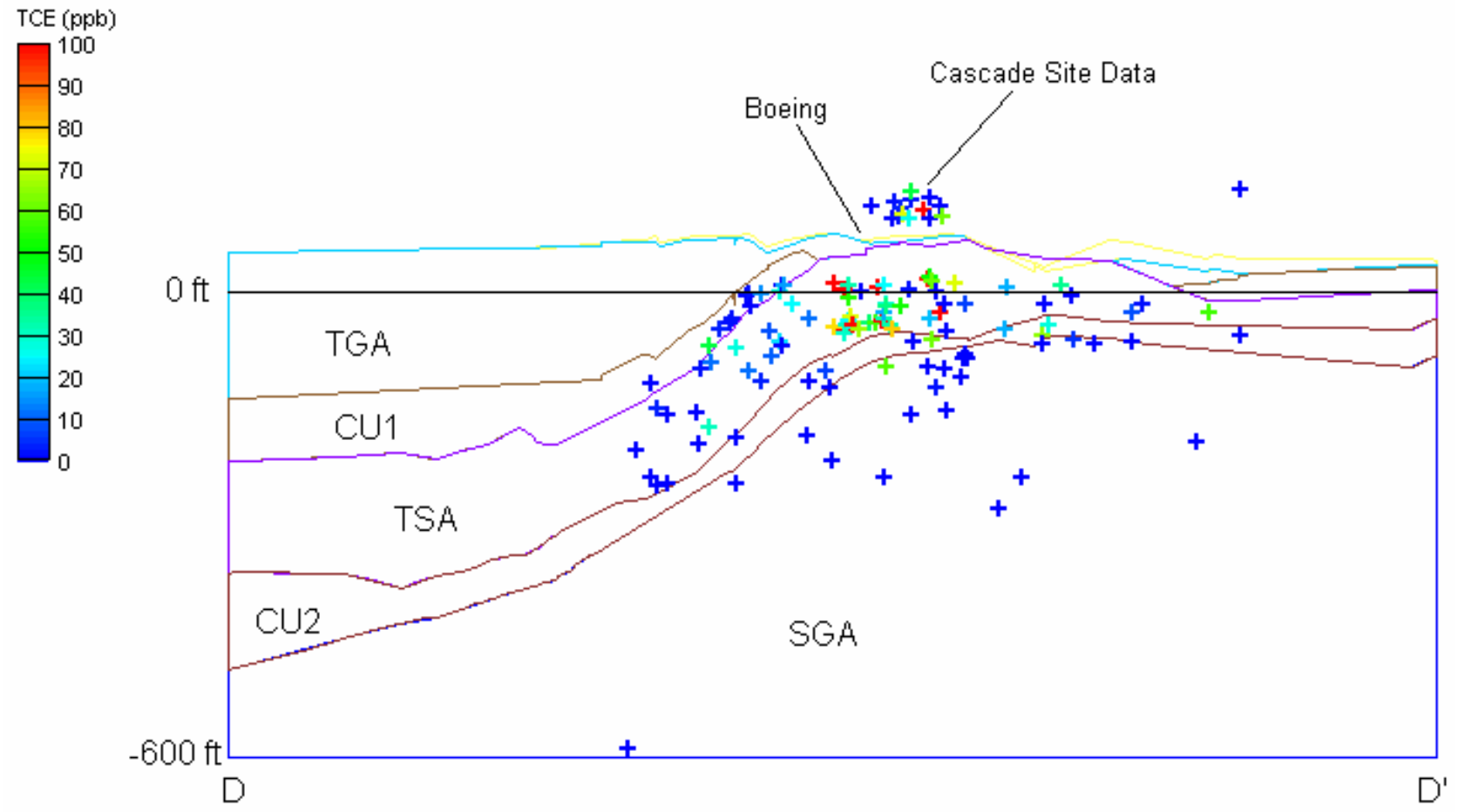

Figure 14 - Cross section along D-D' (see Figure 6) showing three-dimensional scatter data superimposed. The scatter data, which exist in three dimensions, are projected horizontally onto the D-D' cross-section. Since the stratigraphy is sloping downward into the page (towards the north), some data points will not be projected onto the aquifer in which they exist. This is why the Cascade Corp. data appear to the floating. Note the plume area in the TSA underneath the Boeing site.

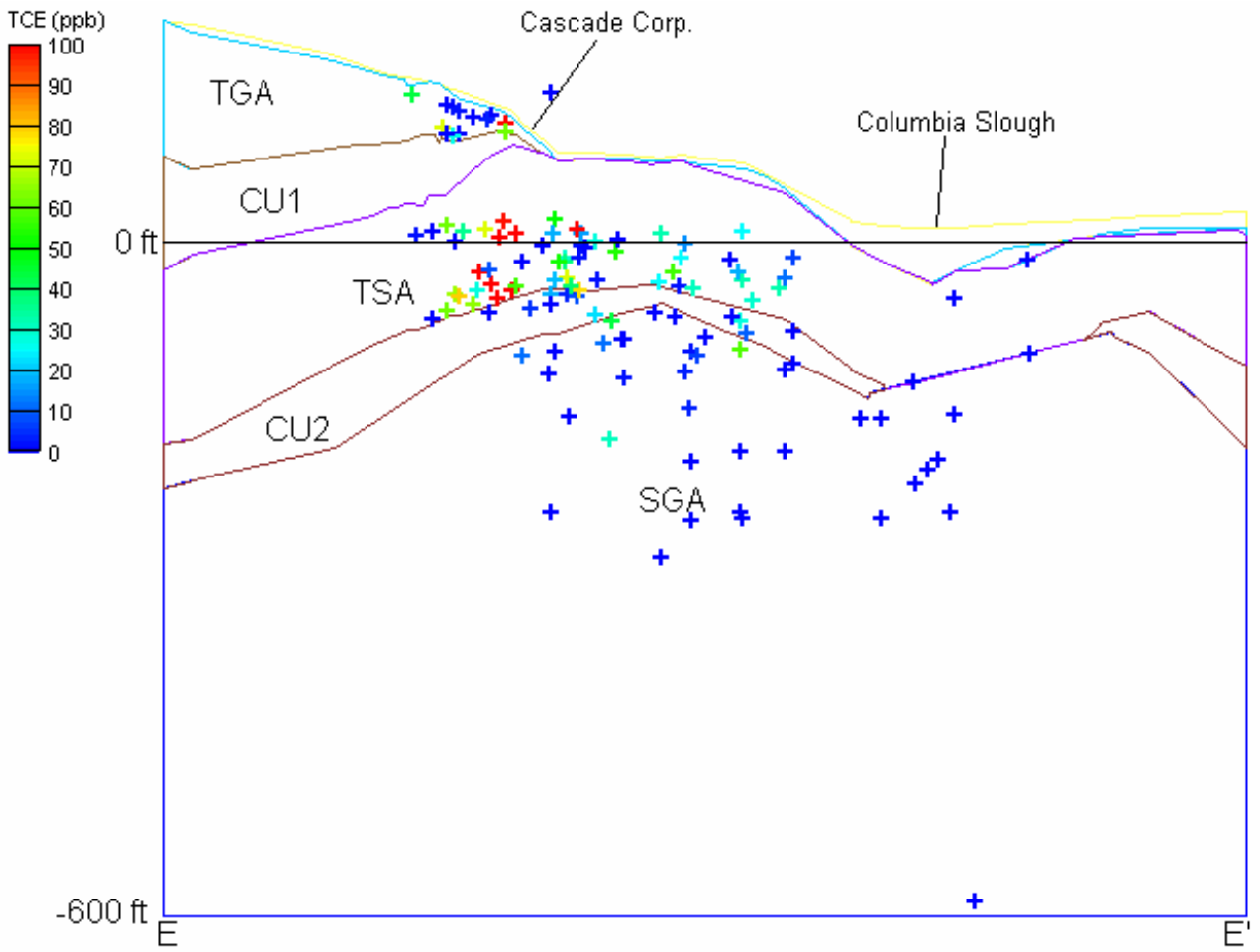

Figure 15 - Cross section along E-E' (see Figure 6) showing three-dimensional scatter data superimposed. The scatter data, which exist in three dimensions, are projected horizontally onto the E-E' cross-section. Since the stratigraphy is sloping downward into the page (towards the west), some data points will not be projected onto the aquifer in which they exist. Note the large concentration of data in the TSA as well as the extent of the positive TCE concentrations.

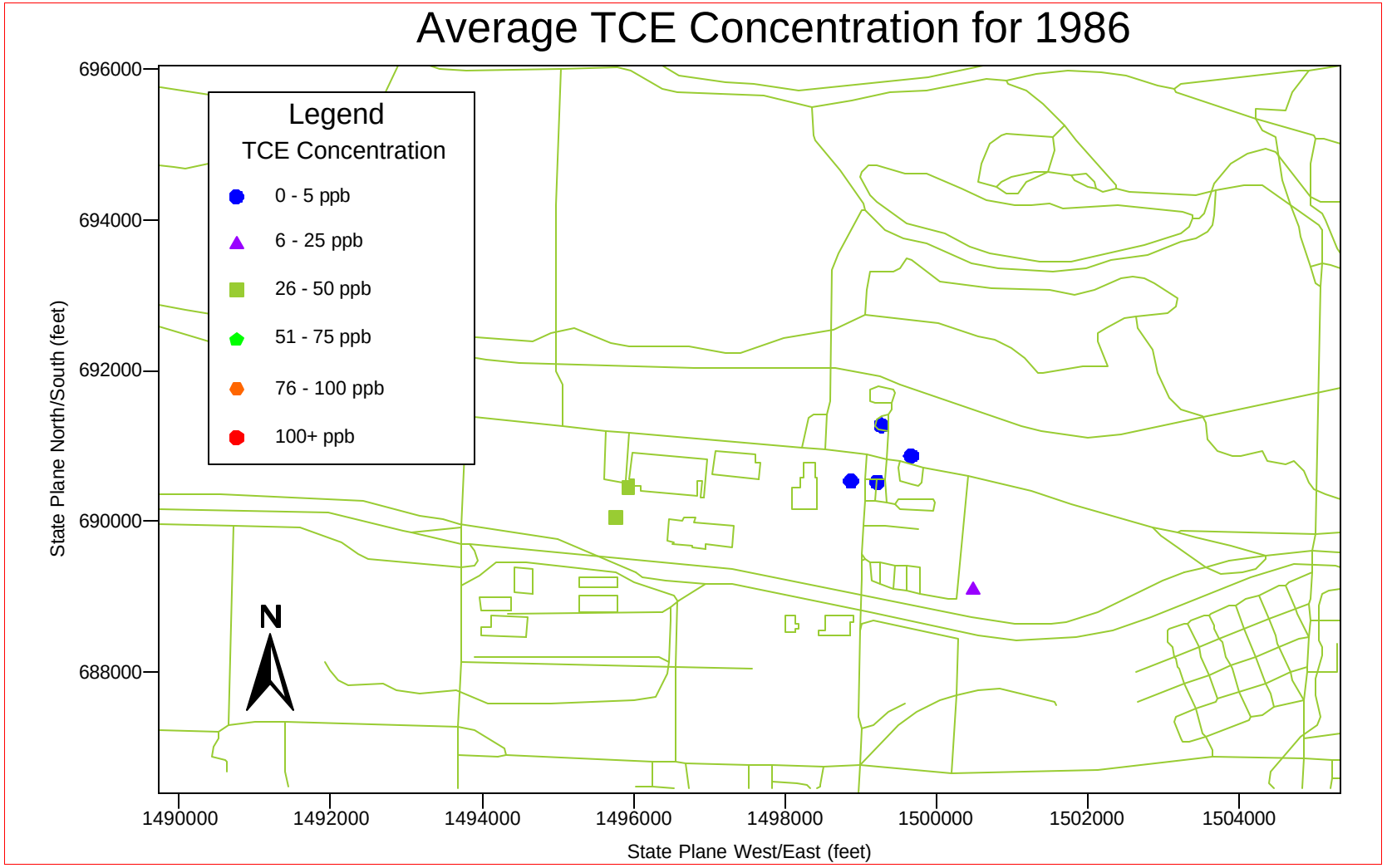

Figure 16 - Time averaged concentration in each well sampled in 1986. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

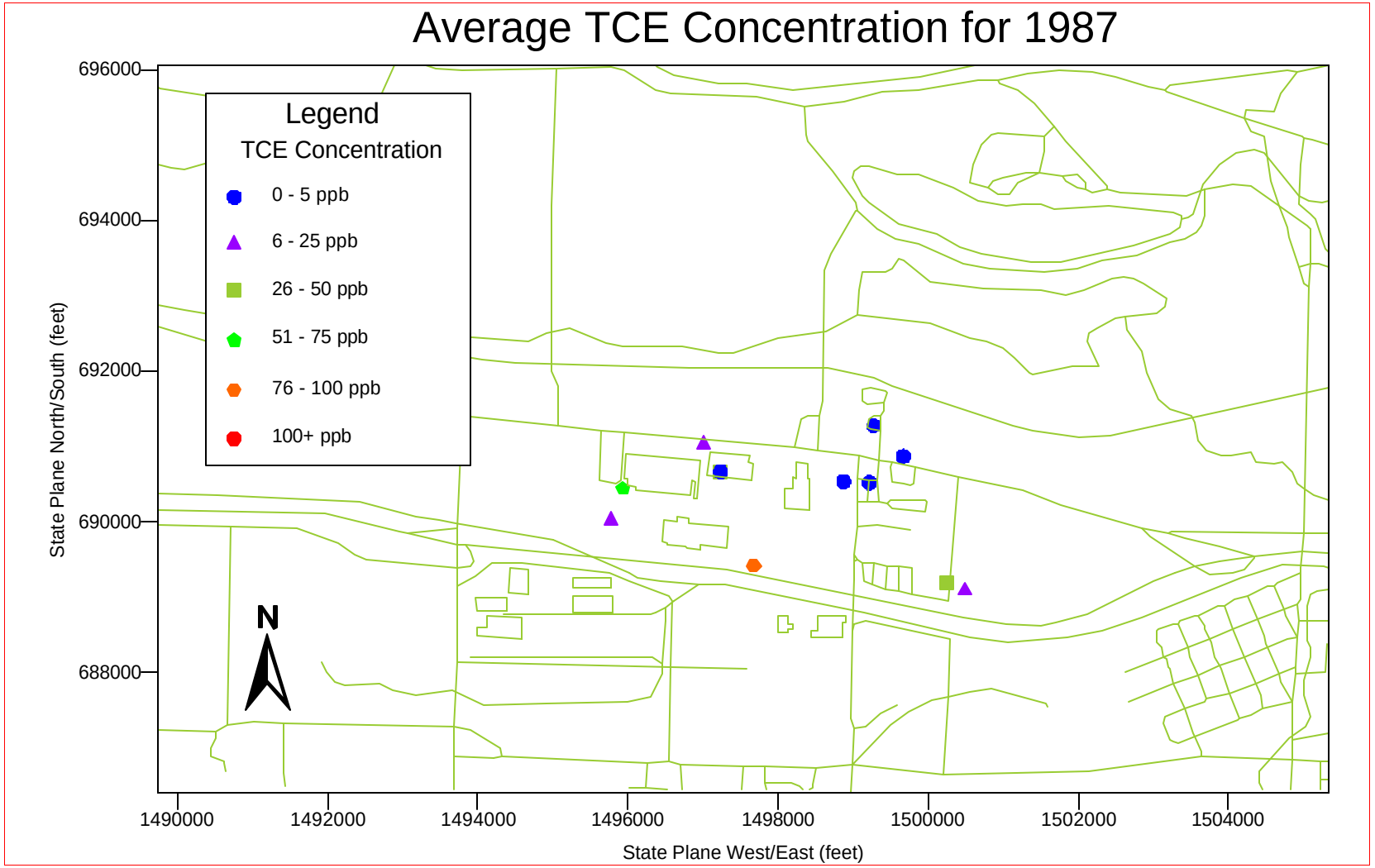

Figure 17 - Time averaged concentration in each well sampled in 1987. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

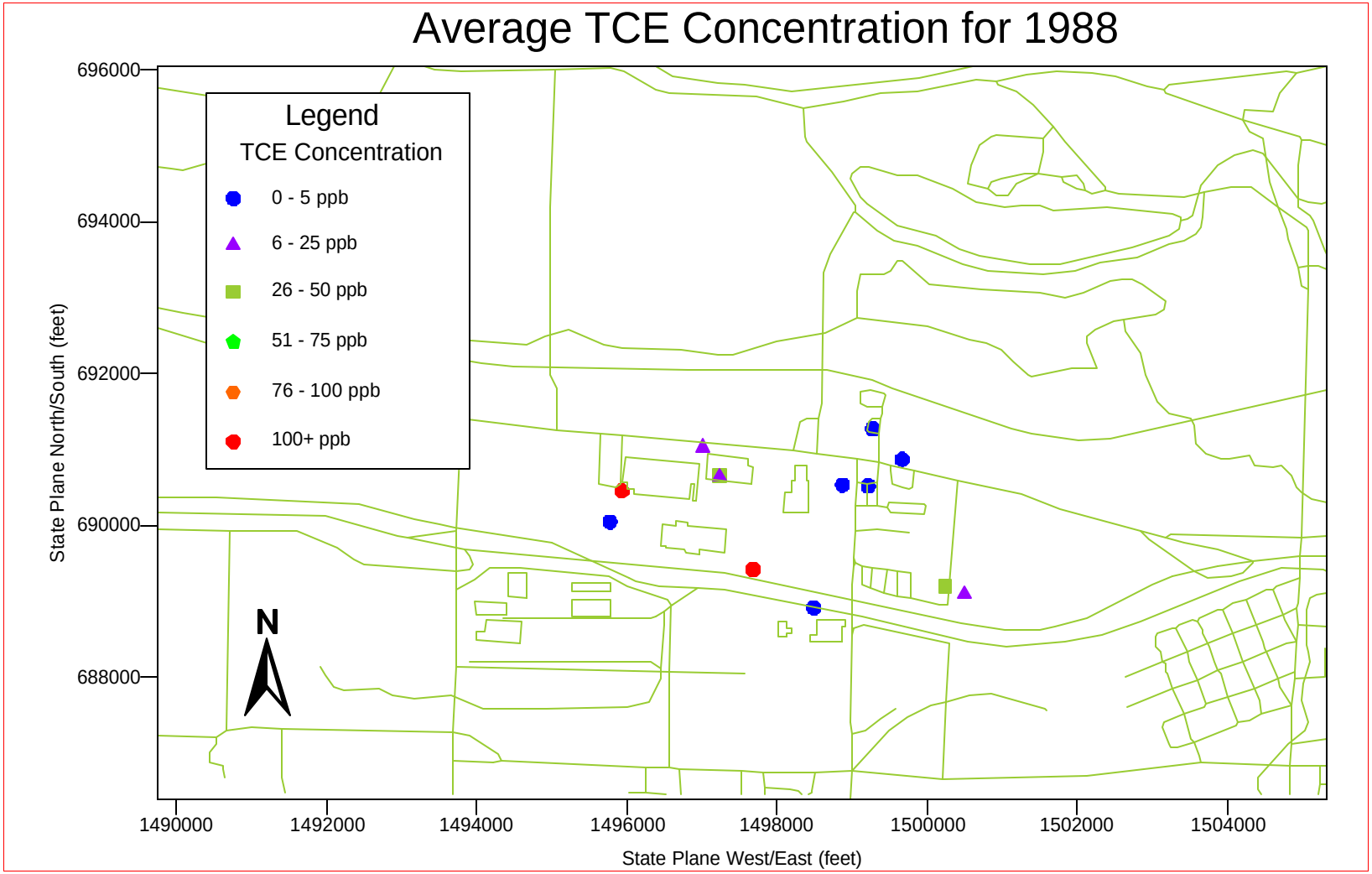

Figure 18 - Time averaged concentration in each well sampled in 1988. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

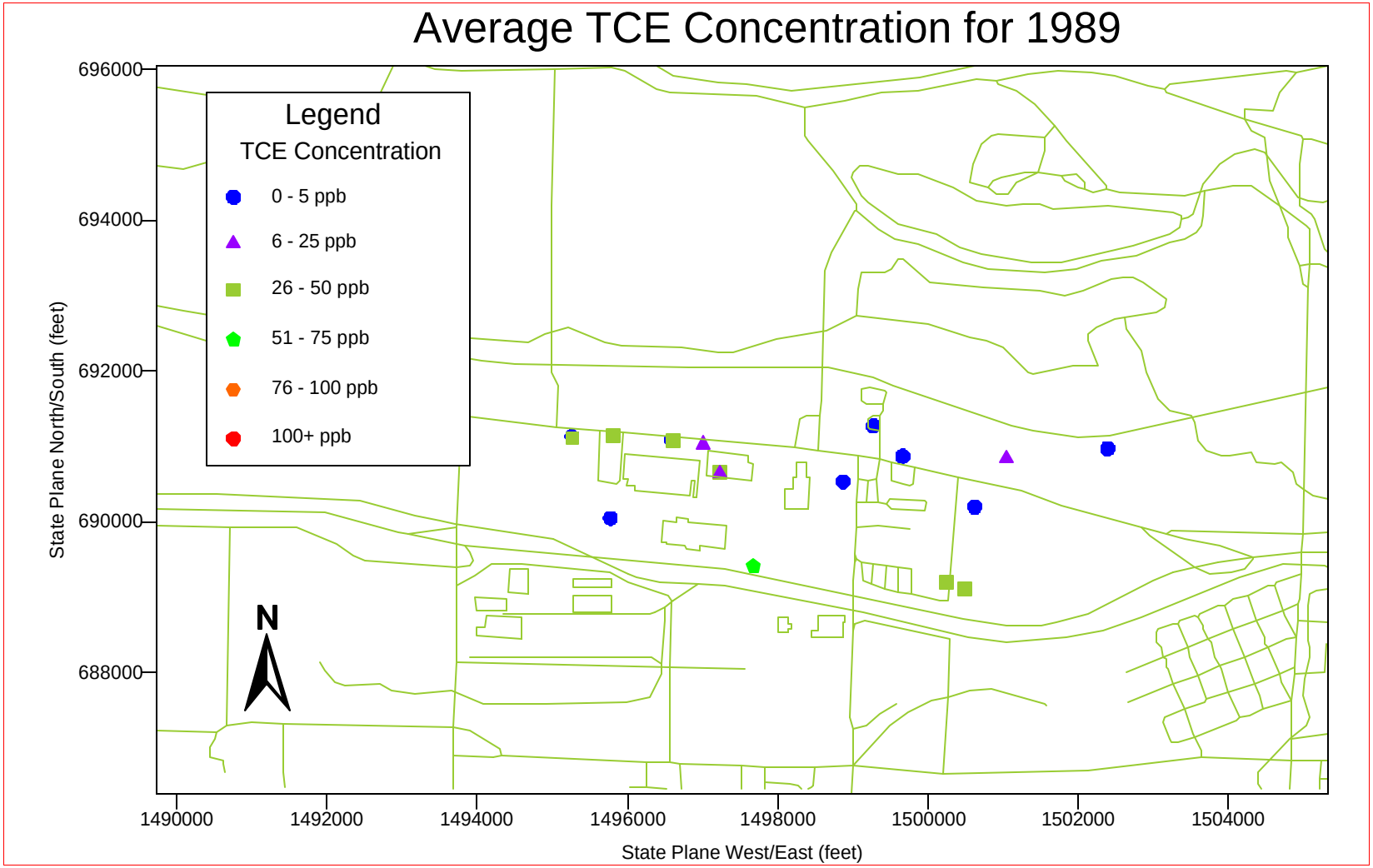

Figure 19 - Time averaged concentration in each well sampled in 1989. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

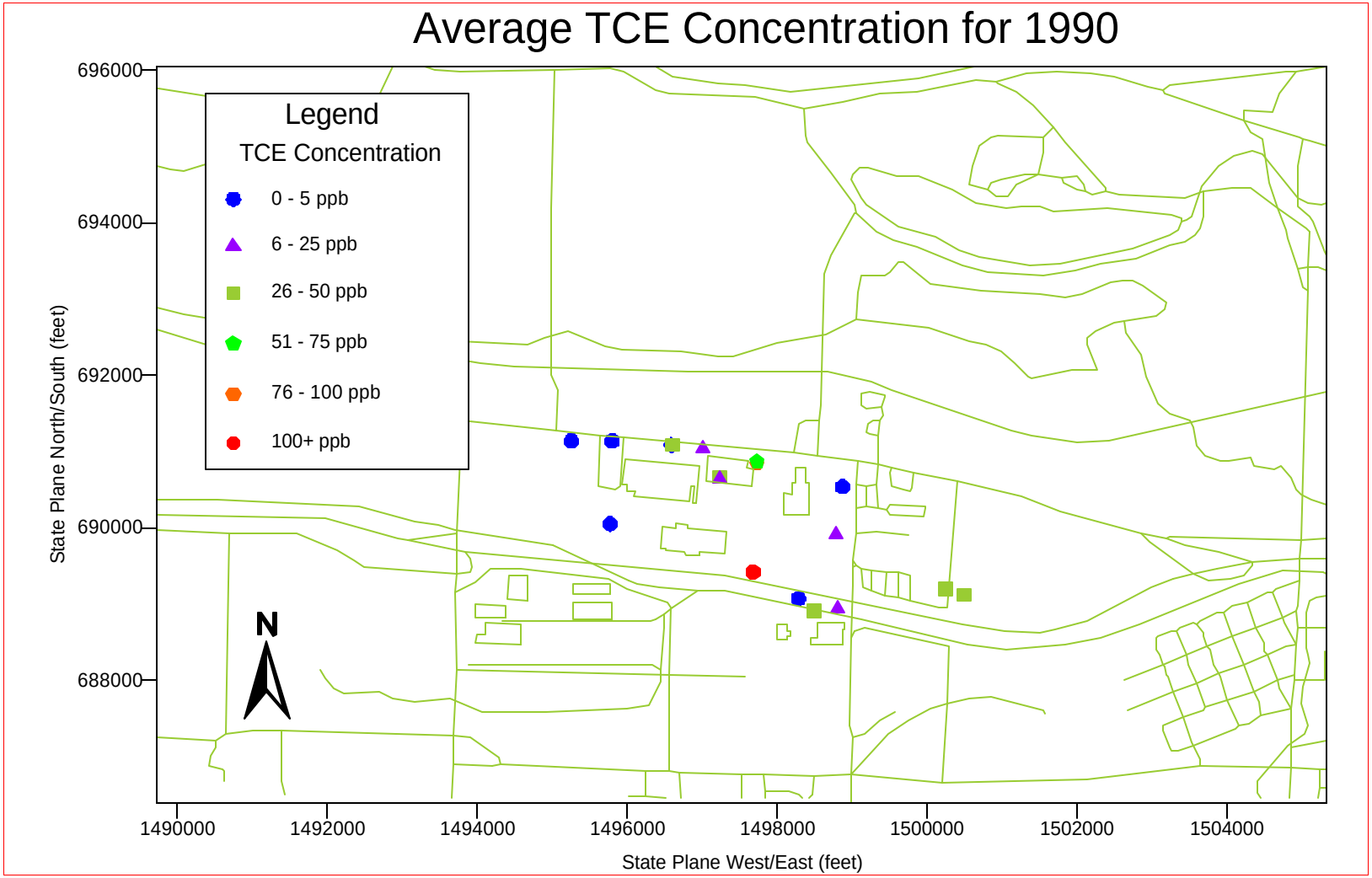

Figure 20 - Time averaged concentration in each well sampled in 1990. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

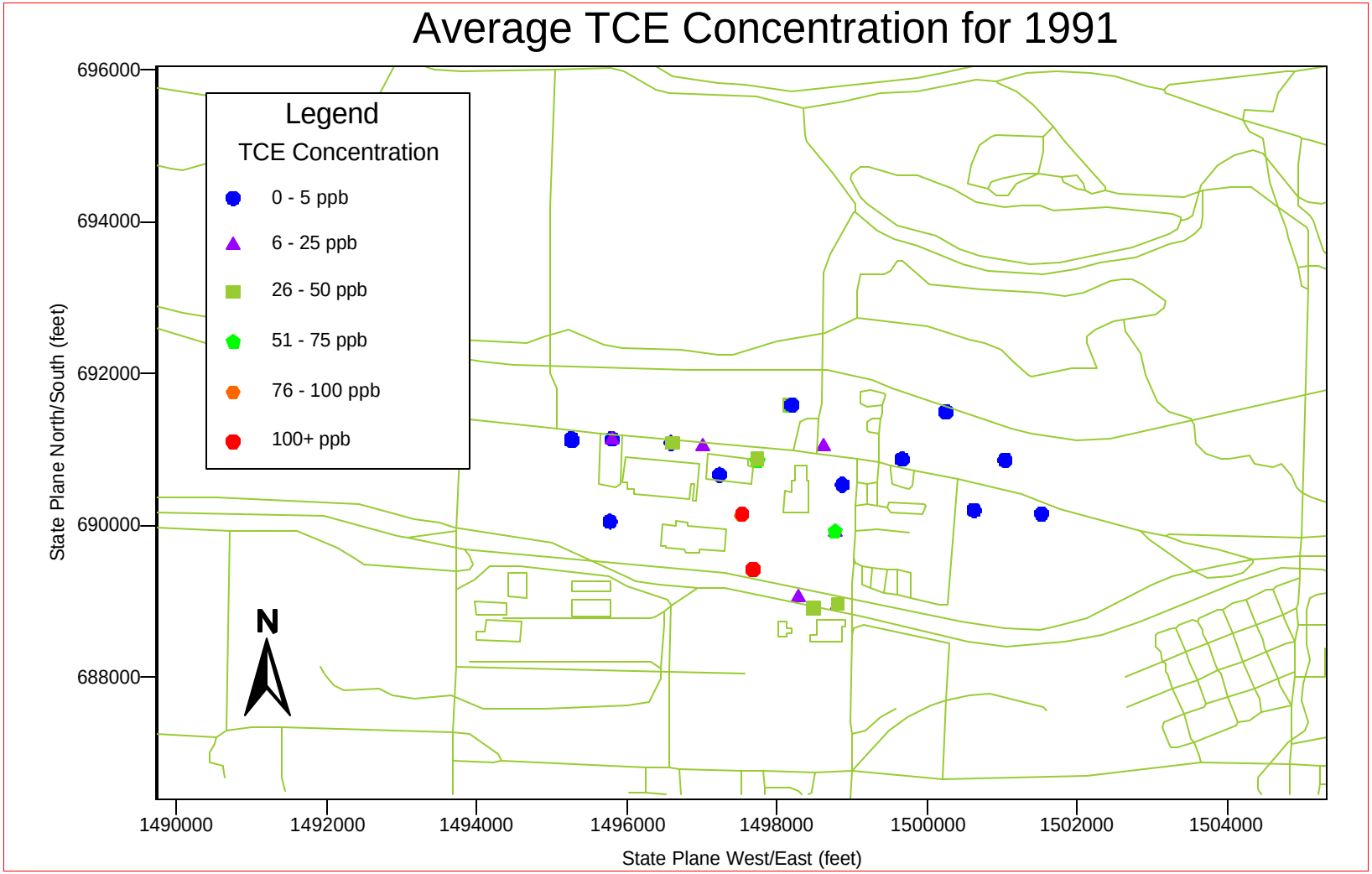

Figure 21 - Time averaged concentration in each well sampled in 1991. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

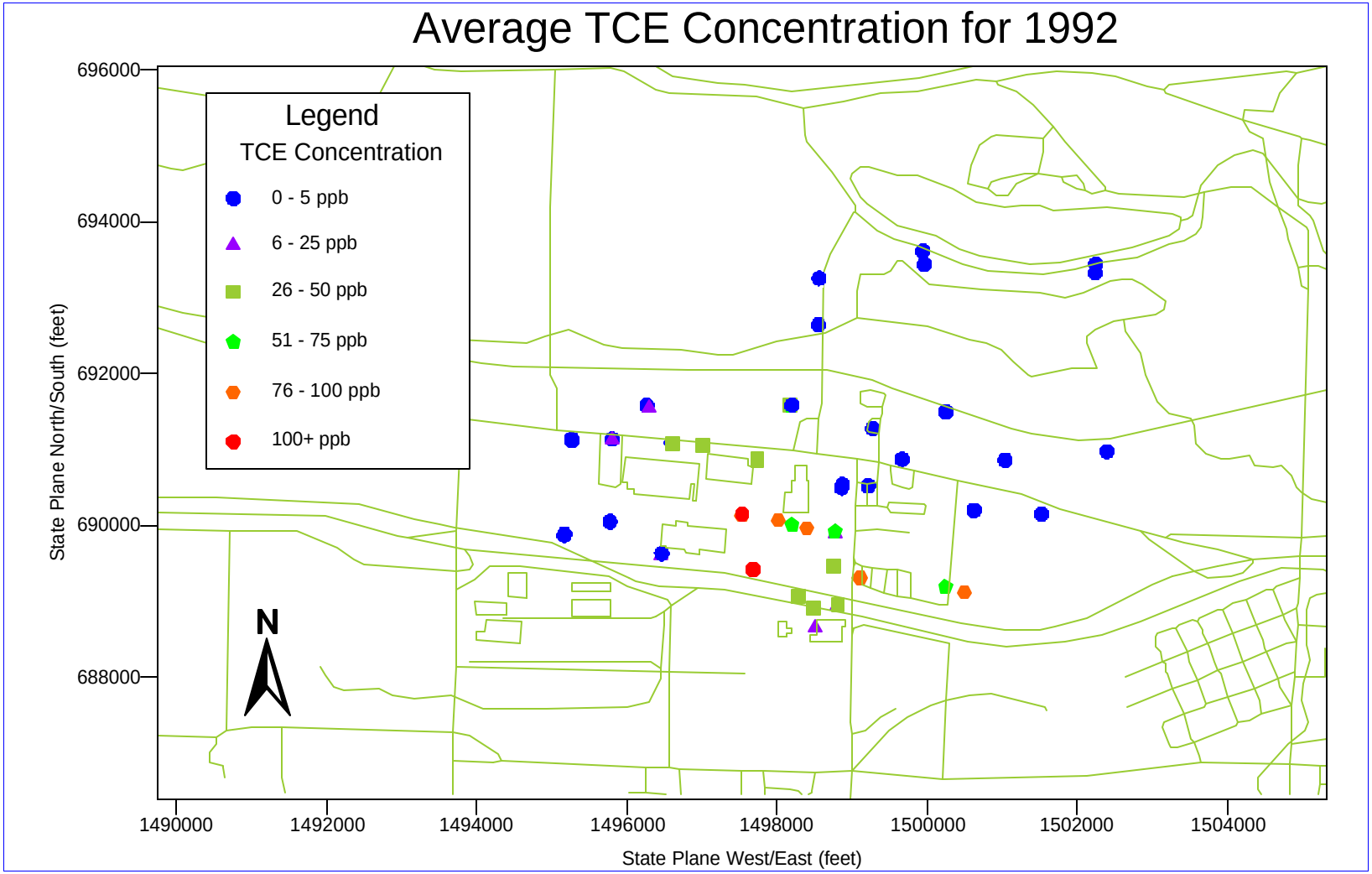

Figure 22 - Time averaged concentration in each well sampled in 1992. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

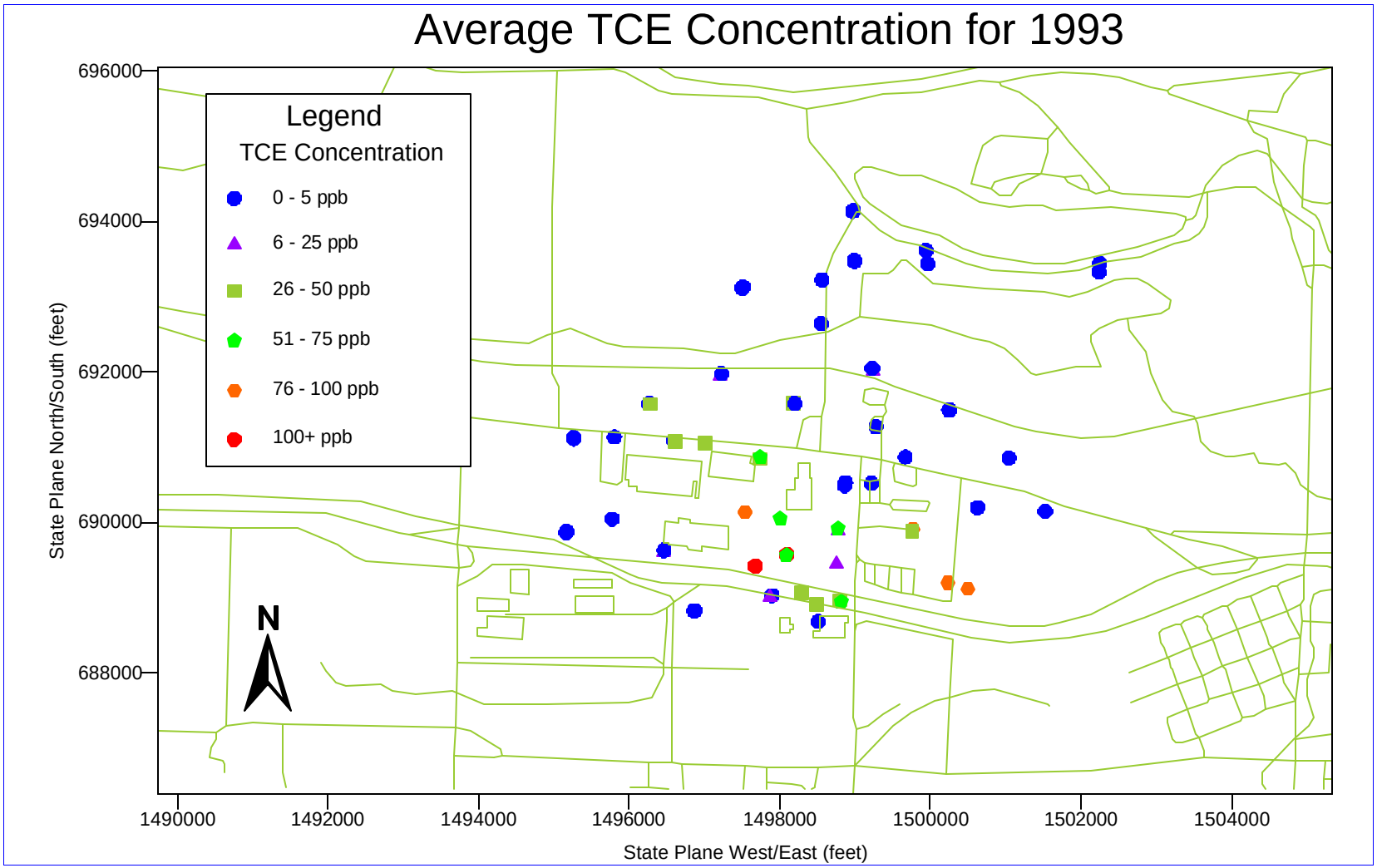

Figure 23 - Time averaged concentration in each well sampled in 1993. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

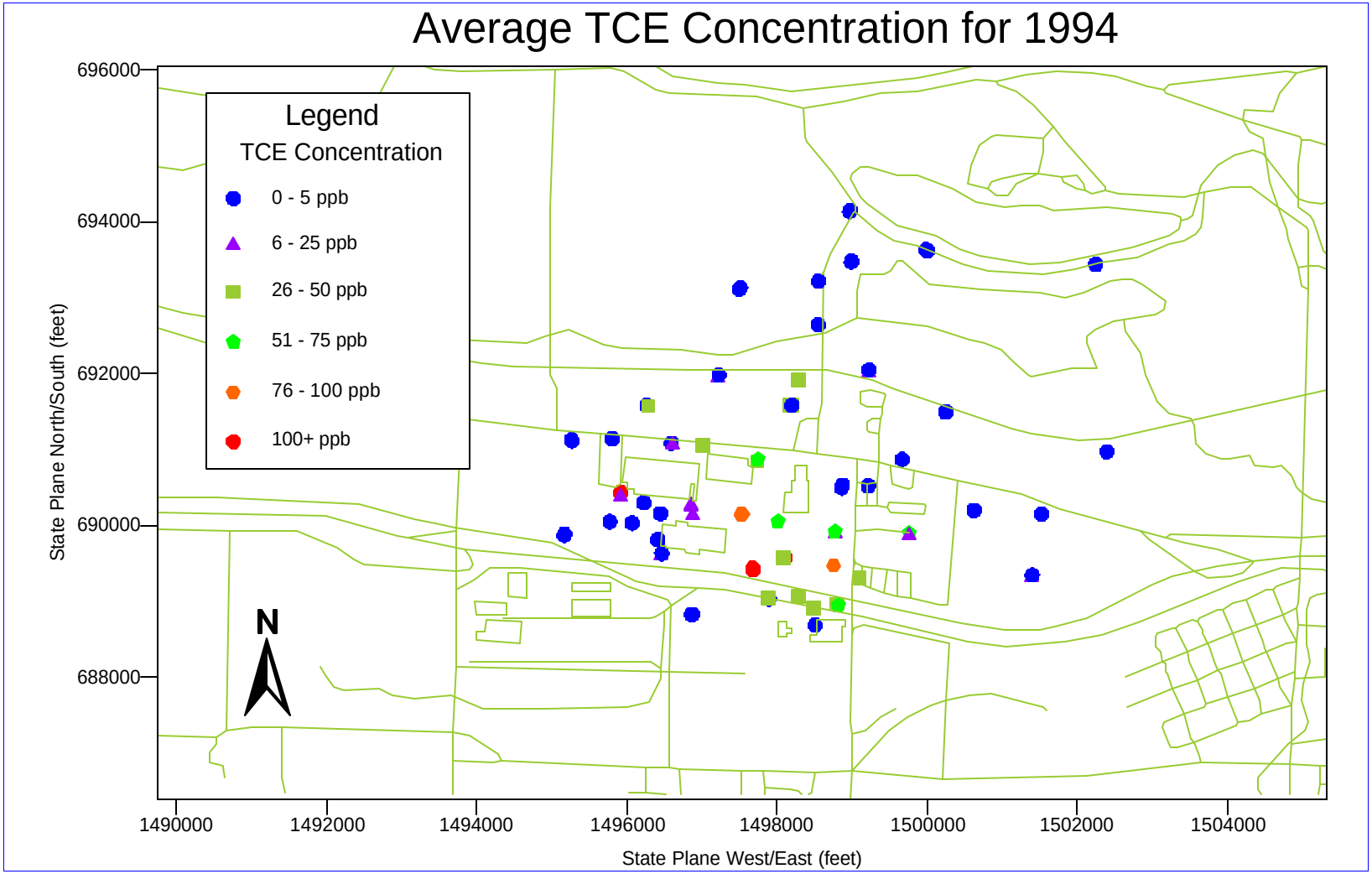

Figure 24 - Time averaged concentration in each well sampled in 1994. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

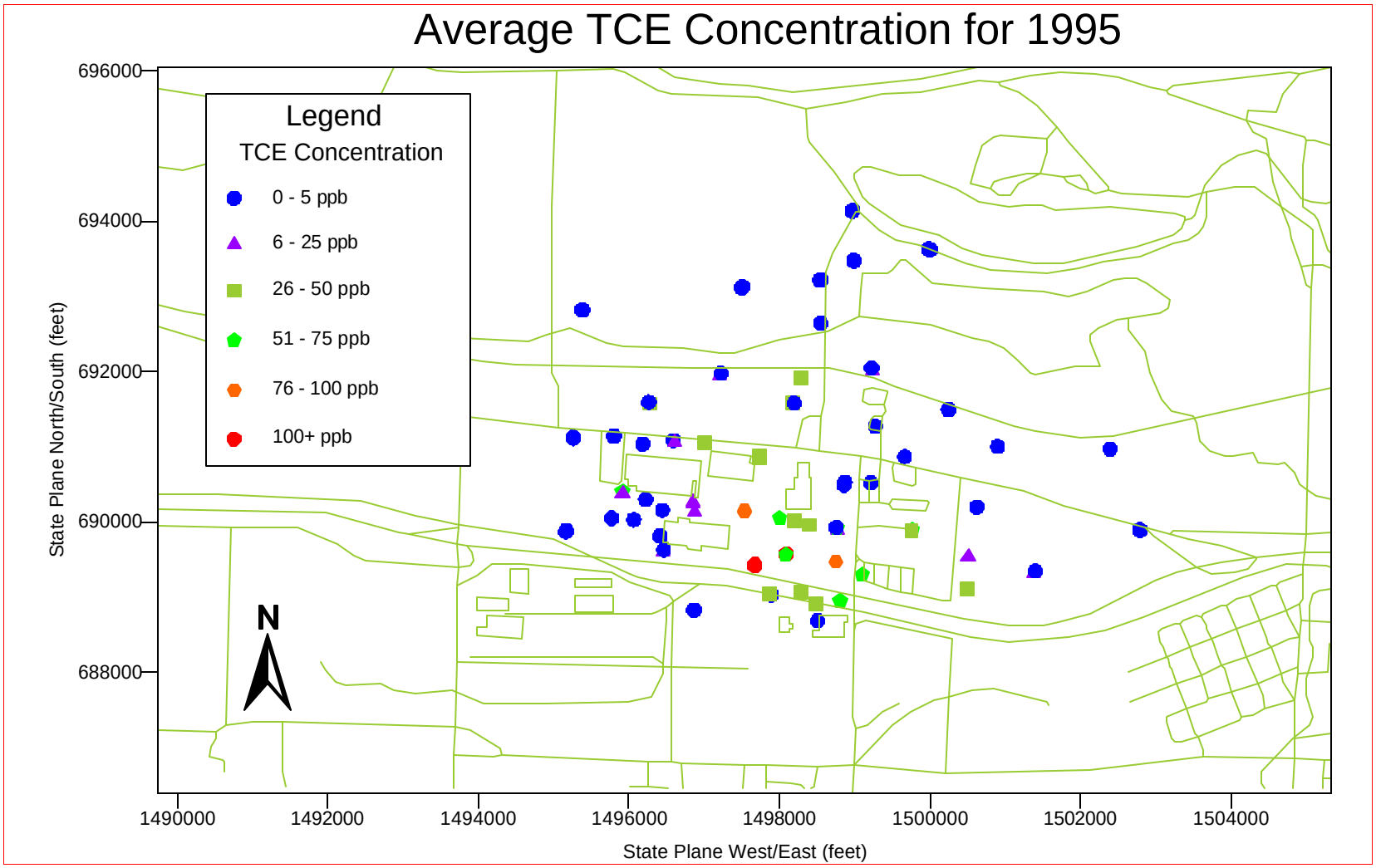

Figure 25 - Time averaged concentration in each well sampled in 1995. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

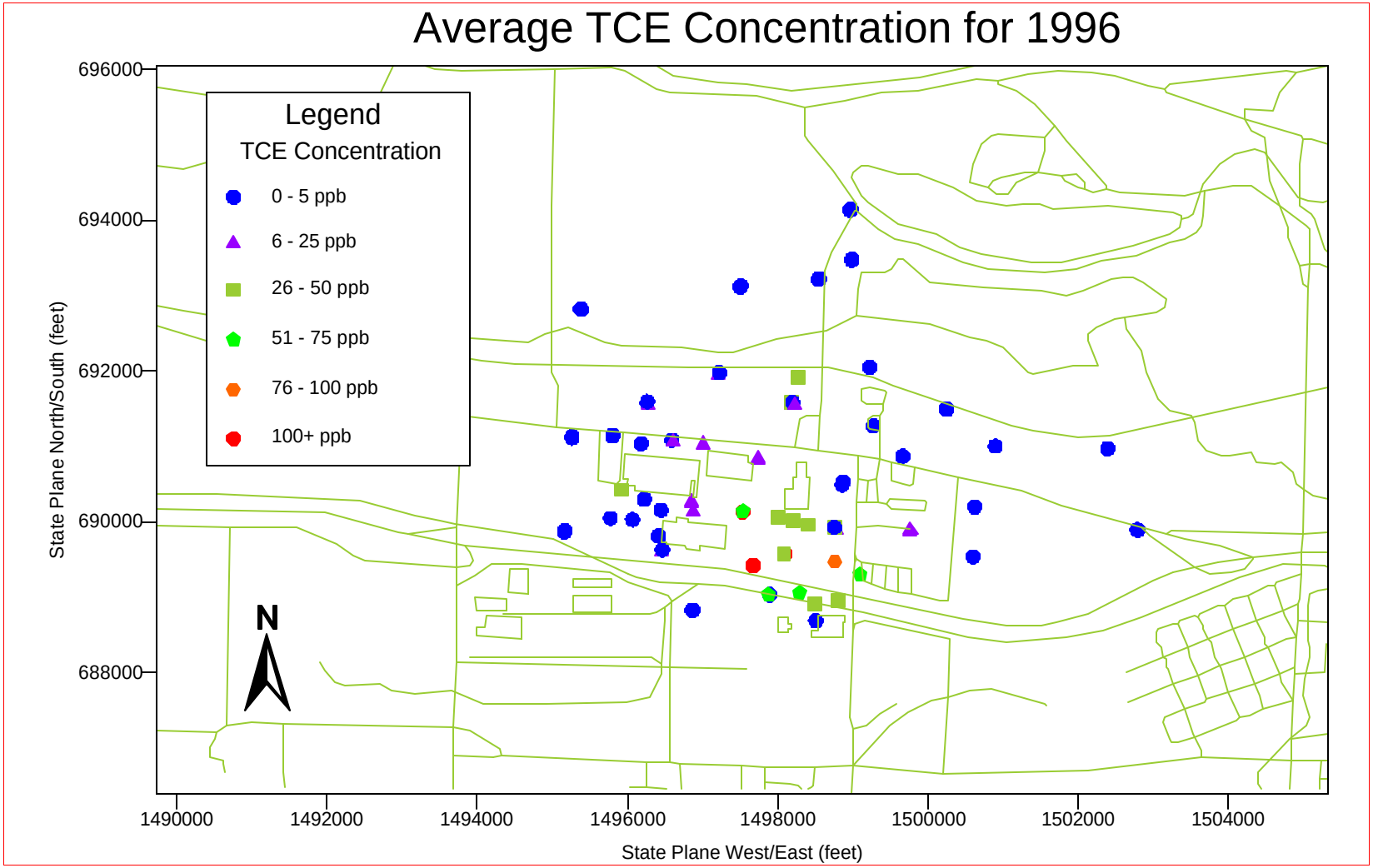

Figure 26 - Time averaged concentration in each well sampled in 1986. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

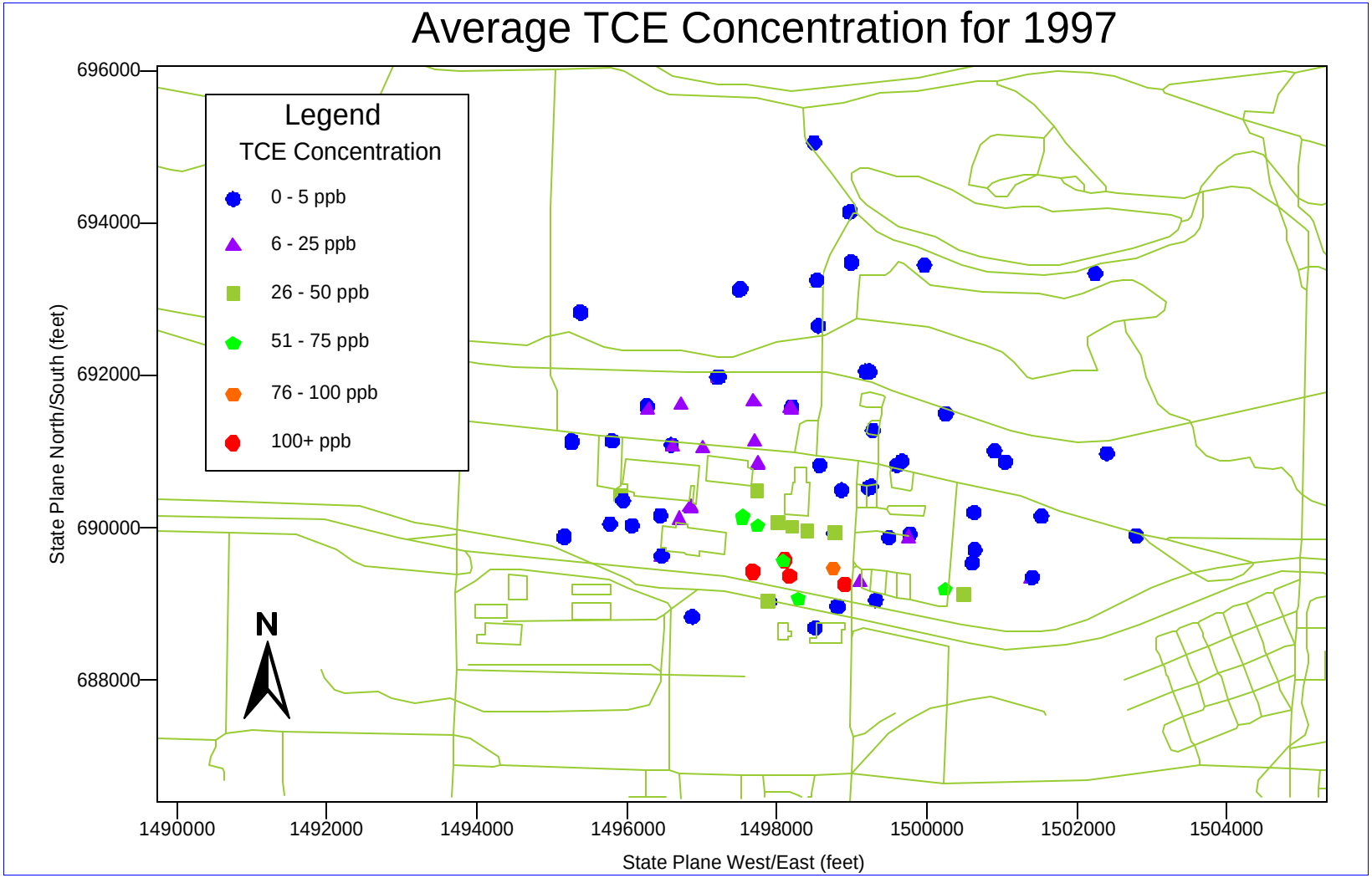

Figure 27 - Time averaged concentration in each well sampled in 1997. Some points show data from multiple completion wells thus a low and high concentration may show at a single point.

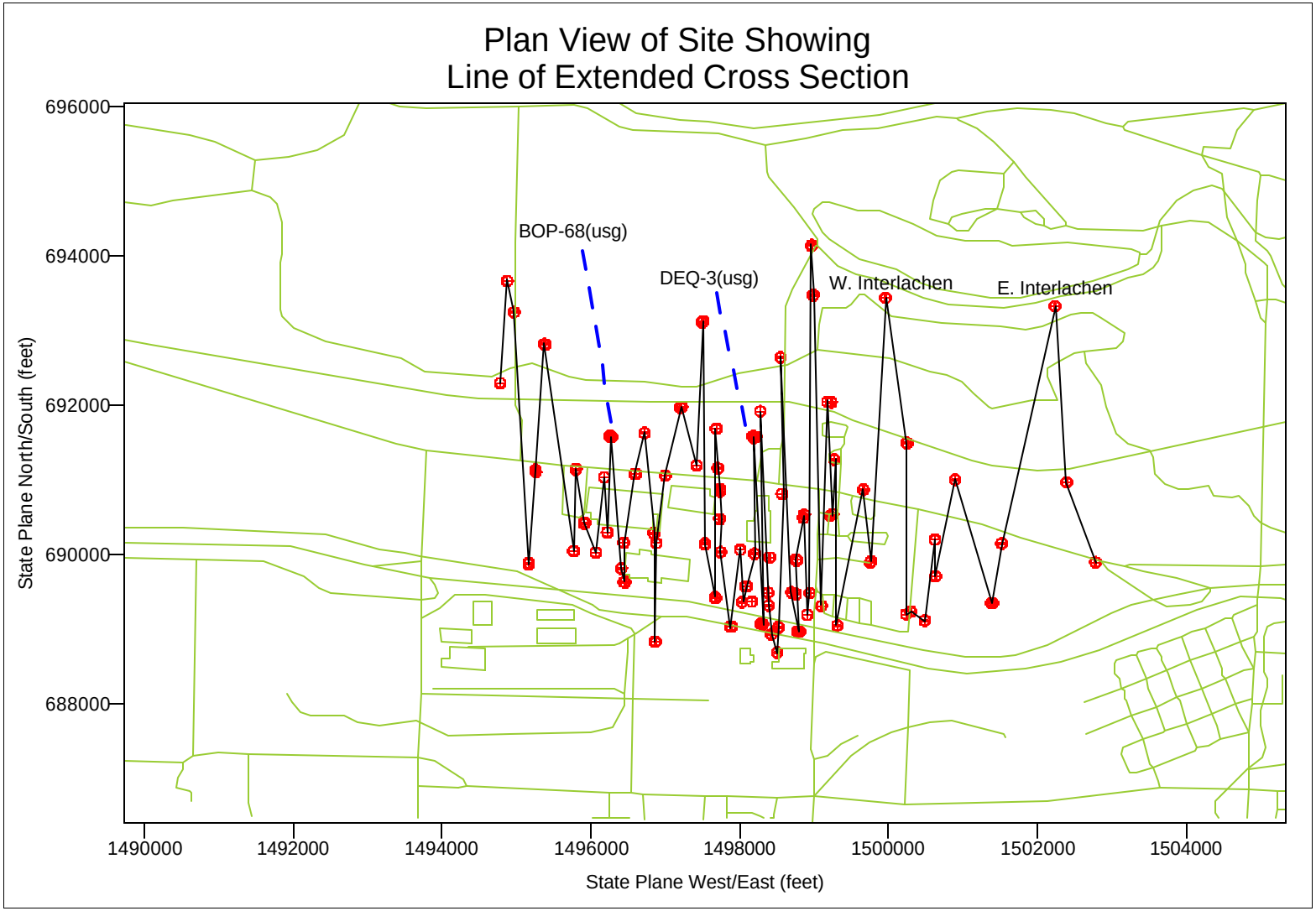

Figure 28 - Line of extended cross section for Figure 29 through Figure 31.

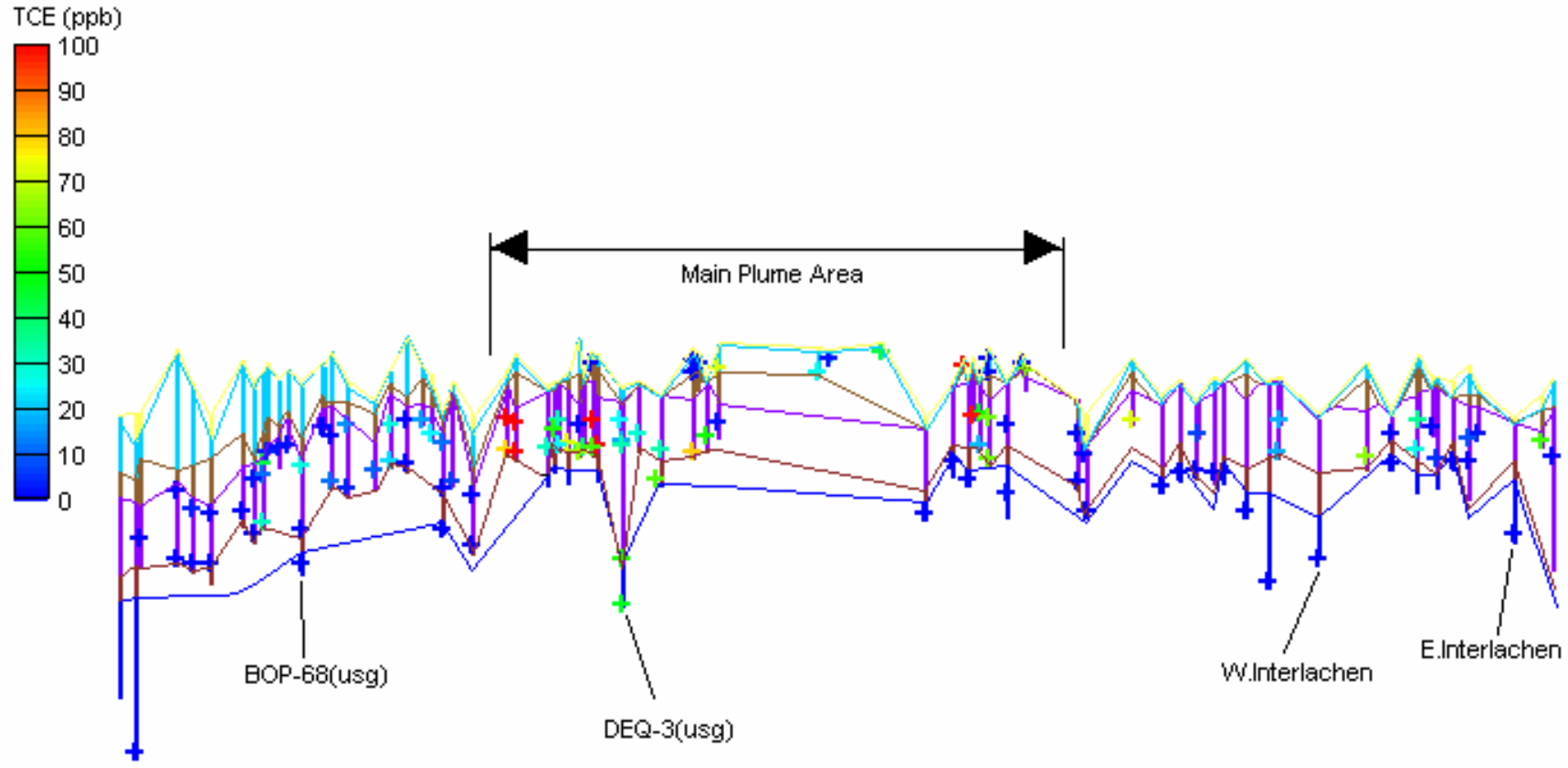

Figure 29 - 'Extended' cross-section showing data points, borehole data, and connected stratigraphy. Data point color varies according to TCE concentration. Note how most of the collected data is in the TSA, with most of the higher hits in the upper TSA. Due to the zig-zag nature of the cross section (see Figure 28) geologic interpretation is not valid here. The plot represents the straightening of the zig-zag line shown in Figure 28, from left to right. Some wells in this view are masked by wells that are immediately adjacent to each other.

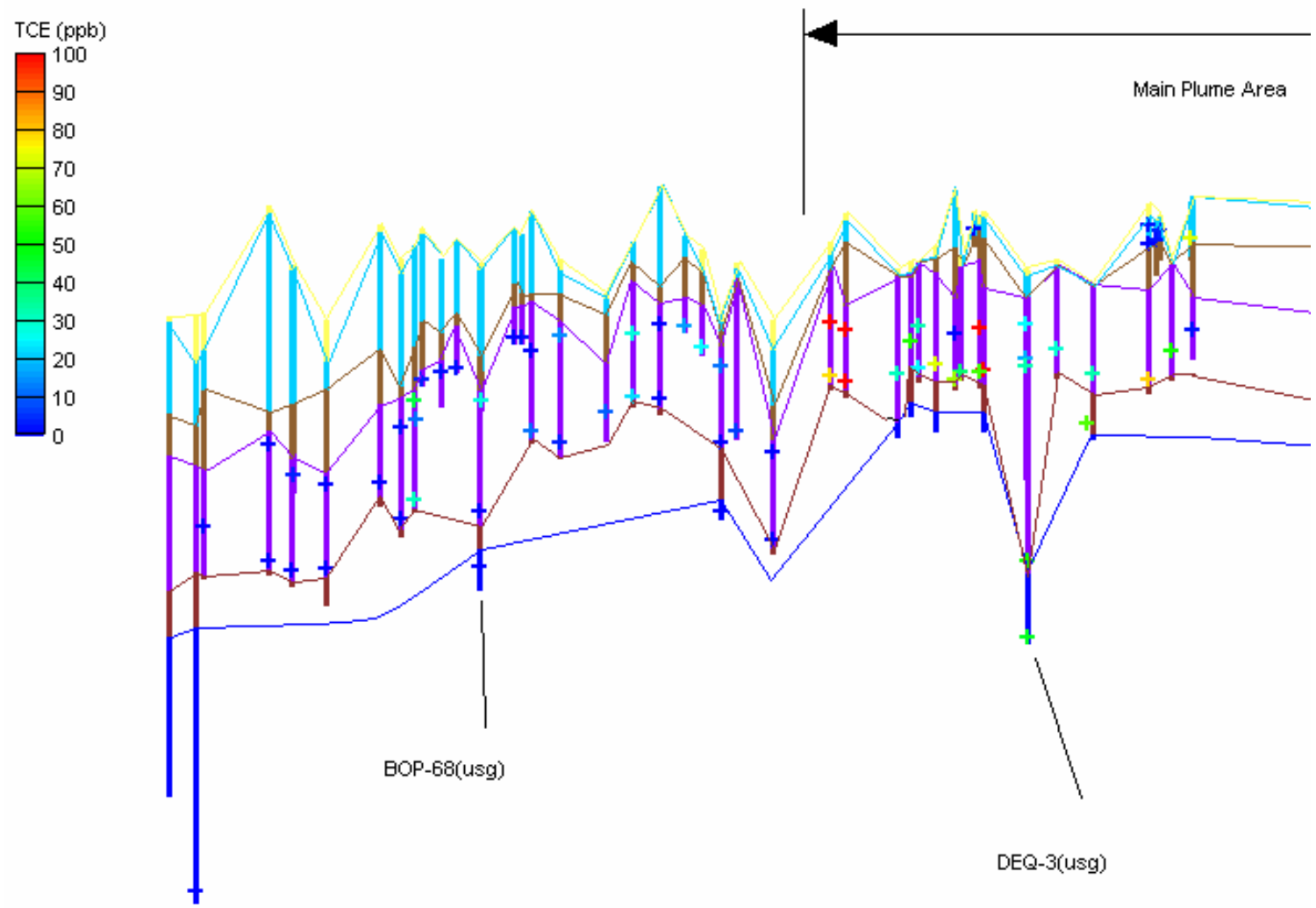

Figure 30 - Close up view of the left-hand side of Figure 29. Data points from multiple completion wells can be seen.

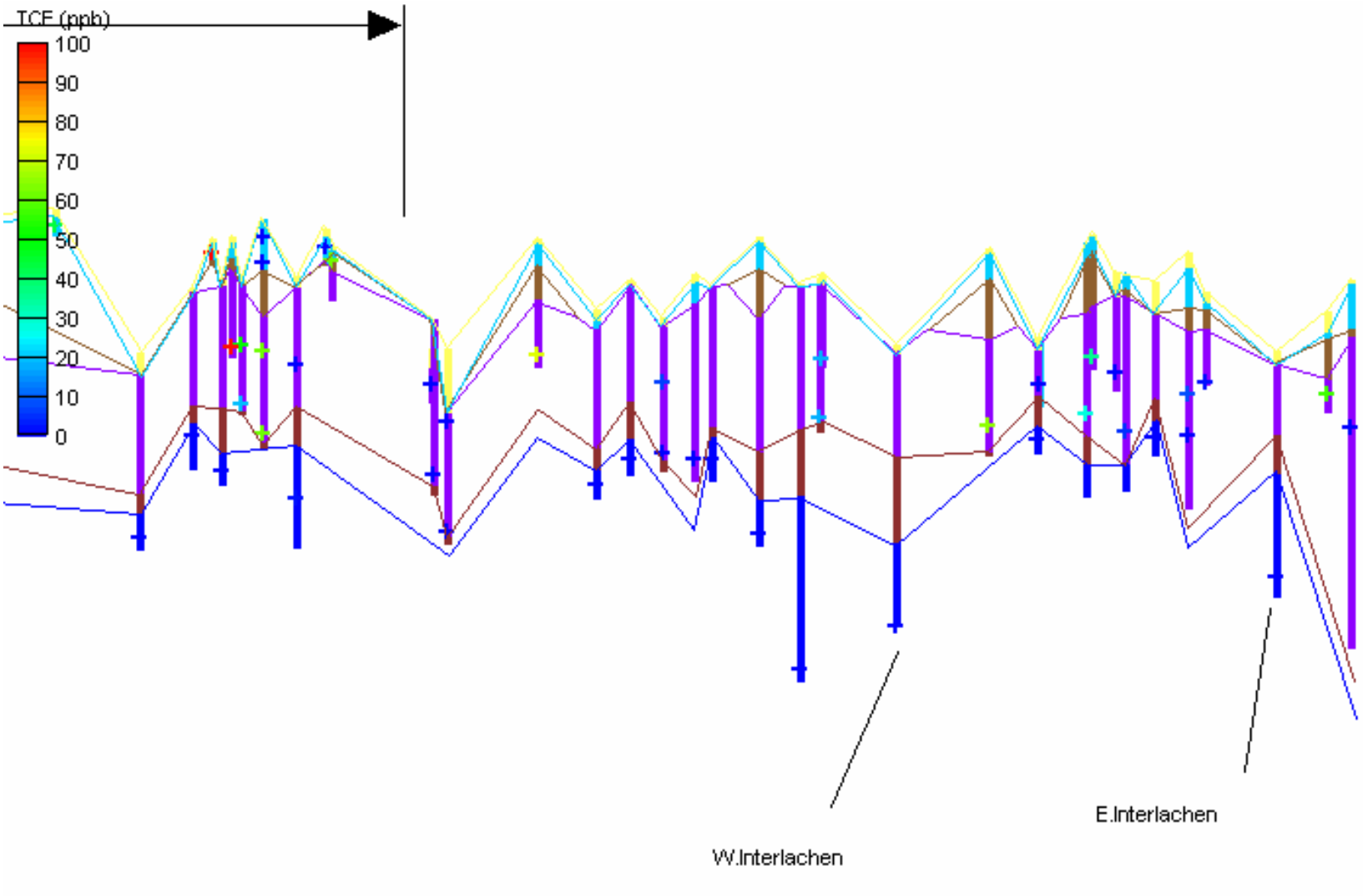

Figure 31 - Close up view of the right-hand side of Figure 29. Data points from multiple completion wells can be seen.

Appendix B

Geologic Borehole Data

No.	WellID	XCoord	YCoord	Elev.	TGA	CU1	TSASS	TSACO	CU2	SGA	BotElev	Depth	Top Of Sceen	BottomOf Screen	Screen Length	MiddleOf Screen
550	A-1(d)	1495772.3	690050.5	116.03	108.03	-17	-74	-130	-172		-180.97	297	-131	-181	50	-156
552	A-2(d)	1495929.5	690454.5	92.7	92.7	-8.3	-67.3	-115.3	-189		-204.3	297	-64	-189	125	-127
554	A-4(i)c	1495000	690884.8	93.8	85.8	-117	-146.2				-179.2	273	-81	-101	20	-91
555	A-5(d)	1497003.1	691058.5	88.9	63.9	63.9	29	-15			-22.1	111	-6	-22	16	-14
556	A-6(ia)	1494571.1	690759.4	95.3	95.3	-123.7					-102.7	198	-80	-100	20	-90
557	A-6(ib)	1494571.1	690759.4	95.3	95.3	-123.7					-134.7	230	-110	-123	13	-116
500	BOP-1(i)	1495870.4	690746.6	84.6	84.6	-22.4					-39.4	124	-10	-16	6	-13
501	BOP-2(i)	1495654.3	690766.9	84.1	84.1	-46.9					-46.9	131	-33	-38	5	-36
502	BOP-3(i)	1495637.8	690647.9	79.2	79.2	-45.8					-46	125.2	-35	-40	5	-37
503	BOP-4(i)	1495862.3	690634.5	86.5	86.5	-21.5					-24	110.5	-7	-12	5	-9
505	BOP-6(i)	1495736.8	690529.3	83.3	83.3	-31.7					-36.65	119.95	-25	-30	5	-27
506	BOP-7(s)	1495263.1	691073.8	81.8	65.8						16.8	65	26	16	10	21
214	BOP-7(i)	1495263	691090.3	80.9	66.9	-67.1					-96.1	177	-67	-87	20	-77
560	BOP-8(s)	1496192.4	691125.3	74.3	74.3						14.3	60	32	22	10	27
566	BOP-8(i)	1496188	691109.4	76	76	12					-21.5	97.5	18	-2	20	8
508	BOP-9(s)	1495791.9	690105.7	114.8	114.8						15.8	99				
220	BOP-9(i)	1495775.4	690098.5	115.1	115.1	-12.9					-36.9	152	-3	-23	20	-13
	BOP-10(s)	1496342.7	690107.6	108.2	108.2						57.2	51	80	70	10	75
509	BOP-10(i)	1496329.8	690091.1	108.8	108.8	36.8					26.8	82	52	32	20	42
510	BOP-11(s)	1495192.8	689863.3	135.3	126.3						15.3	120	34	24	10	29
215	BOP-11(i)	1495194.4	689880.2	134.6	127.6	-89.4					-95.4	230	-70	-90	20	-80
511	BOP-12(s)	1496359.2	689684.7	128.4	128.4						72.4	56	91	81	10	86
221	BOP-12(i)	1496351.4	689665.5	128.7	127.7	45.7					30.7	98	58	38	20	48
512	BOP-13(i)	1497678.8	689409.5	127.8	125.8	96.8					81.8	46	102	87	15	94
465	BOP-13(ds)	1497672.4	689432.8	126.7	121.7	86.7	41.7				-5.1	131.8	9	-1	10	4
205	BOP-13(d)	1497677	689419.8	127.5	119.5	96.5	29.5	-14	-60.3		-65.5	193	-41	-61	20	-50
513	BOP-14(s)	1497235	690668	86.1	86.1		82.5	25.5			-3.9	90	17	7	10	12
204	BOP-14(d)	1497234.6	690668.4	86	74		84	2	-56		-67	153	-27	-47	20	-37
514	BOP-15(s)	1494612.1	690721.1	95.9	91.9						13.9	82	29	19	10	24
	BOP-16(i)	1495543.8	690736.6	90.8	90.8	-54.2					-60.2	151	-47	-52	5	-50
	BOP-17(s)	1495939	690546.3	83.2	83.2						13.2	70	37	27	10	32
	BOP-18(s)	1495932	690747.4	85.35	85.35						15.35	70	36	26	10	31
206	BOP-19(i)	1496867.8	690486.1	84.5	72.5	68.5					49.5	35	75	68	7	72
517	BOP-20(i)	1496618.9	691085.4	78.4	66.4	54.4					27.4	51	54	34	20	44
516	BOP-20(ds)	1496606.5	691086	78.2	67.2	42	12.2				-18.8	97	9	-11	20	-1
515	BOP-20(dg)	1496592.5	691087	78	66	42	13	-73	-130		-131	209	-105	-125	20	-115
519	BOP-21(ds)	1495802.6	691149.4	77.1	65.1	-30.9	-66.9				-114.9	192	-88	-108	20	-98
518	BOP-21(dg)	1495801.2	691137.7	78.2	63.2	-56.8	-67.8	-164.8	-206.8		-212.8	291	-185	-205	20	-195
521	BOP-22(ds)	1495262.4	691115.5	73	70	-75	-126				-166	239	-139	-159	20	-149
520	BOP-22(dg)	1495260.1	691137.8	72.38	67.38	-73.62	-131.62	-225.62	-260.62		-265.62	338	-239	-259	20	-249
523	BOP-23(ds)	1497737.7	690876.6	75.2	73.2		75.2	18.2			-3.8	79	13	3	10	8
522	BOP-23(dg)	1497737.7	690847.6	75.2	73.2		75.2	11.2	-45.8		-49.8	125	-26	-46	20	-36
529	BOP-24(i)	1496393	689951	118.9	118.9	39					37.9	81	61	41	20	51
530	BOP-25(i)	1496926.6	689855.6	110.68	110.68	82.68					70.68	40	96	76	20	86
531	BOP-26(i)	1496783	689867	114	114	68					64	50	88	68	20	78
532	BOP-27(i)	1496650	689814	124.1	124.1	69.1					60.1	64	83	63	20	73
533	BOP-28(i)	1496604	690019	111.9	111.9	59					54.4	57.5	78	58	20	68
524	BOP-29(i)	1497368.4	689489.2	128.1	128.1	100.1					87.6	40.5	113	93	20	103
525	BOP-30(i)	1497697.9	689719.2	114.2	114.2	103.2					94.3	19.9	107	97	10	102
526	BOP-31(ds)	1497533.3	690135	97.1	81.1		71.1	7.1			5.8	91.3	17	7	10	12
528	BOP-31(dg)	1497534.8	690149.5	96.5	83.5		67.5	7.5	-53.5		-57.5	154	-34	-54	20	-44
534	BOP-32(p)	1497445.8	690268.5	94.9	63.9		63.9				43.8	51.1	70	50	20	60
535	BOP-33(i)	1496988.8	689696.1	110.99	110.99	88.99					82.99	28	99	89	10	94
527	BOP-34(i)	1497116.4	690001	107.77	105.77	88					80.77	27	100	90	10	95

536	BOP-35(i)	1497314.8	689940	110.95	97.95	92.95					83.45	27.5	103	93	10	98
537	BOP-36(i)	1496956.6	690501.3	85.13	85.13	75.1					67.63	17.5	79	74	5	76
538	BOP-37(i)	1497082.5	690296.2	96.6	76.6	76.6					66.1	30.5	82	77	5	79
539	BOP-38(p)	1497659	690477	82.5	82.5		59.5				47.4	35.1	59	49	10	54
540	BOP-39(p)	1497216.9	690547.5	85.11	81.11		65.11				49.71	35.4	70	50	20	60
541	BOP-40(p)	1497106.6	690413.9	91.2	72.2		68				47.1	44.1	67	47	20	57
543	BOP-41(ds)	1495162.9	689871.4	135.7	121.7	-94.8	-105.3				-126.6	262.3	-107	-127	20	-117
542	BOP-41(dg)	1495164.9	689889.2	135.2	126.2	-81.8	-103	-212.8	-249.8		-252.3	387.5	-230	-250	20	-240
545	BOP-42(ds)	1496462.1	689632.7	129.3	124.3	54.3	4				-29.2	158.5	-8	-28	20	-18
544	BOP-42(dg)	1496447.9	689633.4	129.5	129.5	43	34	-46.5	-111.5		-113.7	243.2	-92	-112	20	-102
547	BOP-43(ds)	1496283.7	691577.8	75	68.5	-39	-50				-80.6	155.6	-61	-81	20	-71
546	BOP-43(dg)	1496262.8	691582	74.7	67.7	-14.8	-59.3	-147.3	-199.3		-202.8	277.5	-177	-197	20	-187
591	BOP-44(ds)	1497206.5	691983	20.6	8.6		-18.4				-43.7	64.3	-23	-43	20	-33
592	BOP-44(dg)	1497225.2	691983	21.1	9.1		-17	-77	-125.4		-132.7	153.8	-104	-124	20	-114
	BOP-45(i)	1497050.3	691170.9	84.4	75.4	68.4	43				21.4	63	72	68	4	70
	BOP-46(i)	1497111.6	691165.9	85.7	77.7	72.7	37.7				20.7	65	77	73	4	75
	BOP-47(p)	1497247.8	691155.4	89.8	85.8	64	46.8				32.8	57				
	BOP-48(i)	1496983.3	690355.3	91.6	84.6	74	63.6				41.6	50	78	73	5	75
	BOP-49(p)	1497074.8	690425	91.1	78.1	71	64.1				31.1	60				
	BOP-50(p)	1497174.4	690491.4	88.1	81.1		63.1				43.1	45				
	BOP-51(i)	1497194.8	690064.9	106.6	104.1	84.3	62.6				39.6	67	93	89	4	91
	BOP-52(i)	1497303.6	690143.2	100.3	96.3	86	64.3				40.3	60	88	84	4	86
	BOP-53(p)	1497365.4	690207.4	99	94						73	26	79	75	4	76
	BOP-54(p)	1497356.4	690214.9	98.5	91.5		71.5				23.5	75	63	59	4	60
	BOP-55(i)	1496064	690017.7	112.3	112.3						16.9	95.4	27	17	10	22
	BOP-56(i)	1496220.2	690291.3	99.3	99.3						30.1	69.2	41	31	10	36
	BOP-57(ia)	1495933.1	690382	95.7	95.7						-6.2	101.9	0	-5	5	-3
	BOP-57(ib)	1495913.9	690394.1	94.7	94.7	-15.3					-21.7	116.4	-13	-18	5	-16
	BOP-58(i)	1496871.8	690141.1	104	104						82.2	21.8	93	83	10	88
	BOP-59(i)	1496427.6	689995.1	110.6	110.6	47					38.5	72.1	59	49	10	54
454	BOP-60(ds)	1495915.7	690429.8	93	93	-9	-62				-76	169	-65	-75	10	-70
455	BOP-60(dg)	1495915.9	690414.3	93.8	93.8	-14	-60.7	-103.2	-184.2		-185.8	279.6	-165	-185	20	-175
456	BOP-61(ds)	1496851.9	690285.1	96.3	96.3	80.3	49.3				-4.1	100.4	6	-4	10	1
457	BOP-61(dg)	1496843.6	690290.5	96.2	96.2	73.6	54.8	-23.8	-69.8		-75.1	171.3	-60	-70	10	-65
458	BOP-62(ds)	1496066.6	690031.6	112.1	105.1	13.1	-37.9				-53.7	165.8	-42	-52	10	-47
459	BOP-63(ds)	1496222.9	690301.4	98.8	98.8	21	8				-40.7	139.5	-30	-40	10	-35
460	BOP-64(ds)	1496411.3	689814.6	110.5	110.5	53	29				-9.5	120	2	-9	10	-4
461	BOP-65(ds)	1496445.1	690159.4	104.4	104.4	42.4	30.4				-8.8	113.2	2	-8	10	-3
462	BOP-66(ds)	1496881.8	690155.8	103.3	103.3	81.3	36.3				1.6	101.7	13	3	10	8
7001	BOP-67(ds)	1496182.3	691038.8	79.4	79.4	0.4	-27				-77	156.4	-34	-44	10	-39
7000	BOP-68(usg)	1496264.6	691598.3	73.6	67.1	-23.9	-60.4	-148.4	-201.9	-227.4	-269.3	342.9	-236	-256	19	-246
559	D-1(i)	1494452.6	692256.1	20.05	20.05	-84.9					-95.95	116	-64	-84	-20	-74
560	D-2(i)	1494817.5	692345	16.8	5.8	-100					-105.2	122	-75	-95	20	-85
561	D-3(i)	1495389.3	692130.3	42	31	-99					-109.5	151.5	-80	-100	20	-90
563	D-4(s)	1494997.3	693166.6	21.6	21.6						-9.3	30.9	7	-13	20	-3
562	D-4(i)	1495008	693176.2	21.67	-33.33	-74					-77.33	99	-51	-69	19	-60
564	D-6(i)	1495055	695940.4	28.12	-17.88	-53					-68.88	97	-39	-59	20	-49
565	D-7(i)	1495789.3	692132.6	43.01	43.01	-73.99					-91.99	135	-63	-83	20	-73
566	D-8(i)	1496146.8	692122.8	27.43	2.43	-61.6					-76.07	103.5	-50	-70	20	-60
567	D-9(i)	1496582.4	692135	18.08	-2.92	-33.9					-49.92	68	-20	-40	20	-30
568	D-10(i)	1496990.5	692130.3	35.73	35.73	5	-10				-19.27	55	9	-6	15	1
570	D-11(s)	1496340.6	691570.5	75.1	68.1						13.3	61.8	27	17	10	22
569	D-11(i)	1496314.5	691573.8	75.63	50.63	-6.4					-29.37	105	6	-14	20	-4
572	D-12(s)	1496235.2	692018.1	32.38	25.38						-9.62	42	11	1	10	6
571	D-12(i)	1496236.1	692008.2	31.6	25.6	-48.4					-81.4	113	-28	-48	20	-38
586	D-13(s)	1495858.8	693248.7	14.3	14.3						-4.4	18.7	6	-4	10	1
585	D-13(i)	1495833.3	693250.7	14.1	-36.9	-63					-66.2	80.3	-44	-64	20	-54
588	D-14(s)	1495385.1	694126.6	13.4	13.4						-4.7	18.1	5	-5	10	0
587	D-14(i)	1495345.1	694146.7	13.8	-27.2	-63.2					-74	87.8	-45	-65	20	-55
589	D-15(ds)	1498965.6	694138.8	16.5	-1		-1				-32.2	48.7	-6	-26	20	-16
590	D-15(dg)	1498975.6	694149.7	16.8	2.8		2.8	44.2	-110.2		-117.4	134.2	-90	-110	20	-100
	D-16(i)	1497480.5	693098.7	15.1	-18.9	-72					-78.9	94	-54	-74	20	-64

593	D-16(ds)	1497497.5	693117.3	15.4	-17.6	-76	-111.6			-136.9	152.3	-114	-134	20	-124
594	D-16(dg)	1497511.9	693134.8	15.1	-17.9	-76	-111.9	-182.9	-226.9	-231.9	247	-206	-226	20	-216
466	D-17(ds)	1498097.3	689575.1	121.9	115.9	106.9	42.9	13.9		0.9	121	12	2	10	7
467	D-17(dg)	1498080.6	689576.6	121.8	114.8	108.8	78	12.8	-51.2	-56.1	177.9	-30	-50	20	-40
7003	D-18(ds)	1495386.1	692820.3	14.9	-30.6	-62.6	-147.1			-163.7	178.6	-153	-163	10	-158
7002	D-18(dg)	1495375.5	692825.6	15.1	-29.4	-60	-145.9	-192.4	-257	-285.9	301	-237	-257	20	-247
	SV-1a	1496900.3	690901.2	81.94	66.94					57.94	24	76	74	2	75
	SV-1b	1496910.6	690899.7	81.94	81.94					76.24	5.7	78	76	2	77
	SV-2a	1496941	690735.1	83.47	68.47					66.97	16.5	72	70	2	71
	SV-2b	1496941.4	690745.7	83.45	83.45					76.35	7.1	79	77	2	78
573	E1	1495110.8	690810.7	92.3	85.3	-105.2				-105.5	197.8	-32	-98	65	-65
574	E2	1495304	690935.2	82.62	77.62	-73.38				-80.38	163	-12	-72	60	-42
575	E3	1495486.3	691053.6	74.53	71.53	-48.47				-55.47	130	-9	-45	36	-27
576	E4	1495675	691157.8	78	66	-38				-52	130	-5	-41	36	-23
577	E5	1496068.4	690364.2	96.55	96.55	6				2.55	94	27	12	16	19
578	E6	1496311.5	690077.3	111.4	111.4	40.4				23.9	87.5	59	39	20	49
579	E7	1496505.9	690111.5	107.3	107.3	56.3				43.8	63.5	64	54	10	59
580	E8	1496670.2	690313.4	96.35	89.35	62				56.35	40	73	63	10	68
581	E9	1496850.4	690498	83.91	76.91	68.9				63.91	20	74	69	5	71
582	E10	1495662.3	690715.1	87.2	87.2	-44.8				-64.3	151.5	20	-51	71	-16
583	E11	1495841.1	690388.9	103.3	97.3	-19.7				-32.7	136	32	-24	56	4
584	E-12a(ABAN)	1496113.5	690144	109	105	14				2.6	106.4				
	E-12b(NEW)	1495176.2	691145.4	81.6	76.6	-79.9				-111.9	193.5	-40	-80	40	-60
	E13	1496095.3	691949.9	43.8	43.8	-57.2				-78.2	122	-25	-56	31	-41
428	PIEZM-P1	1496142.3	692315.6	16.57	-18.43	-81				-83.43	100				
429	PIEZM-P2	1496155.8	692404.4	15	-21	-83				-83	98				
430	PIEZM-P3	1494815.9	692421.6	12.2	-3.8	-98.8				-112.6	124.8				
431	PIEZM-P4	1494808.8	692527.8	11.8	-12.2	-102				-107.2	119				
	Industrial_Supply_Well	1498533.1	688639.9	145	145	98	27		-78	-135	280	0	-50	50	-25
802	BH-2/MW-2	1498501	688918.4	140.8	140.8	77	37.8	-6.2		-66.2	207	26	-59	85	-17
803	BH-3/MW-3	1498553.4	688459.8	147.9	147.9	89	29.93	-18.07		-61.1	209	-5	-53	48	-29
804	BH-4A/MW-4A	1498544	688457.6	148.09	148.09					127.39	20.7	143	128	15	136
805	BH-4B/MW-4B	1498544	688462.7	148.02	148.02	99.02				97.02	51	114	99	15	106
806	BH-5A/MW-5A	1498504.6	688920.5	140.75	140.75					113.75	27	131	115	16	123
807	BH-5B/MW-5B	1498508.3	688919.5	140.66	140.66					91.66	49	107	92	15	99
808	BH-6A/MW-6A	1498633.9	688898.7	140.76	140.76					127.76	13	137	129	8	133
809	BH-6B/MW-6B	1498638.6	688898.3	140.74	140.74	96.24				94.89	45.85	110	95	16	102
829	MW-7s	1498541.6	688651.7	145.55	138.55					122.55	23	139	124	15	131
810	MW-7i	1498540.2	688655.8	145.67	138.67	96.67				95.07	50.6	115	100	15	107
813	MW-8s	1498309.7	689068.9	137.1	123.6					110.1	27	121	111	10	116
812	MW-8i	1498299.3	689070.7	137.1	124.1	90				86.6	50.5	103	90	14	96
811	MW-8dg	1498286.8	689072.7	137	124	88	46	0	-56	-62.1	199.1	-41	-56	15	-48
815	MW-9s	1498528.5	689024.3	136.6	130.1					113.6	23	125	115	10	120
814	MW-9i	1498519.6	689026.9	136.5	130	89.5				85.5	51	100	90	10	94
818	MW-10s	1498779.2	688973.3	136.2	136.2					115	21.2	126	116	10	121
817	MW-10i	1498789.8	688970.4	136	136	88				86	50	101	91	10	96
821	MW-10ds	1498811.1	688966.5	135.2	135.2	93.2	45.2			0.2	135	21	6	15	14
816	MW-10dg	1498800.6	688968.3	135.7	135.7	88.5	46	1.7	-70.3	-74.3	210	-53	-68	15	-61
822	MW-11s	1498032	689363.2	130.2	127.2	102.2				92.2	38	119	104	15	112
823	MW-12s	1498390.5	689320.6	126	124	102				79.5	46.5	117	102	15	110
824	MW-13s	1498909.6	689196	128.2	119.7	95				94.2	34	118	103	15	111
826	MW-14ds	1498766.6	689929.7	80.9	73.9		73.9	26.9		2.9	78	28	13	15	20
825	MW-14dg	1498776.6	689929.2	81	74		74	27	-42	-44	125	-26	-41	15	-34
831	MW-16dg	1498203.8	690013.9	76.5	70.5		70.5	17.5	-41.5	-46.85	123.35	9	-39	47	-15
832	MW-17s	1498703.6	689496.7	119.1	114.1	98.5				95.7	23.4	110	100	10	105
833	MW-17ds	1498758.3	689471.1	120	115	99.5	90			10	110	24	14	10	18
834	MW-18ds	1499100.4	689311.7	118.2	113.2	93.6	62.2	13.2		0.2	118	16	6	10	11
835	MW-19ds	1498508.3	688687.2	144.34	144.34	96.34	38.34	-3.66		-25.66	170	10	0	10	5
850	MW-20ds	1497894.7	689034.5	150.5	150.5	90.5	36.5	-5.5		-7.7	158.2	6	-4	10	1
851	MW-20dg	1497875.3	689038	150.9	150.9	90.9	36.9	-5.1	-53.1	-57.6	208.5	-42	-52	10	-47
854	MW-22ds	1499768.5	689916.6	86	79		79	29		-0.1	86.1	12	2	10	7

855	MW-22dg	1499756.6	689895.1	82.1	75.1		75.1	25.1	-51.9		-59.9	142	-42	-52	10	-47
836	MW-23ds	1498858.3	690494.2	81.1	77.1		77.1	31.1	-40.9		-44.4	125.5	7	-3	10	2
847	MW-24dg	1498404.2	689963.2	79.4	70.4		72.4	17.4	-45.6		-47.6	127	7	-43	50	-18
848	MW-25dg	1498008.4	690067.2	83.6	70.6		70.6	20.6	-46.4		-47.5	131.1	-34	-44	10	-39
837	MW-26ds	1501386	689352	106	90	53	32.3				-32	138	-20	-30	10	-25
7006	MW-26dg	1501401	689348	106.3	90.3	53	32.3	-33.7			-131.7	238	-59	-69	10	-64
7007	MW-27s	1498499.6	688701.2	143.95	143.95						113.95	30				
7008	MW-27i	1498499.8	688695.4	144.02	144.02						95.62	48.4				
	MW-28s	1498494.9	688828.2	142.57	142.57						115.17	27.4				
	MW-28i	1498489.7	688830.4	142.62	142.62						94.02	48.6				
865	MW-29ds	1502785.9	689897.5	79.2	76	34.2	27.3	-68.8			-71	150.2	-51	-61	10	-56
866	MW-29dg	1502795.4	689893.4	79.4	76.2	34.4	27.4	-68.6			-260.4	339.8	-127	-136	9	132
	RW-1	1498526.8	688907.1	140.9	140.9	89					86.9	54	124	94	31	109
	RW-2	1498622.8	688897.6	141	141	89					86	55	121	91	31	106
7013	RW-3	1498429.9	688932.9	139	139	81					79.5	59.5	119	84	35	102
	B-1	1498182.8	689572.7	120.1	115.1	107.6					98.9	21.2	105	100	5	103
7015	B-2	1498385.2	689491.7	121.6	119.6	97					63.6	58	101	96	5	99
	B-3	1498388.6	689706.9	104.7	99.7	89.7	84				78.7	26				
	B-4	1498397.5	689809.8	95.2	90.2	81					68.2	27				
	B-5	1498739.3	689519.5	116.1	111.1	99.6					99.1	17	104	99	5	102
7016	B-6	1498947.5	689484.3	111.6	107.6	98.6	87.8				61.3	50.3	101	96	5	98
	B-7	1499010.4	688415.9	151.9	144.9						135.7	16.2	141	136	5	138
	SW-1	1498784.1	689557.5	110.3	105.8						105.8	4.5				
7014	SW-2	1497949.5	689695.3	109.4	107.4	107.4					105.9	3.5				
	C-101v	1498538.1	688626.9	145.67	145.67						95.42	50.25				
	C-105	1498479.7	688845.1	142.48	142.48						126.48	16				
	C-106	1498497.2	688841.3	142.17	142.17						126.17	16				
	C-107	1498509.2	688839.9	142.17	142.17						127.67	14.5				
	C-111v	1498582.7	688803	142.49	142.49						118.79	23.7				
	C-112	1498599.3	688837.1	142.24	142.24						94.24	48				
	C-113	1498652.4	688841.5	141.92	141.92						91.92	50				
7004	C-117v	1498581.2	688769.9	145.83	145.83						120.53	25.3				
7005	C-118v	1498596.1	688802.9	145.88	145.88						119.88	26				
911	EMC-1ds	1498989.1	693474.3	17.2	-43.8		-43				-60	77.2	-46	-56	10	-51
912	EMC-1dg	1498991.1	693485.9	17.1	-42.9		-43.4	-103.9	-158.4		-163.4	180.5	-148	-158	10	-153
913	EMC-2ds	1499231.6	692044.1	45.2	36.2		36.2	0			-23.1	68.3	-10	-20	10	-15
914	EMC-2dg	1499225.7	692052.5	44.8	35.8		35.8	-1	-87.2		-95.4	140.2	-75	-85	10	-80
118	C-12-19AC1	1491895	696045	10	-38	-80	-138				-207	217				
119	TW15-19ADBB1	1492947.7	695945	24.3	-3.7	-106	-141	-196	-254		-291.7	316	-173	-252	79	-212
120	C-11-PW15-19ADBB2	1493296.7	695965	26	-1	-79	-143	-209	-253		-261	287	-171	-194	23	-182
121	TW4-19BACD1	1490747.1	696550.6	26.1	-42.9	-88.9	-171.9	-217.9	-268.9	-323.9	-549.9	576				
122	PW4-19BACD2	1496764	696549	23	-46	-87	-175	-220	-272	-327	-510.7	533.7	-344	-500	156	-422
124	PW3-19BBCB2	1489297	696803	24	-24	-126	-190	-241	-287		-293	317	-214	-263	49	-238
125	TW9-19BDDC1	1491225	695065	23.93	-31.07	-78.1	-189.07	-231.07	-278.1	-343.1	-476.07	500	-356	-452	96	-404
126	C-13-PW9-19BDDC2	1490929	694999	23.93	-19.07						-471.07	495	-353	-461	109	-407
127	TW5-19CBBA1	1489249.5	694950.5	22.5	10.5	-134	-168.5	-239.5	-305.5		-317.5	340	-113	-176	63	-144
131	20ADCD1	1498492.5	695050	22.7	8.7				-62.3	-77.3	-335.3	358				
132	C-1-PW14-20ADCB2	1498520	695066	22	10				-54	-83	-339	361	-227	-330	103	-279
134	Thacker-20BC1	1494793.4	695568.4	25	-27	-57					-59	84	-45	-55	10	-50
135	TW7-20BDBB1	1495909	695826.6	29.4	-25.6		-36.6	-83.6	-146.6	-208.6	-424.6	454	-299	-420	121	-360
136	C-3-PW7-20BDBB2	1495909	695826.6	26	26	-24	-39	-87	-147	-212	-424	450	-299	-404	105	-352
137	B-4-SPADA	1494917.4	693577.8	20.3	-36.7						-56.7	77				
138	z185Piezo-20CBDC1	1494877.6	693669	20.8	-31.2	-97.2	-141.2	-189.2	-251.2	-311.2	-1079.2	1100	-157	-1020	863	-588
139	RW-2-20CC1	1494444.1	692282.8	15	6	-95	-168	-204	-283	-344	-508	523				
140	PPWN-20CCAB1	1494970.8	693293.1	23.6	-31.4	-76.4	-140.4	-188.4	-250.4	-314.4	-424.4	448	-316	-415	99	-365
141	PPWS-20CCAB2	1494970	693252.9	23	-17	-59	-145	-215	-255		-257	280	-153	-254	101	-203

142	B-8-PW8-20CCAB3	1495088	693366	20	-36	-70	-115	-210	-254	-312	-430	450	-325	-420	95	-372
143	RW-1-20CCCD1	1494781.8	692302.2	18	13	-85	-128	-207	-271	-320	-487	505	-222	-422	200	-322
165	E.Piezo-21CADD1	1502248.5	693442.8	32	32		32	4			-8	40				
166	W.Inter-21CBCD1	1499963	693442	21	11		11	-9	-84	-164	-240	261	-239	-240	1	-240
167	W.Piezo-21CBCD2	1499941.3	693617.5	45	45		38				-5	50				
169	Schloradt-21DACB1	1503381	693817	22	22						-28	50				
173	E.Inter-21DBCC1	1502169	693260	17	17						-92	109				
174	E.Inter-21DBCC2	1502239	693333	14	1		1	-21	-64	-100	-212	226	-187	-202	15	-194
175	Tuttle-21DBDC1	1502887.1	693483.4	35.5	35.5						-8.5	44				
176	ColumbiaA-Fujii_Farms	1504270.3	692679.6	17.6	2.6		2.6	-9.4	-67.4	-125.4	-247.4	265	-190	-255	65	-222
181	NWNG-27BC1	1504706	689885	100	100						-305	405				
183	COF6-27CBAA2	1505616	689085	110	100	24	9	-47	-108	-124	-97	207	-45	-98	53	-72
184	COF5-27CBBB1	1504741.4	688994.4	117	113	12	-8				-243	360	-153	-238	85	-196
185	COF3-27CBBB2	1504758	688995.8	117	112	34		-8	-86	-148	-943	1060	-203	-223	20	-213
189	Watters-Fairview-RV	1502396	690975	51	31	25		-13			-41	92	-14	-39	25	-26
192	B-32-WADE	1499665	690871	77.2	73.2		73.2	6.2	-57.8	-120.8	-290.8	368	-273	-288	15	-280
193	Willard-28BC1	1500899	691006	79	49			49	-31	-51	-81	160	-51	-81	30	-66
194	B-34-Schmidt-28BC2	1500415	690451	78	43			43	-29	-70	-206	284	-80	-199	119	-140
195	B-17-28BC4	1500508	689570	112	105		92	19	-73	-86	-223	335	-103	-213	110	-158
196	Schmoyer-Andrews	1500625	690201	88.43	64.43		64.4	42.4			-21.57	110	5	-15	20	-5
198	B-18-Hoyt	1500240	689201	110	104	80	25	9	-80		-82	192	-30	-80	50	-55
199	COF4-28DCDD1	1502960	686565	185	183	-32		-104			-235	420	80	-165	245	-42
200	B-5-Cereghino29AA1	1498613.1	691066.9	78	72		72				-22	100				
201	B-21-29AA3	1498957.5	691050.9	82	80		80	34			-21	103				
202	B-12-Rolling_Hills	1499274.4	691276.3	75.5	73.5		73.5	27	-57	-66	-104.5	180	-65	-105	40	-85
203	B-33-Parker	1497360.3	691290.4	82	82		50				-10	92				
207	B-10-James_Shephard	1498871.3	690537	83.5	73.5		73.5	33.5	-38.5	-74.5	-166.5	250	-77	-168	91	-122
208	B-24-Sandy_Mobile_Villa	1499215	690521	80.1	74.1		74.1	28.1	-31.9	-67.9	-99.9	180	-77	-94	17	-86
225	B-19-Cherry_Blossom-29DA2	1499315	689051	120	115	90	45	-5	-80	-123	-166	286	-147	-163	16	-155
226	B-22a-29DCDD1	1497874	687077	195	190	68	1	-72	-193	-253	-261	456	-127	-181	54	-154
227	B-22b-RWD-29DCDD2	1498040	687073	195	190	49	20	-71	-193	-231	-504	699	-497	-504	7	-500
232	UnionPI-30CCAC1	1489524.6	687768.8	205	202	-173	-203				-495	700	-270	-415	145	-342
233	B-13-30DADD1	1494018	688431	178	137	-121					-251	429	55	-119	174	-32
239	Glisa-9999ie-33ADDA1	1504477	684549.2	197.3	197.3		-106	-141	-239	-344	-930.7	1128				
240	RHS-33BBCA1	1499806	685985	200	200	-37	-95				-105	305	-5	-105	100	-55
245	COWV-34AABC1	1508606	686185	170	155						-190	360				
345	Calcagno-Edwards	1501042	690861	73	50			50			-17	90				
382	GSP-29AAAC	1498969	691642	70	70						-33	103				
390	ODOT_Core	1501664.9	689206.9	105	102	77	25	-37			-60	165				
393	PWB-1usg	1498550	692646.6	13.7	-10.3		-9	-63	-118	-137	-169.3	183	-148	-168	20	-158
7009	PWB-2lts	1499982.2	693633.6	45.1	45.1		45				-44.9	90	-20	-40	20	-30
7010	PWB-2usg	1500006.3	693623.1	45.1	45.1		45	-8	-60	-102	-249.9	295	-227	-247	20	-237
400	B-1	1495723.8	691418.7	72	68						-24	96	20	-31	51	-6
409	B-24/29AD3	1499255	690542	85	77		58	45			-106	191	-67	-105	38	-86
417	B-35-CLAFLIN	1500488	689119	123	121	108	56	0			-2	125	18	3	15	10
419	C-2c-Big_Eddy-20AC3	1497935	695415	25	9		9	-24	-81		-140	165	-100	-120	20	-110
434	Schmautz-28BC6	1501525	690151	70	59	53	34	15			-15.5	85.5	-14	-16	2	-15
858	RPW-1ds	1498538.9	693219.5	10.9	-35.1		-35.1				-108.1	119				

859	RPW-1dg	1498552.7	693225.4	11.1	-34.9		-34.9	-118.9	-183		-192.4	203.5				
860	RPW-2dg	1498279.5	691922.5	51.2	49.9		49.9	-11.8	-63.8	-106.4	-110.8	162	-24	-59	35	-42
900	DEQ-1s	1500174	688243.2	151.22	147.22						111.52	39.7	135	115	20	125
901	DEQ-1ds	1500195.1	688236.1	151	151						5.5	145.5	27	7	20	17
902	DEQ-1dg	1500184.6	688240	151	147	89	69	-34	-76		-84	235	-53	-73	20	-63
903	DEQ-3s	1498176.6	691588.9	68.5	60.8		39	19			-9.5	78	20	0	20	10
904	DEQ-3i	1498188.3	691587	68.4	60.8		38	18			-151.6	220	-29	-39	10	-34
905	DEQ-3d	1498198.1	691585.3	67.8	60.8		38	18			-252.2	320	-230	-250	20	-240
906	DEQ-4s	1500254.3	691495.5	27	27						-36.7	63.7	-6	-26	20	-16
907	DEQ-4d	1500243.5	691497.9	27	15			15	-28	-56	-79	106	-57	-77	20	-67
908	DEQ-5i	1496865.6	688822.3	156	156						51.5	104.5	73	53	20	63
909	DEQ-5ds	1496861.6	688831.7	155.9	155.9	48.4	31.4				-4.1	160	20	0	20	10
910	DEQ-5dg	1496871.4	688830.8	155.9	155.9	48.4	31.4	-14.1	-79.1		-84.1	240	-58	-78	20	-68
7017	C-114v	1498609	688700										0	0	0	0
7018	C-115	1498609	688721										0	0	0	0
7019	C-116v	1498635	688708										0	0	0	0
7020	CMW-2	1498488	688919										0	0	0	0
7021	CMW-3	1498528	688430										0	0	0	0
7022	CMW-37usg	1500603	689540										0	0	0	0
7023	EMC-2usg	1499181	692051	52.9	42.9		34	4	-77	-96	-122.1	175	-104	-114	10	-109
7024	EW-1	1497771.2	689549	123.5							-59.9	183.4	-28	-58	30	-43
7025	EW-12	1497744	690037.2	93.9		81.9	63.9	11.9	-49.1	-82.1	-103.1	197	-17	-47	30	-32
7026	EW-2	1498903.6	689252.5	126.1							-48.5	174.6	-7	-47	40	-27
7028	EW-4	1498203.8	690013.9	76.5							-42.5	119	7	-41	48	-17
7029	EW-5	1498404.2	689963.2	79.4							-45	124.4	8	-42	50	-18
7030	EW-6	1498193.1	691566	69			57	19			-53	122	-16	-36	20	-26
7031	EW-7	1497710.5	691158.4	69.2			60.2	15.2		-93.8	-108.8	178	-26	-57	31	-41
7032	EW-8	1497733	690480.3	77.3			63.3	3.3	-33.7	-72.7	-85.7	163	7	-23	30	-8
7033	EW-9	1496722.3	691630	43.3	37.3	18.3	-32.7	-106.7			-111.7	155	-57	-107	50	-82
7034	PWB-1lts	1498518	692645	16.48									0	0	0	0
7035	PWB-1uts	1498517	692644	15.98									0	0	0	0
7040	PMX-410R	1499490	689870										0	0	0	0
7042	EW-13	1496697.5	690134.4	104.49							-79	183.49	-34	-74	30	-49
7043	EW-14	1498164.8	689369.9	128.4	122	101	49	10	-54	-84	-101.6	230	-22	-52	30	-37
7041	EW-16	1500635.3	689710	84.12	84.12	72	63	10		-90	-113.88	198	-40	-80	40	-60
7036	BOP-69(usg)	1497424.1	691199.3	74.95	68.95		57.95	8.95			-110.05		-97	-107	10	-102
7037	MW-38usg	1498570	690819	73.9			69	25	-37	-53	-94.1	168	-59	-69	10	-64
7038	EW-19	1497687.9	691687.5	45.65							-69.35	115	-39	-64	25	-52
7044	EW-3	1495948.5	690357.7	97.1							-111.04	208.14	-78	-103	25	-90
7045	EW-11	1500302.8	689236.9	115.19	115	101	49	-11	-66	-90	-119.81	235	-23	-63	40	-43
7046	EW-17	1498555.7	692628.8	14.7									0	0	0	0
7047	DEQ-3usg	1498221.9	691582.3	71.06	71.06		50	20	-40	-82			-92	-101	10	-95
7048	BOP-44usg	1497200	691975	21.1	12.1	1.6	-13.9	-66.9	-119.9	-173.9	-193.9	215	-181	-191	10	-186
7049	MW-14usg	1498756.6	689930.2	81.4	74.4		74.4	27.4	-38.6	-80.8	-109.1	193.5	-87	-107	20	-97
7050	MW-36dg	1499600	690823										0	0	0	0

Appendix C

Yearly Averaged Concentration Data

1986 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
192	B-32-WADE	1499665	690871	0	SGA
198	B-18-Hoyt	1500240	689201	25.5	TSA
202	B-12-Rolling_Hills	1499274.4	691276.3	0	SGA
207	B-10-James_Shephard	1498871.3	690537	0	SGA
208	B-24-Sandy_Mobile_Villa	1499215	690521	0	SGA
417	B-35-CLAFLIN	1500488	689119	12	TSA
550	A-1(d)	1495772.3	690050.5	27.6666666666667	TSA
552	A-2(d)	1495929.5	690454.5	44.3333333333333	TSA
555	A-5(d)	1497003.1	691058.5	25	TSA

1987 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
120	C-11-PW15-19ADBB2	1493296.7	695965	0	TSA
122	PW4-19BACD2	1496764	696549	0	SGA
124	PW3-19BBCB2	1489297	696803	0	TSA
126	C-13-PW9-19BDDC2	1490929	694999	0	SGA
132	C-1-PW14-20ADCB2	1498520	695066	0	SGA
136	C-3-PW7-20BDBB2	1495909	695826.6	0	SGA
142	B-8-PW8-20CCAB3	1495088	693366	0	SGA
192	B-32-WADE	1499665	690871	0	SGA
198	B-18-Hoyt	1500240	689201	33.5	TSA
202	B-12-Rolling_Hills	1499274.4	691276.3	0	SGA
204	BOP-14(d)	1497234.6	690668.4	27.3333333333333	TSA
205	BOP-13(d)	1497677	689419.8	99.8	TSA
207	B-10-James_Shephard	1498871.3	690537	1.9	SGA
208	B-24-Sandy_Mobile_Villa	1499215	690521	0	SGA
417	B-35-CLAFLIN	1500488	689119	14	TSA
513	BOP-14(s)	1497235	690668	4.19999980926514	TSA
550	A-1(d)	1495772.3	690050.5	13.0857143061502	TSA
552	A-2(d)	1495929.5	690454.5	54.3350000351667	TSA
555	A-5(d)	1497003.1	691058.5	23	TSA

1988 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
138	z185Piezo-20CBDC1	1494877.6	693669	0	TSA
141	PPWS-20CCAB2	1494970	693252.9	0.839999985694885	TSA
192	B-32-WADE	1499665	690871	0	SGA
198	B-18-Hoyt	1500240	689201	34	TSA
202	B-12-Rolling_Hills	1499274.4	691276.3	0	SGA
204	BOP-14(d)	1497234.6	690668.4	27	TSA
205	BOP-13(d)	1497677	689419.8	100	TSA
207	B-10-James_Shephard	1498871.3	690537	0	SGA
208	B-24-Sandy_Mobile_Villa	1499215	690521	0	SGA
417	B-35-CLAFLIN	1500488	689119	16	TSA
513	BOP-14(s)	1497235	690668	8.60000038146973	TSA
550	A-1(d)	1495772.3	690050.5	3.70000004768372	TSA
552	A-2(d)	1495929.5	690454.5	168	TSA
555	A-5(d)	1497003.1	691058.5	20	TSA
7020	CMW-2	1498488	688919	3	TSA
7021	CMW-3	1498528	688430	0.200000007947286	TSA

1989 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
189	Watters-Fairview_RV	1502396	690975	2	TSA
192	B-32-WADE	1499665	690871	0	SGA
196	Schmoyer-Andrews	1500625	690201	2	TSA
198	B-18-Hoyt	1500240	689201	38.5	TSA
202	B-12-Rolling_Hills	1499274.4	691276.3	0	SGA
204	BOP-14(d)	1497234.6	690668.4	30.3333333333333	TSA
205	BOP-13(d)	1497677	689419.8	60	TSA
207	B-10-James_Shephard	1498871.3	690537	0	SGA
345	Calcagno-Edwards	1501042	690861	8	TSA
417	B-35-CLAFLIN	1500488	689119	26.5	TSA
513	BOP-14(s)	1497235	690668	9.75	TSA
515	BOP-20(dg)	1496592.5	691087	2.89999997615814	TSA
516	BOP-20(ds)	1496606.5	691086	27	TSA
518	BOP-21(dg)	1495801.2	691137.7	0	TSA
519	BOP-21(ds)	1495802.6	691149.4	28	TSA
520	BOP-22(dg)	1495260.1	691137.8	0.200000002980232	TSA
521	BOP-22(ds)	1495262.4	691115.5	43	TSA
550	A-1(d)	1495772.3	690050.5	3.04999995231628	TSA
555	A-5(d)	1497003.1	691058.5	10	TSA

1990 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
198	B-18-Hoyt	1500240	689201	45	TSA
204	BOP-14(d)	1497234.6	690668.4	30	TSA
205	BOP-13(d)	1497677	689419.8	130	TSA
207	B-10-James_Shephard	1498871.3	690537	0	SGA
417	B-35-CLAFLIN	1500488	689119	47	TSA
513	BOP-14(s)	1497235	690668	11	TSA
515	BOP-20(dg)	1496592.5	691087	4.04999995231628	TSA
516	BOP-20(ds)	1496606.5	691086	29.5	TSA
518	BOP-21(dg)	1495801.2	691137.7	0	TSA
519	BOP-21(ds)	1495802.6	691149.4	25	TSA
520	BOP-22(dg)	1495260.1	691137.8	0	TSA
521	BOP-22(ds)	1495262.4	691115.5	25	TSA
522	BOP-23(dg)	1497737.7	690847.6	98.8	TSA
523	BOP-23(ds)	1497737.7	690876.6	67	TSA
550	A-1(d)	1495772.3	690050.5	1.79999995231628	TSA
555	A-5(d)	1497003.1	691058.5	22.5	TSA
811	MW-8dg	1498286.8	689072.7	4.5	TSA
816	MW-10dg	1498800.6	688968.3	9	TSA
825	MW-14dg	1498776.6	689929.2	11	TSA
7020	CMW-2	1498488	688919	26.1666666666667	TSA
7021	CMW-3	1498528	688430	3.5	TSA

1991 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
192	B-32-WADE	1499665	690871	0	SGA
196	Schmoyer-Andrews	1500625	690201	2.66666666666667	TSA
200	B-5-Cereghino29AA1	1498613.1	691066.9	14.5	TSA
205	BOP-13(d)	1497677	689419.8	145	TSA
207	B-10-James_Shephard	1498871.3	690537	0	SGA
345	Calcagno-Edwards	1501042	690861	0	TSA
434	Schmautz-28BC6	1501525	690151	1.0333333214124	TSA
513	BOP-14(s)	1497235	690668	0	TSA
515	BOP-20(dg)	1496592.5	691087	3.69999992847443	TSA
516	BOP-20(ds)	1496606.5	691086	33.25	TSA
518	BOP-21(dg)	1495801.2	691137.7	0	TSA
519	BOP-21(ds)	1495802.6	691149.4	13.75	TSA
520	BOP-22(dg)	1495260.1	691137.8	0	TSA
521	BOP-22(ds)	1495262.4	691115.5	4.16666666666667	TSA
522	BOP-23(dg)	1497737.7	690847.6	51.5	TSA
523	BOP-23(ds)	1497737.7	690876.6	40.3333333333333	TSA
526	BOP-31(ds)	1497533.3	690135	99.1666666666667	TSA
528	BOP-31(dg)	1497534.8	690149.5	107.25	TSA
550	A-1(d)	1495772.3	690050.5	1.42500001192093	TSA
555	A-5(d)	1497003.1	691058.5	19.4000000059605	TSA
811	MW-8dg	1498286.8	689072.7	14	TSA
816	MW-10dg	1498800.6	688968.3	15	TSA
821	MW-10ds	1498811.1	688966.5	35.5	TSA
825	MW-14dg	1498776.6	689929.2	17	TSA
826	MW-14ds	1498766.6	689929.7	51	TSA
901	DEQ-1ds	1500195.1	688236.1	0	TSA
902	DEQ-1dg	1500184.6	688240	0	TSA
903	DEQ-3s	1498176.6	691588.9	43.0599998474121	TSA
904	DEQ-3i	1498188.3	691587	52.6599998474121	TSA
905	DEQ-3d	1498198.1	691585.3	0	SGA
906	DEQ-4s	1500254.3	691495.5	0	TSA
907	DEQ-4d	1500243.5	691497.9	0	SGA
7020	CMW-2	1498488	688919	27	TSA
7021	CMW-3	1498528	688430	6	TSA

1992 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
120	C-11-PW15-19ADBB2	1493296.7	695965	0	TSA
136	C-3-PW7-20BDBB2	1495909	695826.6	0	SGA
138	z185Piezo-20CBDC1	1494877.6	693669	0	TSA
140	PPWN-20CCAB1	1494970.8	693293.1	0	SGA
141	PPWS-20CCAB2	1494970	693252.9	0	TSA
165	E.Piezo-21CADD1	1502248.5	693442.8	0	TSA
166	W.Inter-21CBCD1	1499963	693442	0	SGA
167	W.Piezo-21CBCD2	1499941.3	693617.5	0	TSA
174	E.Inter-21DBCC2	1502239	693333	0	SGA
175	Tuttle-21DBDC1	1502887.1	693483.4	0	TSA
176	ColumbiaA-Fujii_Farms	1504270.3	692679.6	0	SGA
189	Watters-Fairview_RV	1502396	690975	0	TSA
192	B-32-WADE	1499665	690871	0	SGA
196	Schmoyer-Andrews	1500625	690201	2	TSA
198	B-18-Hoyt	1500240	689201	57	TSA
202	B-12-Rolling_Hills	1499274.4	691276.3	0	SGA
205	BOP-13(d)	1497677	689419.8	190	TSA
207	B-10-James_Shephard	1498871.3	690537	0.26666667064031	SGA
208	B-24-Sandy_Mobile_Villa	1499215	690521	2.63333336512248	SGA
227	B-22b-RWD-29DCDD2	1498040	687073	0	SGA
345	Calcagno-Edwards	1501042	690861	0	TSA
393	PWB-1usg	1498550	692646.6	7.50000029802322E-02	SGA
417	B-35-CLAFLIN	1500488	689119	85	TSA
434	Schmautz-28BC6	1501525	690151	1.66666666666667	TSA
515	BOP-20(dg)	1496592.5	691087	3.03333338101705	TSA

516	BOP-20(ds)	1496606.5	691086	30.4	TSA
518	BOP-21(dg)	1495801.2	691137.7	0	TSA
519	BOP-21(ds)	1495802.6	691149.4	7.23333326975505	TSA
520	BOP-22(dg)	1495260.1	691137.8	0	TSA
521	BOP-22(ds)	1495262.4	691115.5	1.36666667461395	TSA
522	BOP-23(dg)	1497737.7	690847.6	44.75	TSA
523	BOP-23(ds)	1497737.7	690876.6	49.6666666666667	TSA
526	BOP-31(ds)	1497533.3	690135	99.6666666666667	TSA
528	BOP-31(dg)	1497534.8	690149.5	104	TSA
542	BOP-41(dg)	1495164.9	689889.2	0.200000002980232	TSA
543	BOP-41(ds)	1495162.9	689871.4	0.324999988079071	TSA
544	BOP-42(dg)	1496447.9	689633.4	14.5	TSA
545	BOP-42(ds)	1496462.1	689632.7	0.549999997019768	TSA
546	BOP-43(dg)	1496262.8	691582	0	TSA
547	BOP-43(ds)	1496283.7	691577.8	12.6800000190735	TSA
550	A-1(d)	1495772.3	690050.5	0.600000023841858	TSA
555	A-5(d)	1497003.1	691058.5	27.5	TSA
811	MW-8dg	1498286.8	689072.7	28.25	TSA
816	MW-10dg	1498800.6	688968.3	19.75	TSA
821	MW-10ds	1498811.1	688966.5	43.3250000119209	TSA
825	MW-14dg	1498776.6	689929.2	19.042857170105	TSA
826	MW-14ds	1498766.6	689929.7	69.5	TSA
831	MW-16dg	1498203.8	690013.9	65.5	TSA
833	MW-17ds	1498758.3	689471.1	30.8	TSA
834	MW-18ds	1499100.4	689311.7	77	TSA
835	MW-19ds	1498508.3	688687.2	10.4000000506639	TSA
836	MW-23ds	1498858.3	690494.2	3.99999996026357	TSA
847	MW-24dg	1498404.2	689963.2	87.5	TSA
848	MW-25dg	1498008.4	690067.2	79.75	TSA
901	DEQ-1ds	1500195.1	688236.1	0	TSA
902	DEQ-1dg	1500184.6	688240	0	TSA
903	DEQ-3s	1498176.6	691588.9	42.7833334604899	TSA
904	DEQ-3i	1498188.3	691587	55.6428571428571	TSA
905	DEQ-3d	1498198.1	691585.3	0	SGA
906	DEQ-4s	1500254.3	691495.5	3.33333338300387E-02	TSA
907	DEQ-4d	1500243.5	691497.9	0	SGA
7020	CMW-2	1498488	688919	36.3333333333333	TSA
7021	CMW-3	1498528	688430	1.56666668256124	TSA
7034	PWB-1lts	1498518	692645	5.98888892597622	TSA
7035	PWB-1uts	1498517	692644	35.6299999237061	TSA

1993 Yearly Averaged TCE Data:

WellNo	***ID***	***XCoord***	***YCoord***	***Average TCE***	***Aquifer***
132	C-1-PW14-20ADCB2	1498520	695066	0	SGA
140	PPWN-20CCAB1	1494970.8	693293.1	0	SGA
141	PPWS-20CCAB2	1494970	693252.9	0	TSA
165	E.Piezo-21CADD1	1502248.5	693442.8	0	TSA
166	W.Inter-21CBCD1	1499963	693442	0	SGA
167	W.Piezo-21CBCD2	1499941.3	693617.5	0	TSA
174	E.Inter-21DBCC2	1502239	693333	0	SGA
192	B-32-WADE	1499665	690871	0	SGA
196	Schmoyer-Andrews	1500625	690201	1.27500000596046	TSA
198	B-18-Hoyt	1500240	689201	79	TSA
202	B-12-Rolling_Hills	1499274.4	691276.3	0	SGA
205	BOP-13(d)	1497677	689419.8	165	TSA
207	B-10-James_Shephard	1498871.3	690537	0.2	SGA
208	B-24-Sandy_Mobile_Villa	1499215	690521	2.15000003576279	SGA
345	Calcagno-Edwards	1501042	690861	0	TSA
393	PWB-1usg	1498550	692646.6	1.56666660308838	SGA
417	B-35-CLAFLIN	1500488	689119	77	TSA
434	Schmautz-28BC6	1501525	690151	2.20000001788139	TSA
465	BOP-13(ds)	1497672.4	689432.8	126.666666666667	TSA
466	D-17(ds)	1498097.3	689575.1	160	TSA
467	D-17(dg)	1498080.6	689576.6	56	TSA
515	BOP-20(dg)	1496592.5	691087	3	TSA
516	BOP-20(ds)	1496606.5	691086	27.5	TSA
518	BOP-21(dg)	1495801.2	691137.7	0	TSA

519	BOP-21(ds)	1495802.6	691149.4	5.54999995231628	TSA
520	BOP-22(dg)	1495260.1	691137.8	0	TSA
521	BOP-22(ds)	1495262.4	691115.5	1.5	TSA
522	BOP-23(dg)	1497737.7	690847.6	33.25	TSA
523	BOP-23(ds)	1497737.7	690876.6	58.5	TSA
526	BOP-31(ds)	1497533.3	690135	83.75	TSA
528	BOP-31(dg)	1497534.8	690149.5	99.6666666666667	TSA
542	BOP-41(dg)	1495164.9	689889.2	0	TSA
543	BOP-41(ds)	1495162.9	689871.4	0	TSA
544	BOP-42(dg)	1496447.9	689633.4	14	TSA
545	BOP-42(ds)	1496462.1	689632.7	0	TSA
546	BOP-43(dg)	1496262.8	691582	1.53333330154419	TSA
547	BOP-43(ds)	1496283.7	691577.8	43.6666666666667	TSA
550	A-1(d)	1495772.3	690050.5	0.900000005960464	TSA
555	A-5(d)	1497003.1	691058.5	31	TSA
589	D-15(ds)	1498965.6	694138.8	0	TSA
590	D-15(dg)	1498975.6	694149.7	0	TSA
591	BOP-44(ds)	1497206.5	691983	18.6666666666667	TSA
592	BOP-44(dg)	1497225.2	691983	0	TSA
593	D-16(ds)	1497497.5	693117.3	0	TSA
594	D-16(dg)	1497511.9	693134.8	0	TSA
811	MW-8dg	1498286.8	689072.7	34.25	TSA
816	MW-10dg	1498800.6	688968.3	30.6	TSA
821	MW-10ds	1498811.1	688966.5	68.3333333333333	TSA
825	MW-14dg	1498776.6	689929.2	22.7142857142857	TSA
826	MW-14ds	1498766.6	689929.7	57	TSA
833	MW-17ds	1498758.3	689471.1	22.1666666666667	TSA
834	MW-18ds	1499100.4	689311.7	25.7142857142857	TSA
835	MW-19ds	1498508.3	688687.2	3.33333331346512	TSA
836	MW-23ds	1498858.3	690494.2	2.17499995231628	TSA
848	MW-25dg	1498008.4	690067.2	57.8333333333333	TSA
850	MW-20ds	1497894.7	689034.5	0	TSA
851	MW-20dg	1497875.3	689038	9.92000002861023	TSA
854	MW-22ds	1499768.5	689916.6	88.25	TSA
855	MW-22dg	1499756.6	689895.1	30.2	TSA
858	RPW-1ds	1498538.9	693219.5	1.2571428503309	TSA
859	RPW-1dg	1498552.7	693225.4	0	TSA
901	DEQ-1ds	1500195.1	688236.1	0	TSA
902	DEQ-1dg	1500184.6	688240	0	TSA
903	DEQ-3s	1498176.6	691588.9	45.2666664123535	TSA
904	DEQ-3i	1498188.3	691587	49	TSA
905	DEQ-3d	1498198.1	691585.3	0	SGA
906	DEQ-4s	1500254.3	691495.5	0	TSA
907	DEQ-4d	1500243.5	691497.9	0	SGA
909	DEQ-5ds	1496861.6	688831.7	0.949999988079071	TSA
910	DEQ-5dg	1496871.4	688830.8	0	TSA
911	EMC-1ds	1498989.1	693474.3	0	TSA
912	EMC-1dg	1498991.1	693485.9	0	TSA
913	EMC-2ds	1499231.6	692044.1	11.6666666666667	TSA
914	EMC-2dg	1499225.7	692052.5	0	TSA
7020	CMW-2	1498488	688919	38	TSA
7021	CMW-3	1498528	688430	10.375	TSA
7034	PWB-1lts	1498518	692645	13.3000001907349	TSA
7035	PWB-1uts	1498517	692644	54	TSA

1994 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
122	PW4-19BACD2	1496764	696549	0	SGA
126	C-13-PW9-19BDDC2	1490929	694999	0	SGA
132	C-1-PW14-20ADCB2	1498520	695066	0	SGA
136	C-3-PW7-20BDBB2	1495909	695826.6	0	SGA
138	z185Piezo-20CBDC1	1494877.6	693669	0	TSA
140	PPWN-20CCAB1	1494970.8	693293.1	0.100000002167442	SGA
141	PPWS-20CCAB2	1494970	693252.9	1.72222220235401	TSA
142	B-8-PW8-20CCAB3	1495088	693366	0	SGA
165	E.Piezo-21CADD1	1502248.5	693442.8	0	TSA
189	Watters-Fairview_RV	1502396	690975	0.466666658719381	TSA
192	B-32-WADE	1499665	690871	0	SGA
196	Schmoyer-Andrews	1500625	690201	1.05000001192093	TSA
205	BOP-13(d)	1497677	689419.8	162.5	TSA
207	B-10-James_Shephard	1498871.3	690537	1.92499998211861	SGA
208	B-24-Sandy_Mobile_Villa	1499215	690521	1.84285713945116	SGA
393	PWB-1usg	1498550	692646.6	0	SGA
434	Schmautz-28BC6	1501525	690151	2.25	TSA
454	BOP-60(ds)	1495915.7	690429.8	116.538461538462	TSA
455	BOP-60(dg)	1495915.9	690414.3	10.860000038147	TSA
456	BOP-61(ds)	1496851.9	690285.1	17.6666666666667	TSA
457	BOP-61(dg)	1496843.6	690290.5	22	TSA
458	BOP-62(ds)	1496066.6	690031.6	1.53333338101705	TSA
459	BOP-63(ds)	1496222.9	690301.4	0.209999993443489	TSA
460	BOP-64(ds)	1496411.3	689814.6	0	TSA
461	BOP-65(ds)	1496445.1	690159.4	2.85000002384186	TSA
462	BOP-66(ds)	1496881.8	690155.8	17.5	TSA
465	BOP-13(ds)	1497672.4	689432.8	124	TSA
466	D-17(ds)	1498097.3	689575.1	163.333333333333	TSA
467	D-17(dg)	1498080.6	689576.6	45.3333333333333	TSA
515	BOP-20(dg)	1496592.5	691087	3	TSA
516	BOP-20(ds)	1496606.5	691086	24.5	TSA
518	BOP-21(dg)	1495801.2	691137.7	0	TSA
519	BOP-21(ds)	1495802.6	691149.4	3.63333336512248	TSA
520	BOP-22(dg)	1495260.1	691137.8	0	TSA
521	BOP-22(ds)	1495262.4	691115.5	1.35000002384186	TSA
522	BOP-23(dg)	1497737.7	690847.6	43.3333333333333	TSA
523	BOP-23(ds)	1497737.7	690876.6	56.3333333333333	TSA
526	BOP-31(ds)	1497533.3	690135	81	TSA
528	BOP-31(dg)	1497534.8	690149.5	89	TSA
542	BOP-41(dg)	1495164.9	689889.2	0	TSA
543	BOP-41(ds)	1495162.9	689871.4	0	TSA
544	BOP-42(dg)	1496447.9	689633.4	14	TSA
545	BOP-42(ds)	1496462.1	689632.7	0	TSA
546	BOP-43(dg)	1496262.8	691582	0	TSA
547	BOP-43(ds)	1496283.7	691577.8	40.8	TSA
550	A-1(d)	1495772.3	690050.5	0.306666672229767	TSA
555	A-5(d)	1497003.1	691058.5	30	TSA
589	D-15(ds)	1498965.6	694138.8	0	TSA
590	D-15(dg)	1498975.6	694149.7	0	TSA
591	BOP-44(ds)	1497206.5	691983	15.3333333333333	TSA
592	BOP-44(dg)	1497225.2	691983	0	TSA
593	D-16(ds)	1497497.5	693117.3	0	TSA
594	D-16(dg)	1497511.9	693134.8	0	TSA
811	MW-8dg	1498286.8	689072.7	37	TSA
816	MW-10dg	1498800.6	688968.3	37.1666666666667	TSA
821	MW-10ds	1498811.1	688966.5	55.9	TSA
825	MW-14dg	1498776.6	689929.2	20.5	TSA
826	MW-14ds	1498766.6	689929.7	53.75	TSA
833	MW-17ds	1498758.3	689471.1	85.1666666666667	TSA
834	MW-18ds	1499100.4	689311.7	26.3799999237061	TSA
835	MW-19ds	1498508.3	688687.2	1.79999996423721	TSA
836	MW-23ds	1498858.3	690494.2	2.7199999332428	TSA
837	MW-26ds	1501386	689352	13.75	TSA
848	MW-25dg	1498008.4	690067.2	52.75	TSA
850	MW-20ds	1497894.7	689034.5	0	TSA

851	MW-20dg	1497875.3	689038	38.25	TSA
854	MW-22ds	1499768.5	689916.6	51	TSA
855	MW-22dg	1499756.6	689895.1	19	TSA
858	RPW-1ds	1498538.9	693219.5	0.792222215069665	TSA
859	RPW-1dg	1498552.7	693225.4	7.50000029802322E-02	TSA
860	RPW-2dg	1498279.5	691922.5	37.6363636363636	TSA
903	DEQ-3s	1498176.6	691588.9	39.6599998474121	TSA
904	DEQ-3i	1498188.3	691587	47	TSA
905	DEQ-3d	1498198.1	691585.3	0	SGA
906	DEQ-4s	1500254.3	691495.5	0	TSA
907	DEQ-4d	1500243.5	691497.9	0	SGA
909	DEQ-5ds	1496861.6	688831.7	0	TSA
910	DEQ-5dg	1496871.4	688830.8	0	TSA
911	EMC-1ds	1498989.1	693474.3	0	TSA
912	EMC-1dg	1498991.1	693485.9	0	TSA
913	EMC-2ds	1499231.6	692044.1	12.1230769524207	TSA
914	EMC-2dg	1499225.7	692052.5	0	TSA
7006	MW-26dg	1501401	689348	0	TSA
7009	PWB-2lts	1499982.2	693633.6	0	TSA
7010	PWB-2usg	1500006.3	693623.1	0	SGA
7020	CMW-2	1498488	688919	31	TSA
7021	CMW-3	1498528	688430	0.774999976158142	TSA
7034	PWB-1lts	1498518	692645	25	TSA
7035	PWB-1uts	1498517	692644	49	TSA

1995 Yearly Averaged TCE Data:

WellNo	***ID***	***XCoord***	***YCoord***	***Average TCE***	***Aquifer***
122	PW4-19BACD2	1496764	696549	0	SGA
126	C-13-PW9-19BDDC2	1490929	694999	0	SGA
132	C-1-PW14-20ADCB2	1498520	695066	0	SGA
136	C-3-PW7-20BDBB2	1495909	695826.6	0	SGA
138	z185Piezo-20CBDC1	1494877.6	693669	0	TSA
140	PPWN-20CCAB1	1494970.8	693293.1	0	SGA
141	PPWS-20CCAB2	1494970	693252.9	0.966666698455811	TSA
142	B-8-PW8-20CCAB3	1495088	693366	0	SGA
189	Watters-Fairview_RV	1502396	690975	0.433333317438761	TSA
192	B-32-WADE	1499665	690871	0	SGA
193	Willard-28BC1	1500899	691006	0	SGA
195	B-17-28BC4	1500508	689570	14.5	SGA
196	Schmoyer-Andrews	1500625	690201	0.75	TSA
198	B-18-Hoyt	1500240	689201	50	TSA
202	B-12-Rolling_Hills	1499274.4	691276.3	0.169999998807907	SGA
205	BOP-13(d)	1497677	689419.8	155	TSA
207	B-10-James_Shephard	1498871.3	690537	3.73333330949148	SGA
208	B-24-Sandy_Mobile_Villa	1499215	690521	1.14444442590078	SGA
393	PWB-1usg	1498550	692646.6	0	SGA
417	B-35-CLAFLIN	1500488	689119	33	TSA
454	BOP-60(ds)	1495915.7	690429.8	53.6666666666667	TSA
455	BOP-60(dg)	1495915.9	690414.3	22.5	TSA
456	BOP-61(ds)	1496851.9	690285.1	24.6	TSA
457	BOP-61(dg)	1496843.6	690290.5	20	TSA
458	BOP-62(ds)	1496066.6	690031.6	2.19999992847443	TSA
459	BOP-63(ds)	1496222.9	690301.4	0.949999988079071	TSA
460	BOP-64(ds)	1496411.3	689814.6	0	TSA
461	BOP-65(ds)	1496445.1	690159.4	2.26666673024495	TSA
462	BOP-66(ds)	1496881.8	690155.8	19	TSA
465	BOP-13(ds)	1497672.4	689432.8	115	TSA
466	D-17(ds)	1498097.3	689575.1	135	TSA
467	D-17(dg)	1498080.6	689576.6	51	TSA
515	BOP-20(dg)	1496592.5	691087	3.29999995231628	TSA
516	BOP-20(ds)	1496606.5	691086	19.5	TSA
518	BOP-21(dg)	1495801.2	691137.7	0	TSA
519	BOP-21(ds)	1495802.6	691149.4	2.34999996423721	TSA
520	BOP-22(dg)	1495260.1	691137.8	0	TSA
521	BOP-22(ds)	1495262.4	691115.5	1.5	TSA
522	BOP-23(dg)	1497737.7	690847.6	30	TSA
523	BOP-23(ds)	1497737.7	690876.6	34.5	TSA

526	BOP-31(ds)	1497533.3	690135	93	TSA
528	BOP-31(dg)	1497534.8	690149.5	93.5	TSA
542	BOP-41(dg)	1495164.9	689889.2	0	TSA
543	BOP-41(ds)	1495162.9	689871.4	0	TSA
544	BOP-42(dg)	1496447.9	689633.4	11	TSA
545	BOP-42(ds)	1496462.1	689632.7	0	TSA
546	BOP-43(dg)	1496262.8	691582	0	TSA
547	BOP-43(ds)	1496283.7	691577.8	38.3333333333333	TSA
550	A-1(d)	1495772.3	690050.5	0.949999988079071	TSA
555	A-5(d)	1497003.1	691058.5	27	TSA
589	D-15(ds)	1498965.6	694138.8	0	TSA
590	D-15(dg)	1498975.6	694149.7	0	TSA
591	BOP-44(ds)	1497206.5	691983	13.5	TSA
592	BOP-44(dg)	1497225.2	691983	0.276666661103566	TSA
593	D-16(ds)	1497497.5	693117.3	0	TSA
594	D-16(dg)	1497511.9	693134.8	0	TSA
811	MW-8dg	1498286.8	689072.7	43.6666666666667	TSA
816	MW-10dg	1498800.6	688968.3	51	TSA
821	MW-10ds	1498811.1	688966.5	51.5	TSA
825	MW-14dg	1498776.6	689929.2	21.6666666666667	TSA
826	MW-14ds	1498766.6	689929.7	65.3333333333333	TSA
831	MW-16dg	1498203.8	690013.9	46	TSA
833	MW-17ds	1498758.3	689471.1	96.1666666666667	TSA
834	MW-18ds	1499100.4	689311.7	67.3333333333333	TSA
835	MW-19ds	1498508.3	688687.2	3.76666665077209	TSA
836	MW-23ds	1498858.3	690494.2	1.67499998211861	TSA
837	MW-26ds	1501386	689352	13	TSA
847	MW-24dg	1498404.2	689963.2	41	TSA
848	MW-25dg	1498008.4	690067.2	51	TSA
850	MW-20ds	1497894.7	689034.5	0	TSA
851	MW-20dg	1497875.3	689038	30.6666666666667	TSA
854	MW-22ds	1499768.5	689916.6	73	TSA
855	MW-22dg	1499756.6	689895.1	27.5	TSA
858	RPW-1ds	1498538.9	693219.5	0	TSA
859	RPW-1dg	1498552.7	693225.4	0	TSA
860	RPW-2dg	1498279.5	691922.5	35.1111111111111	TSA
865	MW-29ds	1502785.9	689897.5	0	TSA
866	MW-29dg	1502795.4	689893.4	0	TSA
903	DEQ-3s	1498176.6	691588.9	28.4	TSA
904	DEQ-3i	1498188.3	691587	37.5714285714286	TSA
905	DEQ-3d	1498198.1	691585.3	0	SGA
906	DEQ-4s	1500254.3	691495.5	0	TSA
907	DEQ-4d	1500243.5	691497.9	0.300000011920929	SGA
909	DEQ-5ds	1496861.6	688831.7	0	TSA
910	DEQ-5dg	1496871.4	688830.8	0	TSA
911	EMC-1ds	1498989.1	693474.3	0	TSA
912	EMC-1dg	1498991.1	693485.9	0	TSA
913	EMC-2ds	1499231.6	692044.1	8.56666665607029	TSA
914	EMC-2dg	1499225.7	692052.5	0	TSA
7000	BOP-68(usg)	1496264.6	691598.3	0	SGA
7001	BOP-67(ds)	1496182.3	691038.8	1.375	TSA
7002	D-18(dg)	1495375.5	692825.6	0	TSA
7003	D-18(ds)	1495386.1	692820.3	0	TSA
7006	MW-26dg	1501401	689348	0	TSA
7009	PWB-2lts	1499982.2	693633.6	0	TSA
7010	PWB-2usg	1500006.3	693623.1	0	SGA
7020	CMW-2	1498488	688919	36	TSA
7021	CMW-3	1498528	688430	0	TSA
7049	MW-14usg	1498756.6	689930.2	0	SGA

1996 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
138	z185Piezo-20CBDC1	1494877.6	693669	0	TSA
189	Watters-Fairview_RV	1502396	690975	2.15000000596046	TSA
192	B-32-WADE	1499665	690871	0	SGA
193	Willard-28BC1	1500899	691006	0	SGA
196	Schmoyer-Andrews	1500625	690201	0	TSA
202	B-12-Rolling_Hills	1499274.4	691276.3	0	SGA
205	BOP-13(d)	1497677	689419.8	165	TSA
207	B-10-James_Shephard	1498871.3	690537	2.5	SGA
454	BOP-60(ds)	1495915.7	690429.8	33.5	TSA
455	BOP-60(dg)	1495915.9	690414.3	25.6666666666667	TSA
456	BOP-61(ds)	1496851.9	690285.1	24	TSA
457	BOP-61(dg)	1496843.6	690290.5	18.5	TSA
458	BOP-62(ds)	1496066.6	690031.6	2.29999995231628	TSA
459	BOP-63(ds)	1496222.9	690301.4	0.600000023841858	TSA
460	BOP-64(ds)	1496411.3	689814.6	0	TSA
461	BOP-65(ds)	1496445.1	690159.4	2.54999995231628	TSA
462	BOP-66(ds)	1496881.8	690155.8	12.75	TSA
465	BOP-13(ds)	1497672.4	689432.8	150	TSA
466	D-17(ds)	1498097.3	689575.1	130	TSA
467	D-17(dg)	1498080.6	689576.6	38	TSA
515	BOP-20(dg)	1496592.5	691087	2.03333330154419	TSA
516	BOP-20(ds)	1496606.5	691086	7	TSA
518	BOP-21(dg)	1495801.2	691137.7	0	TSA
519	BOP-21(ds)	1495802.6	691149.4	0.699999988079071	TSA
520	BOP-22(dg)	1495260.1	691137.8	0	TSA
521	BOP-22(ds)	1495262.4	691115.5	2.34999996423721	TSA
522	BOP-23(dg)	1497737.7	690847.6	9	TSA
523	BOP-23(ds)	1497737.7	690876.6	23	TSA
526	BOP-31(ds)	1497533.3	690135	101	TSA
528	BOP-31(dg)	1497534.8	690149.5	73.5	TSA
542	BOP-41(dg)	1495164.9	689889.2	0	TSA
543	BOP-41(ds)	1495162.9	689871.4	0	TSA
544	BOP-42(dg)	1496447.9	689633.4	11	TSA
545	BOP-42(ds)	1496462.1	689632.7	0	TSA
546	BOP-43(dg)	1496262.8	691582	0	TSA
547	BOP-43(ds)	1496283.7	691577.8	21	TSA
550	A-1(d)	1495772.3	690050.5	0.550000011920929	TSA
555	A-5(d)	1497003.1	691058.5	24	TSA
589	D-15(ds)	1498965.6	694138.8	0	TSA
590	D-15(dg)	1498975.6	694149.7	0	TSA
591	BOP-44(ds)	1497206.5	691983	11	TSA
592	BOP-44(dg)	1497225.2	691983	0	TSA
593	D-16(ds)	1497497.5	693117.3	0	TSA
594	D-16(dg)	1497511.9	693134.8	0	TSA
811	MW-8dg	1498286.8	689072.7	69	TSA
816	MW-10dg	1498800.6	688968.3	61	TSA
821	MW-10ds	1498811.1	688966.5	26.4	TSA
825	MW-14dg	1498776.6	689929.2	19	TSA
826	MW-14ds	1498766.6	689929.7	49.5	TSA
831	MW-16dg	1498203.8	690013.9	29	TSA
833	MW-17ds	1498758.3	689471.1	98	TSA
834	MW-18ds	1499100.4	689311.7	72	TSA
835	MW-19ds	1498508.3	688687.2	1.05000001192093	TSA
836	MW-23ds	1498858.3	690494.2	1	TSA
847	MW-24dg	1498404.2	689963.2	47.5	TSA
848	MW-25dg	1498008.4	690067.2	38	TSA
850	MW-20ds	1497894.7	689034.5	0	TSA
851	MW-20dg	1497875.3	689038	66	TSA
854	MW-22ds	1499768.5	689916.6	18	TSA
855	MW-22dg	1499756.6	689895.1	17	TSA
858	RPW-1ds	1498538.9	693219.5	0	TSA
859	RPW-1dg	1498552.7	693225.4	0	TSA
860	RPW-2dg	1498279.5	691922.5	30	TSA
865	MW-29ds	1502785.9	689897.5	0	TSA
866	MW-29dg	1502795.4	689893.4	0	TSA

903	DEQ-3s	1498176.6	691588.9	22.5	TSA
904	DEQ-3i	1498188.3	691587	30.3333333333333	TSA
905	DEQ-3d	1498198.1	691585.3	0	SGA
906	DEQ-4s	1500254.3	691495.5	0	TSA
907	DEQ-4d	1500243.5	691497.9	0	SGA
909	DEQ-5ds	1496861.6	688831.7	0	TSA
910	DEQ-5dg	1496871.4	688830.8	0	TSA
911	EMC-1ds	1498989.1	693474.3	0	TSA
912	EMC-1dg	1498991.1	693485.9	0	TSA
913	EMC-2ds	1499231.6	692044.1	5.89999993642171	TSA
914	EMC-2dg	1499225.7	692052.5	0	TSA
7000	BOP-68(usg)	1496264.6	691598.3	0	SGA
7001	BOP-67(ds)	1496182.3	691038.8	1.35000002384186	TSA
7002	D-18(dg)	1495375.5	692825.6	0	TSA
7003	D-18(ds)	1495386.1	692820.3	0	TSA
7020	CMW-2	1498488	688919	42	TSA
7021	CMW-3	1498528	688430	1.39999997615814	TSA
7022	CMW-37usg	1500603	689540	2.91111110316383	SGA
7047	DEQ-3usg	1498221.9	691582.3	16	SGA
7049	MW-14usg	1498756.6	689930.2	0	SGA

1997 Yearly Averaged TCE Data:

WellNo	*ID*	*XCoord*	*YCoord*	*Average TCE*	*Aquifer*
131	20ADCD1	1498492.5	695050	0	SGA
139	RW-2-20CC1	1494444.1	692282.8	64.6666666666667	TGA
143	RW-1-20CCCD1	1494781.8	692302.2	670	TGA
166	W.Inter-21CBCD1	1499963	693442	0	SGA
174	E.Inter-21DBCC2	1502239	693333	0	SGA
189	Watters-Fairview_RV	1502396	690975	0	TSA
192	B-32-WADE	1499665	690871	0	SGA
193	Willard-28BC1	1500899	691006	0	SGA
196	Schmoyer-Andrews	1500625	690201	0	TSA
198	B-18-Hoyt	1500240	689201	60.5	TSA
202	B-12-Rolling_Hills	1499274.4	691276.3	0	SGA
205	BOP-13(d)	1497677	689419.8	143.333333333333	TSA
208	B-24-Sandy_Mobile_Villa	1499215	690521	0.349999997019768	SGA
225	B-19-Cherry_Blossom-29DA2	1499315	689051		SGA
345	Calcagno-Edwards	1501042	690861	0	TSA
393	PWB-1usg	1498550	692646.6	0	SGA
400	B-1	1495723.8	691418.7		TGA
409	B-24/29AD3	1499255	690542	1.10000001192093	SGA
417	B-35-CLAFLIN	1500488	689119	35	TSA
434	Schmautz-28BC6	1501525	690151	1.70000004768372	TSA
454	BOP-60(ds)	1495915.7	690429.8	27.4	TSA
455	BOP-60(dg)	1495915.9	690414.3	25.5	TSA
456	BOP-61(ds)	1496851.9	690285.1	23.3333333333333	TSA
457	BOP-61(dg)	1496843.6	690290.5	21.6666666666667	TSA
458	BOP-62(ds)	1496066.6	690031.6	2.60000003178914	TSA
461	BOP-65(ds)	1496445.1	690159.4	2.20000001589457	TSA
465	BOP-13(ds)	1497672.4	689432.8	130	TSA
466	D-17(ds)	1498097.3	689575.1	116.666666666667	TSA
467	D-17(dg)	1498080.6	689576.6	52.3333333333333	TSA
515	BOP-20(dg)	1496592.5	691087	3.20000002384186	TSA
516	BOP-20(ds)	1496606.5	691086	11.2	TSA
518	BOP-21(dg)	1495801.2	691137.7	0	TSA
520	BOP-22(dg)	1495260.1	691137.8	0	TSA
521	BOP-22(ds)	1495262.4	691115.5	2.76666668256124	TSA
522	BOP-23(dg)	1497737.7	690847.6	19	TSA
523	BOP-23(ds)	1497737.7	690876.6	19.3333333333333	TSA
526	BOP-31(ds)	1497533.3	690135	66.3333333333333	TSA
528	BOP-31(dg)	1497534.8	690149.5	59.3333333333333	TSA
542	BOP-41(dg)	1495164.9	689889.2	0	TSA
543	BOP-41(ds)	1495162.9	689871.4	0	TSA
544	BOP-42(dg)	1496447.9	689633.4	8.78333333333333	TSA
545	BOP-42(ds)	1496462.1	689632.7	0	TSA
546	BOP-43(dg)	1496262.8	691582	0	TSA
547	BOP-43(ds)	1496283.7	691577.8	14.3333333333333	TSA

550	A-1(d)	1495772.3	690050.5	0	TSA
555	A-5(d)	1497003.1	691058.5	23	TSA
589	D-15(ds)	1498965.6	694138.8	0	TSA
590	D-15(dg)	1498975.6	694149.7	0	TSA
591	BOP-44(ds)	1497206.5	691983	8.55999992370606	TSA
592	BOP-44(dg)	1497225.2	691983	0	TSA
593	D-16(ds)	1497497.5	693117.3	0	TSA
594	D-16(dg)	1497511.9	693134.8	0	TSA
811	MW-8dg	1498286.8	689072.7	66.6666666666667	TSA
812	MW-8i	1498299.3	689070.7	0	TGA
813	MW-8s	1498309.7	689068.9	1.2	TGA
814	MW-9i	1498519.6	689026.9	26	TGA
815	MW-9s	1498528.5	689024.3	2	TGA
816	MW-10dg	1498800.6	688968.3	0	TSA
817	MW-10i	1498789.8	688970.4	0	TGA
818	MW-10s	1498779.2	688973.3	0	TGA
821	MW-10ds	1498811.1	688966.5	1.4	TSA
822	MW-11s	1498032	689363.2	0	TGA
823	MW-12s	1498390.5	689320.6	2.6	TGA
824	MW-13s	1498909.6	689196	0	TGA
825	MW-14dg	1498776.6	689929.2	11.6	TSA
826	MW-14ds	1498766.6	689929.7	33.3333333333333	TSA
829	MW-7s	1498541.6	688651.7	35.5	TGA
832	MW-17s	1498703.6	689496.7	93	TGA
833	MW-17ds	1498758.3	689471.1	81.75	TSA
834	MW-18ds	1499100.4	689311.7	21.6666666666667	TSA
835	MW-19ds	1498508.3	688687.2	1.20000002384186	TSA
836	MW-23ds	1498858.3	690494.2	0.400000002980232	TSA
837	MW-26ds	1501386	689352	7.03333326975504	TSA
848	MW-25dg	1498008.4	690067.2	33.6666666666667	TSA
850	MW-20ds	1497894.7	689034.5	0	TSA
851	MW-20dg	1497875.3	689038	46.6666666666667	TSA
854	MW-22ds	1499768.5	689916.6	2.43333334922791	TSA
855	MW-22dg	1499756.6	689895.1	17.3333333333333	TSA
860	RPW-2dg	1498279.5	691922.5	25.1666666666667	TSA
865	MW-29ds	1502785.9	689897.5	0	TSA
866	MW-29dg	1502795.4	689893.4	0	TSA
903	DEQ-3s	1498176.6	691588.9	9.65	TSA
904	DEQ-3i	1498188.3	691587	23.6666666666667	TSA
905	DEQ-3d	1498198.1	691585.3	0	SGA
906	DEQ-4s	1500254.3	691495.5		TSA
907	DEQ-4d	1500243.5	691497.9	0	SGA
909	DEQ-5ds	1496861.6	688831.7	0	TSA
910	DEQ-5dg	1496871.4	688830.8	0	TSA
911	EMC-1ds	1498989.1	693474.3	0	TSA
912	EMC-1dg	1498991.1	693485.9	0	TSA
913	EMC-2ds	1499231.6	692044.1	1.54999997615814	TSA
914	EMC-2dg	1499225.7	692052.5	0	TSA
7000	BOP-68(usg)	1496264.6	691598.3	0	SGA
7002	D-18(dg)	1495375.5	692825.6	0	TSA
7003	D-18(ds)	1495386.1	692820.3	0	TSA
7004	C-117v	1498581.2	688769.9	125	TGA
7005	C-118v	1498596.1	688802.9	1.8	TGA
7006	MW-26dg	1501401	689348	0.166666666666667	TSA
7007	MW-27s	1498499.6	688701.2	6.85	TGA
7008	MW-27i	1498499.8	688695.4	0	TGA
7013	RW-3	1498429.9	688932.9	56.3333333333333	TGA
7014	SW-2	1497949.5	689695.3	0	TGA
7015	B-2	1498385.2	689491.7	2.1	TGA
7016	B-6	1498947.5	689484.3	58.5	TGA
7017	C-114v	1498609	688700	57.5	TGA
7018	C-115	1498609	688721	66	TGA
7019	C-116v	1498635	688708	36.5	TGA
7022	CMW-37usg	1500603	689540	0.585714287417276	SGA
7023	EMC-2usg	1499181	692051	0	SGA
7024	EW-1	1497771.2	689549	112.5	TGA
7025	EW-12	1497744	690037.2	52.3333333333333	TSA
7026	EW-2	1498903.6	689252.5	126.666666666667	TSA
7028	EW-4	1498203.8	690013.9	32	TSA
7029	EW-5	1498404.2	689963.2	40	TSA

7030	EW-6	1498193.1	691566	11.62	TSA
7031	EW-7	1497710.5	691158.4	21.5	SGA
7032	EW-8	1497733	690480.3	45	TSA
7033	EW-9	1496722.3	691630	6.94	TSA
7034	PWB-1lts	1498518	692645	42	TSA
7035	PWB-1uts	1498517	692644	48	TSA
7036	BOP-69(usg)	1497424.1	691199.3	5	SGA
7037	MW-38usg	1498570	690819	0	SGA
7038	EW-19	1497687.9	691687.5	18.3	SGA
7040	PMX-410R	1499490	689870	0	TSA
7041	EW-16	1500635.3	689710	0.6	SGA
7042	EW-13	1496697.5	690134.4	8.2	TSA
7043	EW-14	1498164.8	689369.9	140	TSA
7044	EW-3	1495948.5	690357.7	4.85	TSA
7047	DEQ-3usg	1498221.9	691582.3	50.3333333333333	SGA
7048	BOP-44usg	1497200	691975	0	SGA
7049	MW-14usg	1498756.6	689930.2	0	SGA
7050	MW-36dg	1499600	690823	0	TSA

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