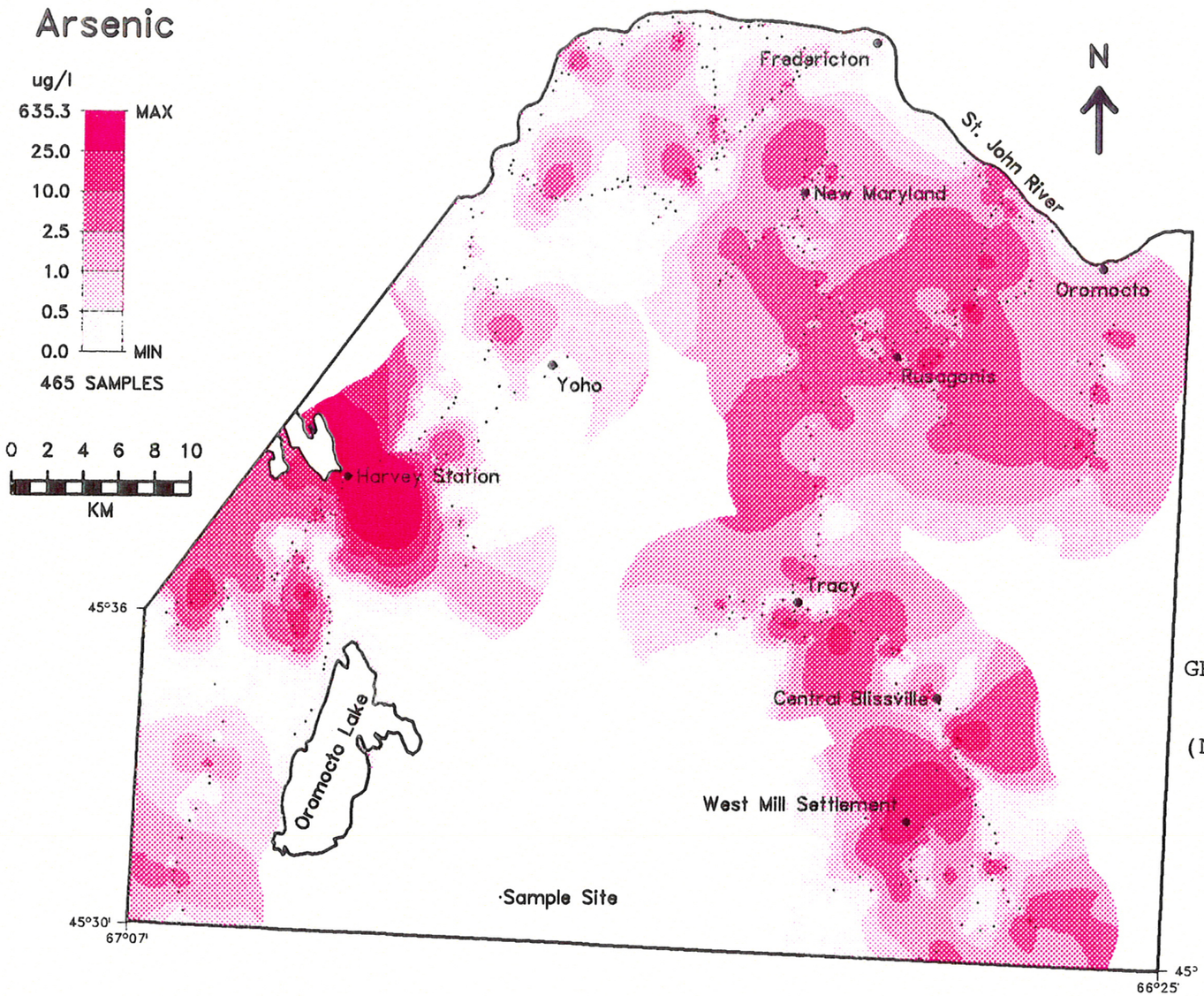




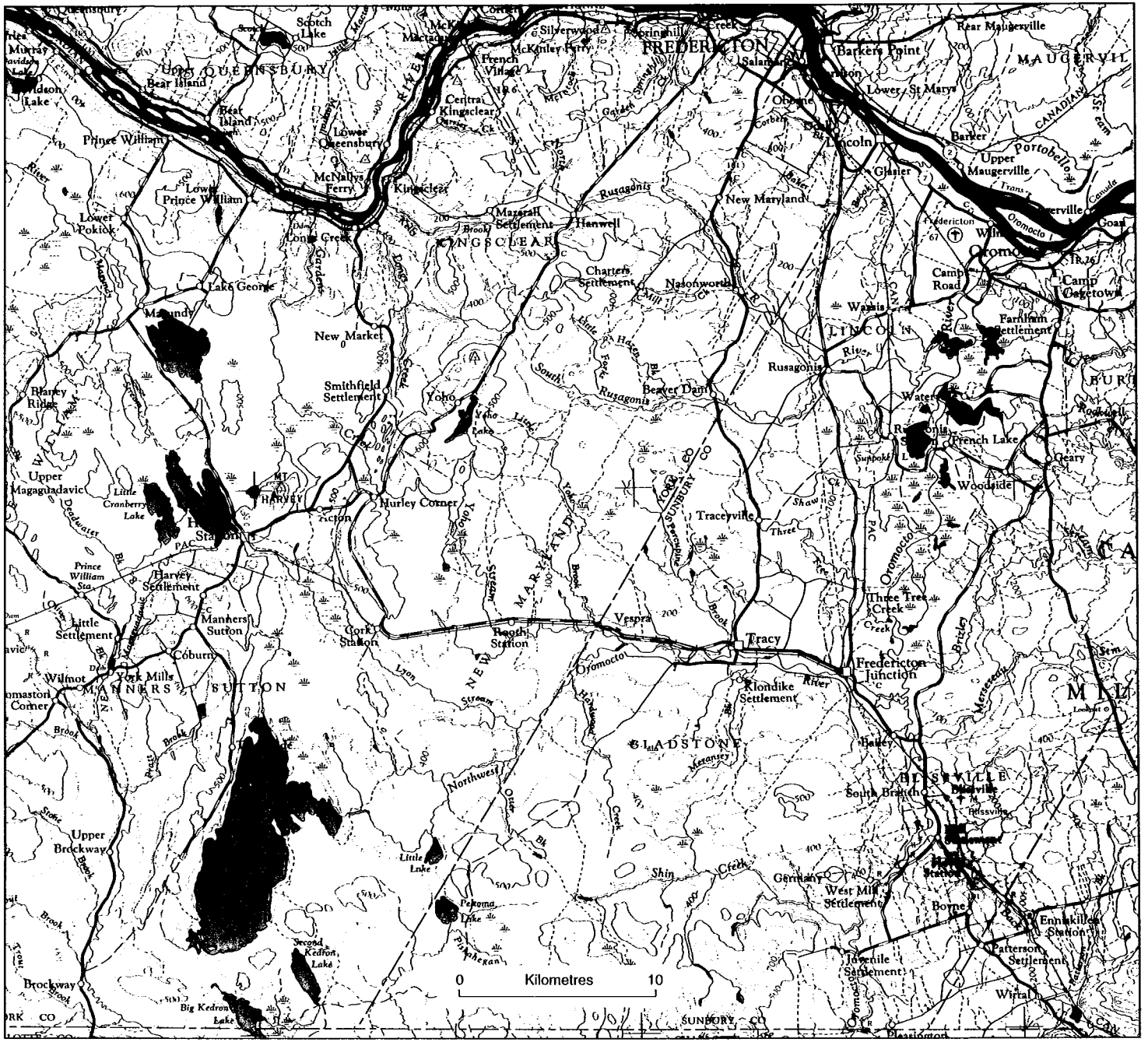
**OPEN FILE 3306**

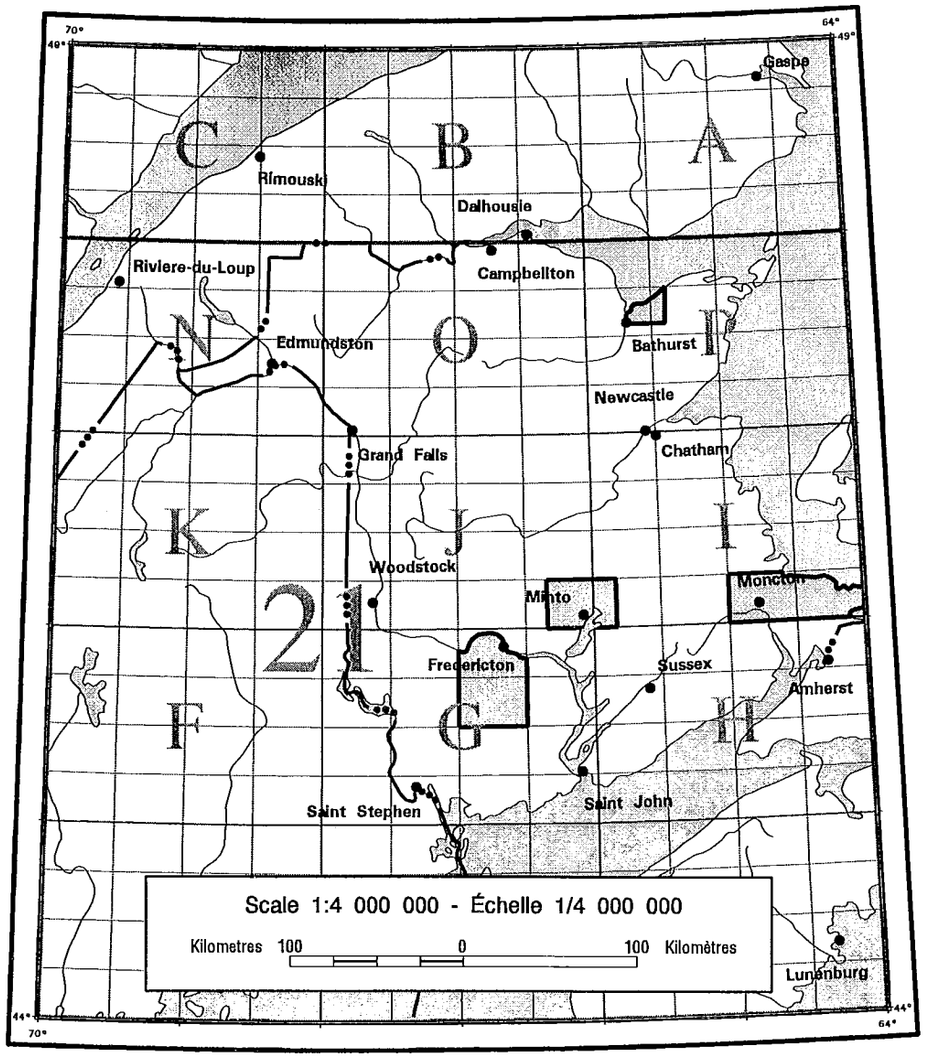
# GROUNDWATER HYDROGEOCHEMICAL SURVEY OF CENTRAL NEW BRUNSWICK

(NTS 21G/9; 21G/10; 21G/15; 21G/16)

D.R.Boyle
W.A.Spirito
S.W.Adcock

REPRODUCE THIS SHEET AS A TRANSPARENCY





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# FREDERICTON OPEN FILE

## Introduction

This open file contains groundwater geochemical data from a detailed groundwater survey of central New Brunswick (Fredericton area) comprising NTS sheets 21G/10, 21G/15, and parts of 21G/15, 21G/16. Reconnaissance sampling to establish analytical and sampling parameters was carried out in the summer of 1992. Detailed groundwater surveys were carried out in the months of July-August 1993 and 1994, with follow-up work in the summer of 1995. A similar groundwater geochemical survey was conducted prior to this survey and results were released as Geological Survey of Canada Open File 2912 (Boyle et al., 1995).

Included in this open file are field observations, sample coordinates, pH, conductivity, total dissolved solids, alkalinity, hardness, cationic-anionic balance error and concentration data for 27 elements, statistical summaries, analytical methodologies, geology map, 1:250,000 element distribution maps, and a 1:250,000 topographic overlay.

A digital copy (DBF format) of the field and analytical data can be obtained from the publication office of the Geological Survey of Canada, 601 Booth St, Ottawa, Ontario, K1A 0E8.

The data will be of use to municipalities in the area, land planners, environmental regulatory agencies, health officials, and mineral explorationists.

## Credits

Survey design, supervision, sampling methodology and interpretation: D.R. Boyle

Sampling Assistance: S. Plunkett; S. Alvarado; K. Besemann; L. Tulk.

Water Analysis: Analytical staff of Mineralogy and Chemistry Subdivision, Mineral Resources Division, Geological Survey of Canada.

Data Management and Computer Plotting: W. A. Spirito and S. W. Adcock

## Survey Objectives

The groundwater program in the Fredericton area was carried out with the following objectives:

1. Establishment of a groundwater hydrogeochemical database to be used in future land and water planning programs. The database can be used in such studies as a) health risk assessments for drinking water, b) location of good quality municipal groundwater supplies, and c) baseline data for impact studies of new industrial and residential building developments.

2. Applications of groundwater geochemistry to geological mapping of lateral and vertical facies changes within Carboniferous clastic sediments underlying the region.

## Survey Methodology

### Sample Collection

Groundwater samples were generally taken from the kitchen taps of residential water supplies. After running the tap for 2-3 minutes, two 250 ml water samples were collected in linear polyethylene bottles. One of the samples was acidified with 0.5 ml concentrated nitric acid and used for major cation and trace metal analyses. The other was untreated and used for alkalinity and major and trace anion determinations. The samples were not filtered to avoid biasing measurements of total elemental intakes. Samples were refrigerated at 4°C until the analyses were completed.

Information on the type (e.g. drilled, dug), depth, and age of the well was recorded together with information on installed water treatment systems.

### Analytical Methods

The pH and conductivity of each well water sample was measured on site using portable meters. The following analytical methods were used:

- Alkalinity by titration to an end point of 4.5.
- SO4, Cl, F, total N, and Br by ion chromatography.
- As and Sb by hydride generation atomic absorption spectroscopy.
- Ca, Mg, Na, K, SiO2, Al, Fe, Mn, Ba, Sr, B, Cu, Ni, Co, Zn, Pb, Cd, V, Li, and Zr by ICP emission spectroscopy and ICP mass spectrometry.

Determination limits for the various elements are given in Table 1.

Table 1. Units of measure and determination limits for elements analyzed in Fredericton area groundwaters.

| Element | Unit of Measure | Determination Limit |
|---|---|---|
| Ca | mg/l | 0.01 |
| Mg | mg/l | 0.03 |
| Na | mg/l | 0.1 |
| K | mg/l | 0.1 |
| Cl | mg/l | 0.05 |
| SO4 | mg/l | 0.05 |
| SiO2 | mg/l | 0.01 |
| F | mg/l | 0.02 |
| Total N | mg/l | 0.05 |
| Al | ug/l | 20 |
| Br | ug/l | 50 |
| B | ug/l | 5 |
| Li | ug/l | 1 |
| Ba | ug/l | 5 |
| Sr | ug/l | 5 |
| Fe | ug/l | 7 |
| Mn | ug/l | 1 |
| Cu | ug/l | 7 |
| Zn | ug/l | 5 |
| Pb | ug/l | 1 |
| Cd | ug/l | 1 |
| As | ug/l | 0.2 |
| Sb | ug/l | 1 |
| Ni | ug/l | 13 |
| Co | ug/l | 1 |
| V | ug/l | 2 |
| Zr | ug/l | 3 |

The concentration units used in this report are as follows:

mg/l = milligrams per liter = ppm = parts per million.
ug/l = micrograms per liter = ppb = parts per billion.

## Quality Control

Quality control was maintained by duplicate field sampling and the use of field, laboratory and international water standards. For every 20 samples, two randomly selected numbers were assigned for a duplicate groundwater sample and a field standard.

For the duplicate sampling program, scattergrams of the various elements and their correlation coefficients are presented in Figures 1a to 1d. The elements Cd, Pb, and V are not included because 98% of their values fall below the determination limit. The duplicate data demonstrate excellent field sampling and laboratory analytical control for this study.

One field standard was collected to represent the general matrix composition of groundwaters in the study area. Statistical data for this standard are presented in Table 2. For those elements present in concentrations above their determination limits, the standard deviation is generally well below 10% of the mean.

During laboratory analysis, accuracy and quality control were maintained by inserting artificial and international standards having known concentrations for most of the elements.

A further measure of quality control is the dispersion from theoretical zero of the charge balance for each water as most waters should display electroneutrality. A dispersion of +/- 5.00 for the balance error (see legend for formula) is considered good. All of the waters from the study area balance within this limit.

## Geology and Hydrology

The Maritime Carboniferous Basin (MCB), of which the survey area is a part, is largely represented by a thick succession (up to 6000m) of Pennsylvanian fluvial, lacustrine and paludal sediments (Gusow, 1953; Van de Poll, 1966; Ball et al., 1981; Wilson and Ball, 1983). In New Brunswick, the MCB has been divided into two sub-basins of which the New Brunswick Platform is the larger. It is separated from the smaller Moncton Sub-Basin to the south by the Kingston Uplift.

Table 2. Statistics for a field standard (F-1) used in the Fredericton area groundwater survey.

| Parameter | Min. | Max. | Mean | C.V.[1] |
|---|---|---|---|---|
| Ca (ppm) | 11.3 | 12.4 | 11.8 | 0.024 |
| Mg (ppm) | 1.3 | 1.4 | 1.3 | 0.027 |
| Na (ppm) | 45.5 | 64.8 | 56.4 | 0.074 |
| K (ppm) | 0.2 | 0.7 | 0.4 | 0.298 |
| Cl (ppm) | 8.4 | 12.1 | 10.1 | 0.119 |
| SO4 (ppm) | 9.6 | 14.5 | 11.3 | 0.135 |
| Alk (ppm CaCO3) | 129.6 | 139.1 | 134.4 | 0.018 |
| Tot-N (ppm) | 0.02 | 0.1 | 0.05 | 0.385* |
| F (ppb) | 0.12 | 0.15 | 0.13 | 0.068 |
| B (ppb) | 10 | 46 | 32 | 0.327 |
| Br (ppb) | 25 | 75 | 28 | 0.548* |
| SiO2 (ppm) | 6.5 | 8.3 | 7.3 | 0.069 |
| Al (ppb) | 10 | 27 | 12 | 0.473* |
| Fe (ppb) | 47 | 71 | 58 | 0.101 |
| Mn (ppb) | 9 | 21 | 16 | 0.175 |
| Cu (ppb) | 4 | 9 | 5 | 0.359* |
| Pb (ppb) | 0.5 | 2.0 | 0.6 | 0.536* |
| Zn (ppb) | 8 | 25 | 19 | 0.221 |
| Cd (ppb) | 0.5 | 2.0 | 0.6 | 0.536* |
| Ni (ppb) | 7 | 21 | 10 | 0.518* |
| Co (ppb) | 1 | 5 | 3 | 0.965* |
| As (ppb) | 4.2 | 5.2 | 4.6 | 0.051 |
| Sb (ppb) | 0.5 | 2.0 | 0.6 | 0.538 |
| V (ppb) | 7 | 19 | 11 | 0.245 |
| Ba (ppb) | 3 | 15 | 7 | 0.587* |
| Sr (ppb) | 105 | 125 | 115 | 0.037 |
| Li (ppb) | 0.5 | 3 | 1 | 0.548* |
| Zr (ppb) | 1 | 9 | 2 | 1.037* |

1. Elements marked with * are at or below the determination limit. C.V. = coefficient of variation.

Lower Pennsylvanian sedimentary formations in the MCB consist predominantly of grey quartzose sandstones and conglomerates with minor red, green and buff siltstones, calcareous argillites, feldspathic sandstones, and evaporites. Upper Pennsylvanian formations are comprised mainly of red to grey siltstones, feldspathic sandstones, and polymictic conglomerates. Sandstones are cemented mainly by hematite and/or carbonates. Organic sediments, in the form of carbonized plant debris as well as scattered and laterally extensive coal seams are ubiquitous in the upper formations and present in minor quantities in lower formations.

Most of the survey area is dominated by the late Pennsylvanian Pictou Group, the formations of which typically comprise rocks described above for the Upper Pennsylvanian (Figure 2). Surrounding the Pennsylvanian sediments to the south and south west are a series of Mississippian sediments and mafic and felsic vocanic flows (Kuan, 1970; McCutcheon, 1984; Payette and Martin, 1986a,b). The MCB is bordered in the northwest and southeast by Silurian metasediments; few groundwater samples were collected over these rocks.

The entire area has been subjected to post-Carboniferous normal and reverse block faulting with predominant fault directions of NE-SW and NW-SE.

Groundwater hydrology in the area is controlled by both formational and structural (faults, fractures, joints, cleavage) elements of the bedrock. The complex structural/formational hydrology in this region and the presence of rapid lateral sedimentary facies changes typical of fluvial/lacustrine/paludal environments give rise to pronounced changes in groundwater quality over very short distances (less than a few km).

**Map Production and Data Handling**

The maps are all drawn using the Universal Transverse Mercator projection. The Applied Geochemistry and Geophysics Subdivision's SPARCMAP geochemical mapping software, built around the commercial UNIRAS library of graphics subroutines, was used to create the maps.

The coastline, drainage, sample points and towns were digitized from the 1:250000 NTS topographic maps.

For plotting and statistical purposes, analytical values of "less than detection" were converted to half the detection limit.

The sample sites are very irregularly distributed, making contouring a difficult task. The procedure can be split into two parts:

Part 1: Gridding/Interpolation

The gridding of the data is performed by the UNIRAS subroutine GINTP1. The following description is taken from the UNIRAS documentation. GINTP1 interpolates from a set of irregularly distributed data points to a regular grid of points by a combination of distance weighting and quadratic methods. The approximation has four steps:

1. Let S denote the set of analytical data. Each data point has an x-y coordinate (the sample location). The grid network size is set to 1 km square. For each point in S the closest grid node is located, and the function value at the node is set equal to the value of the data point. If several data points are assigned to the same grid node, the node value is set equal to the average of the data points.

2. For each grid node which has not been assigned a value in the previous step, neighbouring grid nodes (which have been assigned a value) are used in an interpolation formula to generate the function value at the node. A distance weighted average procedure is used.

The purpose of weighted average interpolation is to estimate the value of a bivariate function at an arbitrary point (x0,y0) when the function value is known at the points belonging to a finite set S. Let (ai,bi) for i=1,2,3,4, be the point which, among all points (a,b) in S such that (a-x0,b-y0) belongs to the i'th quadrant, is closest to (x0,y0). Let di denote the square of the distance from (x0,y0) to (ai,bi) and let ci denote the function value at (ai,bi). Now put

$$w = 1/d1 + 1/d2 + 1/d3 + 1/d4$$

Then the function value z0 at the point (x0,y0) is estimated by

$$z0 = 1/w * ( c1/d1 + c2/d2 + c3/d3 + c4/d4 )$$

All nodes which have been assigned values are used in the interpolation. [The above equations are then generalized to i=1,...n; as written, they apply to the special case of selecting the one data point within each quadrant which is closest to the grid node.]

3. The grid is smoothed by quadratic interpolation. At each grid node the slope components are calculated from the closest data point and those found within a specified distance of the grid node. Quadratic interpolations are performed for the slope components. This process tends to continue surface slope which is supported by data points into void data areas. It may produce local maxima or minima which are outside the range of surrounding data point Z values.

Specifically, let G be a grid node, let R1 be the distance from G to the nearest data point, and put R2 equal to 1.25 * R1. Compute the averages Z1 and Z2 of the grid node values on two approximate circle circumferences, both with G as centre and with radii R1 and R2, respectively. Put

Z3 = (R2*R2*Z1 - R1*R1*Z2) / (R2*R2 - R1*R1)

Then the value ZNEW, which replaces the value ZOLD at the node G is given by:

ZNEW = ZOLD + 0.15 * (Z3-ZOLD)

The value of ZNEW is computed iteratively eight times for every grid point.

4. In the final step, a smoothing operation is performed by a two-dimensional filter applied to the grid. The filter is designed to reduce the surface curvature in sparse data areas while maintaining the quality of the interpolation results around the input data points.

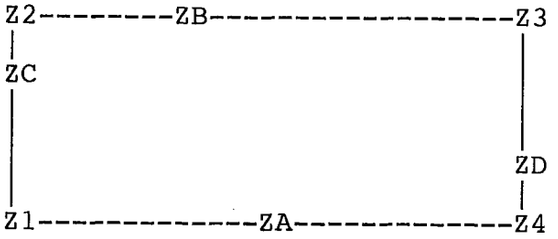
All points lying inside a circle of the same radius as the distance from the grid node to the nearest irregular data point are used in the calculation of an average value:

Zxy = 1/n * ∑n1 (Zn * 1/Rn3)

where n is the number of grid nodes inside the circle and Zn and Rn are the value and distance respectively from grid node Zn to the grid node Zxy.
The calculation is repeated three times.

Part 2: Contouring:

The contouring is performed by the UNIRAS subroutine GCNR2S. For each cell, the four corner values are fixed by the preceding gridding/interpolation procedure. GCNR2S interpolates values along the edges of each cell in order to produce smooth contour lines. The interpolation method is illustrated below where points ZA-D are interpolated from the four corners of a grid cell of input values Z1-4 in the XY plane.




$$ZA = Z1 + (XA-X1)/(X4-X1)*(Z4-Z1)$$

Additional smoothing is produced by fitting a hyperbola to the two corresponding points on the cell edges where a contour line enters and leaves the cell. The contour line will follow the hyperbola as closely as the resolution of the output device permits.

The interpolation/contouring procedure produces a contoured surface for the whole map area. The confidence one has in this surface decreases with distance from the original data. Therefore, contours are not shown for areas more than 4 km from the nearest data point.

Contour intervals for TDS, pH, alkalinity, SiO2, Ca, Mg, Na, K, SO4, Cl, TotN, Sr, Ni, Li, Zn, As, Fe, Cu, and Ba are based on 25, 50, 75, 90 and 95th percentiles. Intervals for Al, B, Br, V, Co and Zr are similar except the bottom 25th and 50th groups have been combined since they largely represent data at or below determination limits. Intervals for Mn were chosen with the maximum acceptable drinking water concentration as the upper limit of the lowest class. For Mn, because much of the data exceed recommended drinking water levels, the higher range of values is accentuated. Because of very low data contrast, levels for Pb were chosen at approximately 50, 75, and 90th percentile concentrations with the drinking water guideline representing the bottom limit of the upper contour level. For total hardness, the levels were chosen based on widely accepted intervals of soft (0-60), moderately hard (60-120), hard (120-180), and very hard (>180). For F, the contour levels accentuate the dispersion of the data both above (>1.5 ppm) and below (<0.8 ppm) recommended levels for prevention of dental mottling/skeletal fluorosis and dental caries (cavities) respectively.

It must be noted that, because of the nature of the sample site distribution and the use of electronic contouring, the distribution maps are meant to show only significant regional trends. Each cell is given an area of influence of 4 km and any attempts to calculate concentrations levels at a particular site from the distribution maps is to be discouraged.

## Elemental Distributions

Detailed descriptions of elemental distributions and correlations, and factors controlling them, will be given in a later Geological Survey of Canada publication. Only the major features related to concentration levels, distributions, and correlations are presented.

Note: Drinking water guidelines presented below are based on the latest Guidelines for Canadian Drinking Water Quality (5th edition, 1993) published by Health and Welfare Canada. Percentages of households exceeding limits are based on a total population of 465 residential wells sampled.

pH

The pH of Fredericton area groundwaters varies from 4.97 to 9.21. There are a number of clearly defined areas (west of Oromocto Lake; Yoho region; north of Tracy) where pH is less than neutral. Some of these areas may be sensitive to the effects of acid precipitation. Most of the study area, however, is underlain by groundwaters of neutral to alkaline composition.

The aesthetic objective limits for pH of drinking water have been set at 6.5-8.5. Ten percent (45) of households exceed this range and 17% (81) fall below it.

### Total Dissolved Solids (TDS)

Total dissolved solids concentrations vary from 25 to 1718 mg/l. High TDS areas are most likely due to chemical facies changes within the Carboniferous sedimentary formations.

The aesthetic (palatability) objective limit for TDS is 500 mg/l. Eleven percent (51) of household wells exceed this limit.

### Alkalinity

Alkalinity, expressed as equivalent mg/l $CaCO_3$, varies from 4.8 to 381.1 mg/l. Overall, groundwaters in the Fredericton area display moderate to low alkalinity. Areas of anomalous alkalinity (> 215 mg/l) correlate strongly with anomalous fluoride and sodium areas (see Na and F maps).

### Total Hardness

Total hardness, expressed as equivalent mg/l $CaCO_3$, varies from 0.1 to 740 mg/l and largely reflects the combined distributions of Ca and Mg. Much of the region is characterized by moderate to

low total hardness. Areas of high total hardness (> 120 mg/l) probably represent sedimentary formations containing anomalous concentrations of calcareous and/or evaporitic sediments.

Groundwater hardness may have an impact on the efficiencies of household cleansing systems and on the production of certain industrial products (e.g. textiles, plating products, canned foods). Thirty percent (139) of the well waters in the Fredericton area can be classed as hard (120-180 mg/l) to very hard (>180 mg/l).

**Calcium**

Calcium in groundwaters varies from 0.02 to 181.9 mg/l. The patterns for calcium correlate very closely with those for total hardness. Areas of anomalously low calcium commonly correlate with areas of high fluoride, and are the result of strong cation exchange processes between groundwaters and sediments (Ca, and Mg for Na; compare Ca and F maps). Anomalously high calcium areas probably correlate with areas underlain by rocks with relatively higher concentrations of calcareous sediments and/or gypsum.

Calcium in drinking water does not have a maximum acceptable concentration guideline.

**Magnesium**

Magnesium levels vary from nondetectable (< 0.01) to 70.5 mg/l. The patterns shown for Mg are almost identical to those of calcium reflecting their coexistence in calcareous and evaporitic sedimentary environments and their similar cation exchange properties.

Magnesium in drinking water does not have a maximum acceptable concentration guideline.

**Sodium**

Sodium levels vary from 0.1 to 558 mg/l. Anomalous sodium patterns correlate closely with those of high fluorine and low calcium and magnesium. The process leading to this relationship is one of combined cation and anion exchange (Boyle, 1992).

Sodium has an aesthetic objective limit of 200 mg/l. Three percent (14) of the wells in the Fredericton area exceed this limit.

**Potassium**

Potassium varies in concentration from 0.1 to 6.6 mg/l. Areas of high potassium probably outline sedimentary facies that are more feldspathic and/or mica-rich than the `average' sedimentary rock of the region. Areas where potassium is low in concentration probably correspond to sediments that are more siliceous, ferromagnesian, or clay-rich than the average rock composition. Groundwaters associated with the Harvey volcanic suite in the Harvey Station area are also enriched in K.

Potassium in drinking water does not have a maximum acceptable concentration guideline.

**Chloride**

Chloride varies in concentration from 0.9 to 918 mg/l. Areas of anomalous chloride correspond to areas of high sodium and may reflect a) the presence of intercalated marine sediments within the largely continental Carboniferous clastic sediments of the region, b) the occurrence of salt deposits, or c) the effects of postglacial marine incursions.

The aesthetic objective limit for chloride in drinking waters is 250 mg/l. Five percent (24) of the wells in the Fredericton area exceed this limit.

**Sulfate**

Sulfate varies in concentration from 0.1 to 170 mg/l. A broad area of moderately high sulfate occurs over the northeastern portion of the survey area. Areas of high sulfate may represent the occurrence of intercalated marine sediments or may be the result of oxidation of sulfide-bearing sediments.

The aesthetic objective limit for sulfate in drinking waters is 500 mg/l. No wells in the Fredericton area exceed this limit.

**Silica**

Silica concentrations vary from 1.9 to 18.9 mg/l. Levels of silica in groundwaters, within the narrow temperature range observed for the Fredericton groundwaters, are affected largely by rock type. Formations composed of more pristine feldspar-ferromagnesian-mica minerals (e.g. conglomerates, sandstones) produce higher levels of silica than the more mature clay formations (e.g. mudstones, siltstones). Silica in groundwaters of the Fredericton area are highest over the Harvey volcanic suite in the Harvey Station area.

Silica in drinking water does not have a maximum acceptable concentration guideline.

**Aluminum**

Aluminum levels vary from <10 to 741 ug/l. Concentration of this element is controlled by pH (amphoteric properties) and silica (formation of secondary clays). It is also complexed by fluoride. Its distribution, therefore, is controlled more by secondary water-rock interaction processes than by specific changes in rock types.

Aluminum in drinking water does not have a maximum acceptable concentration guideline.

**Fluorine**

Fluorine varies in concentration from 0.02 to 6.5 mg/l. A number of F anomalies occur over the Carboniferous sediments in the eastern portion of the area. These anomalies correlate with areas of high alkalinity and sodium, and low calcium and magnesium. They appear to evolve from Ca-Mg-$HCO_3$ groundwaters as the result of cation (Ca, Mg exchange for Na) and anion ($OH^-$ for F) exchange processes related to specific rock characteristics (Boyle, 1992). Much of the rest of the region contains quite low concentrations of fluorine (<0.20 mg/l).

The federal maximum acceptable concentration guideline for fluorine in drinking water is set at 1.5 mg/l. For the Fredericton area, 4% (20) of the rural wells contain fluorine levels exceeding this limit. Similar groundwater fluorine anomalies occur in other parts of the Maritime Carboniferous Basin (Boyle, 1992; Boyle and Chagnon, 1994).

**Boron**

Boron concentrations vary from 2 to 444 ug/l. The principal mineral sources for this element in sedimentary basins are biotite, and amphiboles. Boron may also be concentrated in certain types of evaporitic deposits and ocean water. Marine sediments generally contain higher levels of the element than non-marine clastic sediments. Some of the boron anomalies in the Fredericton area correlate with anomalies shown for Na, Cl and Br and thus may reflect the presence of intercalated marine sediments and evaporites in the Carboniferous sediments of this region. Silurian metasediments in the nothwestern and southwestern portions of the survey area have broad boron anomalies associated with them.

None of the boron values in this region exceed the federal maximum acceptable concentration guideline of 5.0 mg/l and thus pose no risk to health. Groundwaters containing more than 500 Êg/l can

be toxic to certain fruit (apple, pear, plum) and vegetable (peppers, pumpkin, corn, radish) crops if used for irrigation.

**Bromine**

Bromine concentrations vary from <50 to 3445 ug/l. Anomalous patterns for this element occur largely over the Carboniferous sediments and correlate strongly with those of Na, and Cl. The principal source of bromine in groundwaters is the leaching of sediments of marine origin and the incursion of postglacial seawater into groundwater regimes. The element is, therefore, a sensitive indicator of the presence of intercalated marine sediments within the largely continentally derived clastic formations of the area or a history of seawater incursions.

There are no guideline directives for bromine in drinking water.

**Total Nitrogen**

The combined concentrations of nitrate and nitrite in groundwaters expressed here as total nitrogen (N) range from <0.01 to 18.8 mg/l. Nitrogen is an essential element to plant growth and also plays a major role in the decay of organic matter. The concentration of nitrogen in groundwaters can be achieved by both natural and anthropogenic processes. Generally, the major anthropogenic sources of this element in groundwaters are agricultural and domestic use of fertilizers and leakage of septic system fluids into groundwater capture zones of domestic wells.

The federal maximum acceptable concentration guideline for total nitrogen in drinking waters is set at 10 mg/l. In many developed rural areas of North America this limit is often exceeded, especially in agricultural communities. In the Fredericton area only 3 out of 465 residences sampled had groundwater nitrogen concentrations exceeding the above guideline. It should be noted that these are `one time' analyses and this element can vary considerably in concentration depending on the time of sampling. Therefore, follow-up of anomalous wells is warranted before making any judgments with regard to remediation.

**Iron**

Iron concentrations vary from <4 ug/l to 6032 ug/l. Groundwaters in the Maritime Carboniferous Basin (MCB) are well known for their high iron and manganese concentrations and the Fredericton area is no exception. Many of the rock units in the MCB contain iron oxides as interstitial cements while others contain abundant amounts of diagenetic iron sulfides (pyrite, marcasite). Areas of high iron content in groundwaters probably represent formations where these rock units are abundant.

Iron has an aesthetic objective limit of 300 ug/l based on its ability to discolor clothing and plumbing fixtures, cause scaling in pipes, and render an objectionable taste to waters. Thirteen percent (62) of the Fredericton area wells exceed this limit.

**Manganese**

Manganese concentrations vary from 1 to 2316 ug/l. Manganese oxides of diagenetic origin often coat fractures in rocks of the MCB and this is probably the primary source of this element. Ferromagnesian minerals such as biotite and amphibole may also contribute Mn to groundwaters. Many of the manganese groundwater anomalies in the Fredericton region correspond to areas of high iron content making groundwaters in these areas very poor in quality.

Manganese has an aesthetic objective limit of 50 ug/l based on the same criteria described above for iron. Twenty seven percent (125) of the wells in the Fredericton area exceed this limit.

**Copper**

Copper varies in concentration from <4 to 6562 ug/l. The primary source of copper entering groundwaters is copper-bearing sulfide mineralization associated with the sandstone and conglomerate members of the Carboniferous formations. Although the tap from which each sample was taken was allowed to run for 2-3 minutes before sampling, the possibility of copper anomalies related to leaching from copper piping should not be overlooked. The area between Rusagonis and Central Blissville is particulary anomalous in copper; these anomalies may be related to bedrock mineralization.

Copper has an aesthetic objective limit of 1000 ug/l. Only 10 of the wells in the Fredericton area yielded copper levels above this limit.

**Zinc**

Zinc concentrations vary from <3 to 8482 ug/l. The primary source of zinc in groundwaters is sulfide bedrock mineralization. Anomalous zinc patterns occur in both the Missisippian and Pennsylvanian formations of the MCB.

Zinc has an aesthetic objective limit for drinking water of 5,000 ug/l. Only one of the well waters in the Fredericton area exceeds this limit.

**Lead**

Lead values vary from <1 to 116 ug/l. The primary sources of lead are sulfide mineralization in the Carboniferous sediments and lead-based components of household plumbing. Because none of the anomalous patterns shown on the lead distribution map correspond to other base metal anomalies, leaching of lead from plumbing systems or industrial contamination of groundwater are probably the principal causes of lead enrichment in Fredericton area groundwaters.

The maximum acceptable concentration for lead in drinking water is 10 ug/l. Twenty households (4%) out of 465 wells yielded lead values greater than this limit, indicating that the groundwaters of the Fredericton area are not very aggressive in mobilizing lead from household plumbing systems. For the Moncton area the percentage of lead values over the reccommended limit is 1% (Boyle et al., 1995). The Fredericton area groundwaters would therefore appear to be slightly more aggressive at mobilizing Pb than those of the Moncton Sub-Basin. Because of the `one time' nature of the sampling program in this area, anomalous concentrations of lead do not represent average daily or yearly intakes. Follow-up of these areas is warranted.

**Cadmium**

Cadmium concentrations in groundwater vary from <1 to 3 ug/l. A cadmium distribution map is not presented because 98% of the data falls below the determination limit of 1.0 ug/l. The principal sources of cadmium are mineralized bedrock (Pb-Zn-Cu), cadmium-bearing components of plumbing systems, and industrial contamination of groundwater supplies.

The maximum acceptable concentration for cadmium in drinking water is 5.0 ug/l. None of the household well waters exhibited cadmium values greater than this limit indicating that the groundwaters of the Fredericton area are not aggressive in mobilizing cadmium from household plumbing systems.

**Arsenic**

Arsenic in Fredericton area groundwaters varies from <0.2 to 635 ug/l. Principal sources for arsenic are sulfide mineralization in the Carboniferous sediment and volcanic formations (Cu-Pb-Zn enrichments) and contamination from industrial and agricultural activity. The Mississippian Harvey volcanic suite is well known for its ability to produce highly anomalous groundwater concentration of arsenic (Bottomley, 1984; Peters, 1977; see As map). In these rocks the element is largely concentrated in disseminated arsenopyrite.

The maximum acceptable concentration for arsenic in drinking water is 25 ug/l. Nine wells yielded arsenic concentrations greater than this limit. Because of the `one time' nature of the sampling program in this area, anomalous concentrations of arsenic do not represent average daily or yearly intake. Follow-up of these anomalous areas is warranted.

**Antimony**

Antimony concentrations in groundwater vary from <1 to 32 ug/l. An antimony distribution map is not presented since 98% of the data is at or below the determination limit of 1.0 ug/l.

Guidelines for the concentration of antimony in drinking water have not been established.

**Nickel**

Nickel concentrations in groundwater vary from <7 to 97 ug/l. Nickel may be released to groundwaters through the oxidation of sulfides (e.g. pyrite, pentlandite, pyrrhotite), and the weathering of ferromagnesian minerals such as amphibole, pyroxene, olivine, and biotite. Metal plating operations, burning of fossil fuels and waste incineration may contribute anthropogenic nickel to groundwater regimes. Only a few isolated anomalies exist for nickel; these are supported by magnesium and cobalt anomalies and it is probable therefore that they outline areas where the underlying Carboniferous sediments are relatively rich in ferromagnesian and/or sulfide minerals.

A maximum acceptable concentration for nickel in drinking water has not been established.

**Cobalt**

Cobalt concentrations in groundwaters vary from <5.0 to 51 ug/l. With few exceptions, the anomalous patterns for cobalt correspond closely to those of nickel and the comments made for nickel would therefore apply to cobalt.

A maximum acceptable concentration for cobalt in drinking water has not been established.

**Vanadium**

Vanadium concentrations in groundwater vary from <2.0 to 27 ug/l. Carbonaceous material, certain shales, and carnotite (K-U-V mineral) mineralization associated with sandstone-type uranium deposits are primary sources of vanadium in sedimentary environments. A number of sandstone-type uranium occurrences have been discovered in the Maritime Carboniferous Basin and exploration for this element was quite active in the 70's and early 80's. A few isolated groundwater vanadium anomalies are

present in the region, but these are not broad anomalous trends that would signify a vanadium province within the MCB of the Fredericton area as occurs in the Moncton Sub-basin (Boyle et al., 1995)

A maximum acceptable concentration for vanadium in drinking water has not been established.

**Barium**

Barium concentrations in groundwater vary from 3.0 to 1136 ug/l. Barium may enter groundwaters as the result of alteration of feldspar and micaceous minerals to clays and from the dissolution of barite. Distribution patterns for barium are difficult to interpret because uptake in groundwaters is strongly affected by solubility limiting effects of sulfate (low solubility of BaSO4); solubility-enhancing effects of Na, K, Ca and Mg; adsorption and coprecipitation processes with iron and manganese, and the strong cation exchange tendencies for this element on clays and organic matter.

The maximum acceptable concentration of barium in drinking water is 1,000 ug/l based on its possible negative effects on the cardiovascular system. Only one well in the Fredericton area exhibits barium levels above this limit.

**Strontium**

Strontium concentrations in groundwaters vary from 1.0 to 9661 ug/l. In sedimentary environments strontium may be concentrated in groundwaters as the result of dissolution of evaporite deposits (strontianite and celestite) and the alteration of feldspathic and micaceous minerals to clays. Unlike the Moncton Sub-basin (Boyle et al., 1995), strontium groundwater anomalies in the Fredericton area do not correspond to similar anomalies for Cl, Br and Na and are therefore not related to the presence of intercalated marine sediments and/or evaporites in the largely continental Carboniferous sediments. The large strontium anomaly in the northwest portion of the survey area is probably related to a clastic sedimentary assemblage characteristically different from other formations in the region.

A maximum acceptable concentration for strontium in drinking water has not been established.

**Lithium**

Lithium concentrations in groundwater vary from <1.0 to 300 ug/l. Lithium enters groundwaters mainly through the weathering of alumino-silicate minerals, especially Li-bearing micas such as muscovite and lepidolite. Lithium in groundwaters of the Fredericton region displays a number of sporadic anomalies which do not correlate with any of the other elements. Lithium anomalies are most

likely related to localized increases in the abundance of muscovite which is the primary Li-bearing mineral in these types of sediments.

A maximum acceptable concentration for lithium in drinking water has not been established.

**Zirconium**

Zirconium concentrations in groundwaters vary from <3 to 20 ug/l. Zirconium is a relatively immobile element during weathering processes and anomaly contrasts in groundwaters are therefore quite low. Since the principal mineral of zirconium (zircon) is very stable, enrichments of this element in groundwaters is most likely due to greater abundance of more Zr-rich mafic minerals in the sediments.

Zirconium is not considered to be a health hazard and drinking water guidelines are therefore not warranted.

Legend for Data Listings

The following codes apply to the data listings:

Well Type - D - drilled well.
- S - surface spring or dug well.
- U - well type unknown.

$$\text{Balance Error (\%)} = \frac{\text{sum cation milliequivalents - sum anion milliequivalents}}{\text{sum anion milliequivalents + sum cation milliequivalents}} \times 100$$

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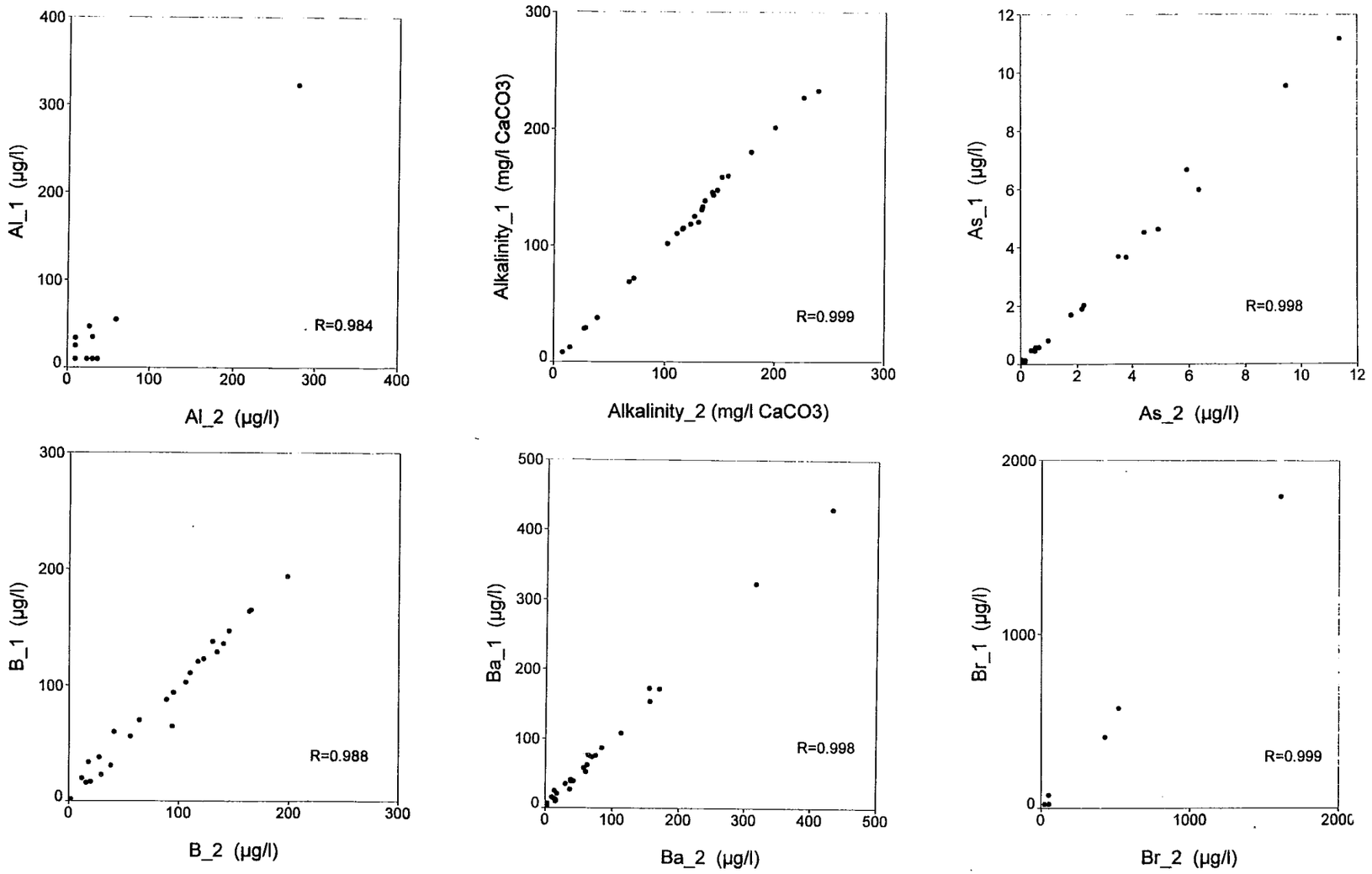



Figure 1a: Al, Alkalinity, As, B, Ba, and Br scatterplots for duplicate samples, Fredericton groundwater survey. Number of sample pairs is 23. Note for some elements data points overplot.

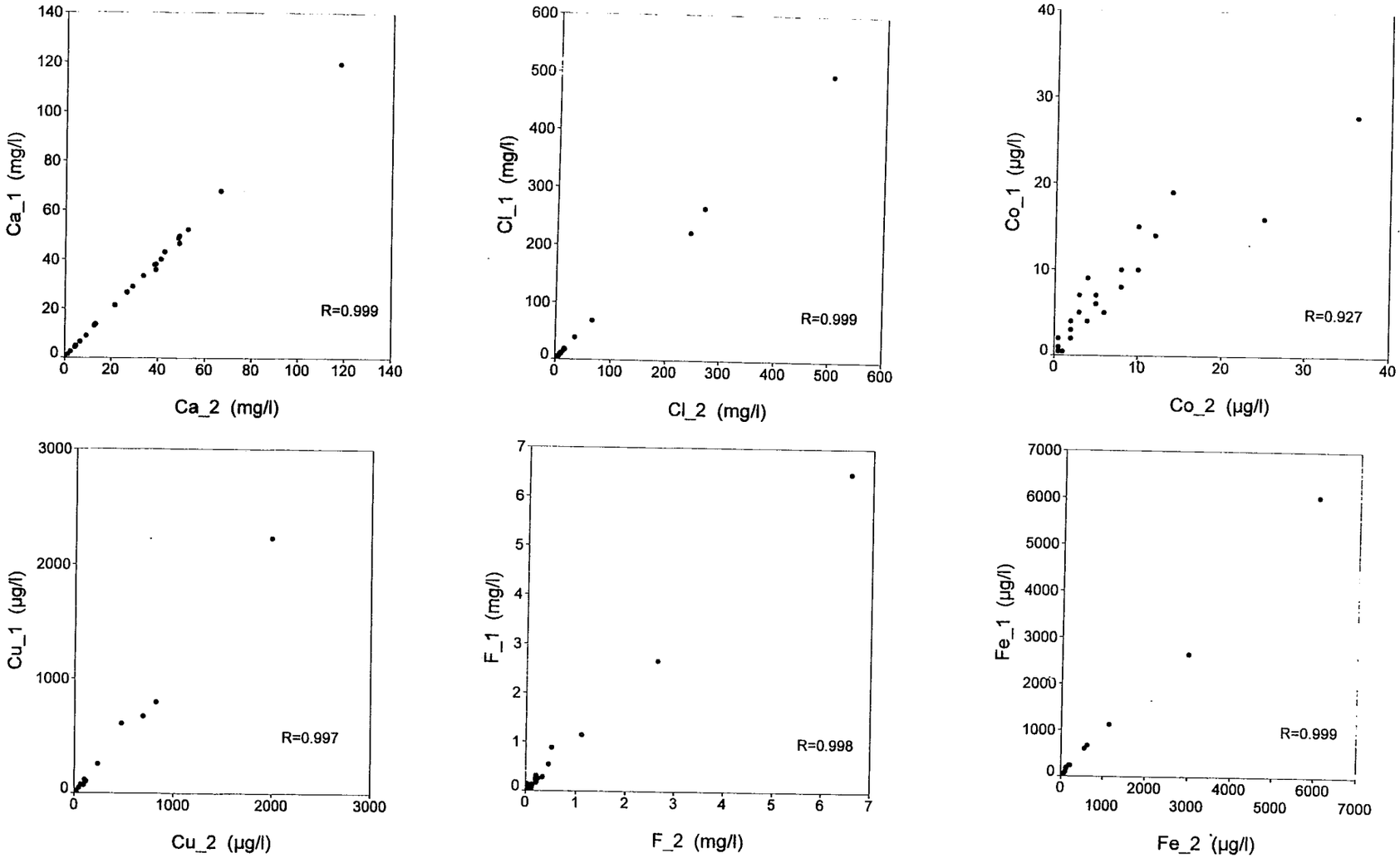



Figure 1b: Ca, Cl, Co, Cu, F, and Fe scatterplots for duplicate samples, Fredericton groundwater survey. Number of sample pairs is 23. Note for some elements data points overplot.

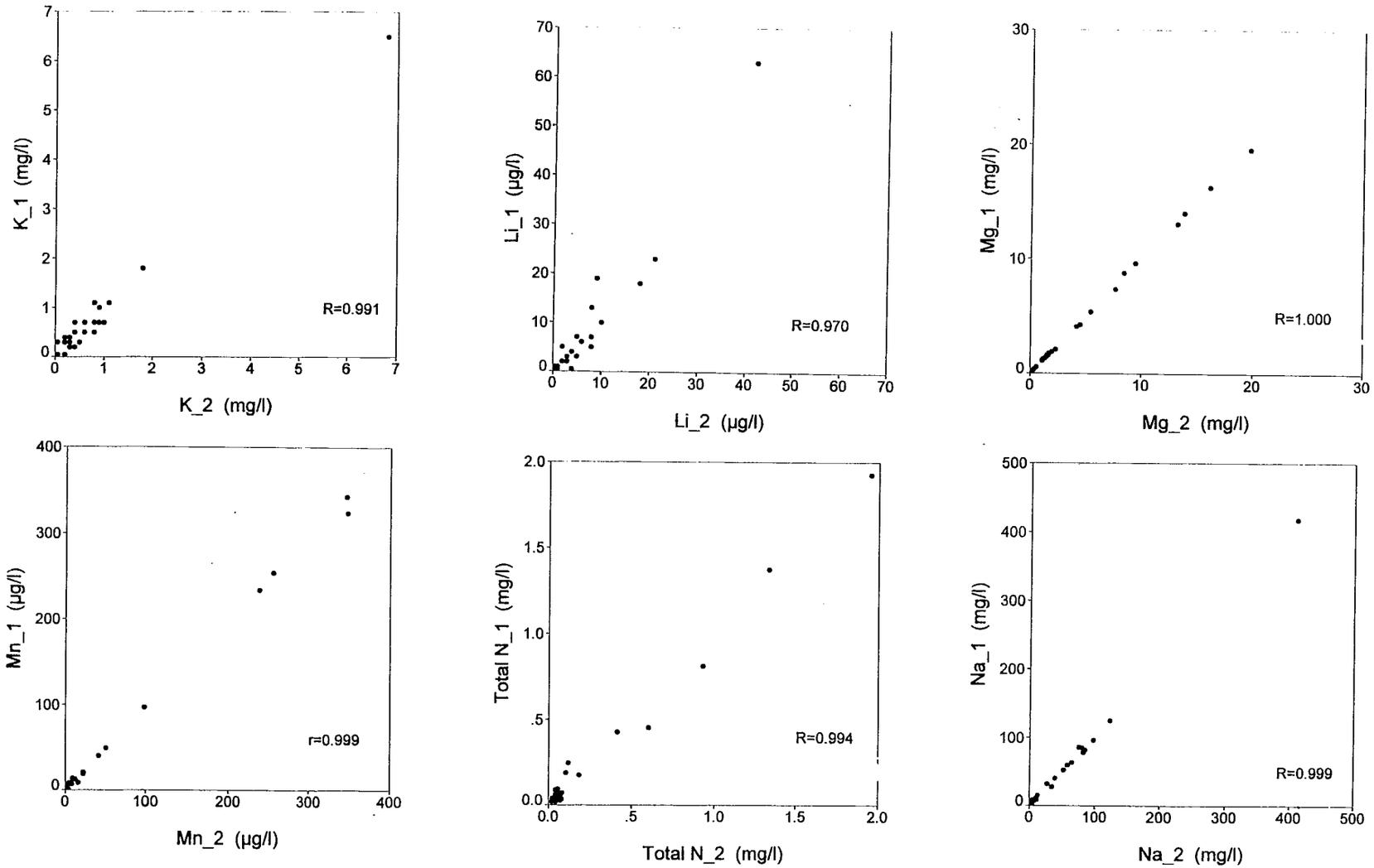



Figure 1c: K, Li, Mg, Mn, Total N, and Na scatterplots for duplicate samples, Fredericton groundwater survey. Number of sample pairs is 23. Note for some elements data points overplot.

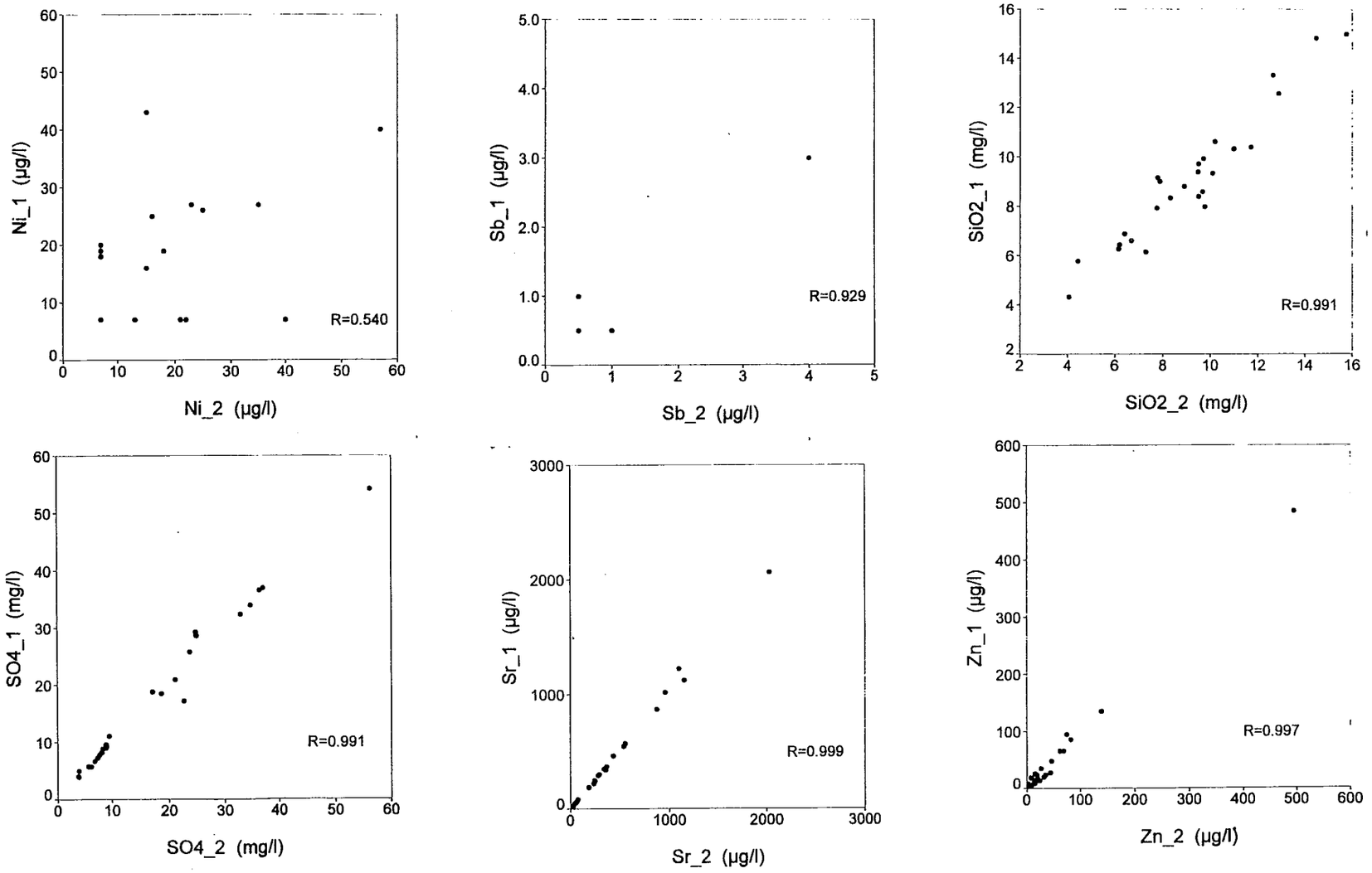



Figure 1d: Ni, Sb, SiO2, SO4, Sr, and Zn scatterplots for duplicate samples, Fredericton groundwater survey. Number of sample pairs is 23. Note for some elements data points overplot.

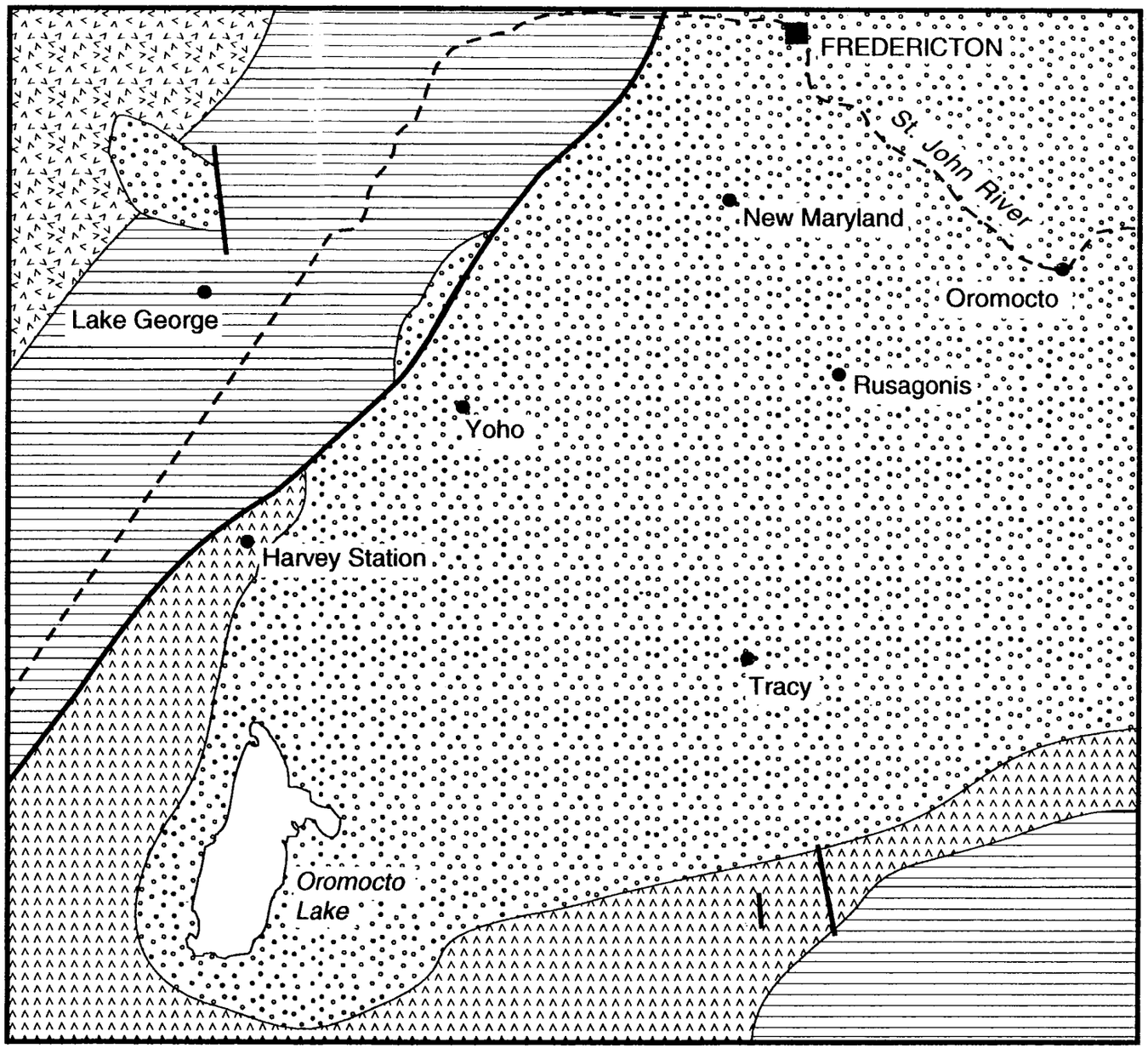



**Figure 2**

**Generalized Geology**

**of the Fredericton Area**

# APPENDIX A

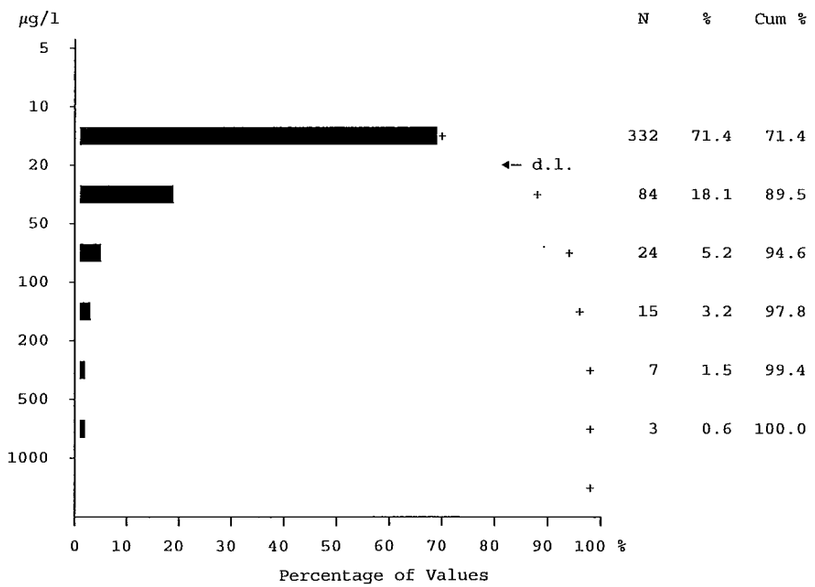
# STATISTICAL SUMMARIES

**(elements and parameters in alphabetical order)**

# Aluminum

Number of values - 465

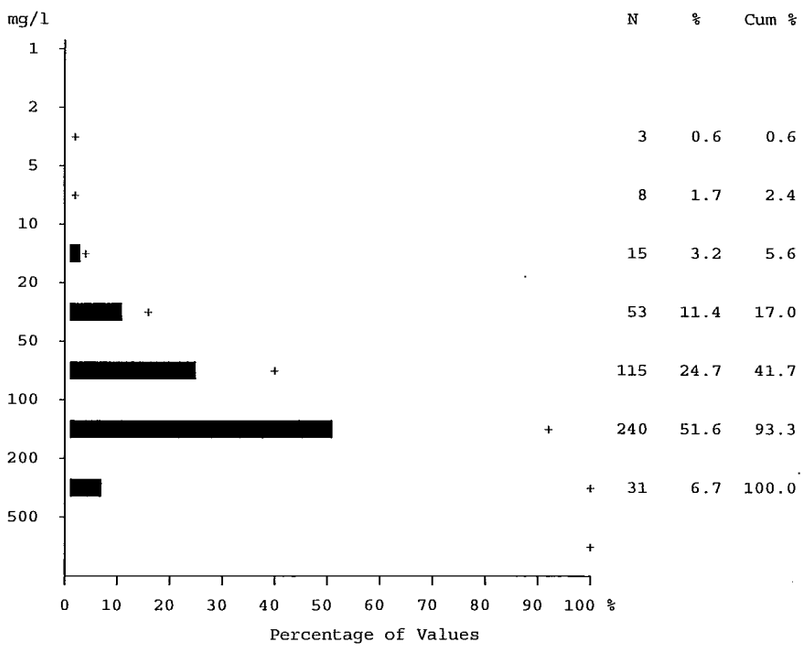
Determination limit - 20 $\mu$g/l




| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 332 |
| Number of missing values | 0 |
| Mean | 29.645 |
| Standard deviation | 68.833 |
| Skewness | 6.709 |
| Kurtosis | 53.835 |
| Geometric Mean | 15.815 |
| Percentiles | |
| Minimum value | 10.000 |
| 25th | 10.000 |
| 50th | 10.000 |
| 75th | 23.500 |
| 80th | 29.000 |
| 90th | 52.400 |
| 95th | 110.700 |
| 98th | 276.720 |
| 99th | 375.020 |
| Maximum value | 741.000 |

# Alkalinity

Number of values - 465



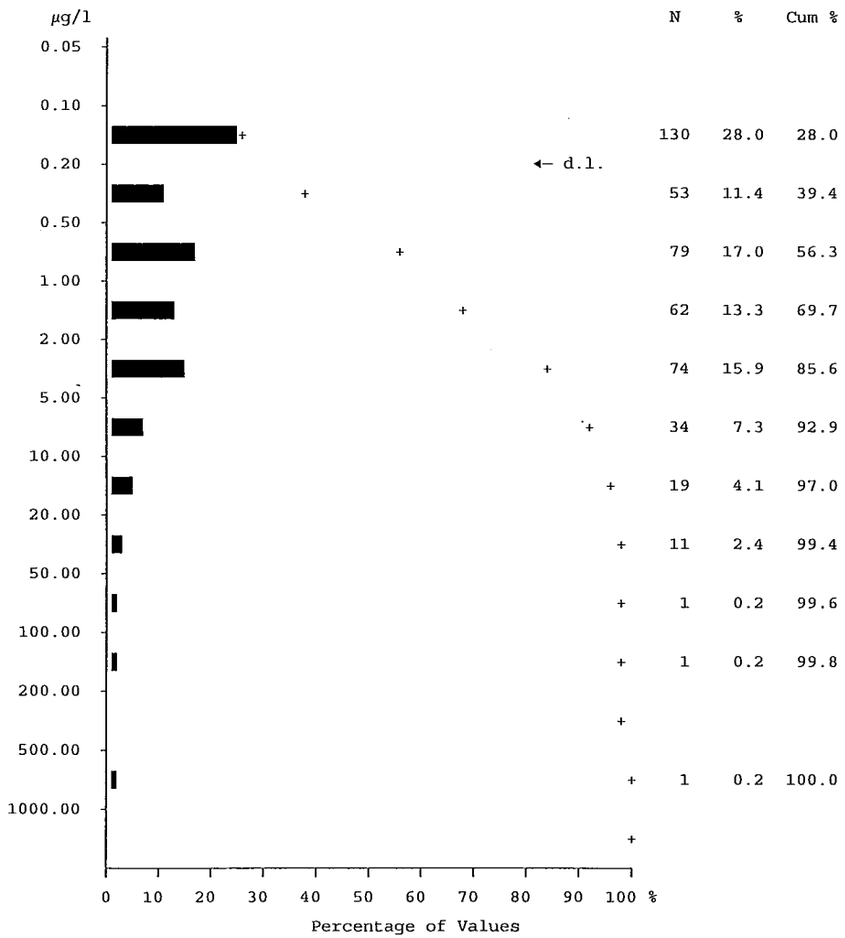

| | All units |
|---|---|
| Number of values | 465 |
| Number of missing values | 0 |
| Mean | 111.308 |
| Standard deviation | 58.695 |
| Skewness | 0.441 |
| Kurtosis | 0.624 |
| Geometric Mean | 90.348 |
| Percentiles | |
| Minimum value | 3.400 |
| 25th | 71.750 |
| 50th | 111.700 |
| 75th | 147.750 |
| 80th | 156.520 |
| 90th | 185.280 |
| 95th | 206.610 |
| 98th | 241.400 |
| 99th | 275.902 |
| Maximum value | 381.100 |

**Alk**

# Arsenic

Number of values - 465

Determination limit - 0.2 μg/l

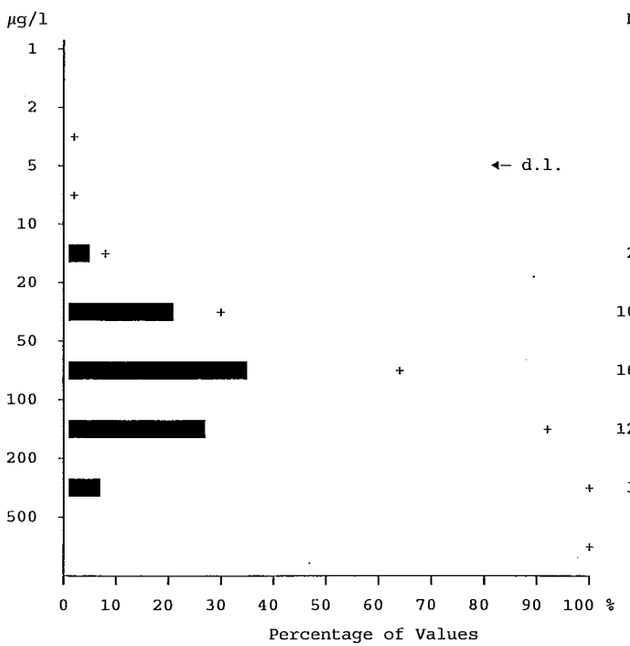



| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 130 |
| Number of missing values | 0 |
| Mean | 4.459 |
| Standard deviation | 30.927 |
| Skewness | 18.641 |
| Kurtosis | 371.347 |
| Geometric Mean | 0.758 |
| Percentiles | |
| Minimum value | 0.100 |
| 25th | 0.100 |
| 50th | 0.700 |
| 75th | 2.600 |
| 80th | 3.500 |
| 90th | 6.940 |
| 95th | 13.670 |
| 98th | 26.836 |
| 99th | 33.940 |
| Maximum value | 635.300 |

# Boron

Number of values - 465

Determination limit - 5 $\mu$g/l



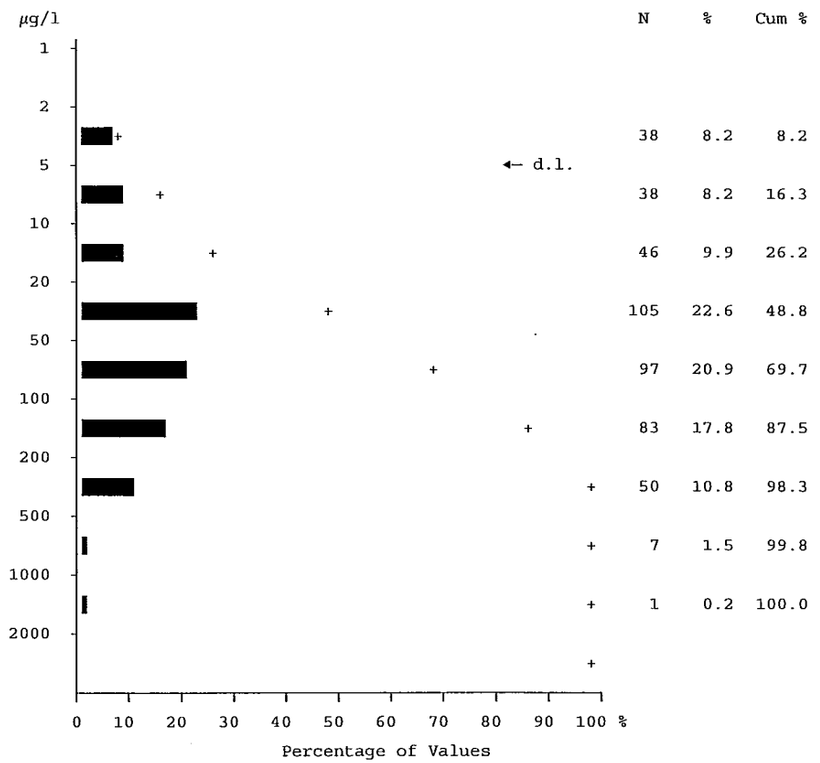

| µg/l | N | % | Cum % |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 5 | 9 | 1.9 | 1.9 |
| 10 | 9 | 1.9 | 3.9 |
| 20 | 23 | 4.9 | 8.8 |
| 50 | 102 | 21.9 | 30.8 |
| 100 | 160 | 34.4 | 65.2 |
| 200 | 127 | 27.3 | 92.5 |
| 500 | 35 | 7.5 | 100.0 |

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 9 |
| Number of missing values | 0 |
| Mean | 89.010 |
| Standard deviation | 66.090 |
| Skewness | 1.468 |
| Kurtosis | 3.284 |
| Geometric Mean | 64.643 |
| Percentiles | |
| Minimum value | 2.500 |
| 25th | 42.000 |
| 50th | 71.000 |
| 75th | 121.000 |
| 80th | 134.000 |
| 90th | 177.200 |
| 95th | 218.800 |
| 98th | 263.400 |
| 99th | 297.560 |
| Maximum value | 444.000 |

# Barium

Number of values - 465

Determination limit - 5 $\mu$g/l



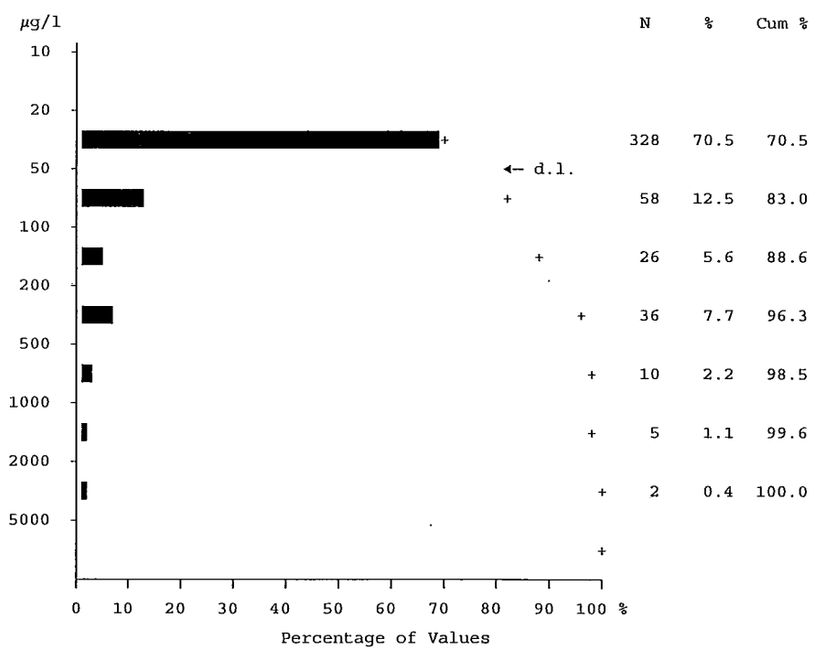

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 38 |
| Number of missing values | 0 |
| Mean | 94.568 |
| Standard deviation | 126.177 |
| Skewness | 3.354 |
| Kurtosis | 16.762 |
| Geometric Mean | 43.466 |
| Percentiles | |
| Minimum value | 2.500 |
| 25th | 18.000 |
| 50th | 52.000 |
| 75th | 122.500 |
| 80th | 144.400 |
| 90th | 236.200 |
| 95th | 330.400 |
| 98th | 467.320 |
| 99th | 633.420 |
| Maximum value | 1136.000 |

**BA**

# Bromine

Number of values - 465

Determination limit - 50 $\mu$g/l



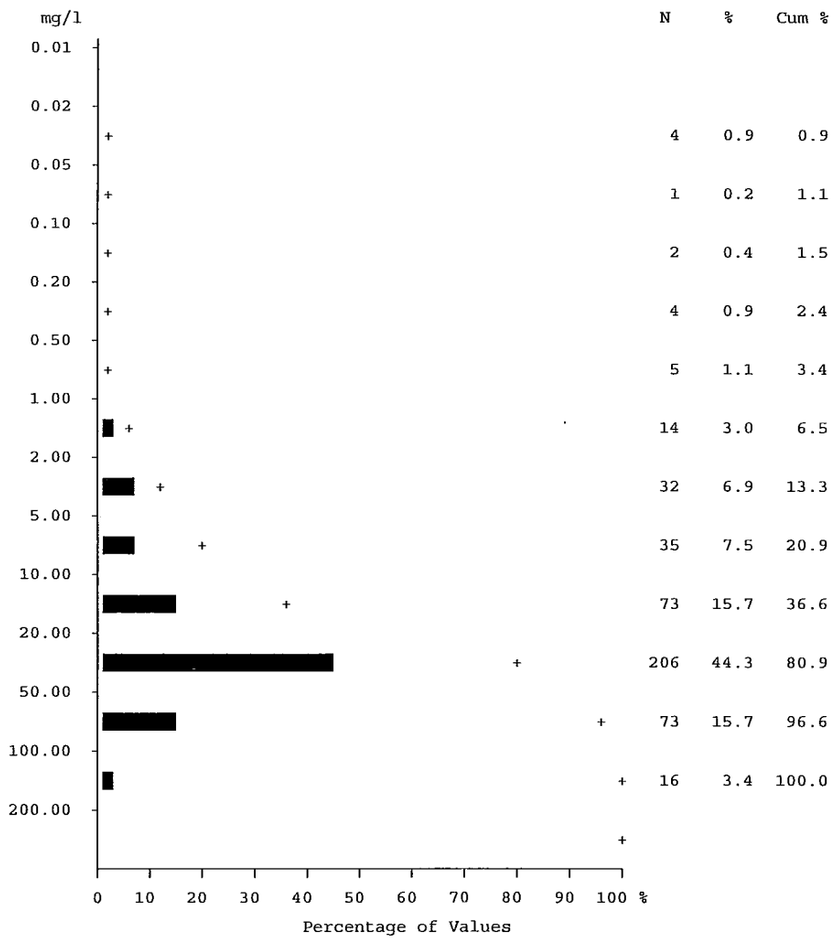

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 328 |
| Number of missing values | 0 |
| Mean | 107.578 |
| Standard deviation | 298.439 |
| Skewness | 7.511 |
| Kurtosis | 70.447 |
| Geometric Mean | 43.798 |
| Percentiles | |
| Minimum value | 25.000 |
| 25th | 25.000 |
| 50th | 25.000 |
| 75th | 63.500 |
| 80th | 79.600 |
| 90th | 241.200 |
| 95th | 441.500 |
| 98th | 897.600 |
| 99th | 1727.020 |
| Maximum value | 3445.000 |

**Br**

# Calcium

Number of values - 465

Determination limit - 0.01 mg/l



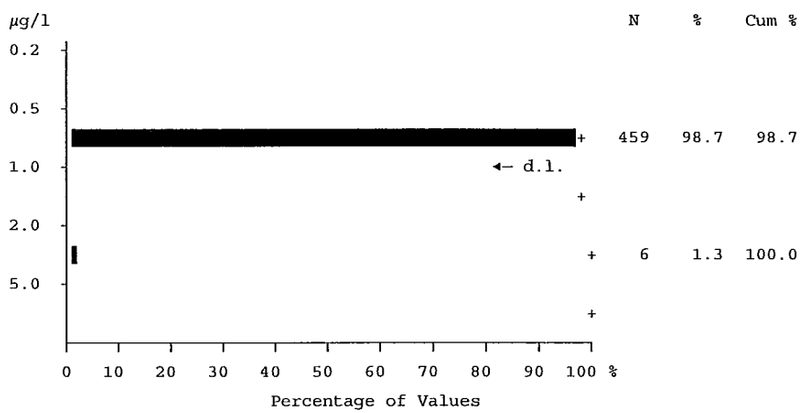

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 0 |
| Mean | 33.190 |
| Standard deviation | 28.873 |
| Skewness | 1.774 |
| Kurtosis | 4.677 |
| Geometric Mean | 19.707 |
| Percentiles | |
| Minimum value | 0.020 |
| 25th | 13.105 |
| 50th | 27.200 |
| 75th | 43.660 |
| 80th | 49.294 |
| 90th | 69.872 |
| 95th | 92.023 |
| 98th | 111.871 |
| 99th | 146.139 |
| Maximum value | 181.930 |

Ca

# Cadmium

Number of values - 465

Determination limit - 1 $\mu$g/l

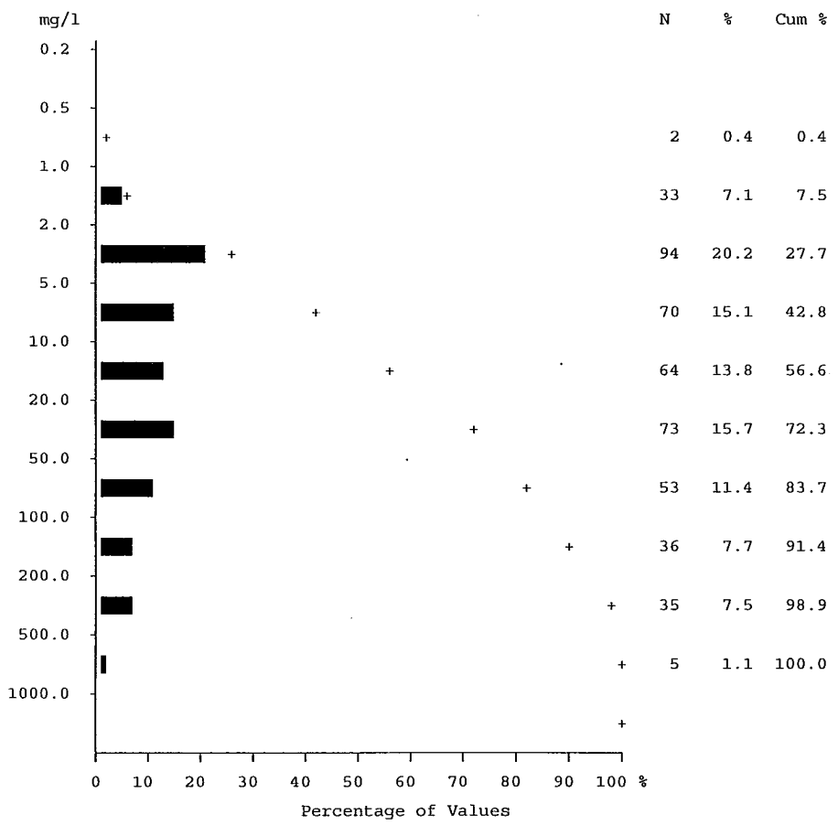



| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 459 |
| Number of missing values | 0 |
| Mean | 0.524 |
| Standard deviation | 0.214 |
| Skewness | 9.494 |
| Kurtosis | 93.692 |
| Geometric Mean | 0.510 |
| Percentiles | |
| Minimum value | 0.500 |
| 25th | 0.500 |
| 50th | 0.500 |
| 75th | 0.500 |
| 80th | 0.500 |
| 90th | 0.500 |
| 95th | 0.500 |
| 98th | 0.500 |
| 99th | 2.000 |
| Maximum value | 3.000 |

# Chlorine

Number of values - 465

Determination limit - 0.05 mg/l



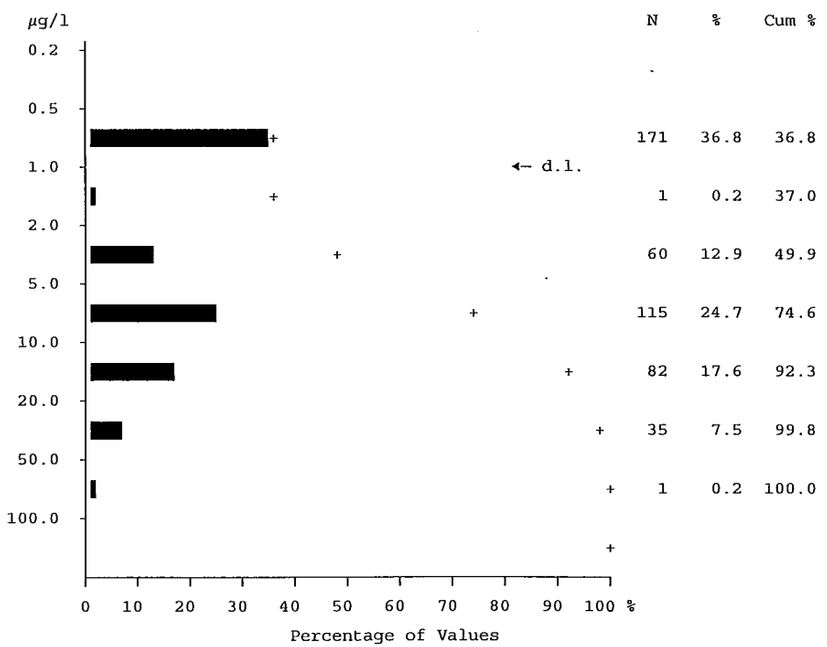

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 0 |
| Mean | 57.653 |
| Standard deviation | 108.158 |
| Skewness | 3.759 |
| Kurtosis | 18.780 |
| Geometric Mean | 16.972 |
| Percentiles | |
| Minimum value | 0.860 |
| 25th | 4.415 |
| 50th | 13.750 |
| 75th | 54.460 |
| 80th | 73.342 |
| 90th | 185.800 |
| 95th | 254.100 |
| 98th | 419.520 |
| 99th | 546.764 |
| Maximum value | 918.000 |

Cl

# Cobalt

Number of values - 465

Determination limit - 1 $\mu$g/l

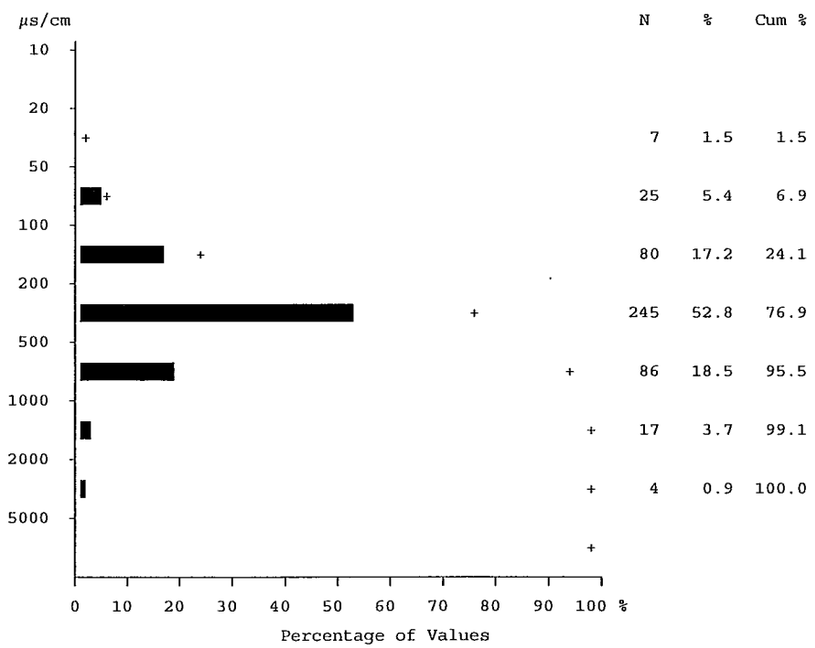



| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 171 |
| Number of missing values | 0 |
| Mean | 6.657 |
| Standard deviation | 7.689 |
| Skewness | 1.799 |
| Kurtosis | 4.080 |
| Geometric Mean | 2.881 |
| Percentiles | |
| Minimum value | 0.500 |
| 25th | 0.500 |
| 50th | 5.000 |
| 75th | 10.000 |
| 80th | 11.000 |
| 90th | 17.000 |
| 95th | 23.700 |
| 98th | 29.000 |
| 99th | 32.000 |
| Maximum value | 51.000 |

# Conductivity

Number of values - 465

Determination limit - 0 $\mu$s/cm



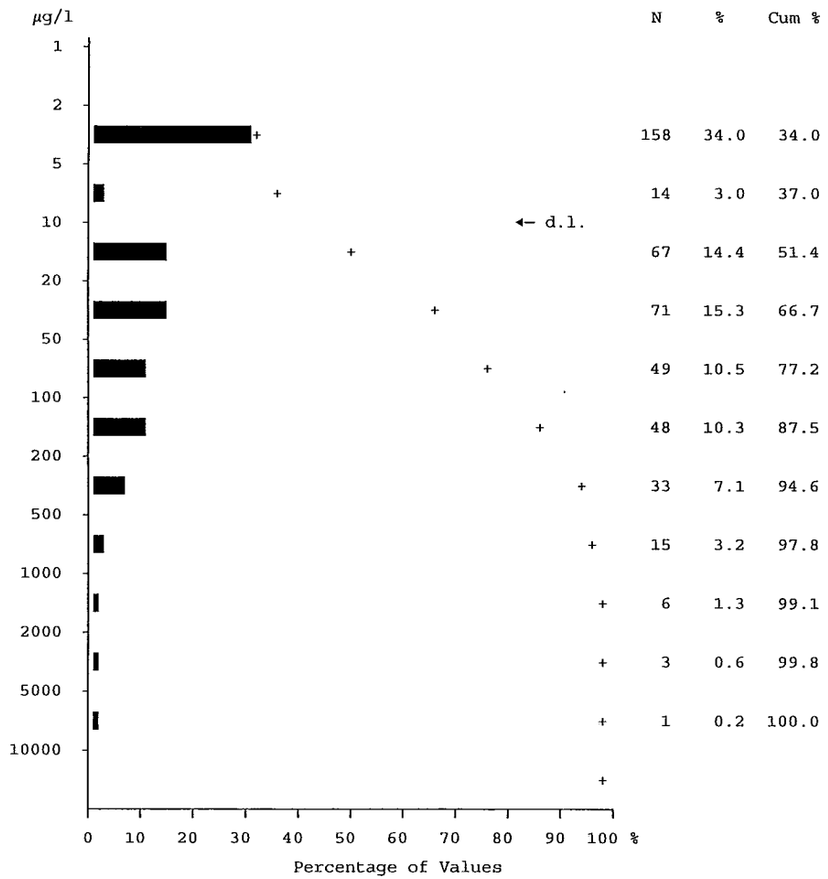

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 1 |
| Mean | 394.519 |
| Standard deviation | 340.993 |
| Skewness | 3.455 |
| Kurtosis | 17.925 |
| Geometric Mean | 305.255 |
| Percentiles | |
| Minimum value | 35.000 |
| 25th | 202.000 |
| 50th | 308.500 |
| 75th | 480.000 |
| 80th | 526.000 |
| 90th | 742.000 |
| 95th | 987.500 |
| 98th | 1366.400 |
| 99th | 2060.050 |
| Maximum value | 2990.000 |

**Cond**

# Copper

Number of values - 465

Determination limit - 7 $\mu$g/l



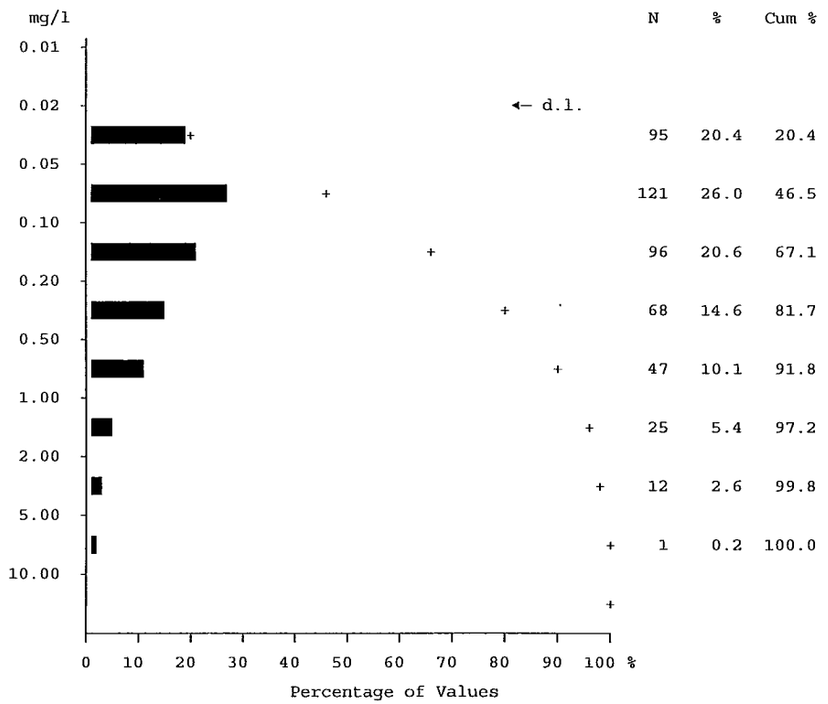

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 158 |
| Number of missing values | 0 |
| Mean | 122.071 |
| Standard deviation | 417.929 |
| Skewness | 9.999 |
| Kurtosis | 131.661 |
| Geometric Mean | 22.664 |
| Percentiles | |
| Minimum value | 3.500 |
| 25th | 3.500 |
| 50th | 18.000 |
| 75th | 85.500 |
| 80th | 116.800 |
| 90th | 252.800 |
| 95th | 544.900 |
| 98th | 1031.000 |
| 99th | 1911.120 |
| Maximum value | 6562.000 |

Cu

# Fluorine

Number of values - 465

Determination limit - 0.02 mg/l



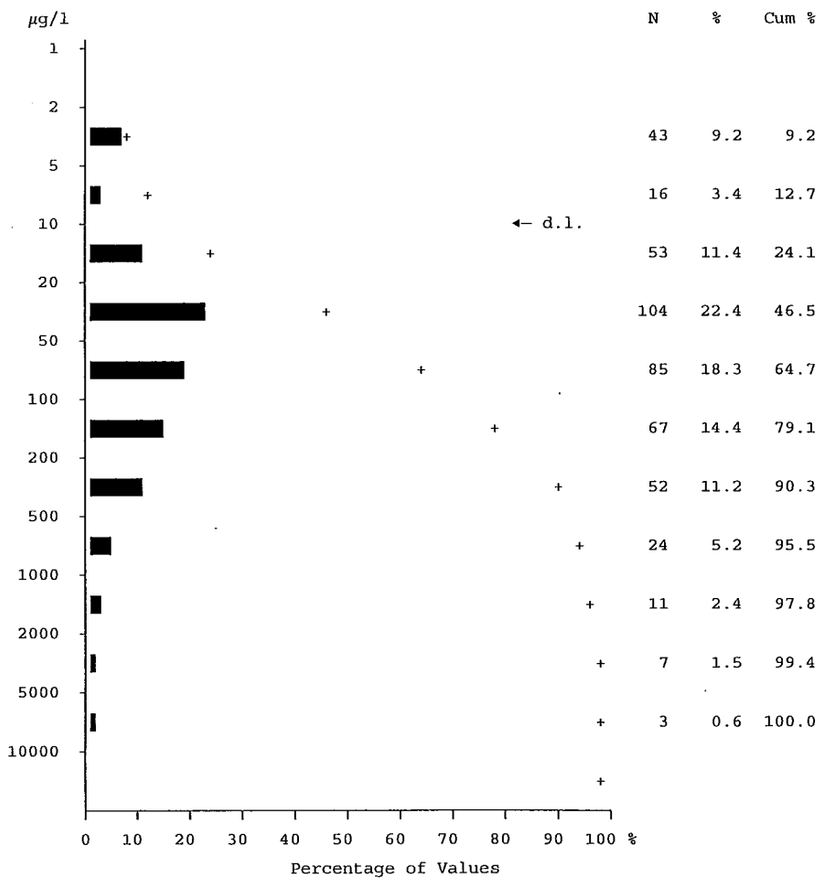

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 0 |
| Mean | 0.335 |
| Standard deviation | 0.640 |
| Skewness | 4.500 |
| Kurtosis | 27.378 |
| Geometric Mean | 0.136 |
| Percentiles | |
| Minimum value | 0.020 |
| 25th | 0.050 |
| 50th | 0.110 |
| 75th | 0.305 |
| 80th | 0.430 |
| 90th | 0.854 |
| 95th | 1.474 |
| 98th | 2.626 |
| 99th | 3.567 |
| Maximum value | 6.470 |

F

# Iron

Number of values - 465

Determination limit - 7 $\mu$g/l



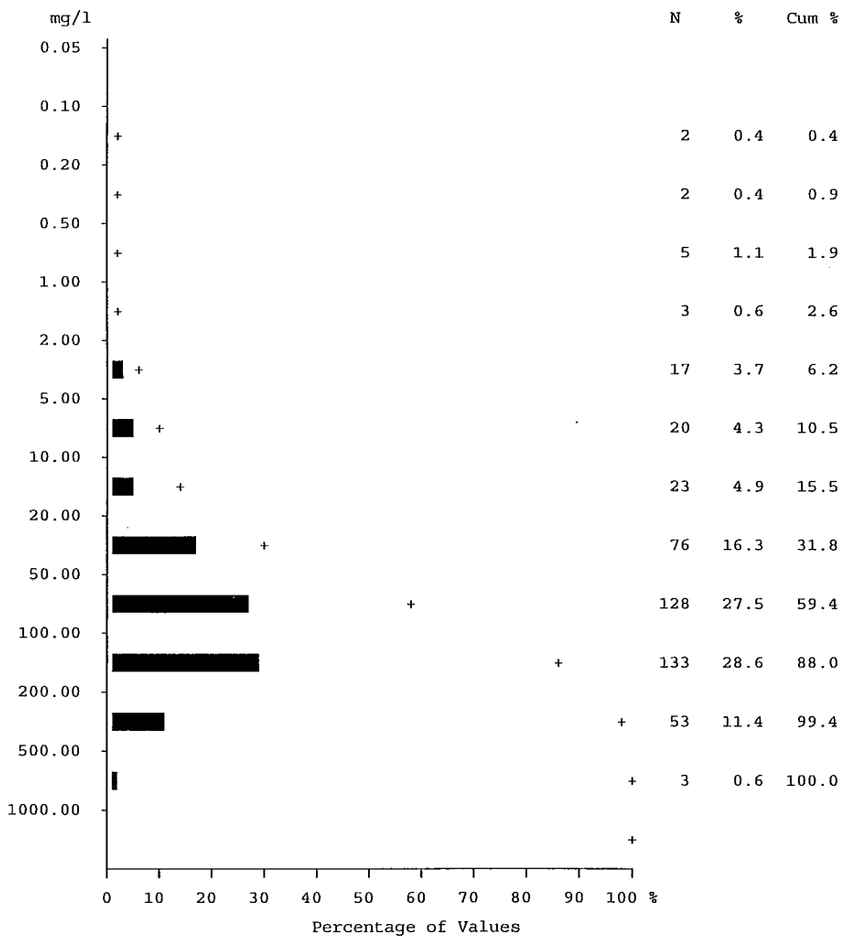

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 43 |
| Number of missing values | 0 |
| Mean | 222.969 |
| Standard deviation | 597.646 |
| Skewness | 6.062 |
| Kurtosis | 44.305 |
| Geometric Mean | 58.299 |
| Percentiles | |
| Minimum value | 3.500 |
| 25th | 20.000 |
| 50th | 56.000 |
| 75th | 166.000 |
| 80th | 220.200 |
| 90th | 481.000 |
| 95th | 981.200 |
| 98th | 2371.200 |
| 99th | 3258.900 |
| Maximum value | 6032.000 |

**Fe**

# Hardness

Number of values - 465

Determination limit - 0 mg/l



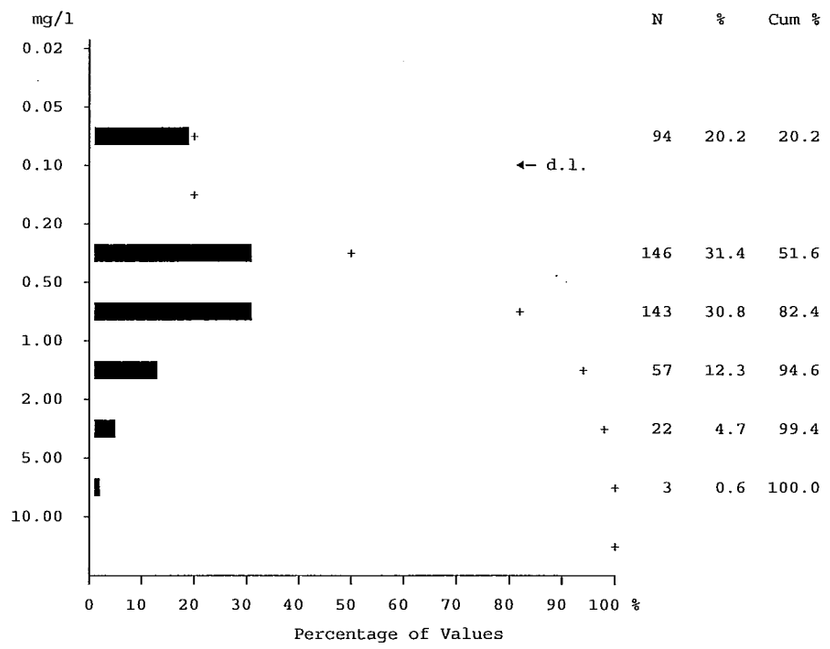

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 0 |
| Mean | 103.525 |
| Standard deviation | 95.408 |
| Skewness | 2.068 |
| Kurtosis | 7.061 |
| Geometric Mean | 59.882 |
| Percentiles | |
| Minimum value | 0.100 |
| 25th | 38.000 |
| 50th | 80.600 |
| 75th | 138.550 |
| 80th | 152.820 |
| 90th | 238.880 |
| 95th | 287.600 |
| 98th | 361.428 |
| 99th | 465.206 |
| Maximum value | 740.400 |

Hardness

# Potassium

Number of values - 465

Determination limit - 0.1 mg/l

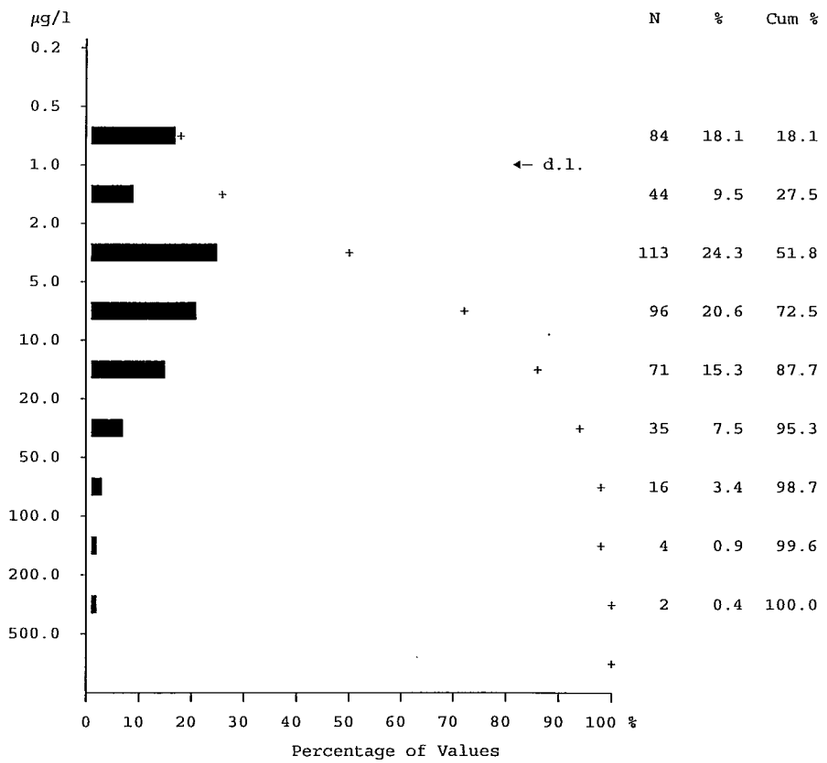



| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 94 |
| Number of missing values | 0 |
| Mean | 0.647 |
| Standard deviation | 0.830 |
| Skewness | 3.543 |
| Kurtosis | 16.482 |
| Geometric Mean | 0.353 |
| Percentiles | |
| Minimum value | 0.050 |
| 25th | 0.200 |
| 50th | 0.400 |
| 75th | 0.800 |
| 80th | 0.900 |
| 90th | 1.300 |
| 95th | 2.140 |
| 98th | 3.636 |
| 99th | 4.602 |
| Maximum value | 6.600 |

# Lithium

Number of values - 465

Determination limit - 1 $\mu$g/l

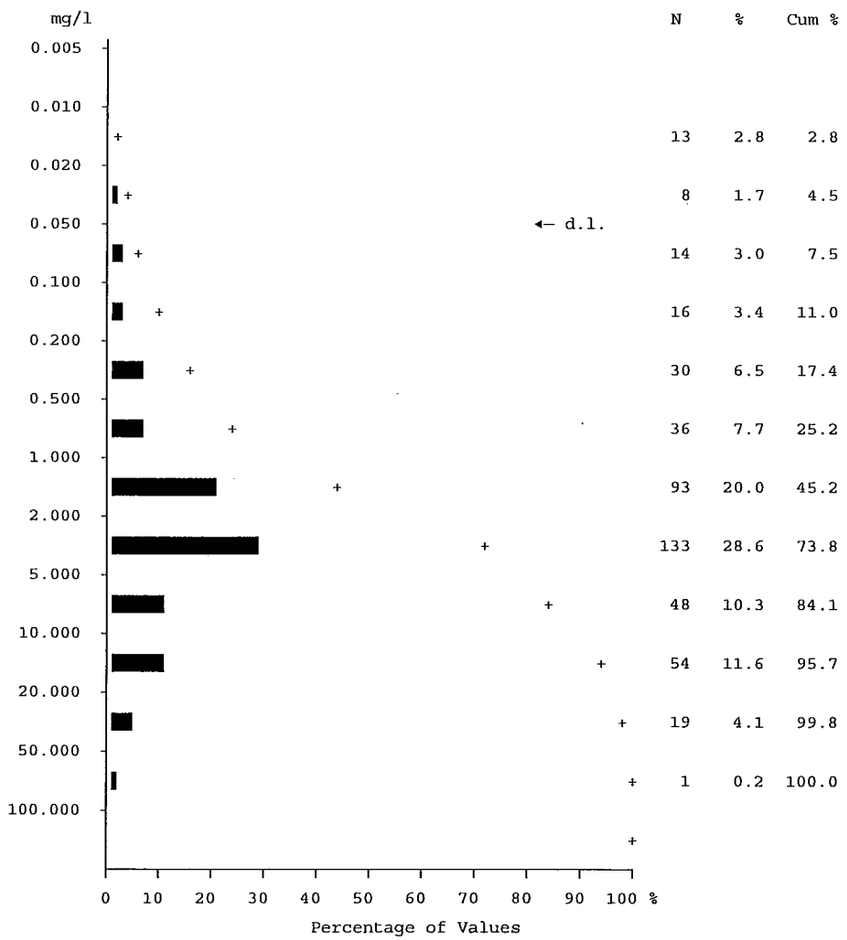



| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 84 |
| Number of missing values | 0 |
| Mean | 11.265 |
| Standard deviation | 25.828 |
| Skewness | 6.767 |
| Kurtosis | 60.407 |
| Geometric Mean | 3.889 |
| Percentiles | |
| Minimum value | 0.500 |
| 25th | 1.000 |
| 50th | 4.000 |
| 75th | 10.000 |
| 80th | 13.000 |
| 90th | 23.400 |
| 95th | 47.700 |
| 98th | 86.160 |
| 99th | 116.120 |
| Maximum value | 300.000 |

# Magnesium

Number of values - 465

Determination limit - 0.03 mg/l



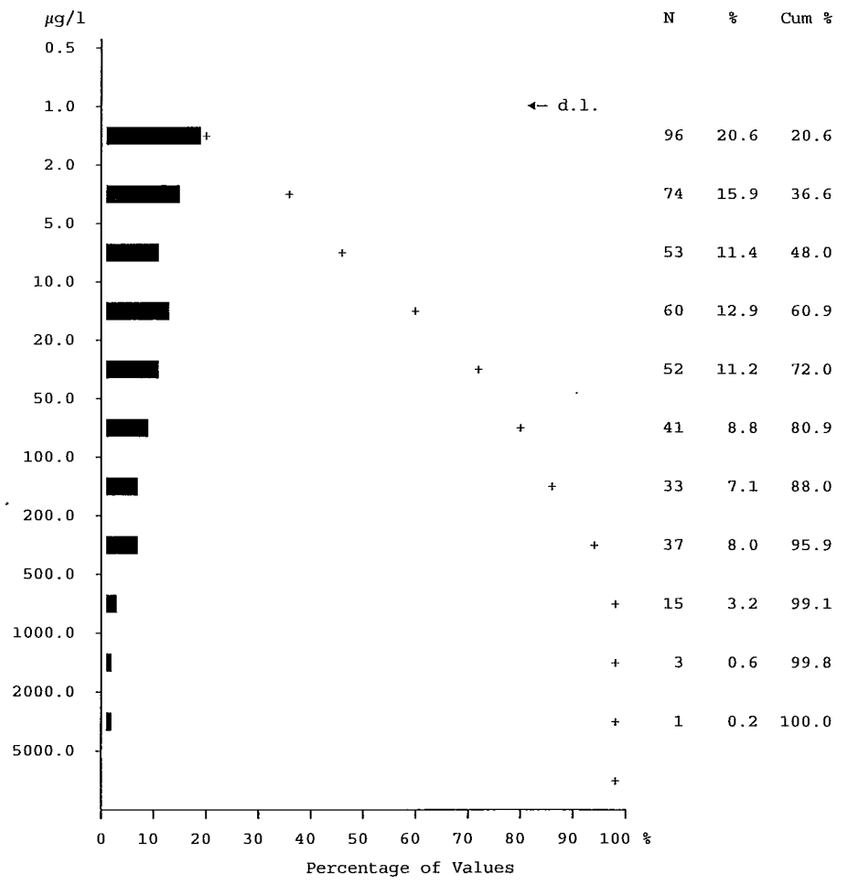

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 13 |
| Number of missing values | 0 |
| Mean | 5.036 |
| Standard deviation | 7.427 |
| Skewness | 3.351 |
| Kurtosis | 16.975 |
| Geometric Mean | 1.876 |
| Percentiles | |
| Minimum value | 0.015 |
| 25th | 0.980 |
| 50th | 2.250 |
| 75th | 5.365 |
| 80th | 7.324 |
| 90th | 13.722 |
| 95th | 19.668 |
| 98th | 29.486 |
| 99th | 36.867 |
| Maximum value | 70.520 |

Mg

# Manganese

Number of values - 465

Determination limit - 1 $\mu$g/l



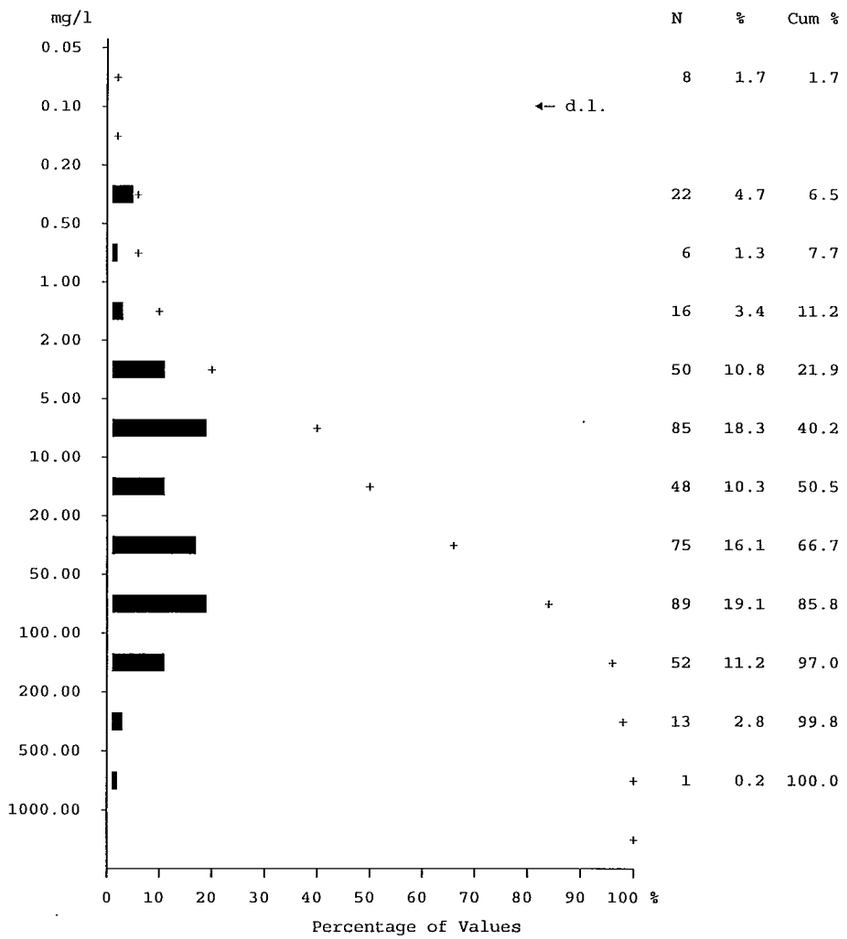

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 0 |
| Mean | 83.277 |
| Standard deviation | 214.645 |
| Skewness | 5.927 |
| Kurtosis | 46.753 |
| Geometric Mean | 12.712 |
| Percentiles | |
| Minimum value | 1.000 |
| 25th | 2.000 |
| 50th | 10.000 |
| 75th | 66.000 |
| 80th | 91.800 |
| 90th | 234.800 |
| 95th | 458.500 |
| 98th | 684.400 |
| 99th | 914.120 |
| Maximum value | 2316.000 |

**Mn**

# Sodium

Number of values - 465

Determination limit - 0.1 mg/l



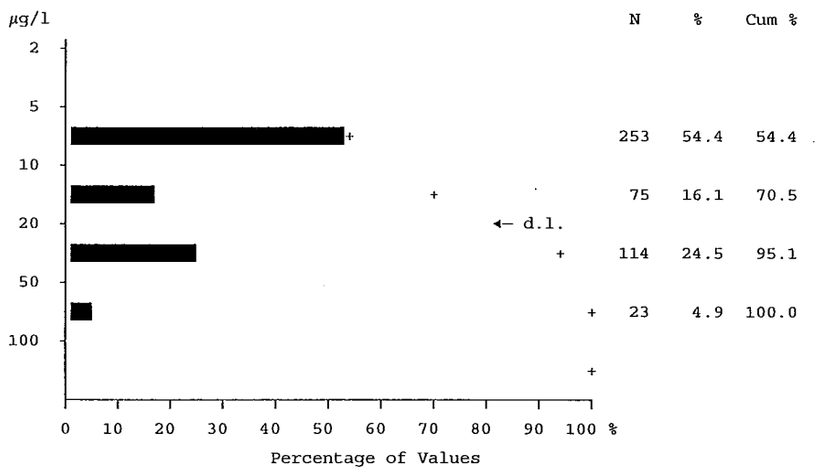

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 8 |
| Number of missing values | 0 |
| Mean | 45.064 |
| Standard deviation | 63.092 |
| Skewness | 3.246 |
| Kurtosis | 16.343 |
| Geometric Mean | 15.295 |
| Percentiles | |
| Minimum value | 0.050 |
| 25th | 5.900 |
| 50th | 19.000 |
| 75th | 68.450 |
| 80th | 85.340 |
| 90th | 111.620 |
| 95th | 142.820 |
| 98th | 220.460 |
| 99th | 364.230 |
| Maximum value | 558.000 |

Na

# Nickel

Number of values - 465

Determination limit - 13 $\mu$g/l



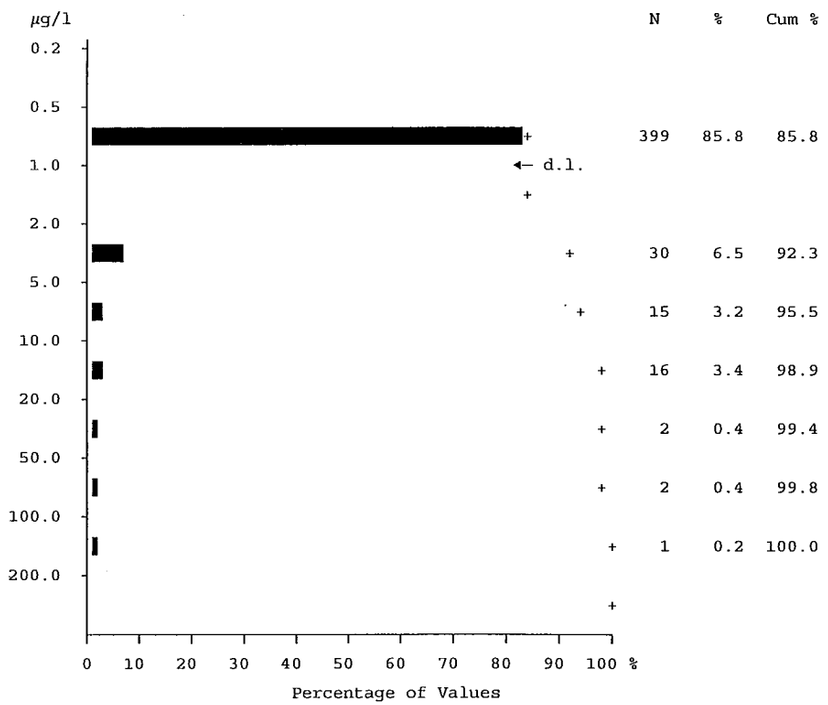

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 253 |
| Number of missing values | 0 |
| Mean | 16.401 |
| Standard deviation | 14.929 |
| Skewness | 1.991 |
| Kurtosis | 4.659 |
| Geometric Mean | 12.033 |
| Percentiles | |
| Minimum value | 6.500 |
| 25th | 6.500 |
| 50th | 6.500 |
| 75th | 23.000 |
| 80th | 25.000 |
| 90th | 39.000 |
| 95th | 49.400 |
| 98th | 59.680 |
| 99th | 72.380 |
| Maximum value | 97.000 |

Ni

# Lead

Number of values - 465

Determination limit - 1 μg/l



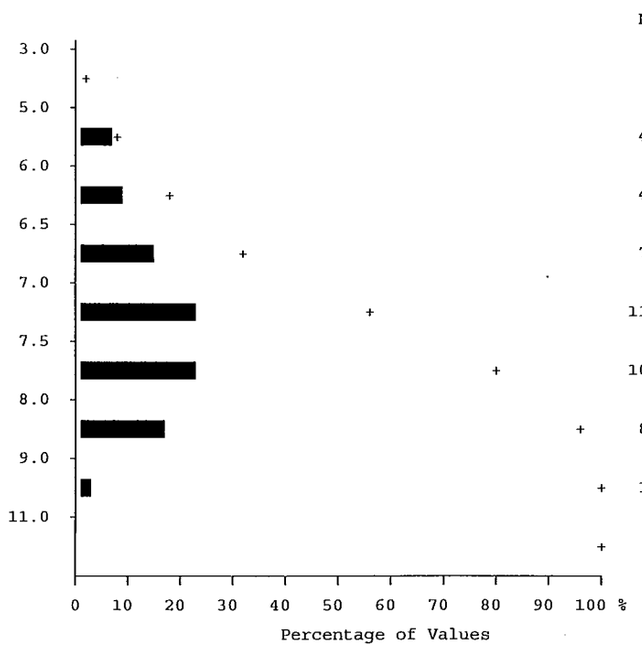

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 399 |
| Number of missing values | 0 |
| Mean | 1.945 |
| Standard deviation | 7.334 |
| Skewness | 10.477 |
| Kurtosis | 138.074 |
| Geometric Mean | 0.713 |
| Percentiles | |
| Minimum value | 0.500 |
| 25th | 0.500 |
| 50th | 0.500 |
| 75th | 0.500 |
| 80th | 0.500 |
| 90th | 3.000 |
| 95th | 8.700 |
| 98th | 14.680 |
| 99th | 37.440 |
| Maximum value | 116.000 |

**Pb**

# pH

Number of values - 465

Determination limit - 0



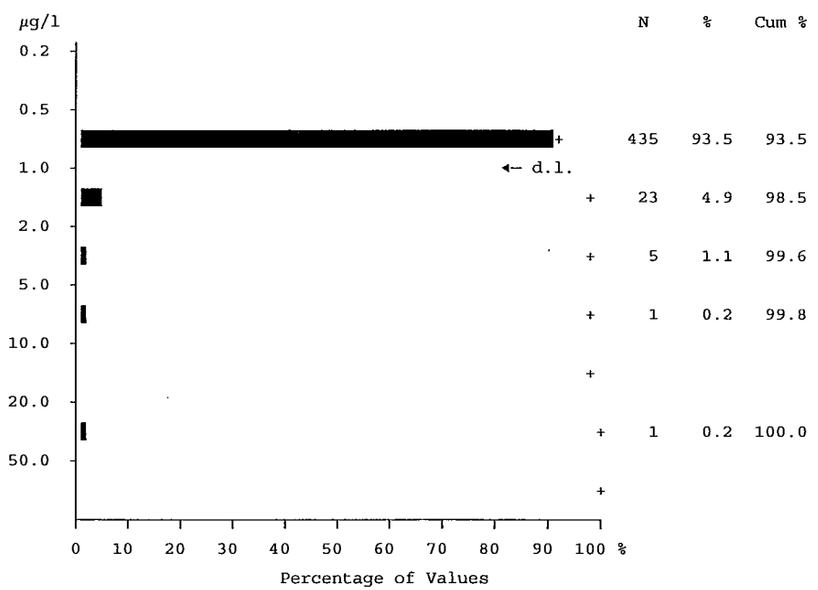

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 2 |
| Mean | 7.302 |
| Standard deviation | 0.890 |
| Skewness | -0.102 |
| Kurtosis | -0.406 |
| Geometric Mean | 7.246 |
| Percentiles | |
| Minimum value | 4.970 |
| 25th | 6.740 |
| 50th | 7.350 |
| 75th | 7.870 |
| 80th | 7.990 |
| 90th | 8.520 |
| 95th | 8.848 |
| 98th | 9.032 |
| 99th | 9.160 |
| Maximum value | 9.210 |

pH

# Antimony

Number of values - 465

Determination limit - 1 $\mu$g/l



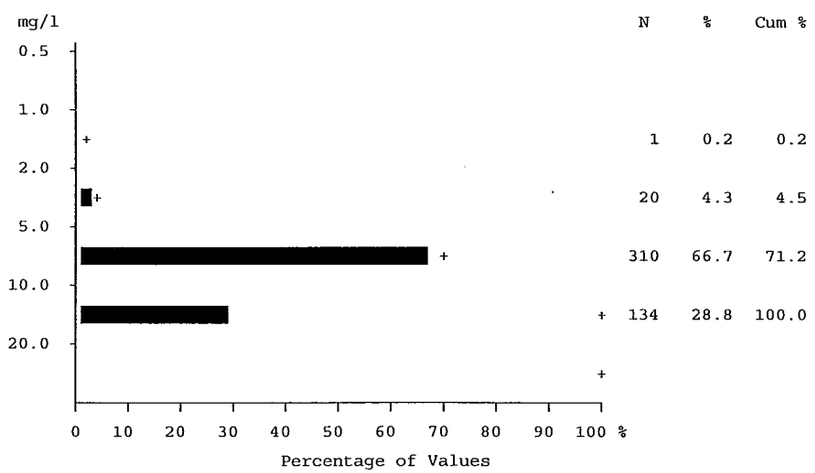

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 435 |
| Number of missing values | 0 |
| Mean | 0.629 |
| Standard deviation | 1.501 |
| Skewness | 19.736 |
| Kurtosis | 407.326 |
| Geometric Mean | 0.535 |
| Percentiles | |
| Minimum value | 0.500 |
| 25th | 0.500 |
| 50th | 0.500 |
| 75th | 0.500 |
| 80th | 0.500 |
| 90th | 0.500 |
| 95th | 1.000 |
| 98th | 1.000 |
| 99th | 3.340 |
| Maximum value | 32.000 |

**Sb**

# Silica

Number of values - 465

Determination limit - 0.01 mg/l



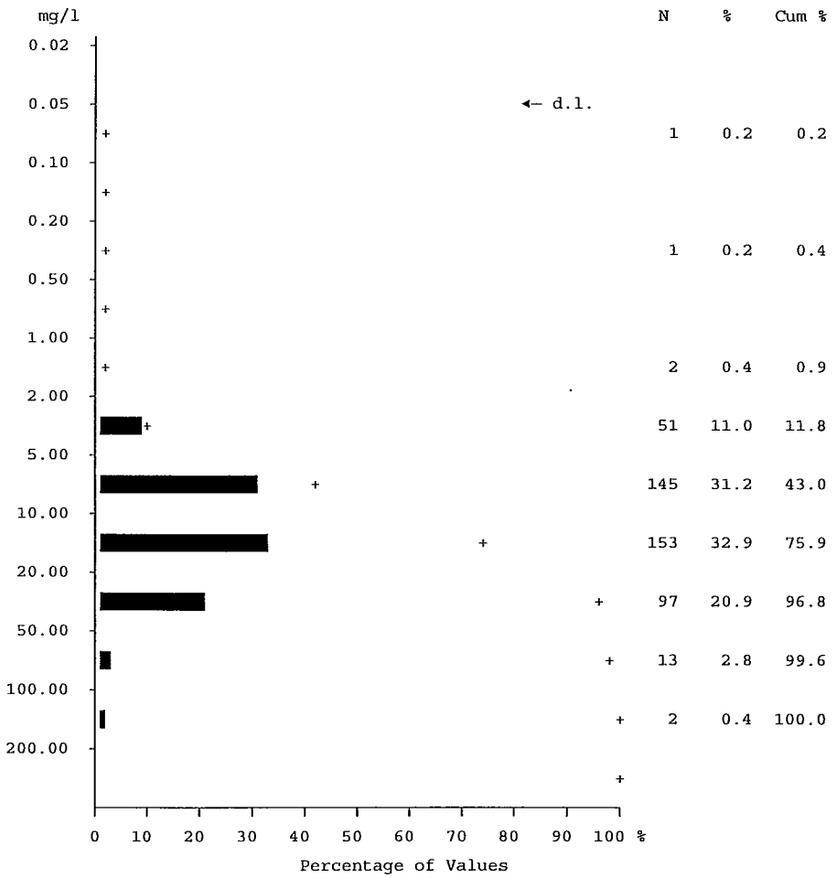

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 0 |
| Mean | 8.659 |
| Standard deviation | 2.787 |
| Skewness | 0.723 |
| Kurtosis | 0.180 |
| Geometric Mean | 8.229 |
| Percentiles | |
| Minimum value | 1.920 |
| 25th | 6.570 |
| 50th | 8.090 |
| 75th | 10.395 |
| 80th | 11.120 |
| 90th | 12.638 |
| 95th | 14.192 |
| 98th | 15.004 |
| 99th | 16.109 |
| Maximum value | 18.850 |

**SiO2**

# Sulphate

Number of values - 465

Determination limit - 0.05 mg/l



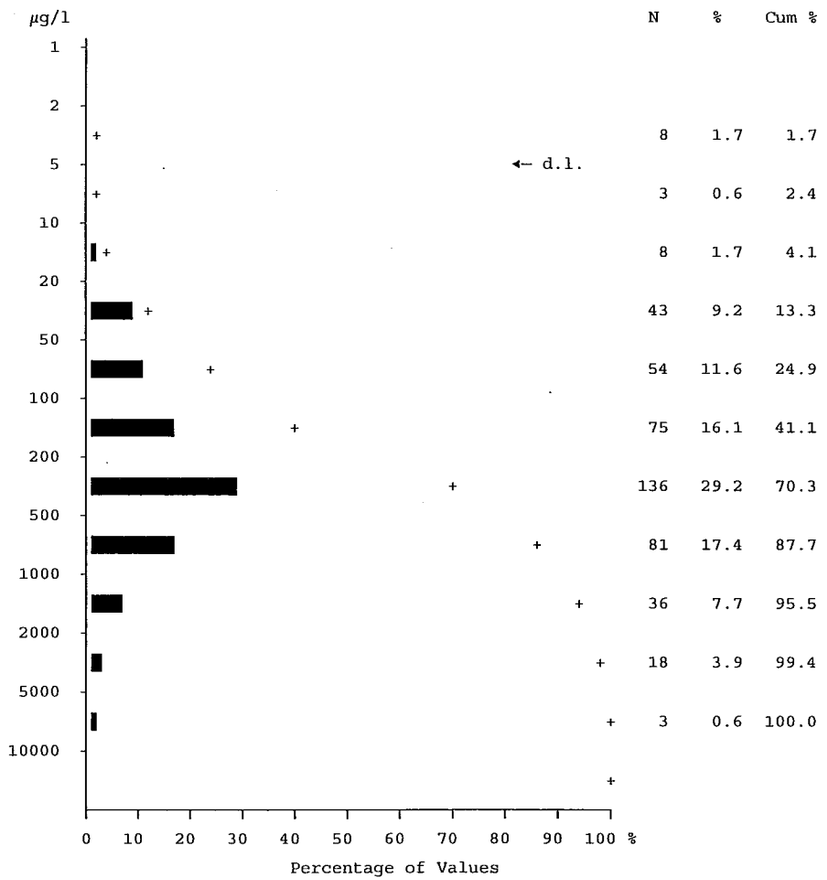

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 0 |
| Mean | 16.239 |
| Standard deviation | 15.547 |
| Skewness | 4.110 |
| Kurtosis | 30.259 |
| Geometric Mean | 11.918 |
| Percentiles | |
| Minimum value | 0.090 |
| 25th | 6.660 |
| 50th | 11.860 |
| 75th | 19.285 |
| 80th | 23.990 |
| 90th | 33.642 |
| 95th | 45.373 |
| 98th | 54.422 |
| 99th | 64.087 |
| Maximum value | 170.000 |

**SO4**

# Strontium

Number of values - 465

Determination limit - 5 $\mu$g/l



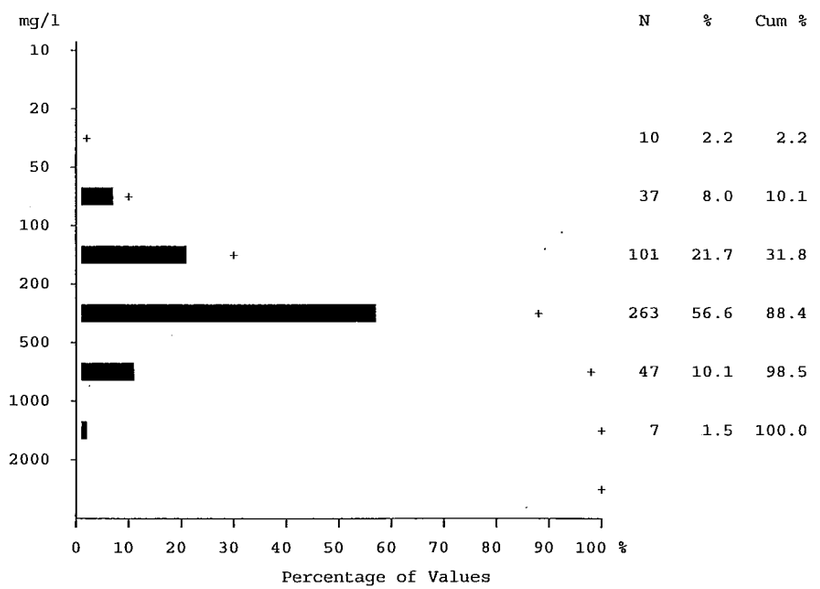

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 8 |
| Number of missing values | 0 |
| Mean | 514.335 |
| Standard deviation | 856.506 |
| Skewness | 5.516 |
| Kurtosis | 43.801 |
| Geometric Mean | 231.254 |
| Percentiles | |
| Minimum value | 2.500 |
| 25th | 99.500 |
| 50th | 271.000 |
| 75th | 568.000 |
| 80th | 704.200 |
| 90th | 1132.200 |
| 95th | 1843.700 |
| 98th | 3093.600 |
| 99th | 4435.340 |
| Maximum value | 9661.000 |

**Sr**

# Total Dissolved Solids

Number of values - 465

Determination limit - 0 mg/l



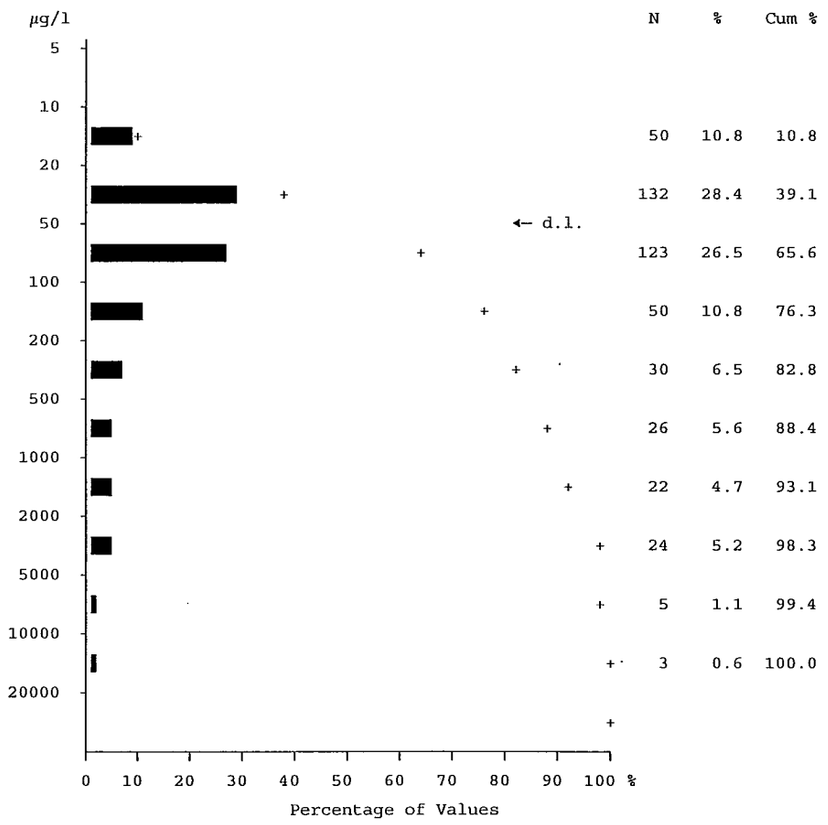

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 0 |
| Number of missing values | 0 |
| Mean | 300.430 |
| Standard deviation | 204.029 |
| Skewness | 2.432 |
| Kurtosis | 10.548 |
| Geometric Mean | 245.014 |
| Percentiles | |
| Minimum value | 25.000 |
| 25th | 168.500 |
| 50th | 260.000 |
| 75th | 390.000 |
| 80th | 415.800 |
| 90th | 526.400 |
| 95th | 650.300 |
| 98th | 879.440 |
| 99th | 1195.500 |
| Maximum value | 1718.000 |

**TDS**

# Total Nitrogen

Number of values - 465

Determination limit - 25 µg/l



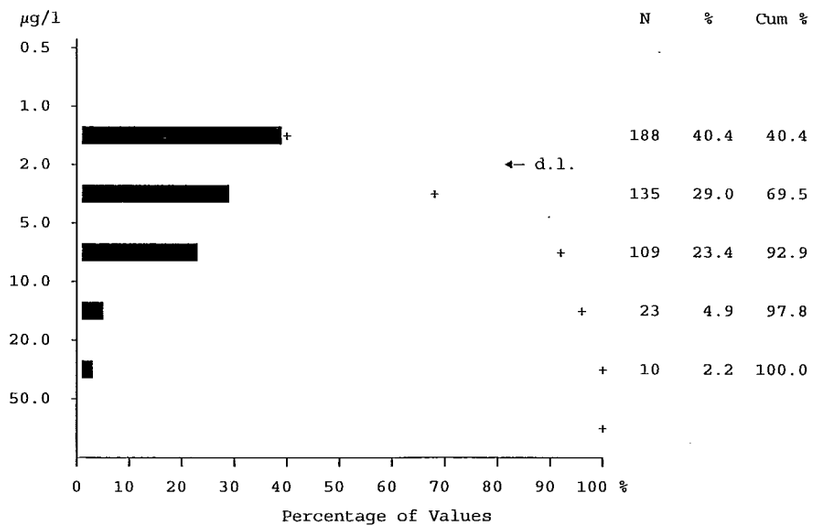

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 50 |
| Number of missing values | 0 |
| Mean | 498.194 |
| Standard deviation | 1505.077 |
| Skewness | 6.926 |
| Kurtosis | 64.097 |
| Geometric Mean | 99.962 |
| Percentiles | |
| Minimum value | 12.500 |
| 25th | 40.000 |
| 50th | 65.000 |
| 75th | 175.500 |
| 80th | 364.600 |
| 90th | 1381.600 |
| 95th | 2778.700 |
| 98th | 4801.320 |
| 99th | 7425.460 |
| Maximum value | 18815.000 |

**Total N**

# Vanadium

Number of values - 465

Determination limit - 2 $\mu$g/l

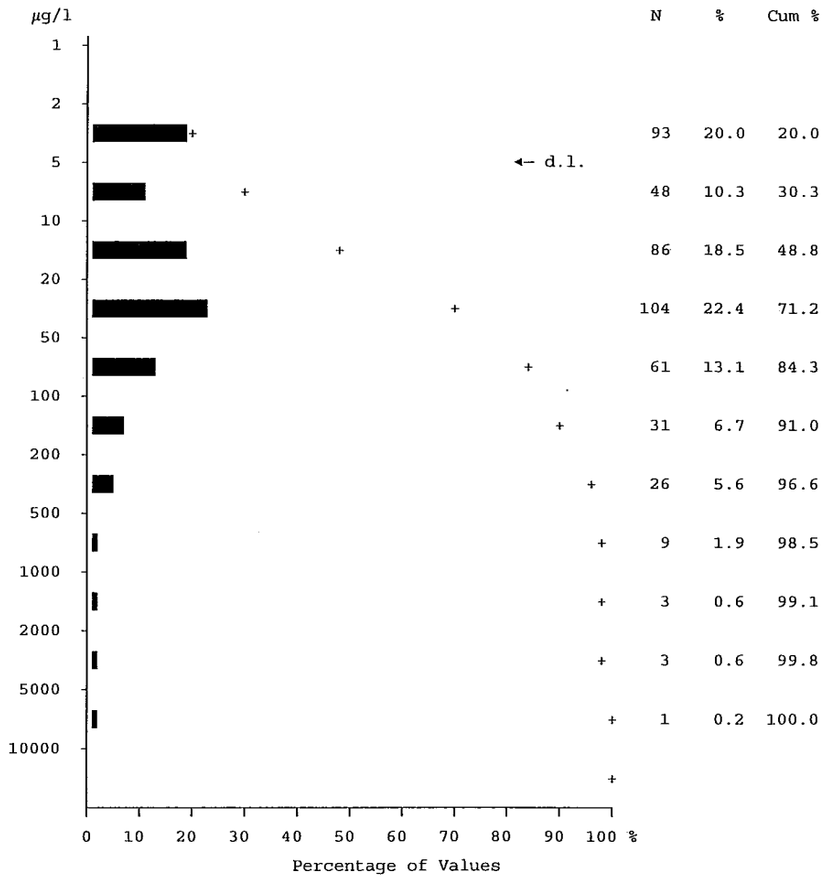



| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 188 |
| Number of missing values | 0 |
| Mean | 3.839 |
| Standard deviation | 4.240 |
| Skewness | 2.574 |
| Kurtosis | 7.879 |
| Geometric Mean | 2.487 |
| Percentiles | |
| Minimum value | 1.000 |
| 25th | 1.000 |
| 50th | 2.000 |
| 75th | 5.000 |
| 80th | 6.000 |
| 90th | 8.000 |
| 95th | 13.000 |
| 98th | 20.680 |
| 99th | 22.000 |
| Maximum value | 27.000 |

# Zinc

Number of values - 465

Determination limit - 5 $\mu$g/l



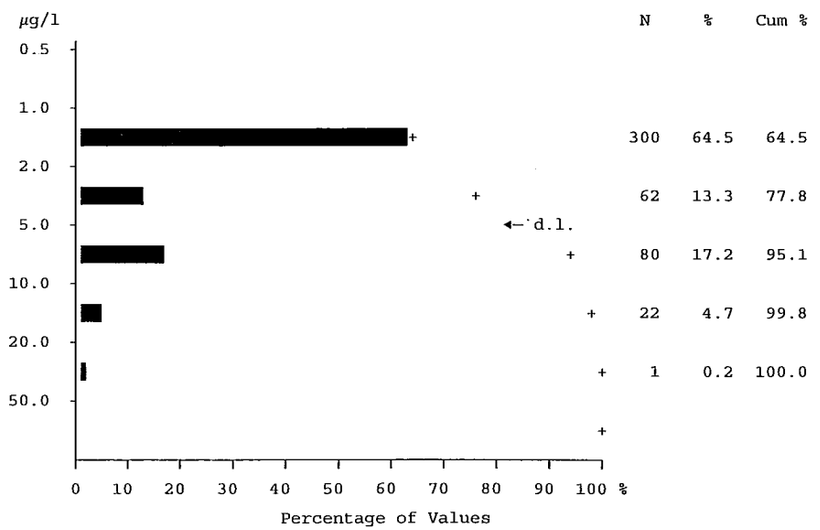

| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 93 |
| Number of missing values | 0 |
| Mean | 103.481 |
| Standard deviation | 476.232 |
| Skewness | 13.255 |
| Kurtosis | 212.152 |
| Geometric Mean | 21.734 |
| Percentiles | |
| Minimum value | 2.500 |
| 25th | 8.000 |
| 50th | 20.000 |
| 75th | 61.500 |
| 80th | 78.800 |
| 90th | 165.400 |
| 95th | 331.900 |
| 98th | 807.960 |
| 99th | 1932.140 |
| Maximum value | 8482.000 |

Zn

# Zirconium

Number of values - 465

Determination limit - 3 $\mu$g/l




| | All units |
|---|---|
| Number of values | 465 |
| Number of values below d.l. | 300 |
| Number of missing values | 0 |
| Mean | 3.191 |
| Standard deviation | 3.060 |
| Skewness | 2.372 |
| Kurtosis | 6.414 |
| Geometric Mean | 2.386 |
| Percentiles | |
| Minimum value | 1.500 |
| 25th | 1.500 |
| 50th | 1.500 |
| 75th | 4.000 |
| 80th | 5.000 |
| 90th | 8.000 |
| 95th | 9.700 |
| 98th | 12.680 |
| 99th | 16.340 |
| Maximum value | 20.000 |

Zr

# APPENDIX B

(DATA LISTING)

# GSC Open File 3306
# Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2001 | 21G15 | 680195 | 5085876 | DR | 120 | 30 | 6.65 | 363 | 243 | 73.1 | 146.3 | -4.35 |
| 2002 | 21G15 | 680023 | 5085093 | DR | - | 12 | 9.08 | 414 | 325 | 150.9 | 4.3 | -0.66 |
| 2003 | 21G15 | 679819 | 5084642 | DU | 25 | 76 | 6.98 | 592 | 389 | 124.4 | 244.4 | 2.40 |
| 2004 | 21G15 | 679521 | 5084222 | DR | 185 | 16 | 7.80 | 356 | 288 | 133.8 | 7.3 | -5.02 |
| 2005 | 21G15 | 679351 | 5083661 | DR | 40 | 31 | 6.28 | 1086 | 689 | 158.9 | 365.3 | -4.61 |
| 2006 | 21G15 | 679117 | 5083132 | DR | 100 | 22 | 7.34 | 200 | 173 | 89.5 | 52.1 | 2.18 |
| 2007 | 21G15 | 678849 | 5082490 | DR | 100 | - | 7.02 | 649 | 429 | 138.9 | 261.9 | -0.02 |
| 2008 | 21G15 | 678599 | 5082005 | DR | 85 | 12 | 7.80 | 276 | 239 | 109.8 | 76.0 | 1.62 |
| 2009 | 21G15 | 678013 | 5081576 | DR | 80 | 2 | 7.60 | 213 | 186 | 90.0 | 86.9 | 0.01 |
| 2010 | 21G15 | 677630 | 5081365 | DR | 759 | 51 | 6.11 | 113 | 93 | 42.4 | 48.1 | 4.25 |
| 2011 | 21G15 | 676993 | 5080836 | DR | - | 15 | 6.79 | 417 | 330 | 67.8 | 190.2 | -4.45 |
| 2012 | 21G15 | 676666 | 5080571 | DR | 100 | 5 | 7.15 | 248 | 211 | 103.1 | 102.0 | 0.61 |
| 2013 | 21G15 | 676336 | 5080172 | DR | 180 | 18 | 8.73 | 282 | 251 | 123.9 | 8.7 | -1.29 |
| 2014 | 21G15 | 675908 | 5079659 | DR | 40 | - | 7.37 | 244 | 222 | 108.2 | 81.4 | 4.36 |
| 2015 | 21G15 | 675509 | 5079192 | DR | 120 | 2 | 6.99 | 154 | 126 | 59.3 | 67.3 | 2.81 |
| 2016 | 21G15 | 675167 | 5078660 | DR | - | - | 7.72 | 179 | 162 | 77.5 | 78.2 | 4.01 |
| 2018 | 21G15 | 674876 | 5078229 | DR | - | - | 7.77 | 167 | 146 | 68.1 | 70.3 | 4.83 |
| 2019 | 21G15 | 674782 | 5077971 | DR | - | 30 | 7.70 | 186 | 169 | 84.9 | 85.3 | 1.16 |
| 2021 | 21G15 | 675459 | 5078490 | DR | - | 14 | 7.54 | 351 | 286 | 136.5 | 150.8 | 0.24 |
| 2022 | 21G15 | 676116 | 5081089 | DR | 90 | 1 | 6.00 | 86 | 73 | 23.5 | 34.5 | 1.87 |
| 2023 | 21G15 | 678365 | 5081487 | DR | 50 | 44 | 6.89 | 235 | 206 | 101.7 | 96.8 | 2.68 |
| 2024 | 21G15 | 678722 | 5080941 | DR | 196 | 10 | 7.53 | 232 | 198 | 90.1 | 73.7 | 3.23 |
| 2025 | 21G15 | 679054 | 5080495 | DR | 60 | 19 | 7.59 | 397 | 353 | 186.1 | 140.6 | -0.27 |
| 2026 | 21G15 | 679350 | 5080181 | DR | 90 | 90 | 9.20 | 359 | 310 | 143.1 | 3.4 | 1.86 |
| 2027 | 21G15 | 679966 | 5080376 | DU | - | - | 6.86 | 960 | 626 | 139.4 | 294.7 | -2.78 |
| 2028 | 21G15 | 679584 | 5080955 | DR | 120 | 18 | 8.26 | 340 | 313 | 133.8 | 52.1 | 4.74 |
| 2029 | 21G15 | 679138 | 5081609 | DR | - | 15 | 7.98 | 345 | 315 | 144.5 | 94.0 | 3.12 |
| 2030 | 21G15 | 678858 | 5082168 | DR | - | 7 | 8.03 | 372 | 290 | 108.4 | 0.4 | 1.28 |
| 2031 | 21G15 | 681173 | 5084537 | DR | - | 6 | 6.74 | 347 | 280 | 107.4 | 80.6 | 4.01 |
| 2032 | 21G15 | 680744 | 5085136 | DR | - | - | 8.88 | 376 | 307 | 133.5 | 9.5 | 4.53 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2001 | 54.81 | 2.33 | 10.9 | 0.2 | 77.48 | 8.75 | 6.50 | <20 | 0.26 | <50 | 90 | 670 | 33 | 1 | 660 | 36 | <1 | <1 | 1.3 | <1 | 20 | 6 | 3 | <3 | 167 | 465 | <1 |
| 2002 | 1.68 | 0.04 | 92.7 | 0.2 | 24.53 | 11.47 | 5.94 | 35 | 4.11 | <50 | 65 | 67 | 31 | 1 | 15 | <5 | <1 | <1 | 2.1 | <1 | <13 | <1 | <2 | 8 | 5 | 66 | 13 |
| 2003 | 92.56 | 3.27 | 20.6 | 0.5 | 99.57 | 8.89 | 7.95 | 58 | 0.04 | 141 | 144 | 1393 | 774 | 11 | 1014 | 125 | 4 | <1 | 2.2 | <1 | 28 | 8 | 6 | <3 | 251 | 2403 | 2 |
| 2004 | 2.81 | 0.08 | 73.9 | <0.1 | 28.29 | 11.06 | 7.81 | 44 | 0.27 | <50 | 35 | 76 | 29 | 2 | 33 | 7 | <1 | <1 | 1.3 | <1 | <13 | <1 | 4 | 14 | 9 | 108 | 18 |
| 2005 | 119.56 | 16.28 | 63.4 | 0.7 | 265.00 | 18.75 | 9.72 | <20 | 0.10 | 574 | 165 | 428 | 667 | 21 | 76 | 28 | <1 | <1 | <0.2 | <1 | 27 | 10 | <2 | <3 | 172 | 548 | <1 |
| 2006 | 18.59 | 1.40 | 24.7 | 0.3 | 4.55 | 5.89 | 7.99 | <20 | 0.15 | <50 | 36 | <25 | 80 | 2 | 117 | 162 | <1 | <1 | 1.2 | <1 | <13 | <1 | <2 | <3 | 71 | 569 | 3 |
| 2007 | 90.77 | 8.61 | 21.3 | 1.0 | 115.00 | 10.45 | 11.89 | <20 | 0.08 | 176 | 128 | 40 | 27 | 1 | 22 | 21 | <1 | <1 | 1.6 | <1 | 29 | 7 | 2 | <3 | 588 | 2023 | 18 |
| 2008 | 27.60 | 1.72 | 33.1 | 0.4 | 5.54 | 25.00 | 10.58 | <20 | 0.30 | <50 | 50 | 43 | 242 | 181 | <7 | <5 | <1 | <1 | 2.9 | <1 | <13 | <1 | <2 | <3 | 85 | 575 | 19 |
| 2009 | 31.91 | 1.77 | 10.3 | 0.2 | 4.11 | 13.79 | 13.52 | <20 | 0.18 | <50 | 58 | 30 | 56 | 165 | <7 | <5 | <1 | <1 | <0.2 | <1 | 14 | 5 | <2 | <3 | 127 | 848 | 13 |
| 2010 | 15.89 | 2.06 | 5.0 | 0.3 | 4.36 | 5.86 | 7.21 | 121 | 0.05 | <50 | 24 | <25 | 332 | 42 | 100 | 157 | <1 | <1 | 0.5 | <1 | <13 | <1 | <2 | <3 | 80 | 163 | <1 |
| 2011 | 67.81 | 5.11 | 6.1 | 0.4 | 2.42 | 146.00 | 14.01 | 26 | 0.12 | <50 | 100 | 39 | 2848 | 1917 | 67 | 303 | <1 | <1 | 6.4 | 1 | 25 | 11 | 4 | 8 | 93 | 577 | 13 |
| 2012 | 37.91 | 1.80 | 12.3 | 0.3 | 10.41 | 10.46 | 10.90 | <20 | 0.06 | <50 | 69 | <25 | 166 | 243 | 88 | 24 | 9 | <1 | 1.2 | <1 | 17 | 5 | 5 | 20 | 302 | 814 | 14 |
| 2013 | 3.37 | 0.08 | 63.6 | <0.1 | 2.63 | 22.04 | 7.36 | <20 | 0.22 | <50 | 46 | <25 | 13 | 1 | <7 | <5 | <1 | <1 | 1.7 | <1 | <13 | 2 | 2 | <3 | 65 | 106 | 54 |
| 2014 | 29.50 | 1.90 | 27.5 | 0.3 | 3.08 | 16.87 | 10.69 | 40 | 0.11 | <50 | 59 | 42 | 48 | 18 | 66 | 16 | <1 | <1 | 9.3 | 1 | 19 | 8 | 8 | 19 | 147 | 529 | 18 |
| 2015 | 24.85 | 1.30 | 4.7 | 0.5 | 2.41 | 11.51 | 7.82 | 23 | 0.05 | <50 | 45 | <25 | 13 | 4 | 172 | 12 | 7 | <1 | 1.3 | <1 | 13 | 7 | 5 | 4 | 139 | 684 | 4 |
| 2016 | 27.54 | 2.30 | 9.6 | 0.2 | 1.24 | 12.04 | 13.69 | 28 | 0.17 | <50 | 47 | <25 | 110 | 273 | 13 | 14 | <1 | <1 | 0.7 | <1 | 16 | 6 | 6 | 6 | 114 | 379 | 7 |
| 2018 | 25.05 | 1.89 | 9.0 | <0.1 | 1.28 | 11.52 | 13.30 | <20 | 0.12 | <50 | 41 | <25 | 46 | 148 | 44 | 12 | <1 | <1 | 0.2 | 1 | <13 | 3 | 2 | <3 | 103 | 391 | 5 |
| 2019 | 29.41 | 2.91 | 7.2 | 0.2 | 4.44 | 7.72 | 12.57 | <20 | 0.15 | <50 | 55 | <25 | 52 | 182 | <7 | 26 | <1 | <1 | 2.4 | <1 | <13 | 3 | 2 | 8 | 167 | 383 | 6 |
| 2021 | 55.78 | 2.82 | 13.8 | 0.4 | 25.68 | 8.48 | 11.74 | <20 | 0.07 | <50 | 86 | 202 | 20 | 16 | 117 | 14 | <1 | <1 | 1.3 | <1 | 17 | 5 | 3 | 7 | 204 | 1393 | 10 |
| 2022 | 12.01 | 1.09 | 3.7 | <0.1 | 1.27 | 15.28 | 11.04 | <20 | 0.07 | <50 | 25 | <25 | 85 | 185 | 8 | 18 | <1 | <1 | 2.0 | 1 | <13 | 4 | 2 | <3 | 51 | 197 | 4 |
| 2023 | 35.90 | 1.75 | 15.3 | 0.3 | 8.05 | 11.05 | 9.01 | <20 | 0.11 | <50 | 65 | 39 | 30 | 1 | 611 | 66 | <1 | <1 | 0.5 | <1 | <13 | 4 | 5 | <3 | 154 | 1018 | 7 |
| 2024 | 27.04 | 1.52 | 23.5 | 0.2 | 8.93 | 14.26 | 12.56 | <20 | 0.24 | <50 | 53 | <25 | 41 | 220 | <7 | 6 | <1 | <1 | <0.2 | <1 | <13 | <1 | 2 | 3 | 96 | 701 | 20 |
| 2025 | 45.34 | 6.67 | 34.9 | 0.9 | 10.92 | 17.59 | 8.57 | <20 | 0.12 | <50 | 80 | 28 | 263 | 310 | 25 | 291 | <1 | <1 | 0.5 | <1 | 15 | 6 | 2 | <3 | 94 | 1004 | 5 |
| 2026 | 1.36 | <0.03 | 88.0 | <0.1 | 2.57 | 35.90 | 6.29 | <20 | 1.46 | <50 | 53 | <25 | 24 | 5 | <7 | 9 | <1 | <1 | 0.5 | <1 | <13 | <1 | <2 | <3 | 8 | 40 | 14 |
| 2027 | 101.31 | 10.19 | 77.0 | 1.1 | 237.00 | 13.90 | 14.88 | <20 | 0.05 | 76 | 205 | 735 | 16 | 1 | 27 | 39 | <1 | <1 | 0.2 | <1 | 30 | 7 | <2 | <3 | 142 | 432 | 7 |
| 2028 | 18.71 | 1.31 | 72.1 | <0.1 | 4.85 | 45.80 | 5.81 | <20 | 0.81 | <50 | 77 | <25 | 95 | 107 | 13 | <5 | 8 | <1 | 1.2 | <1 | 15 | 6 | 4 | 7 | 38 | 440 | 3 |
| 2029 | 33.53 | 2.52 | 50.3 | 0.2 | 3.01 | 41.12 | 7.93 | <20 | 0.25 | <50 | 104 | <25 | 50 | 132 | 58 | 16 | <1 | <1 | 1.3 | <1 | 21 | 8 | 5 | 12 | 67 | 656 | 17 |
| 2030 | 0.04 | 0.06 | 88.5 | <0.1 | 45.74 | 14.22 | 8.92 | <20 | 0.18 | 84 | 24 | <25 | 49 | 1 | 37 | <5 | <1 | <1 | 0.8 | <1 | <13 | 4 | 3 | 6 | <5 | <5 | 40 |
| 2031 | 30.17 | 1.28 | 50.8 | <0.1 | 39.03 | 10.24 | 10.52 | 27 | 0.18 | 53 | 103 | <25 | 246 | 662 | 43 | 19 | <1 | <1 | 0.9 | <1 | 28 | 8 | 6 | 4 | 387 | 957 | 16 |
| 2032 | 3.63 | 0.10 | 92.0 | <0.1 | 27.99 | 13.13 | 5.50 | 40 | 1.94 | <50 | 53 | <25 | 11 | 1 | 181 | 10 | <1 | <1 | 2.2 | 1 | <13 | 5 | 3 | 12 | 57 | 117 | 23 |

# GSC Open File 3306
## Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2033 | 21G15 | 680422 | 5084482 | DR | - | - | 7.51 | 322 | 280 | 127.7 | 108.9 | 4.69 |
| 2034 | 21G15 | 679030 | 5085364 | DR | - | - | 8.93 | 397 | 318 | 145.0 | 4.9 | -0.49 |
| 2036 | 21G15 | 679042 | 5084386 | DR | - | 15 | 9.07 | 267 | 237 | 129.3 | 2.9 | -1.85 |
| 2037 | 21G15 | 679929 | 5082455 | DR | - | - | 8.41 | 341 | 314 | 147.1 | 24.6 | 1.03 |
| 2038 | 21G15 | 679895 | 5079618 | DR | - | 5 | 7.90 | 372 | 282 | 85.2 | 180.8 | -3.95 |
| 2039 | 21G15 | 680119 | 5078613 | DR | - | - | 6.32 | 820 | 497 | 63.9 | 166.7 | -3.53 |
| 2041 | 21G15 | 680172 | 5078392 | DR | - | 15 | 9.21 | 339 | 297 | 151.4 | 2.3 | 0.18 |
| 2042 | 21G15 | 680668 | 5077906 | DR | 65 | - | 6.47 | 270 | 168 | 86.5 | 92.4 | 3.42 |
| 2043 | 21G15 | 680583 | 5077070 | DU | - | - | 8.40 | 332 | 236 | 91.1 | 13.2 | -0.05 |
| 2044 | 21G15 | 680332 | 5076606 | DR | 300 | 15 | 7.35 | 468 | 347 | 114.3 | 136.2 | -3.41 |
| 2045 | 21G15 | 680278 | 5076060 | DR | 200 | 5 | 8.90 | 384 | 329 | 145.9 | 4.3 | 1.91 |
| 2046 | 21G15 | 679764 | 5075578 | DR | 125 | 1 | 5.64 | 563 | 306 | 54.8 | 0.5 | -2.03 |
| 2047 | 21G15 | 679542 | 5074916 | DR | 130 | 5 | 7.14 | 796 | 495 | 117.5 | 310.9 | -2.43 |
| 2048 | 21G15 | 679029 | 5074367 | DR | - | 10 | 6.64 | 203 | 241 | 131.1 | 27.7 | 2.82 |
| 2049 | 21G15 | 678952 | 5073798 | DR | - | 15 | 8.52 | 404 | 304 | 140.7 | 3.5 | -0.17 |
| 2050 | 21G15 | 678932 | 5073408 | DR | 145 | 12 | 8.40 | 593 | 360 | 115.4 | 13.2 | -0.78 |
| 2051 | 21G15 | 679816 | 5072689 | DR | - | 10 | 7.95 | 488 | 307 | 92.3 | 38.3 | -1.70 |
| 2052 | 21G15 | 679816 | 5072689 | DR | - | 14 | 8.41 | 176 | 117 | 30.2 | 5.2 | -4.04 |
| 2053 | 21G15 | 681061 | 5071880 | DR | 205 | 10 | 8.62 | 1441 | 914 | 93.4 | 28.6 | -4.57 |
| 2054 | 21G15 | 681734 | 5071755 | DR | - | - | 5.70 | 171 | 35 | 18.3 | 13.1 | -1.60 |
| 2055 | 21G15 | 682373 | 5072241 | DR | 228 | 1 | 8.32 | 542 | 418 | 153.9 | 19.0 | -0.92 |
| 2057 | 21G15 | 683116 | 5073708 | DR | - | - | 7.80 | 478 | 398 | 179.6 | 44.2 | -1.01 |
| 2058 | 21G15 | 683486 | 5074064 | DR | 165 | 14 | 7.82 | 505 | 405 | 180.9 | 50.1 | 3.29 |
| 2059 | 21G15 | 684139 | 5074350 | DR | 280 | 12 | 6.64 | 284 | 198 | 84.2 | 105.5 | 2.02 |
| 2061 | 21G15 | 680953 | 5077714 | DR | 120 | 16 | 9.16 | 769 | 533 | 128.5 | 8.8 | -2.66 |
| 2062 | 21G15 | 681606 | 5077455 | DR | 769 | - | 8.24 | 541 | 407 | 131.6 | 38.0 | 4.77 |
| 2063 | 21G15 | 682481 | 5077036 | UN | - | - | 8.79 | 231 | 208 | 107.1 | 9.1 | 3.42 |
| 2064 | 21G15 | 682766 | 5076611 | DR | - | - | 8.49 | 538 | 1078 | 110.6 | 39.2 | -3.15 |
| 2065 | 21G15 | 683104 | 5076487 | DR | 152 | 3 | 8.70 | 419 | 367 | 185.1 | 5.7 | 0.87 |
| 2066 | 21G15 | 683738 | 5076061 | DR | 180 | 19 | 8.90 | 469 | 416 | 201.6 | 4.8 | 4.37 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2033 | 41.72 | 1.17 | 37.7 | <0.1 | 26.88 | 7.21 | 9.20 | <20 | 0.15 | <50 | 101 | 487 | <7 | 1 | 46 | 23 | <1 | <1 | 6.0 | <1 | 14 | 5 | 8 | <3 | 190 | 1010 | 11 |
| 2034 | 1.82 | 0.09 | 89.8 | <0.1 | 29.63 | 13.14 | 5.89 | 55 | 0.84 | <50 | 34 | <25 | 32 | 2 | 132 | 69 | 8 | <1 | 8.1 | <1 | <13 | <1 | 3 | <3 | 20 | 68 | 20 |
| 2036 | 1.14 | <0.03 | 61.5 | <0.1 | 2.11 | 7.60 | 5.70 | 33 | 0.65 | <50 | 36 | <25 | 30 | 2 | 20 | <5 | <1 | <1 | 5.4 | <1 | <13 | <1 | 3 | <3 | <5 | 41 | 14 |
| 2037 | 9.57 | 0.16 | 78.4 | <0.1 | 3.77 | 36.32 | 5.75 | <20 | 0.46 | <50 | 44 | 47 | 16 | 30 | <7 | <5 | <1 | <1 | 0.8 | <1 | <13 | <1 | <2 | <3 | 53 | 286 | 33 |
| 2038 | 62.72 | 5.90 | 5.5 | 0.6 | 69.53 | 25.44 | 7.82 | <20 | 0.07 | <50 | 139 | 39 | 32 | 3 | 296 | 22 | <1 | <1 | 0.9 | <1 | 27 | 10 | 7 | <3 | 29 | 511 | 2 |
| 2039 | 56.05 | 6.52 | 97.7 | 0.9 | 234.00 | 13.40 | 9.75 | <20 | 0.21 | 72 | 130 | 42 | 58 | 2 | 194 | 33 | <1 | <1 | 1.5 | <1 | 24 | 7 | 2 | <3 | 115 | 195 | 3 |
| 2041 | 0.88 | 0.03 | 82.4 | <0.1 | 10.80 | 8.97 | 6.95 | 147 | 1.95 | <50 | 45 | <25 | 52 | 4 | 8 | <5 | <1 | <1 | 9.7 | <1 | <13 | <1 | 9 | <3 | 12 | 22 | 5 |
| 2042 | 34.52 | 1.53 | 5.9 | 0.3 | 3.47 | 5.58 | 10.63 | <20 | 0.06 | <50 | 76 | 516 | 27 | 1 | 92 | 27 | <1 | <1 | 0.8 | <1 | <13 | 4 | 2 | <3 | 33 | 95 | <1 |
| 2043 | 4.81 | 0.29 | 65.1 | <0.1 | 40.77 | 5.14 | 7.58 | 163 | 0.42 | <50 | 35 | 26 | 162 | 10 | <7 | 8 | <1 | <1 | 6.0 | <1 | <13 | <1 | 7 | 4 | 38 | 85 | 2 |
| 2044 | 48.34 | 3.78 | 45.1 | 0.8 | 88.66 | 11.29 | 8.32 | <20 | 0.58 | 138 | 122 | 28 | 25 | 3 | 25 | 24 | 11 | <1 | 2.7 | <1 | 17 | 6 | 8 | <3 | 82 | 875 | 2 |
| 2045 | 1.61 | 0.07 | 96.5 | <0.1 | 5.68 | 33.96 | 6.27 | 47 | 6.47 | <50 | 70 | <25 | 166 | 9 | 8 | 8 | 3 | <1 | 1.9 | <1 | <13 | 3 | 5 | <3 | 7 | 42 | 3 |
| 2046 | 0.12 | 0.04 | 100.7 | <0.1 | 110.00 | 17.83 | 10.33 | <20 | 0.05 | <50 | 6 | 34 | 39 | 1 | 56 | 12 | 11 | <1 | 3.2 | <1 | <13 | <1 | 3 | <3 | <5 | <5 | <1 |
| 2047 | 113.57 | 6.71 | 24.5 | 0.6 | 185.00 | 7.47 | 10.16 | 32 | 0.05 | 118 | 222 | 28 | 2470 | 681 | 46 | 92 | <1 | <1 | 11.5 | <1 | 35 | 16 | 17 | <3 | 240 | 2507 | 3 |
| 2048 | 9.59 | 0.92 | 55.3 | 0.3 | 2.95 | 4.91 | 6.63 | <20 | 0.04 | <50 | 30 | 30 | 50 | 5 | 163 | <5 | <1 | <1 | <0.2 | <1 | <13 | 3 | 2 | 7 | 22 | 125 | <1 |
| 2049 | 1.34 | 0.03 | 86.2 | <0.1 | 25.96 | 11.27 | 6.33 | <20 | 1.00 | <50 | 56 | <25 | <7 | 4 | <7 | <5 | <1 | <1 | 0.3 | <1 | <13 | <1 | <2 | 7 | <5 | 32 | 10 |
| 2050 | 5.21 | 0.06 | 108.3 | <0.1 | 90.07 | 8.31 | 6.38 | <20 | 0.83 | 256 | 46 | 39 | 14 | 4 | <7 | <5 | <1 | <1 | 1.7 | <1 | <13 | <1 | <2 | 9 | <5 | 136 | 17 |
| 2051 | 13.50 | 1.12 | 80.7 | 0.3 | 86.18 | 5.79 | 5.66 | <20 | 0.82 | 180 | 45 | <25 | 66 | 24 | <7 | <5 | <1 | <1 | 6.0 | <1 | <13 | <1 | 2 | <3 | 24 | 221 | 8 |
| 2052 | 1.88 | 0.12 | 27.2 | <0.1 | 1.71 | 6.76 | 6.16 | 199 | 0.34 | <50 | 22 | <25 | 61 | 1 | 36 | <5 | <1 | <1 | 17.2 | <1 | <13 | <1 | 12 | 4 | 20 | 35 | 8 |
| 2053 | 11.29 | 0.12 | 307.0 | 0.2 | 465.00 | 8.54 | 5.93 | <20 | 1.03 | 1809 | 67 | <25 | <7 | 29 | <7 | <5 | <1 | <1 | 2.8 | <1 | <13 | <1 | <2 | <3 | 205 | 246 | 110 |
| 2054 | 4.38 | 0.52 | 2.0 | 0.2 | 2.66 | 5.42 | 7.08 | 298 | 0.08 | <50 | 16 | 125 | 244 | 8 | 2220 | 266 | 2 | 2 | 4.9 | <1 | <13 | 3 | 5 | 4 | <5 | 66 | 1 |
| 2055 | 7.21 | 0.24 | 118.2 | 0.3 | 66.46 | 30.57 | 4.47 | 294 | 0.86 | 70 | 41 | 32 | 1949 | 50 | <7 | 165 | <1 | <1 | 0.8 | <1 | <13 | 3 | <2 | 4 | 23 | 123 | 6 |
| 2057 | 15.97 | 1.06 | 92.8 | 0.6 | 19.90 | 40.97 | 6.52 | <20 | 0.77 | <50 | 62 | 37 | 64 | 18 | 11 | 7 | <1 | <1 | 4.3 | <1 | <13 | 2 | 4 | 3 | 8 | 234 | 32 |
| 2058 | 17.65 | 1.47 | 98.2 | 0.4 | 9.60 | 49.04 | 6.28 | <20 | 0.88 | <50 | 62 | 33 | 343 | 91 | 27 | 27 | <1 | <1 | 2.8 | <1 | <13 | 5 | 3 | 7 | 18 | 188 | 8 |
| 2059 | 37.85 | 2.69 | 11.4 | 0.4 | 26.09 | 5.01 | 11.53 | <20 | 0.09 | <50 | 91 | 26 | 121 | 10 | 44 | 184 | <1 | <1 | 3.5 | <1 | 25 | 11 | 9 | 5 | 27 | 553 | 1 |
| 2061 | 3.46 | 0.05 | 169.8 | <0.1 | 162.00 | 31.19 | 6.39 | 43 | 3.06 | 506 | 52 | 74 | 15 | 7 | <7 | <5 | <1 | <1 | 5.1 | <1 | <13 | <1 | <2 | 3 | 10 | 81 | 5 |
| 2062 | 13.71 | 0.91 | 121.2 | 0.5 | 90.94 | 12.45 | 5.45 | <20 | 0.90 | 253 | 49 | 32 | 38 | 69 | <7 | <5 | <1 | <1 | 2.2 | <1 | <13 | <1 | <2 | 9 | 29 | 179 | <1 |
| 2063 | 3.34 | 0.19 | 55.0 | 0.2 | 2.89 | 7.44 | 7.18 | 181 | 0.61 | <50 | 24 | <25 | 107 | 10 | 59 | <5 | <1 | <1 | 5.5 | <1 | <13 | <1 | 15 | 3 | 5 | 60 | 1 |
| 2064 | 14.90 | 0.50 | 361.0 | 0.8 | 490.00 | 66.45 | 5.72 | <20 | 1.88 | 1692 | 58 | 36 | 38 | 50 | <7 | 10 | 4 | <1 | 0.6 | <1 | <13 | <1 | <2 | 8 | 11 | 355 | 8 |
| 2065 | 2.09 | 0.11 | 101.9 | <0.1 | 4.93 | 22.12 | 6.33 | <20 | 2.77 | <50 | 48 | 28 | 23 | 11 | <7 | <5 | <1 | <1 | 1.4 | <1 | <13 | <1 | <2 | 11 | <5 | 38 | 2 |
| 2066 | 1.87 | 0.04 | 122.2 | <0.1 | 8.52 | 29.81 | 6.09 | <20 | 1.50 | <50 | 39 | <25 | 35 | 7 | <7 | <5 | <1 | <1 | 0.8 | <1 | <13 | <1 | <2 | 10 | 11 | 38 | 6 |

# GSC Open File 3306
## Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2067 | 21G15 | 684223 | 5075709 | UN | - | 100 | 8.30 | 1877 | 1212 | 160.0 | 97.1 | 4.31 |
| 2068 | 21G15 | 684727 | 5075490 | DR | - | - | 8.51 | 524 | 447 | 206.7 | 32.7 | 0.55 |
| 2069 | 21G15 | 684701 | 5075067 | DR | 120 | 5 | 7.99 | 680 | 507 | 161.6 | 73.2 | -3.62 |
| 2070 | 21G15 | 685206 | 5074582 | DR | - | - | 8.83 | 482 | 415 | 180.7 | 3.7 | 1.05 |
| 2071 | 21G15 | 685617 | 5074594 | DR | 151 | 29 | 9.07 | 505 | 426 | 191.3 | 3.9 | -0.34 |
| 2072 | 21G15 | 686240 | 5074568 | DR | - | - | 8.60 | 318 | 275 | 122.2 | 9.0 | 1.40 |
| 2073 | 21G15 | 686480 | 5074364 | UN | - | 5 | 8.70 | 316 | 286 | 123.8 | 9.1 | 0.90 |
| 2074 | 21G15 | 686780 | 5073695 | DR | 75 | 12 | 6.94 | 244 | 183 | 73.9 | 104.0 | -2.47 |
| 2075 | 21G15 | 687150 | 5073039 | DR | - | 6 | 8.52 | 169 | 117 | 59.6 | 2.5 | 4.38 |
| 2076 | 21G15 | 687419 | 5072624 | UN | - | - | 6.26 | 275 | 184 | 43.0 | 76.8 | 1.32 |
| 2077 | 21G15 | 687629 | 5072130 | DR | 100 | 23 | 7.40 | 323 | 303 | 155.4 | 82.5 | 3.64 |
| 2079 | 21G15 | 687570 | 5071506 | DR | 135 | 12 | 7.23 | 300 | 269 | 139.7 | 101.8 | 0.19 |
| 2080 | 21G15 | 687854 | 5071092 | DR | 100 | 35 | 8.06 | 231 | 197 | 74.2 | 23.9 | 4.30 |
| 2082 | 21G15 | 688239 | 5071248 | DR | 139 | 53 | 7.87 | 303 | 255 | 121.5 | 25.7 | -2.16 |
| 2083 | 21G15 | 688718 | 5069050 | UN | - | - | 8.00 | 486 | 382 | 130.1 | 72.8 | -1.43 |
| 2084 | 21G15 | 686817 | 5074519 | UN | - | 35 | 8.78 | 274 | 244 | 113.2 | 8.9 | -4.97 |
| 2085 | 21G15 | 687218 | 5074909 | DR | - | - | 8.60 | 327 | 305 | 125.4 | 13.6 | 2.49 |
| 2086 | 21G15 | 687414 | 5075627 | DR | - | - | 7.89 | 394 | 376 | 181.1 | 52.6 | 3.22 |
| 2087 | 21G15 | 687646 | 5075934 | DR | 240 | - | 8.75 | 351 | 319 | 171.4 | 7.2 | -2.32 |
| 2088 | 21G15 | 687980 | 5076722 | DR | - | 5 | 8.32 | 345 | 319 | 151.9 | 21.1 | 1.34 |
| 2089 | 21G15 | 688019 | 5077213 | DR | 240 | 13 | 8.72 | 550 | 481 | 212.3 | 4.2 | -0.02 |
| 2090 | 21G15 | 688056 | 5076769 | DR | 90 | 8 | 7.12 | 554 | 460 | 216.4 | 299.1 | 3.39 |
| 2091 | 21G15 | 681751 | 5077015 | DR | 110 | 14 | 8.26 | 393 | 117 | 135.2 | 24.0 | 1.42 |
| 2092 | 21G15 | 682056 | 5076701 | DR | 70 | - | 8.60 | 1316 | 770 | 108.8 | 37.7 | -4.32 |
| 2093 | 21G15 | 682385 | 5076333 | DR | 125 | 16 | 8.97 | 453 | 359 | 143.2 | 5.4 | 0.56 |
| 2094 | 21G15 | 682626 | 5075828 | DR | 215 | 20 | 9.01 | 579 | 394 | 165.3 | 9.9 | -4.21 |
| 2096 | 21G15 | 682992 | 5075517 | DU | 10 | - | 7.02 | 217 | 193 | 107.5 | 108.2 | 4.40 |
| 2097 | 21G15 | 683559 | 5075044 | DR | 36 | - | 8.89 | 378 | 334 | 176.5 | 3.0 | -0.28 |
| 2098 | 21G15 | 683751 | 5074850 | UN | - | - | 7.05 | 221 | 197 | 106.5 | 90.6 | 3.53 |
| 2099 | 21G15 | 683992 | 5074579 | DU | - | 15 | 7.43 | 264 | 235 | 116.7 | 18.9 | 5.00 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2067 | 37.98 | 0.56 | 418.0 | 0.3 | 497.00 | 54.15 | 5.77 | <20 | 1.89 | 1795 | 70 | 29 | 188 | 49 | 255 | 135 | <1 | <1 | 6.7 | <1 | <13 | <1 | <2 | <3 | 39 | 871 | 5 |
| 2068 | 11.46 | 1.00 | 114.4 | 0.6 | 14.35 | 45.87 | 4.95 | <20 | 1.72 | <50 | 12 | <25 | 302 | 48 | <7 | <5 | <1 | <1 | 3.6 | <1 | <13 | <1 | <2 | <3 | 19 | 151 | <1 |
| 2069 | 27.15 | 1.33 | 123.3 | 0.5 | 121.00 | 38.98 | 5.84 | <20 | 0.74 | 331 | 32 | 74 | 116 | 91 | <7 | <5 | <1 | <1 | 3.4 | <1 | <13 | 2 | <2 | <3 | 20 | 454 | 3 |
| 2070 | 1.46 | <0.03 | 121.1 | 0.5 | 26.42 | 37.09 | 6.10 | 29 | 2.06 | <50 | 33 | 50 | 64 | 3 | <7 | <5 | <1 | <1 | 1.2 | <1 | <13 | <1 | <2 | 4 | <5 | 27 | 3 |
| 2071 | 1.52 | <0.03 | 120.1 | <0.1 | 12.19 | 50.52 | 5.91 | 43 | 2.32 | <50 | 19 | <25 | 9 | 2 | <7 | <5 | <1 | <1 | 3.3 | <1 | <13 | <1 | <2 | <3 | <5 | 26 | 2 |
| 2072 | 3.28 | 0.20 | 76.8 | <0.1 | 13.62 | 26.48 | 4.63 | <20 | 0.90 | <50 | <5 | <25 | 24 | 4 | <7 | 6 | <1 | <1 | 23.3 | <1 | <13 | <1 | 25 | <3 | <5 | 33 | 11 |
| 2073 | 3.29 | 0.22 | 79.9 | 0.2 | 15.28 | 30.77 | 4.56 | <20 | 0.89 | <50 | <5 | <25 | 26 | 4 | 25 | 6 | <1 | <1 | 21.9 | <1 | <13 | <1 | 27 | 3 | <5 | 33 | 11 |
| 2074 | 37.13 | 2.76 | 6.3 | 0.5 | 27.38 | 15.69 | 7.35 | <20 | 0.14 | <50 | 37 | 41 | 10 | 5 | 10 | 11 | <1 | <1 | 0.7 | <1 | <13 | 3 | <2 | 5 | 145 | 551 | 4 |
| 2075 | 0.92 | 0.06 | 32.1 | 0.2 | 1.47 | 4.39 | 5.37 | <20 | 0.16 | <50 | <5 | <25 | <7 | 1 | 16 | <5 | <1 | <1 | 2.4 | <1 | <13 | <1 | <2 | <3 | <5 | 14 | 3 |
| 2076 | 22.60 | 4.95 | 28.6 | 1.0 | 59.01 | 6.91 | 7.01 | 63 | 0.12 | <50 | 20 | 888 | 88 | 5 | 101 | 17 | <1 | <1 | 3.3 | <1 | <13 | 3 | 7 | 5 | 33 | 259 | 1 |
| 2077 | 27.88 | 3.16 | 52.2 | 0.6 | 8.23 | 15.50 | 5.83 | <20 | 0.15 | <50 | 29 | 27 | 50 | 1 | <7 | 13 | <1 | <1 | 1.1 | <1 | <13 | 2 | <2 | <3 | 49 | 333 | 3 |
| 2079 | 33.49 | 4.43 | 29.3 | 1.3 | 7.42 | 15.91 | 5.81 | <20 | 0.20 | <50 | 30 | 27 | 156 | 210 | <7 | 8 | <1 | <1 | 1.2 | <1 | <13 | 2 | 2 | <3 | 30 | 409 | 3 |
| 2080 | 8.65 | 0.55 | 50.1 | 0.3 | 16.58 | 23.41 | 6.40 | 31 | 0.15 | <50 | 5 | 34 | 28 | 1 | 11 | <5 | <1 | <1 | 5.8 | <1 | <13 | <1 | 13 | <3 | 5 | 142 | 2 |
| 2082 | 9.42 | 0.53 | 59.0 | 0.2 | 18.44 | 12.46 | 6.54 | 55 | 0.28 | <50 | 8 | 57 | 8 | 1 | 15 | 51 | <1 | <1 | 6.6 | <1 | <13 | <1 | 5 | <3 | 5 | 137 | 2 |
| 2083 | 27.67 | 0.92 | 83.1 | 0.3 | 57.29 | 48.21 | 4.87 | <20 | 0.44 | 80 | 34 | 41 | 176 | 32 | <7 | <5 | <1 | <1 | 1.3 | <1 | <13 | 3 | <2 | <3 | 42 | 537 | 7 |
| 2084 | 3.26 | 0.19 | 60.8 | <0.1 | 7.74 | 28.80 | 4.27 | 26 | 0.67 | <50 | 14 | 48 | 66 | 13 | 11 | <5 | <1 | <1 | 13.8 | <1 | <13 | <1 | <2 | <3 | 38 | 48 | 2 |
| 2085 | 4.83 | 0.38 | 86.1 | 0.4 | 17.55 | 36.96 | 4.32 | <20 | 0.96 | <50 | 16 | 61 | 66 | 13 | <7 | <5 | <1 | <1 | 11.2 | <1 | <13 | <1 | <2 | <3 | 14 | 52 | 2 |
| 2086 | 18.36 | 1.66 | 85.5 | 0.9 | 1.47 | 39.59 | 6.02 | <20 | 0.34 | <50 | 17 | 56 | 64 | 71 | 687 | 22 | <1 | <1 | 1.4 | <1 | <13 | 3 | <2 | <3 | 14 | 306 | 20 |
| 2087 | 2.65 | 0.14 | 81.4 | <0.1 | 1.55 | 18.18 | 5.41 | <20 | 0.28 | <50 | 6 | 42 | <7 | 2 | <7 | <5 | <1 | <1 | 3.6 | <1 | <13 | <1 | <2 | <3 | <5 | 43 | 5 |
| 2088 | 8.09 | 0.22 | 83.9 | <0.1 | 27.40 | 7.39 | 6.25 | <20 | 0.09 | <50 | 5 | 46 | 96 | 41 | <7 | <5 | <1 | <1 | 0.9 | <1 | <13 | <1 | <2 | <3 | 6 | 145 | 10 |
| 2089 | 1.67 | <0.03 | 141.7 | <0.1 | 50.88 | 19.12 | 5.28 | <20 | 3.00 | <50 | 44 | 44 | <7 | 7 | <7 | <5 | <1 | <1 | 1.6 | <1 | <13 | <1 | <2 | <3 | 6 | 31 | 15 |
| 2090 | 103.00 | 10.24 | 8.8 | 1.3 | 52.84 | 8.63 | 10.62 | <20 | 0.11 | 132 | 106 | 90 | 173 | 61 | <7 | 20 | <1 | <1 | 0.7 | <1 | 22 | 9 | 2 | <3 | 67 | 1121 | 5 |
| 2091 | 9.10 | 0.31 | 22.9 | 0.2 | 4.51 | 9.58 | 4.54 | <20 | 1.02 | 62 | 5 | 39 | 11 | 16 | <7 | 9 | <1 | <1 | 7.9 | <1 | <13 | <1 | 15 | <3 | 28 | 81 | <1 |
| 2092 | 14.67 | 0.27 | 246.0 | 0.3 | 345.00 | 23.95 | 4.83 | <20 | 1.33 | 1138 | 29 | 79 | <7 | 20 | <7 | 7 | <1 | <1 | 2.9 | <1 | <13 | <1 | <2 | <3 | 103 | 344 | 6 |
| 2093 | 2.13 | <0.03 | 108.8 | <0.1 | 52.65 | 11.91 | 5.20 | <20 | 3.54 | 65 | 33 | 33 | <7 | 4 | <7 | <5 | <1 | <1 | 3.1 | <1 | <13 | <1 | <2 | <3 | <5 | 43 | 2 |
| 2094 | 3.93 | <0.03 | 113.3 | <0.1 | 77.82 | 14.04 | 5.31 | <20 | 3.62 | 99 | 43 | 45 | <7 | 6 | <7 | 9 | <1 | <1 | 1.9 | <1 | <13 | <1 | <2 | <3 | 6 | 88 | 3 |
| 2096 | 40.92 | 1.49 | 6.8 | <0.1 | 0.86 | 4.12 | 7.39 | <20 | 0.08 | <50 | 50 | 41 | 16 | 3 | 36 | 64 | <1 | <1 | 3.6 | <1 | <13 | 5 | 6 | <3 | 18 | 360 | 2 |
| 2097 | 1.19 | <0.03 | 90.7 | <0.1 | 2.53 | 15.38 | 6.35 | 29 | 1.63 | <50 | 38 | 31 | 20 | 6 | <7 | <5 | <1 | <1 | 1.1 | <1 | <13 | <1 | <2 | <3 | <5 | 24 | 4 |
| 2098 | 33.00 | 2.01 | 14.7 | 0.4 | 2.23 | 5.23 | 9.01 | <20 | 0.11 | <50 | 40 | 39 | 15 | 1 | 48 | 23 | <1 | <1 | 1.3 | <1 | <13 | 3 | 5 | <3 | 89 | 470 | 7 |
| 2099 | 7.01 | 0.33 | 61.4 | <0.1 | 11.14 | 4.53 | 7.95 | <20 | 0.38 | <50 | 25 | 40 | 43 | 1 | 55 | <5 | <1 | <1 | 2.7 | <1 | <13 | <1 | <2 | <3 | 6 | 118 | 5 |

# GSC Open File 3306
# Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2101 | 21G15 | 684609 | 5073730 | DR | 163 | 8 | 7.82 | 422 | 380 | 180.3 | 60.4 | 3.27 |
| 2102 | 21G15 | 684996 | 5072985 | DR | - | - | 6.19 | 68 | 70 | 28.0 | 15.2 | 1.39 |
| 2103 | 21G15 | 685958 | 5076205 | DR | - | - | 7.72 | 426 | 410 | 217.0 | 1.1 | 3.86 |
| 2104 | 21G15 | 686462 | 5076499 | DR | - | 3 | 7.21 | 388 | 346 | 193.0 | 157.9 | 1.15 |
| 2105 | 21G15 | 686933 | 5077380 | DR | 108 | 3 | 7.47 | 307 | 277 | 152.7 | 145.8 | 3.91 |
| 2106 | 21G15 | 687321 | 5077425 | DR | 165 | 20 | 8.37 | 313 | 296 | 151.0 | 21.7 | 3.55 |
| 2107 | 21G15 | 687907 | 5077576 | DR | 60 | 4 | 8.81 | 521 | 449 | 205.7 | 7.7 | 3.73 |
| 2108 | 21G15 | 688453 | 5077771 | DR | 40 | 29 | 7.62 | 407 | 383 | 211.8 | 151.2 | 2.56 |
| 2109 | 21G15 | 689000 | 5077943 | DR | 160 | 21 | 8.14 | 1152 | 675 | 142.1 | 78.7 | 3.41 |
| 2110 | 21G15 | 689138 | 5078248 | DR | - | - | 7.87 | 623 | 503 | 185.2 | 70.3 | -2.92 |
| 2111 | 21G15 | 689019 | 5078833 | DR | 150 | 3 | 8.28 | 601 | 466 | 177.8 | 39.5 | 0.00 |
| 2112 | 21G15 | 689142 | 5079404 | DU | 8 | - | 7.48 | 364 | 319 | 179.7 | 153.8 | 1.22 |
| 2113 | 21G15 | 689178 | 5080017 | DR | - | 13 | 8.40 | 500 | 408 | 155.2 | 24.1 | 0.30 |
| 2115 | 21G15 | 689187 | 5080985 | DR | - | 17 | 8.27 | 443 | 408 | 182.7 | 33.4 | 0.17 |
| 2116 | 21G15 | 689214 | 5081375 | DR | - | - | 8.31 | 459 | 416 | 215.8 | 34.5 | 1.22 |
| 2117 | 21G15 | 689312 | 5081734 | DR | 85 | 26 | 7.73 | 480 | 466 | 266.3 | 105.0 | 4.39 |
| 2118 | 21G15 | 689270 | 5082322 | DR | - | - | 8.28 | 453 | 418 | 208.6 | 40.6 | 2.09 |
| 2119 | 21G15 | 689559 | 5083031 | DR | 128 | 19 | 8.00 | 445 | 408 | 191.0 | 67.7 | 1.00 |
| 2121 | 21G15 | 689765 | 5083404 | UN | - | - | 6.15 | 123 | 123 | 57.8 | 0.1 | -0.25 |
| 2122 | 21G15 | 690034 | 5083757 | DR | 135 | - | 7.72 | 373 | 364 | 183.0 | 77.7 | 0.74 |
| 2123 | 21G15 | 689985 | 5084101 | DR | - | 15 | 7.60 | 513 | 473 | 233.0 | 130.6 | 2.91 |
| 2124 | 21G15 | 689666 | 5084358 | DR | 220 | 15 | 7.97 | 565 | 441 | 151.8 | 67.1 | -2.45 |
| 2125 | 21G15 | 689367 | 5084749 | DR | - | - | 8.05 | 436 | 399 | 167.7 | 45.2 | -0.44 |
| 2126 | 21G15 | 689183 | 5084921 | DR | - | - | 7.93 | 583 | 443 | 150.1 | 71.1 | -1.27 |
| 2127 | 21G15 | 688685 | 5085217 | DR | - | 8 | 8.13 | 434 | 398 | 166.9 | 0.9 | -4.19 |
| 2128 | 21G15 | 687858 | 5085848 | DU | - | - | 5.66 | 322 | 187 | 27.4 | 54.8 | 0.33 |
| 2129 | 21G15 | 690594 | 5083486 | DR | 300 | 30 | 7.93 | 2650 | 1559 | 90.8 | 75.3 | 0.11 |
| 2130 | 21G15 | 691864 | 5082869 | DR | 200 | 38 | 7.82 | 578 | 546 | 274.1 | 88.3 | -3.67 |
| 2131 | 21G15 | 691142 | 5083091 | DR | 310 | 7 | 8.25 | 2630 | 1069 | 87.1 | 60.6 | 0.23 |
| 2132 | 21G15 | 691748 | 5078839 | UN | - | - | 8.05 | 494 | 466 | 245.0 | 47.1 | -1.29 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2101 | 21.42 | 1.69 | 85.1 | 0.7 | 11.24 | 32.35 | 6.44 | <20 | 0.58 | <50 | 17 | 42 | 94 | 40 | <7 | 11 | <1 | <1 | 6.0 | <1 | <13 | 5 | <2 | <3 | 12 | 351 | 7 |
| 2102 | 4.34 | 1.06 | 11.0 | 0.4 | 3.27 | 5.40 | 6.57 | <20 | 0.10 | <50 | <5 | 50 | 9 | 5 | 3525 | 74 | 4 | <1 | 0.7 | <1 | 19 | 11 | 9 | <3 | 20 | 39 | 1 |
| 2103 | 0.36 | 0.04 | 117.4 | 0.3 | 2.77 | 15.82 | 8.02 | <20 | 0.24 | <50 | 6 | 49 | 21 | 1 | <7 | 9 | <1 | <1 | 4.2 | <1 | <13 | <1 | 2 | <3 | <5 | 6 | 2 |
| 2104 | 51.91 | 6.89 | 25.8 | 1.3 | 5.33 | 10.12 | 8.72 | <20 | 0.21 | <50 | 69 | 39 | 305 | 149 | <7 | 16 | 2 | <1 | 2.5 | <1 | 20 | 7 | 3 | 6 | 45 | 591 | 3 |
| 2105 | 49.53 | 5.41 | 13.8 | 0.9 | 2.93 | 7.24 | 10.07 | <20 | 0.17 | <50 | 69 | 44 | 125 | 182 | 26 | 19 | <1 | <1 | 0.8 | <1 | 17 | 7 | <2 | <3 | 161 | 893 | 3 |
| 2106 | 8.08 | 0.37 | 75.5 | 0.6 | 2.54 | 17.56 | 7.20 | <20 | 0.41 | <50 | 16 | 52 | 15 | 5 | 12 | 16 | <1 | <1 | 4.7 | <1 | <13 | 2 | 7 | 3 | 24 | 163 | 10 |
| 2107 | 3.01 | 0.05 | 133.1 | 0.2 | 32.12 | 23.10 | 6.07 | <20 | 0.58 | <50 | 23 | 39 | <7 | 2 | <7 | <5 | <1 | <1 | 2.5 | <1 | <13 | <1 | <2 | 5 | 8 | 60 | 18 |
| 2108 | 46.68 | 8.44 | 41.3 | 1.2 | 3.85 | 12.37 | 9.46 | <20 | 0.41 | <50 | 74 | 72 | 180 | 643 | <7 | 29 | <1 | <1 | 31.5 | <1 | <13 | 3 | <2 | 5 | 77 | 560 | 1 |
| 2109 | 28.62 | 1.77 | 205.9 | 0.6 | 213.90 | 42.65 | 4.71 | <20 | 0.66 | 1282 | 45 | 136 | 1807 | 127 | <7 | 11 | <1 | <1 | 2.1 | <1 | <13 | <1 | <2 | <3 | 83 | 431 | 7 |
| 2110 | 23.33 | 2.94 | 115.7 | 1.0 | 66.90 | 58.81 | 6.65 | <20 | 0.59 | 189 | 23 | 48 | 461 | 371 | <7 | 82 | <1 | <1 | 3.6 | <1 | <13 | 5 | 5 | <3 | 31 | 193 | 1 |
| 2111 | 14.10 | 1.04 | 124.4 | 0.4 | 66.87 | 35.72 | 5.39 | <20 | 0.72 | 145 | 20 | 35 | 83 | 69 | <7 | <5 | <1 | <1 | 1.5 | 1 | <13 | 5 | 2 | <3 | 28 | 167 | <1 |
| 2112 | 48.05 | 8.23 | 19.6 | 1.2 | 2.61 | 9.47 | 8.90 | <20 | 0.19 | <50 | 64 | 51 | 1065 | 484 | <7 | 31 | <1 | <1 | 4.3 | <1 | 25 | 10 | 6 | <3 | 176 | 345 | <1 |
| 2113 | 8.91 | 0.47 | 113.4 | 0.3 | 51.21 | 36.34 | 6.33 | <20 | 1.60 | 111 | 10 | 41 | <7 | 29 | <7 | <5 | <1 | <1 | 12.8 | <1 | <13 | 5 | 17 | <3 | 30 | 161 | 6 |
| 2115 | 11.95 | 0.87 | 102.4 | 0.4 | 14.47 | 48.52 | 5.68 | <20 | 0.56 | <50 | 18 | 74 | 281 | 66 | <7 | <5 | <1 | <1 | 6.0 | 1 | <13 | 3 | 9 | <3 | 25 | 205 | 3 |
| 2116 | 12.92 | 0.56 | 101.2 | 0.3 | 2.18 | 28.71 | 6.23 | <20 | 0.26 | <50 | 26 | 48 | 96 | 81 | <7 | <5 | <1 | <1 | 9.5 | <1 | <13 | 3 | <2 | <3 | 42 | 270 | 3 |
| 2117 | 37.35 | 2.88 | 86.9 | 0.8 | 1.32 | 2.54 | 8.55 | <20 | 0.20 | <50 | 81 | 44 | 238 | 295 | 8 | 13 | <1 | <1 | 4.6 | <1 | 25 | 15 | <2 | <3 | 87 | 708 | 1 |
| 2118 | 14.92 | 0.83 | 101.0 | 0.5 | 3.55 | 35.11 | 7.57 | <20 | 0.28 | <50 | 33 | 41 | 83 | 63 | 28 | 13 | <1 | <1 | 2.5 | <1 | <13 | 6 | 2 | <3 | 52 | 275 | 3 |
| 2119 | 23.51 | 2.19 | 86.1 | 0.6 | 7.60 | 46.37 | 7.88 | <20 | 0.41 | 89 | 36 | 28 | 575 | 37 | <7 | 8 | <1 | <1 | 0.7 | <1 | 19 | 13 | <2 | <3 | 29 | 167 | <1 |
| 2121 | 0.02 | <0.03 | 31.2 | <0.1 | 5.21 | 3.00 | 13.27 | 23 | 0.05 | <50 | <5 | 39 | 50 | 3 | 16 | 17 | 9 | <1 | 2.4 | <1 | 15 | 12 | 4 | <3 | 11 | <5 | <1 |
| 2122 | 26.25 | 2.97 | 67.1 | 0.8 | 6.13 | 27.89 | 7.99 | <20 | 0.36 | <50 | 43 | 67 | 789 | 108 | <7 | <5 | <1 | <1 | 3.5 | <1 | 18 | 11 | <2 | <3 | 25 | 270 | <1 |
| 2123 | 40.21 | 7.36 | 78.5 | 1.8 | 10.82 | 36.56 | 10.40 | <20 | 0.30 | 76 | 94 | 60 | 2647 | 324 | 24 | 35 | <1 | <1 | 0.6 | <1 | 25 | 15 | <2 | <3 | 58 | 341 | 2 |
| 2124 | 25.03 | 1.13 | 101.6 | 0.5 | 70.47 | 50.21 | 6.83 | <20 | 0.21 | 243 | 35 | 35 | 268 | 47 | <7 | 11 | <1 | <1 | 6.0 | <1 | <13 | <1 | 5 | 15 | 31 | 454 | 10 |
| 2125 | 17.00 | 0.69 | 96.1 | 0.5 | 36.47 | 36.33 | 7.13 | <20 | 0.31 | 96 | 19 | 66 | 244 | 13 | <7 | <5 | <1 | <1 | 10.9 | <1 | <13 | <1 | 11 | 11 | 15 | 351 | 5 |
| 2126 | 26.45 | 1.24 | 104.3 | 0.3 | 86.65 | 32.15 | 8.49 | <20 | 0.52 | 226 | 55 | 50 | 12 | 105 | <7 | 28 | <1 | <1 | 1.5 | <1 | 17 | 7 | <2 | 3 | 93 | 626 | 10 |
| 2127 | 0.27 | 0.05 | 110.8 | <0.1 | 30.51 | 62.56 | 7.31 | <20 | 0.50 | 92 | 10 | 79 | 30 | 4 | <7 | <5 | <1 | <1 | 3.0 | <1 | <13 | <1 | <2 | <3 | <5 | 6 | 4 |
| 2128 | 14.78 | 4.35 | 41.4 | 6.6 | 37.80 | 26.55 | 7.14 | <20 | 0.05 | 942 | 93 | 13524 | 807 | 134 | 265 | 227 | <1 | <1 | <0.2 | <1 | <13 | <1 | <2 | <3 | 101 | 91 | <1 |
| 2129 | 29.45 | 0.44 | 558.0 | 0.5 | 834.00 | 19.41 | 6.18 | <20 | 0.33 | 3445 | 62 | 60 | 108 | 68 | <7 | 10 | <1 | <1 | 3.7 | <1 | <13 | <1 | <2 | 4 | 87 | 727 | 14 |
| 2130 | 30.53 | 2.96 | 105.9 | 0.9 | 11.91 | 51.56 | 7.12 | <20 | 0.20 | 74 | 46 | 77 | 228 | 223 | <7 | 20 | <1 | <1 | 0.9 | <1 | <13 | <1 | 6 | 5 | 25 | 487 | 5 |
| 2131 | 23.72 | 0.34 | 370.5 | 0.4 | 521.40 | 39.15 | 5.02 | 21 | 1.05 | 3409 | 56 | 89 | 2376 | 132 | 17 | 25 | <1 | <1 | 0.7 | <1 | <13 | <1 | <2 | <3 | 81 | 535 | 9 |
| 2132 | 16.94 | 1.17 | 106.3 | 0.7 | 6.39 | 28.57 | 5.49 | 21 | 0.77 | <50 | 29 | 68 | 240 | 129 | <7 | 12 | <1 | <1 | 1.9 | <1 | 16 | 8 | 3 | <3 | 45 | 252 | 1 |

# GSC Open File 3306
## Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2133 | 21G15 | 692965 | 5082414 | DR | - | - | 6.50 | 480 | 315 | 51.4 | 110.9 | -2.36 |
| 2134 | 21G15 | 691962 | 5079180 | DR | - | 14 | 7.29 | 665 | 505 | 158.6 | 247.6 | -3.65 |
| 2136 | 21G15 | 691998 | 5079537 | DR | - | 12 | 7.18 | 940 | 604 | 129.4 | 44.1 | -3.52 |
| 2137 | 21G15 | 691289 | 5078569 | DR | 180 | 16 | 8.37 | 610 | 562 | 279.4 | 0.1 | -4.16 |
| 2138 | 21G15 | 690808 | 5078310 | UN | - | 15 | 7.76 | 518 | 515 | 296.6 | 59.2 | -1.31 |
| 2139 | 21G15 | 690361 | 5078185 | DR | - | 5 | 7.99 | 483 | 460 | 234.6 | 26.2 | 0.69 |
| 2141 | 21G15 | 678672 | 5090480 | DR | 110 | 20 | 6.13 | 818 | 527 | 84.4 | 124.2 | -1.14 |
| 2142 | 21G15 | 678345 | 5089992 | DR | - | - | 6.98 | 267 | 220 | 104.2 | 123.9 | 1.47 |
| 2143 | 21G15 | 677895 | 5089434 | DR | - | 23 | 6.29 | 557 | 396 | 106.4 | 245.2 | -3.57 |
| 2144 | 21G15 | 677433 | 5089065 | DR | - | - | 7.08 | 357 | 317 | 115.4 | 66.8 | -2.99 |
| 2145 | 21G15 | 676934 | 5088606 | DR | - | - | 7.35 | 1196 | 728 | 90.2 | 492.2 | -4.16 |
| 2146 | 21G15 | 676487 | 5087949 | DR | - | 14 | 7.84 | 261 | 241 | 120.2 | 72.6 | -0.48 |
| 2147 | 21G15 | 676099 | 5087682 | DR | 115 | 1 | 7.40 | 327 | 292 | 140.5 | 56.8 | -3.56 |
| 2148 | 21G15 | 675961 | 5087355 | DR | 100 | 12 | 6.18 | 928 | 653 | 187.8 | 0.6 | -3.56 |
| 2149 | 21G15 | 675561 | 5086933 | DR | - | - | 7.14 | 371 | 287 | 112.0 | 173.7 | -1.82 |
| 2150 | 21G15 | 675313 | 5086670 | DR | 150 | 12 | 7.52 | 243 | 221 | 120.6 | 113.0 | -1.02 |
| 2151 | 21G15 | 674591 | 5086105 | DR | - | - | 7.39 | 252 | 216 | 107.6 | 119.6 | -4.19 |
| 2152 | 21G15 | 674430 | 5086589 | DR | - | - | 8.36 | 250 | 228 | 117.0 | 21.2 | -3.83 |
| 2153 | 21G15 | 674435 | 5087245 | DR | 110 | 5 | 7.41 | 207 | 154 | 83.9 | 85.6 | -2.53 |
| 2154 | 21G15 | 674379 | 5085643 | DR | - | 13 | 7.63 | 243 | 207 | 107.1 | 118.4 | -1.06 |
| 2155 | 21G15 | 674539 | 5085214 | DR | 100 | 6 | 6.40 | 242 | 156 | 30.5 | 97.5 | 2.82 |
| 2157 | 21G15 | 674124 | 5085335 | DR | 190 | - | 7.35 | 271 | 231 | 119.8 | 120.2 | -3.28 |
| 2158 | 21G15 | 674150 | 5084424 | DR | - | 5 | 7.84 | 238 | 203 | 108.4 | 90.1 | -3.20 |
| 2159 | 21G15 | 674101 | 5085046 | DR | - | - | 7.70 | 265 | 233 | 120.2 | 111.2 | -2.83 |
| 2161 | 21G15 | 673815 | 5085015 | DR | 180 | 2 | 7.73 | 239 | 219 | 112.4 | 98.1 | 2.25 |
| 2162 | 21G15 | 673904 | 5085974 | DR | 90 | 6 | 7.45 | 239 | 231 | 114.3 | 0.2 | -1.78 |
| 2163 | 21G15 | 673728 | 5087003 | DR | - | - | 6.99 | 282 | 232 | 106.0 | 138.1 | -0.68 |
| 2164 | 21G15 | 673838 | 5087229 | DR | 150 | 1 | 7.15 | 171 | 155 | 79.9 | 82.1 | -0.41 |
| 2165 | 21G15 | 673804 | 5087895 | DR | 85 | 10 | 5.78 | 202 | 123 | 21.6 | 64.4 | 1.07 |
| 2166 | 21G15 | 673753 | 5088594 | DR | 305 | 11 | 7.67 | 424 | 346 | 149.3 | 176.3 | -4.87 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2133 | 36.59 | 4.76 | 57.4 | 1.0 | 128.00 | 10.82 | 11.50 | <20 | 0.04 | 259 | 57 | 1532 | 172 | 34 | 437 | 92 | <1 | <1 | <0.2 | <1 | 24 | 12 | <2 | <3 | 24 | 222 | 2 |
| 2134 | 90.37 | 5.37 | 46.4 | 0.9 | 140.00 | 20.64 | 7.35 | 21 | 0.12 | 298 | 126 | 90 | 55 | 14 | 13 | 201 | <1 | <1 | 2.1 | <1 | 37 | 17 | 5 | <3 | 103 | 1834 | 9 |
| 2136 | 17.24 | 0.27 | 179.3 | <0.1 | 228.00 | 14.58 | 6.74 | <20 | 0.21 | 443 | 42 | 86 | 24 | 19 | 23 | 26 | 4 | <1 | 0.4 | <1 | 59 | 6 | <2 | <3 | 89 | 375 | 9 |
| 2137 | 0.03 | <0.03 | 153.3 | <0.1 | 37.92 | 32.54 | 6.18 | <20 | 0.99 | 182 | 18 | 79 | 166 | 2 | <7 | 8 | <1 | <1 | 0.8 | <1 | <13 | 7 | <2 | <3 | 7 | <5 | <1 |
| 2138 | 20.68 | 1.85 | 111.3 | 0.5 | 2.91 | 7.38 | 7.07 | <20 | 0.43 | <50 | 28 | 49 | 177 | 325 | 13 | <5 | <1 | <1 | 1.4 | <1 | <13 | <1 | <2 | <3 | 52 | 320 | 6 |
| 2139 | 9.91 | 0.37 | 118.8 | 0.3 | 19.02 | 17.55 | 6.41 | <20 | 0.37 | 100 | 21 | 42 | 282 | 70 | <7 | 8 | <1 | <1 | 1.2 | <1 | <13 | <1 | <2 | <3 | 57 | 207 | 11 |
| 2141 | 42.10 | 4.66 | 127.7 | 0.7 | 212.00 | 27.70 | 6.74 | <20 | 0.04 | 376 | 83 | 104 | 1866 | 399 | 115 | 37 | <1 | <1 | 0.4 | <1 | 32 | 16 | 2 | <3 | 274 | 182 | 1 |
| 2142 | 43.62 | 3.67 | 9.5 | 0.7 | 19.55 | 9.41 | 6.15 | 23 | 0.04 | <50 | 59 | 151 | 20 | 6 | 34 | 272 | <1 | <1 | <0.2 | <1 | 33 | 19 | 4 | <3 | 134 | 650 | 4 |
| 2143 | 81.62 | 10.10 | 17.4 | 0.9 | 130.00 | 13.17 | 10.92 | 23 | 0.06 | 122 | 109 | 666 | 23 | 8 | 993 | 132 | 4 | <1 | <0.2 | <1 | 39 | 20 | 4 | <3 | 362 | 560 | 5 |
| 2144 | 23.30 | 2.10 | 62.8 | 0.4 | 51.26 | 28.14 | 7.41 | <20 | 0.38 | <50 | 54 | 57 | 9 | 14 | 57 | 18 | <1 | <1 | 3.0 | <1 | 14 | 9 | 3 | <3 | 74 | 1462 | 29 |
| 2145 | 174.59 | 13.77 | 32.9 | 0.7 | 374.00 | 8.19 | 12.15 | 39 | 0.08 | 97 | 213 | 48 | 228 | 748 | 10 | 55 | <1 | <1 | 2.5 | <1 | 70 | 28 | 7 | <3 | 824 | 9661 | 2 |
| 2146 | 26.63 | 1.49 | 32.3 | 0.3 | 6.06 | 17.15 | 9.93 | <20 | 0.16 | <50 | 56 | 44 | 67 | 97 | <7 | 6 | <1 | <1 | <0.2 | <1 | 16 | 10 | 6 | <3 | 87 | 2064 | 23 |
| 2147 | 20.45 | 1.41 | 53.8 | 0.2 | 26.10 | 17.78 | 7.76 | <20 | 0.26 | <50 | 55 | 82 | 2361 | 199 | <7 | <5 | <1 | <1 | 1.2 | <1 | 16 | 6 | <2 | <3 | 114 | 1293 | 34 |
| 2148 | 0.22 | <0.03 | 203.6 | 0.8 | 195.00 | 13.75 | 10.09 | <20 | 0.05 | 315 | <5 | 60 | 88 | 4 | 138 | 63 | 19 | <1 | <0.2 | <1 | <13 | <1 | <2 | <3 | <5 | <5 | 7 |
| 2149 | 60.60 | 5.47 | 6.5 | 0.5 | 53.87 | 9.12 | 13.35 | <20 | 0.11 | <50 | 79 | 43 | 112 | 355 | 95 | 18 | <1 | <1 | 1.6 | <1 | 15 | <1 | <2 | 10 | 164 | 1847 | 8 |
| 2150 | 41.80 | 2.12 | 6.5 | 0.3 | 5.03 | 6.27 | 12.01 | <20 | 0.09 | <50 | 69 | 46 | 71 | 108 | 25 | 12 | <1 | <1 | <0.2 | <1 | <13 | <1 | <2 | 16 | 89 | 3594 | 10 |
| 2151 | 41.29 | 4.03 | 2.6 | 0.4 | 17.29 | 10.32 | 12.61 | 29 | 0.08 | <50 | 56 | 78 | 143 | 554 | 332 | 38 | <1 | <1 | 1.3 | <1 | <13 | <1 | <2 | 10 | 156 | 1660 | 7 |
| 2152 | 8.14 | 0.23 | 49.4 | <0.1 | 4.06 | 15.21 | 8.00 | <20 | 0.34 | <50 | 25 | 47 | 34 | 21 | <7 | <5 | <1 | <1 | 0.8 | <1 | <13 | <1 | <2 | 7 | 14 | 484 | 21 |
| 2153 | 28.58 | 3.48 | 1.4 | 0.4 | 2.96 | 5.86 | 8.71 | <20 | 0.10 | <50 | 40 | 41 | 21 | 26 | 33 | 8 | <1 | <1 | 0.8 | 1 | <13 | <1 | <2 | 12 | 95 | 461 | 4 |
| 2154 | 43.45 | 2.43 | 1.1 | 0.3 | 7.90 | 8.93 | 12.09 | <20 | 0.12 | <50 | 67 | 39 | 79 | 92 | <7 | 11 | <1 | <1 | 0.6 | <1 | 23 | 12 | <2 | <3 | 83 | 3412 | 7 |
| 2155 | 32.09 | 4.24 | 7.5 | 0.5 | 36.07 | 10.60 | 6.41 | 80 | 0.03 | <50 | 48 | 37 | 513 | 357 | 55 | 78 | 56 | <1 | 0.2 | <1 | 15 | 5 | <2 | <3 | 130 | 608 | 6 |
| 2157 | 42.38 | 3.53 | 7.4 | <0.1 | 12.88 | 17.16 | 11.19 | 26 | 0.09 | <50 | 69 | 64 | 99 | 203 | 14 | 20 | <1 | <1 | 0.5 | <1 | 15 | 4 | 5 | 8 | 103 | 1836 | 9 |
| 2158 | 32.31 | 2.30 | 12.3 | <0.1 | 8.01 | 14.82 | 10.22 | <20 | 0.12 | 61 | 56 | 83 | 13 | 47 | <7 | 15 | <1 | <1 | <0.2 | <1 | 13 | 6 | 3 | <3 | 56 | 2270 | 13 |
| 2159 | 39.02 | 3.36 | 10.3 | 0.3 | 4.06 | 18.64 | 10.03 | <20 | 0.11 | <50 | 76 | 51 | 85 | 61 | <7 | 6 | <1 | <1 | 0.6 | <1 | 14 | 6 | 2 | <3 | 68 | 3108 | 15 |
| 2161 | 33.85 | 3.31 | 16.7 | 0.3 | 1.97 | 14.70 | 11.20 | <20 | 0.17 | <50 | 57 | 49 | 17 | 127 | <7 | <5 | <1 | <1 | 0.5 | <1 | <13 | <1 | 5 | 5 | 55 | 1834 | 11 |
| 2162 | 0.04 | 0.03 | 59.8 | <0.1 | 8.56 | 8.15 | 14.99 | <20 | 0.13 | <50 | <5 | <25 | 8 | 3 | 22 | 19 | 2 | <1 | 3.7 | 1 | <13 | 5 | 8 | <3 | <5 | <5 | 13 |
| 2163 | 50.52 | 2.94 | 5.5 | 0.4 | 29.25 | 5.62 | 8.26 | 25 | 0.05 | <50 | 68 | 49 | 62 | 3 | 309 | 25 | <1 | <1 | 7.7 | <1 | 24 | 13 | 12 | <3 | 168 | 391 | 2 |
| 2164 | 25.76 | 4.34 | 3.8 | 0.4 | 3.64 | 6.45 | 13.18 | <20 | 0.08 | <50 | 35 | 39 | 19 | 26 | 60 | 13 | 3 | <1 | 0.2 | <1 | 18 | 8 | 7 | <3 | 28 | 225 | 3 |
| 2165 | 18.10 | 4.68 | 8.5 | 0.6 | 34.17 | 11.45 | 15.98 | <20 | 0.06 | 53 | 22 | 74 | 985 | 1852 | 56 | 38 | 3 | <1 | <0.2 | <1 | <13 | 3 | 5 | 7 | 35 | 86 | 6 |
| 2166 | 38.13 | 19.73 | 17.9 | 0.2 | 48.42 | 28.29 | 10.62 | <20 | 0.24 | <50 | 141 | 47 | 26 | 2 | 64 | 21 | <1 | <1 | <0.2 | <1 | 14 | 4 | 5 | 7 | 82 | 8065 | 11 |

# GSC Open File 3306
## Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2167 | 21G15 | 673725 | 5089038 | DR | 86 | 11 | 7.08 | 660 | 599 | 309.4 | 160.4 | -2.76 |
| 2168 | 21G15 | 673522 | 5089910 | DR | 150 | 6 | 7.35 | 494 | 421 | 217.1 | 251.0 | -3.80 |
| 2169 | 21G15 | 673597 | 5089446 | DR | 75 | 11 | 7.67 | 329 | 293 | 167.6 | 177.5 | -3.47 |
| 2170 | 21G15 | 673159 | 5090123 | DR | 110 | 1 | 7.49 | 287 | 255 | 152.5 | 154.2 | -3.44 |
| 2171 | 21G15 | 672905 | 5090049 | DR | 93 | 8 | 7.02 | 304 | 244 | 120.4 | 151.3 | -4.39 |
| 2172 | 21G15 | 673114 | 5084540 | DR | 165 | 17 | 7.12 | 278 | 243 | 122.4 | 136.9 | -2.71 |
| 2173 | 21G15 | 673264 | 5084422 | DR | 240 | 10 | 7.70 | 302 | 253 | 116.2 | 135.5 | -3.68 |
| 2175 | 21G15 | 673114 | 5084540 | DR | 100 | - | 6.85 | 244 | 224 | 108.2 | 114.0 | -3.71 |
| 2176 | 21G15 | 673074 | 5085395 | DR | 180 | 2 | 7.46 | 237 | 225 | 119.4 | 88.1 | -2.30 |
| 2177 | 21G15 | 672907 | 5086380 | DR | - | - | 6.85 | 168 | 145 | 78.8 | 80.4 | -0.56 |
| 2178 | 21G15 | 672963 | 5084102 | DR | 75 | 25 | 6.67 | 569 | 353 | 75.8 | 227.8 | -3.55 |
| 2179 | 21G15 | 672907 | 5086380 | DR | 145 | 3 | 6.91 | 133 | 124 | 61.2 | 61.7 | -3.95 |
| 2181 | 21G15 | 672677 | 5083783 | DR | 90 | 11 | 7.61 | 231 | 205 | 108.3 | 99.5 | -2.19 |
| 2182 | 21G15 | 672264 | 5083282 | DR | - | 2 | 8.77 | 699 | 464 | 112.7 | 19.7 | -2.68 |
| 2183 | 21G15 | 671721 | 5082411 | DR | - | - | 6.59 | 370 | 267 | 91.8 | 124.2 | -2.06 |
| 2184 | 21G15 | 671514 | 5082038 | DR | 240 | 15 | 6.87 | 215 | 175 | 71.8 | 78.1 | -1.12 |
| 2185 | 21G15 | 671132 | 5081505 | DR | - | - | 6.87 | 193 | 171 | 81.5 | 85.8 | -1.58 |
| 2186 | 21G15 | 670824 | 5081141 | DR | 100 | 15 | 7.33 | 191 | 174 | 79.3 | 85.6 | -4.52 |
| 2187 | 21G15 | 671306 | 5082533 | DR | 400 | 6 | 7.20 | 236 | 207 | 102.8 | 106.1 | -2.79 |
| 2188 | 21G15 | 672060 | 5081931 | DR | - | - | 6.84 | 160 | 135 | 57.2 | 62.8 | -2.26 |
| 2189 | 21G15 | 670817 | 5082786 | DR | 65 | 6 | 7.36 | 207 | 188 | 88.7 | 86.2 | -4.95 |
| 2190 | 21G15 | 670226 | 5083103 | DR | - | - | 7.55 | 175 | 173 | 84.9 | 83.3 | -4.57 |
| 2191 | 21G15 | 669427 | 5083081 | DR | - | 8 | 7.55 | 273 | 238 | 130.4 | 120.8 | -2.42 |
| 2192 | 21G15 | 668985 | 5083325 | DR | 85 | 13 | 7.44 | 518 | 415 | 193.6 | 238.4 | -3.96 |
| 2193 | 21G15 | 668695 | 5083450 | DR | 170 | 11 | 7.71 | 341 | 297 | 158.6 | 161.6 | -3.15 |
| 2194 | 21G15 | 669262 | 5083421 | DR | - | 13 | 7.72 | 247 | 202 | 93.7 | 121.0 | -2.82 |
| 2195 | 21G15 | 669280 | 5083611 | DR | - | 11 | 7.80 | 260 | 238 | 136.5 | 143.0 | -1.88 |
| 2197 | 21G15 | 668754 | 5082996 | DR | - | 5 | 7.31 | 770 | 537 | 144.2 | 322.1 | -3.44 |
| 2198 | 21G15 | 668431 | 5082876 | DR | 100 | 6 | 7.69 | 339 | 277 | 138.6 | 176.7 | -2.55 |
| 2199 | 21G15 | 668076 | 5082789 | DR | 100 | 15 | 7.27 | 767 | 532 | 161.3 | 342.7 | -4.27 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2167 | 26.08 | 23.16 | 93.4 | 1.0 | 22.63 | 42.93 | 11.83 | <20 | 0.04 | 59 | 121 | 197 | 19 | 39 | 58 | 7 | <1 | <1 | 0.3 | 4 | 25 | 6 | 6 | 9 | 77 | 749 | 9 |
| 2168 | 55.54 | 27.32 | 5.8 | 0.8 | 33.40 | 21.89 | 10.62 | <20 | 0.04 | 66 | 165 | 77 | 85 | 22 | <7 | 121 | <1 | <1 | <0.2 | <1 | 25 | 6 | 9 | 9 | 245 | 1216 | 12 |
| 2169 | 40.85 | 18.37 | <0.1 | 0.3 | 5.49 | 15.11 | 8.02 | <20 | 0.04 | <50 | 119 | 168 | 90 | 8 | 9 | 7 | <1 | <1 | <0.2 | <1 | 20 | 6 | 2 | <3 | 130 | 499 | 6 |
| 2170 | 30.60 | 18.92 | <0.1 | 0.4 | 3.94 | 15.72 | 9.23 | <20 | 0.04 | <50 | 90 | 68 | 90 | 12 | <7 | 134 | <1 | <1 | <0.2 | <1 | 13 | <1 | 3 | 8 | 145 | 348 | 9 |
| 2171 | 41.65 | 11.52 | 1.1 | 0.2 | 24.36 | 11.34 | 6.27 | <20 | 0.02 | <50 | 95 | 545 | 12 | 1 | <7 | <5 | <1 | <1 | <0.2 | <1 | <13 | <1 | 6 | 9 | 86 | 174 | 2 |
| 2172 | 49.36 | 3.35 | 2.3 | 0.4 | 15.00 | 6.81 | 16.30 | <20 | 0.12 | 57 | 122 | 55 | 29 | 60 | 35 | 22 | <1 | <1 | 0.2 | <1 | <13 | <1 | 6 | 5 | 321 | 272 | 10 |
| 2173 | 45.72 | 5.21 | 7.3 | <0.1 | 22.84 | 15.31 | 14.51 | <20 | 0.16 | <50 | 116 | 63 | 34 | 104 | <7 | 6 | <1 | <1 | 0.5 | <1 | <13 | <1 | 3 | 7 | 88 | 1359 | 11 |
| 2175 | 38.99 | 4.06 | 6.2 | 0.5 | 10.25 | 15.40 | 15.01 | <20 | 0.15 | <50 | 89 | 78 | 1061 | 509 | <7 | 14 | <1 | <1 | 2.3 | <1 | <13 | <1 | <2 | 13 | 207 | 821 | 8 |
| 2176 | 30.40 | 2.98 | 18.4 | 0.5 | 2.42 | 11.70 | 11.57 | 26 | 0.29 | <50 | 78 | 60 | 68 | 495 | 364 | 73 | 48 | <1 | 0.7 | <1 | <13 | <1 | <2 | 12 | 87 | 810 | 36 |
| 2177 | 27.06 | 3.12 | 2.1 | 0.6 | 2.33 | 4.76 | 8.25 | <20 | 0.06 | <50 | 66 | <25 | 24 | 4 | 24 | 23 | <1 | <1 | 1.0 | <1 | <13 | <1 | 4 | <3 | 176 | 273 | <1 |
| 2178 | 77.08 | 8.62 | 14.0 | 0.8 | 138.00 | 7.55 | 12.27 | <20 | 0.12 | 302 | 174 | 106 | 12 | 257 | 895 | 46 | <1 | <1 | <0.2 | <1 | 29 | 9 | <2 | <3 | 344 | 315 | 11 |
| 2179 | 20.26 | 2.70 | 2.0 | 0.4 | 1.60 | 8.10 | 13.06 | <20 | 0.09 | <50 | 52 | 47 | 634 | 77 | <7 | 6 | <1 | <1 | <0.2 | <1 | <13 | <1 | <2 | <3 | 30 | 112 | 1 |
| 2181 | 36.76 | 1.88 | 8.8 | 0.5 | 8.17 | 5.69 | 11.14 | <20 | 0.09 | <50 | 84 | 29 | 16 | 1 | 49 | 20 | <1 | <1 | 16.1 | <1 | <13 | <1 | 22 | 5 | 24 | 1125 | 12 |
| 2182 | 7.68 | 0.14 | 141.4 | 0.3 | 144.00 | 24.17 | 6.67 | <20 | 1.15 | 152 | 55 | 31 | 8 | 14 | <7 | 327 | <1 | <1 | <0.2 | <1 | <13 | 3 | 6 | 8 | 150 | 449 | 186 |
| 2183 | 38.72 | 6.70 | 26.1 | 0.8 | 57.98 | 15.00 | 8.86 | <20 | 0.12 | <50 | 103 | 147 | 8 | 2 | 67 | 259 | <1 | <1 | <0.2 | <1 | 20 | 11 | 2 | <3 | 66 | 176 | <1 |
| 2184 | 29.09 | 1.34 | 11.6 | 0.4 | 11.45 | 18.48 | 13.32 | <20 | 0.16 | <50 | 88 | <25 | 1128 | 234 | 8 | 14 | <1 | <1 | <0.2 | <1 | 19 | 9 | 3 | 7 | 76 | 1124 | 63 |
| 2185 | 30.39 | 2.42 | 5.7 | 0.5 | 1.34 | 17.92 | 12.07 | <20 | 0.29 | <50 | 86 | <25 | 32 | 103 | 500 | 35 | <1 | <1 | <0.2 | <1 | <13 | <1 | <2 | 12 | 92 | 523 | 32 |
| 2186 | 31.26 | 1.86 | 4.3 | 0.2 | 1.26 | 22.39 | 14.36 | <20 | 0.39 | <50 | 80 | <25 | 591 | 269 | <7 | 13 | <1 | <1 | 0.3 | 1 | <13 | <1 | <2 | 17 | 41 | 793 | 33 |
| 2187 | 36.47 | 3.67 | 6.1 | 0.6 | 6.55 | 15.67 | 11.74 | <20 | 0.21 | <50 | 96 | 37 | 329 | 505 | <7 | 8 | <1 | <1 | <0.2 | 1 | <13 | <1 | <2 | 17 | 37 | 1336 | 36 |
| 2188 | 23.19 | 1.20 | 5.6 | 0.3 | 4.18 | 15.74 | 13.95 | <20 | 0.16 | <50 | 65 | <25 | 638 | 212 | <7 | 259 | <1 | <1 | <0.2 | <1 | <13 | <1 | <2 | 10 | 67 | 760 | 30 |
| 2189 | 29.05 | 3.34 | 8.2 | 0.6 | 1.97 | 24.19 | 11.69 | <20 | 0.18 | <50 | 94 | 39 | 104 | 266 | 17 | 13 | <1 | <1 | <0.2 | <1 | 15 | 7 | 4 | <3 | 75 | 1030 | 56 |
| 2190 | 28.19 | 3.15 | 4.5 | 0.5 | 6.04 | 8.89 | 16.91 | <20 | 0.17 | <50 | 70 | 38 | 57 | 686 | <7 | 15 | <1 | <1 | 0.9 | <1 | <13 | 3 | 3 | 3 | 130 | 234 | 16 |
| 2191 | 33.66 | 8.94 | 9.4 | 0.8 | 5.29 | 11.62 | 9.12 | <20 | 0.15 | <50 | 97 | 36 | 87 | 29 | <7 | 16 | <1 | <1 | 0.2 | <1 | 19 | 9 | 2 | <3 | 107 | 750 | 8 |
| 2192 | 55.75 | 24.14 | 13.1 | 0.4 | 52.71 | 22.60 | 10.16 | <20 | 0.06 | <50 | 151 | 249 | 20 | 8 | 22 | 63 | <1 | <1 | <0.2 | <1 | 32 | 15 | 5 | <3 | 130 | 2222 | 19 |
| 2193 | 32.65 | 19.48 | 9.8 | 0.2 | 14.56 | 25.64 | 11.19 | <20 | 0.14 | <50 | 127 | 42 | 22 | 6 | 24 | 23 | <1 | <1 | <0.2 | <1 | 51 | 29 | 22 | <3 | 106 | 2229 | 30 |
| 2194 | 36.68 | 7.16 | 2.1 | 0.9 | 18.52 | 14.44 | 7.65 | <20 | 0.10 | <50 | 100 | <25 | 29 | 35 | <7 | 61 | <1 | <1 | 0.2 | <1 | 44 | 24 | 20 | <3 | 158 | 764 | 10 |
| 2195 | 28.35 | 17.57 | 1.1 | 0.2 | 1.31 | 13.06 | 9.84 | 23 | 0.04 | <50 | 89 | <25 | 68 | 16 | 14 | 30 | <1 | <1 | 0.9 | <1 | 44 | 29 | 21 | <3 | 119 | 495 | 5 |
| 2197 | 66.07 | 38.22 | 37.7 | 0.6 | 195.00 | 14.76 | 8.26 | 110 | 0.02 | <50 | 169 | 100 | 157 | 13 | 49 | 36 | <1 | <1 | <0.2 | <1 | 40 | 11 | 3 | 9 | 369 | 744 | 5 |
| 2198 | 37.61 | 20.14 | 0.8 | 0.2 | 29.20 | 9.93 | 10.12 | <20 | 0.05 | <50 | 105 | <25 | 109 | 7 | <7 | 16 | <1 | <1 | 0.5 | <1 | 26 | 6 | <2 | 11 | 191 | 1693 | 5 |
| 2199 | 85.27 | 31.59 | 18.0 | 0.4 | 167.00 | 22.07 | 9.21 | <20 | 0.03 | <50 | 210 | <25 | 402 | 16 | 16 | 742 | <1 | <1 | <0.2 | <1 | 83 | 43 | 7 | <3 | 307 | 2410 | 7 |

# GSC Open File 3306
# Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2201 | 21G15 | 667340 | 5082424 | DR | - | - | 7.01 | 305 | 217 | 85.7 | 115.8 | -3.70 |
| 2202 | 21G15 | 666742 | 5082141 | DR | 86 | 25 | 6.85 | 297 | 227 | 95.1 | 131.7 | -3.20 |
| 2203 | 21G15 | 665314 | 5082092 | DR | 180 | 15 | 7.29 | 256 | 237 | 138.5 | 141.1 | -0.22 |
| 2204 | 21G15 | 665868 | 5082029 | DR | 145 | 3 | 6.96 | 282 | 196 | 95.6 | 123.0 | -2.50 |
| 2205 | 21G15 | 665103 | 5082142 | DR | 400 | 12 | 7.79 | 302 | 260 | 145.1 | 144.7 | -2.45 |
| 2206 | 21G15 | 664458 | 5082469 | DR | 345 | 20 | 7.28 | 456 | 344 | 118.8 | 191.1 | -2.31 |
| 2207 | 21G15 | 664086 | 5082737 | DR | 120 | 12 | 7.21 | 743 | 500 | 154.6 | 279.2 | -1.82 |
| 2208 | 21G15 | 663698 | 5083027 | DR | 65 | 17 | 7.08 | 919 | 633 | 174.1 | 340.7 | -4.10 |
| 2209 | 21G15 | 663397 | 5083242 | DR | 100 | 5 | 7.34 | 781 | 506 | 141.3 | 287.9 | 0.09 |
| 2210 | 21G15 | 662790 | 5083303 | DR | - | - | 7.19 | 642 | 464 | 167.2 | 275.4 | -1.05 |
| 2211 | 21G15 | 662615 | 5083466 | DR | 104 | 24 | 6.97 | 994 | 673 | 172.5 | 353.2 | -0.68 |
| 2212 | 21G15 | 662677 | 5083745 | DR | 104 | 24 | 6.72 | 1233 | 722 | 88.9 | 277.3 | 0.60 |
| 2213 | 21G15 | 662817 | 5084027 | DR | - | - | 6.67 | 518 | 422 | 161.8 | 237.4 | -5.09 |
| 2215 | 21G15 | 663538 | 5085836 | DR | - | 23 | 7.04 | 424 | 406 | 212.9 | 242.1 | 0.88 |
| 2216 | 21G15 | 664128 | 5086707 | DR | 200 | 25 | 7.62 | 284 | 266 | 114.6 | 144.1 | -3.46 |
| 2217 | 21G15 | 664673 | 5088089 | DR | - | - | 6.99 | 260 | 246 | 133.4 | 147.2 | 0.36 |
| 2218 | 21G15 | 664783 | 5088626 | DR | - | - | 7.60 | 277 | 247 | 115.4 | 138.3 | 0.30 |
| 2219 | 21G15 | 665064 | 5089134 | DR | 165 | 24 | 7.12 | 432 | 362 | 155.2 | 216.5 | -0.92 |
| 2221 | 21G15 | 665469 | 5089078 | DR | 200 | 5 | 7.01 | 342 | 319 | 174.3 | 183.3 | 2.20 |
| 2222 | 21G15 | 665671 | 5089650 | DR | 85 | 15 | 7.60 | 297 | 270 | 133.3 | 152.5 | -0.19 |
| 2223 | 21G15 | 667102 | 5090934 | DR | - | - | 7.33 | 527 | 429 | 190.7 | 215.1 | -0.28 |
| 2224 | 21G15 | 666490 | 5090640 | DR | - | - | 6.81 | 168 | 138 | 62.0 | 62.6 | 2.94 |
| 2225 | 21G15 | 666069 | 5090139 | DR | - | - | 7.18 | 376 | 300 | 118.9 | 156.2 | -1.81 |
| 2226 | 21G15 | 668334 | 5090990 | DR | 305 | 1 | 7.90 | 331 | 313 | 176.0 | 96.8 | -0.90 |
| 2227 | 21G15 | 669152 | 5091991 | DR | - | - | 7.16 | 526 | 379 | 121.5 | 161.2 | -2.34 |
| 2228 | 21G15 | 669676 | 5092383 | DR | 90 | 35 | 7.47 | 655 | 398 | 92.9 | 189.6 | 0.17 |
| 2229 | 21G15 | 671008 | 5092742 | DR | 33 | - | 6.74 | 553 | 418 | 138.3 | 194.7 | -3.65 |
| 2230 | 21G15 | 671116 | 5091645 | DR | - | 4 | 7.30 | 436 | 331 | 127.4 | 206.5 | -4.02 |
| 2231 | 21G15 | 671424 | 5091442 | DR | 80 | 3 | 7.59 | 359 | 298 | 142.9 | 191.5 | -0.34 |
| 2232 | 21G15 | 671526 | 5091934 | DR | 200 | 1 | 7.84 | 269 | 233 | 123.9 | 138.8 | -0.23 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample | Ca | Mg | Na | K | Cl | SO4 | SiO2 | Al | F | Br | B | Tot-N | Fe | Mn | Cu | Zn | Pb | Cd | As | Sb | Ni | Co | V | Zr | Ba | Sr | Li |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | µg/l | mg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l |
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2201 | 27.20 | 11.65 | 14.3 | 0.6 | 41.20 | 9.30 | 5.94 | <20 | 0.05 | <50 | 77 | 1654 | 39 | 2 | 46 | 18 | <1 | <1 | <0.2 | <1 | 23 | 11 | 14 | <3 | 140 | 151 | 2 |
| 2202 | 39.80 | 7.88 | 8.1 | 0.3 | 39.75 | 8.29 | 5.97 | <20 | 0.03 | <50 | 96 | 50 | 32 | 1 | 11 | 557 | <1 | <1 | <0.2 | <1 | 19 | 9 | 10 | <3 | 132 | 132 | 1 |
| 2203 | 33.45 | 14.00 | 2.6 | 0.7 | 3.83 | 4.99 | 8.34 | <20 | 0.05 | <50 | 103 | 35 | 16 | 1 | <7 | 26 | <1 | <1 | 1.7 | <1 | 40 | 16 | 2 | 5 | 430 | 572 | 1 |
| 2204 | 34.41 | 9.04 | 0.6 | 0.9 | 22.27 | 9.51 | 8.24 | <20 | 0.07 | <50 | 99 | 369 | 34 | 3 | <7 | 102 | <1 | <1 | 0.4 | <1 | 39 | 18 | 4 | <3 | 351 | 641 | 7 |
| 2205 | 26.36 | 19.18 | 5.0 | 0.5 | 4.20 | 14.44 | 12.75 | <20 | 0.13 | <50 | 110 | <25 | 104 | 13 | <7 | 37 | <1 | <1 | 9.6 | <1 | 44 | 22 | 2 | 4 | 140 | 1789 | 22 |
| 2206 | 57.33 | 11.69 | 19.6 | 0.9 | 60.34 | 38.75 | 8.49 | <20 | 0.04 | <50 | 171 | 1520 | 44 | 1 | <7 | 60 | <1 | <1 | 2.5 | 5 | <13 | <1 | 13 | 8 | 49 | 3063 | 9 |
| 2207 | 81.86 | 18.22 | 38.4 | 0.4 | 146.00 | 15.82 | 9.99 | <20 | 0.03 | 237 | 194 | 175 | 56 | 1 | 9 | 110 | <1 | <1 | <0.2 | <1 | <13 | <1 | 18 | 5 | 264 | 507 | 3 |
| 2208 | 101.32 | 21.36 | 52.5 | 0.5 | 211.00 | 22.25 | 11.24 | <20 | 0.03 | 314 | 246 | 221 | 37 | 1 | <7 | 43 | <1 | <1 | 1.1 | <1 | 39 | 9 | 6 | <3 | 612 | 536 | 3 |
| 2209 | 82.61 | 19.87 | 44.8 | 0.5 | 149.00 | 26.54 | 8.10 | <20 | 0.04 | 240 | 213 | 1933 | 45 | 1 | 27 | 100 | <1 | <1 | <0.2 | 1 | 38 | 16 | 5 | 4 | 148 | 460 | 4 |
| 2210 | 87.45 | 13.90 | 21.9 | 0.7 | 107.00 | 15.35 | 12.13 | <20 | 0.03 | <50 | 222 | <25 | 633 | 246 | 15 | 69 | 2 | <1 | 0.5 | <1 | 60 | 29 | 4 | <3 | 331 | 2602 | 10 |
| 2211 | 118.99 | 13.69 | 67.2 | 0.5 | 187.00 | 62.87 | 10.47 | 24 | 0.02 | 335 | 265 | 1695 | 77 | 2 | 19 | 83 | <1 | <1 | <0.2 | <1 | 59 | 29 | 2 | <3 | 125 | 661 | 5 |
| 2212 | 95.56 | 9.44 | 143.3 | 1.0 | 327.00 | 27.95 | 7.53 | 26 | 0.02 | 466 | 227 | 1329 | 58 | 1 | 23 | 33 | <1 | <1 | <0.2 | <1 | 56 | 27 | 4 | <3 | 111 | 542 | 3 |
| 2213 | 81.70 | 8.15 | 20.6 | 0.5 | 78.55 | 42.68 | 8.52 | 36 | 0.02 | <50 | 203 | 3685 | 47 | 3 | 17 | 61 | <1 | <1 | <0.2 | <1 | 54 | 25 | 10 | <3 | 73 | 424 | 1 |
| 2215 | 86.49 | 6.40 | 5.9 | 0.4 | 10.24 | 23.52 | 13.47 | 34 | 0.02 | <50 | 209 | 47 | 56 | 102 | 31 | 33 | <1 | <1 | 0.5 | <1 | 61 | 26 | 10 | 5 | 224 | 567 | 3 |
| 2216 | 40.87 | 10.23 | 7.4 | 0.4 | 7.67 | 46.24 | 12.81 | 37 | 0.04 | <50 | 124 | 141 | 35 | 6 | 12 | 76 | <1 | <1 | 0.2 | <1 | 52 | 23 | 4 | <3 | 79 | 1448 | 9 |
| 2217 | 55.89 | 1.88 | 2.4 | <0.1 | 3.15 | 13.42 | 6.34 | <20 | 0.02 | <50 | 143 | 35 | 145 | 10 | 83 | 280 | <1 | <1 | <0.2 | 1 | 37 | 14 | 6 | <3 | 147 | 286 | <1 |
| 2218 | 34.09 | 12.95 | 8.4 | 0.5 | 11.03 | 24.44 | 14.72 | <20 | 0.18 | <50 | 110 | <25 | 40 | 10 | 17 | 12 | <1 | <1 | <0.2 | <1 | 40 | 18 | 4 | 5 | 93 | 526 | 6 |
| 2219 | 68.30 | 11.21 | 11.1 | 1.1 | 38.84 | 32.04 | 8.80 | <20 | 0.04 | <50 | 186 | 1082 | 37 | 6 | 24 | 109 | <1 | <1 | 0.3 | <1 | 51 | 25 | 4 | 4 | 121 | 372 | 4 |
| 2221 | 66.69 | 4.10 | 8.2 | 0.5 | 5.81 | 10.17 | 10.41 | <20 | 0.03 | <50 | 179 | 300 | 61 | 14 | <7 | 14 | 13 | <1 | 0.2 | <1 | 55 | 23 | 3 | 4 | 323 | 696 | 6 |
| 2222 | 46.62 | 8.79 | 7.5 | 0.7 | 5.44 | 29.25 | 9.16 | <20 | 0.04 | <50 | 138 | 176 | 35 | 14 | 13 | 16 | <1 | <1 | 4.6 | 3 | 43 | 19 | <2 | <3 | 173 | 1225 | 10 |
| 2223 | 72.83 | 8.13 | 34.4 | 1.0 | 64.50 | 7.86 | 6.23 | <20 | 0.02 | 72 | 187 | 990 | 97 | 10 | <7 | 74 | <1 | <1 | 0.2 | <1 | 66 | 32 | <2 | <3 | 335 | 156 | <1 |
| 2224 | 20.44 | 2.81 | 13.7 | 0.4 | 12.14 | 8.09 | 4.80 | <20 | 0.03 | <50 | 64 | 151 | 42 | 1 | 204 | 7 | <1 | <1 | <0.2 | <1 | <13 | <1 | 5 | <3 | 66 | 107 | <1 |
| 2225 | 55.98 | 4.02 | 20.2 | 1.8 | 55.05 | 12.01 | 5.33 | 22 | 0.03 | <50 | 151 | 379 | 47 | 4 | 14 | 263 | <1 | <1 | 3.9 | <1 | 25 | 5 | 6 | 3 | 161 | 295 | 1 |
| 2226 | 16.85 | 13.32 | 42.7 | 0.9 | 2.70 | 14.85 | 5.56 | <20 | 0.17 | <50 | 84 | 50 | 888 | 37 | 17 | <5 | <1 | <1 | 0.6 | <1 | <13 | 2 | 2 | <3 | 202 | 1041 | 99 |
| 2227 | 54.79 | 5.96 | 48.1 | 0.8 | 90.90 | 23.52 | 4.59 | <20 | 0.03 | 144 | 147 | 1666 | 18 | 1 | <7 | 16 | <1 | <1 | <0.2 | <1 | 26 | 11 | 2 | 4 | 150 | 256 | 1 |
| 2228 | 67.14 | 5.36 | 57.2 | 1.1 | 114.00 | 23.78 | 4.92 | <20 | 0.03 | 169 | 169 | 10192 | 25 | 1 | 465 | 132 | <1 | <1 | <0.2 | <1 | 25 | 10 | <2 | <3 | 232 | 261 | 3 |
| 2229 | 68.03 | 6.06 | 44.3 | 1.0 | 97.00 | 27.19 | 8.79 | <20 | 0.03 | <50 | 176 | 5066 | 54 | 2 | <7 | 108 | <1 | <1 | <0.2 | <1 | 28 | 16 | <2 | <3 | 131 | 292 | 2 |
| 2230 | 61.49 | 12.89 | 10.5 | 0.7 | 77.00 | 11.78 | 7.29 | <20 | 0.02 | 71 | 148 | 2894 | 23 | 1 | 94 | 17 | <1 | <1 | 0.4 | <1 | 16 | <1 | 7 | 6 | 864 | 219 | 4 |
| 2231 | 54.92 | 13.25 | 3.3 | 0.6 | 24.03 | 13.89 | 10.36 | <20 | 0.05 | <50 | 155 | 2874 | 11 | 5 | 20 | 31 | <1 | <1 | 4.1 | <1 | 45 | 26 | <2 | <3 | 304 | 318 | 4 |
| 2232 | 25.71 | 18.14 | 5.8 | 0.4 | 9.89 | 14.85 | 6.40 | <20 | 0.10 | <50 | 96 | 162 | 11 | 10 | 12 | 15 | <1 | <1 | 1.3 | 4 | 43 | 27 | <2 | <3 | 134 | 1059 | 18 |

# GSC Open File 3306
# Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2233 | 21G15 | 671411 | 5092453 | DR | 135 | 15 | 7.03 | 503 | 446 | 222.7 | 274.5 | 0.27 |
| 2234 | 21G15 | 672224 | 5092498 | DR | - | - | 7.77 | 256 | 234 | 125.1 | 126.9 | 1.24 |
| 2235 | 21G15 | 672607 | 5092387 | DR | 84 | - | 7.20 | 992 | 681 | 200.3 | 380.9 | -2.31 |
| 2236 | 21G15 | 672605 | 5091353 | DR | 120 | 11 | 7.56 | 343 | 301 | 160.0 | 180.3 | -1.70 |
| 2238 | 21G15 | 673495 | 5091155 | DR | 200 | 11 | 7.87 | 292 | 238 | 100.7 | 134.3 | -1.36 |
| 2239 | 21G15 | 674862 | 5092428 | DR | 50 | 50 | 6.76 | 247 | 200 | 86.8 | 111.2 | 2.12 |
| 2241 | 21G15 | 673724 | 5092385 | DR | 125 | 20 | 7.82 | 285 | 248 | 111.4 | 105.0 | -0.32 |
| 2242 | 21G15 | 673292 | 5092295 | DR | - | - | 7.78 | 230 | 202 | 107.4 | 119.2 | -0.93 |
| 2243 | 21G15 | 675302 | 5092529 | DR | - | - | - | - | 160 | 79.7 | 81.0 | -0.22 |
| 2244 | 21G15 | 676088 | 5092685 | UN | - | - | 7.96 | 382 | 320 | 139.3 | 116.2 | -2.93 |
| 2245 | 21G15 | 675880 | 5092646 | DR | - | - | 8.86 | 530 | 481 | 227.0 | 19.3 | -3.20 |
| 2246 | 21G15 | 676387 | 5091982 | DR | 165 | 25 | 6.05 | 167 | 140 | 48.4 | 74.6 | -0.26 |
| 2247 | 21G15 | 677190 | 5092105 | DR | - | 39 | 6.69 | 284 | 244 | 106.6 | 133.6 | 0.12 |
| 2248 | 21G15 | 678485 | 5091586 | DR | 130 | 19 | 7.15 | 307 | 236 | 82.4 | 117.2 | -1.07 |
| 2249 | 21G15 | 678300 | 5091003 | DR | - | - | 6.29 | 181 | 163 | 74.4 | 84.4 | 3.04 |
| 2250 | 21G15 | 678213 | 5090244 | DR | - | - | 6.52 | 668 | 447 | 94.5 | 274.2 | -4.04 |
| 2251 | 21G15 | 678048 | 5089795 | DR | 100 | - | 6.96 | 611 | 444 | 143.4 | 262.8 | -2.41 |
| 2252 | 21G15 | 666702 | 5073246 | DR | 105 | 4 | 7.25 | 164 | 151 | 73.3 | 71.7 | 2.62 |
| 2253 | 21G15 | 666140 | 5072730 | DR | - | - | 5.96 | 159 | 109 | 21.8 | 46.5 | -2.37 |
| 2254 | 21G15 | 665519 | 5072080 | UN | - | 70 | 5.85 | 100 | 74 | 20.1 | 31.1 | -3.69 |
| 2255 | 21G15 | 663929 | 5071037 | DR | - | - | 7.47 | 153 | 146 | 67.3 | 73.5 | 0.11 |
| 2257 | 21G15 | 663057 | 5071337 | DU | 35 | - | 6.96 | 436 | 403 | 226.5 | 240.9 | -0.20 |
| 2258 | 21G15 | 662299 | 5073285 | UN | - | 14 | 6.38 | 340 | 243 | 79.5 | 67.2 | -4.70 |
| 2259 | 21G15 | 662401 | 5073821 | DR | - | - | 5.92 | 44 | 41 | 19.9 | 19.4 | -1.18 |
| 2261 | 21G15 | 662568 | 5074281 | DR | - | - | 7.68 | 264 | 222 | 110.6 | 128.9 | 0.43 |
| 2262 | 21G15 | 662500 | 5076870 | DR | - | - | 7.49 | 548 | 479 | 244.6 | 289.0 | -3.92 |
| 2263 | 21G15 | 662404 | 5077279 | DR | 168 | 5 | 7.89 | 303 | 266 | 130.9 | 147.3 | -0.71 |
| 2264 | 21G15 | 662992 | 5077383 | DR | - | - | 7.36 | 193 | 180 | 101.8 | 103.6 | -1.76 |
| 2265 | 21G15 | 662262 | 5076485 | DR | - | 20 | 7.28 | 686 | 519 | 197.4 | 286.9 | -2.58 |
| 2266 | 21G15 | 661254 | 5076681 | DR | - | - | 7.26 | 507 | 414 | 180.8 | 239.6 | -3.45 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2233 | 84.10 | 15.73 | 7.3 | 2.2 | 35.06 | 14.51 | 12.83 | <20 | 0.03 | <50 | 205 | 1779 | <7 | 1 | 12 | 38 | <1 | <1 | 0.6 | <1 | 41 | 16 | 2 | 3 | 593 | 1238 | 12 |
| 2234 | 31.84 | 11.53 | 10.5 | 0.6 | 3.00 | 16.86 | 6.80 | <20 | 0.13 | <50 | 90 | 42 | 34 | 1 | <7 | 28 | <1 | <1 | <0.2 | <1 | <13 | 3 | <2 | <3 | 61 | 349 | 9 |
| 2235 | 88.55 | 38.87 | 55.9 | 1.6 | 220.00 | 22.70 | 8.63 | <20 | 0.05 | 73 | 254 | 34 | 379 | 26 | <7 | 30 | <1 | <1 | <0.2 | <1 | 48 | 21 | <2 | <3 | 238 | 4766 | 30 |
| 2236 | 37.81 | 20.89 | 6.0 | 0.5 | 9.74 | 24.00 | 6.17 | <20 | 0.05 | <50 | 112 | 739 | 9 | 2 | 29 | 22 | <1 | <1 | <0.2 | 1 | 50 | 11 | 2 | <3 | 93 | 467 | 3 |
| 2238 | 29.71 | 14.63 | 10.5 | 0.7 | 32.04 | 16.83 | 10.55 | <20 | 0.12 | <50 | 107 | 29 | 47 | 6 | 10 | 22 | 2 | <1 | <0.2 | <1 | 16 | 8 | <2 | <3 | 88 | 1143 | 16 |
| 2239 | 36.15 | 5.10 | 10.8 | 0.7 | 12.72 | 24.31 | 4.56 | <20 | 0.05 | <50 | 109 | 30 | 21 | 3 | 53 | 44 | <1 | <1 | <0.2 | <1 | 23 | 14 | <2 | <3 | 63 | 186 | <1 |
| 2241 | 25.45 | 10.08 | 24.4 | 0.7 | 11.88 | 30.87 | 8.43 | <20 | 0.18 | <50 | 101 | <25 | 26 | 7 | 14 | 23 | <1 | <1 | 0.3 | <1 | <13 | <1 | 5 | <3 | 70 | 618 | 29 |
| 2242 | 27.17 | 12.51 | 4.5 | 0.4 | 8.11 | 12.84 | 5.30 | <20 | 0.05 | <50 | 71 | 40 | 14 | 1 | 14 | 31 | <1 | <1 | <0.2 | <1 | <13 | <1 | 6 | 6 | 83 | 242 | 3 |
| 2243 | 25.24 | 4.39 | 9.0 | 0.4 | 5.48 | 13.26 | 5.17 | <20 | 0.04 | <50 | 65 | 209 | 17 | 1 | 10 | 7 | 6 | <1 | <0.2 | <1 | <13 | <1 | 6 | 3 | 19 | 172 | <1 |
| 2244 | 26.53 | 12.14 | 40.2 | 1.3 | 42.50 | 28.20 | 7.89 | 28 | 0.21 | <50 | 148 | 53 | 254 | 15 | <7 | 11 | <1 | <1 | 1.6 | <1 | <13 | <1 | 3 | 4 | 134 | 3344 | 52 |
| 2245 | 5.14 | 1.57 | 124.8 | 0.5 | 38.99 | 25.77 | 6.14 | <20 | 0.52 | <50 | 164 | 32 | <7 | 1 | <7 | <5 | 3 | <1 | <0.2 | <1 | <13 | <1 | 3 | 4 | 108 | 222 | 5 |
| 2246 | 25.01 | 2.96 | 6.3 | 1.4 | 11.51 | 15.89 | 7.07 | <20 | 0.04 | 180 | 73 | 861 | 16 | 4 | 263 | 11 | <1 | <1 | <0.2 | <1 | <13 | 3 | 3 | 3 | 45 | 72 | <1 |
| 2247 | 47.26 | 3.82 | 9.9 | 0.5 | 24.29 | 14.12 | 12.50 | <20 | 0.11 | <50 | 124 | 44 | 238 | 786 | <7 | 12 | <1 | <1 | <0.2 | <1 | 26 | 9 | 3 | <3 | 253 | 218 | 5 |
| 2248 | 41.43 | 3.37 | 18.9 | 0.6 | 44.29 | 18.04 | 8.86 | <20 | 0.12 | <50 | 118 | 29 | <7 | 10 | 32 | 17 | <1 | <1 | 0.5 | <1 | 24 | 10 | <2 | <3 | 116 | 1169 | 9 |
| 2249 | 27.36 | 3.93 | 7.2 | 3.1 | 3.07 | 18.47 | 7.28 | 52 | 0.11 | 55 | 214 | 28 | 1049 | 304 | 147 | 15 | <1 | <1 | 1.2 | <1 | 20 | 6 | 2 | 3 | 243 | 160 | <1 |
| 2250 | 93.10 | 10.20 | 27.1 | 1.3 | 184.00 | 14.08 | 6.06 | <20 | 0.04 | 52 | 216 | <25 | 250 | 12 | 68 | 58 | 10 | <1 | <0.2 | <1 | 44 | 19 | <2 | <3 | 249 | 1097 | 4 |
| 2251 | 86.12 | 11.65 | 23.0 | 1.1 | 126.00 | 9.26 | 8.19 | <20 | 0.05 | 116 | 203 | <25 | 2907 | 165 | 23 | 29 | <1 | <1 | <0.2 | <1 | 41 | 15 | 3 | <3 | 430 | 786 | 9 |
| 2252 | 25.83 | 1.77 | 9.0 | 0.3 | 1.78 | 11.33 | 10.86 | 30 | 0.08 | <50 | 85 | <25 | 299 | 234 | <7 | 9 | <1 | <1 | 0.7 | <1 | 22 | 11 | <2 | <3 | 113 | 602 | 11 |
| 2253 | 15.05 | 2.17 | 13.5 | 0.3 | 34.79 | 8.84 | 7.45 | <20 | 0.05 | <50 | 41 | 82 | 245 | 38 | 44 | 38 | <1 | <1 | <0.2 | <1 | 19 | 8 | <2 | <3 | 158 | 99 | <1 |
| 2254 | 9.73 | 1.66 | 6.5 | 0.5 | 16.61 | 6.77 | 8.05 | 29 | 0.05 | 155 | 65 | 176 | 257 | 19 | 244 | 604 | 5 | <1 | <0.2 | <1 | <13 | 6 | <2 | <3 | 46 | 43 | <1 |
| 2255 | 26.80 | 1.60 | 5.3 | 0.2 | 3.56 | 12.21 | 13.45 | <20 | 0.29 | 52 | 74 | <25 | 9 | 73 | 11 | <5 | <1 | <1 | 0.9 | <1 | 20 | 10 | <2 | 3 | 106 | 504 | 105 |
| 2257 | 82.95 | 8.26 | 5.0 | 0.9 | 14.00 | 5.87 | 8.67 | <20 | 0.08 | <50 | 196 | 627 | 14 | 11 | 25 | 620 | 11 | <1 | <0.2 | <1 | 41 | 22 | <2 | <3 | 45 | 312 | <1 |
| 2258 | 19.62 | 4.45 | 42.1 | 4.2 | 72.95 | 10.38 | 4.52 | <20 | 0.05 | <50 | 66 | 146 | 400 | 4 | 133 | 3452 | 5 | <1 | <0.2 | <1 | 14 | 7 | <2 | <3 | 113 | 77 | <1 |
| 2259 | 5.23 | 1.55 | 1.7 | 0.3 | 0.95 | 2.56 | 3.19 | <20 | 0.03 | <50 | 18 | 52 | 34 | 4 | 1191 | 34 | <1 | <1 | <0.2 | <1 | 14 | 9 | <2 | <3 | 13 | 23 | <1 |
| 2261 | 40.23 | 6.94 | 7.7 | 1.0 | 9.94 | 9.04 | 8.16 | <20 | 0.06 | <50 | 107 | 3603 | <7 | 1 | 11 | 14 | <1 | <1 | 4.6 | 2 | 16 | 8 | 3 | <3 | 322 | 795 | 13 |
| 2262 | 61.19 | 33.14 | 10.8 | 0.6 | 59.79 | 33.57 | 10.15 | <20 | 0.06 | <50 | 175 | 716 | 10 | 4 | 18 | 82 | <1 | <1 | 0.3 | <1 | 40 | 15 | <2 | <3 | 329 | 2087 | 14 |
| 2263 | 26.78 | 19.57 | 9.3 | 0.2 | 16.48 | 20.95 | 12.57 | <20 | 0.11 | <50 | 111 | 95 | 26 | 8 | <7 | 6 | <1 | <1 | <0.2 | <1 | 20 | 1 | 2 | <3 | 76 | 5181 | <1 |
| 2264 | 38.60 | 1.78 | 1.8 | 0.3 | 3.47 | 4.85 | 5.10 | <20 | 0.04 | <50 | 96 | 120 | <7 | 1 | 26 | <5 | <1 | <1 | <0.2 | <1 | <13 | 4 | 2 | <3 | 95 | 71 | 17 |
| 2265 | 68.00 | 28.50 | 31.9 | 0.7 | 120.00 | 14.35 | 12.92 | <20 | 0.05 | 237 | 199 | 59 | 896 | 81 | <7 | 38 | <1 | <1 | 1.1 | <1 | 54 | 23 | 2 | <3 | 554 | 4265 | 9 |
| 2266 | 66.32 | 18.02 | 14.9 | 0.6 | 59.37 | 25.28 | 8.09 | 22 | 0.04 | 205 | 172 | 772 | 28 | 8 | 116 | 42 | <1 | <1 | 0.4 | <1 | 43 | 20 | 3 | <3 | 276 | 800 | 94 |

# GSC Open File 3306
# Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conduc tivity µs/cm | TDS mg/l | Alka linity mg/l | Hard ness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2267 | 21G15 | 660579 | 5077809 | DR | - | - | 7.90 | 375 | 339 | 191.2 | 78.9 | -1.22 |
| 2268 | 21G15 | 660857 | 5078483 | DR | 65 | 6 | 7.24 | 950 | 644 | 175.7 | 393.3 | -3.76 |
| 2269 | 21G15 | 660820 | 5079005 | DR | - | - | 7.50 | 1067 | 664 | 155.2 | 431.8 | -0.30 |
| 2270 | 21G15 | 660847 | 5080662 | DR | - | - | 7.35 | 1038 | 635 | 116.4 | 245.7 | -3.19 |
| 2271 | 21G15 | 661306 | 5080952 | DR | 145 | 17 | 7.96 | 295 | 269 | 134.6 | 151.1 | -2.39 |
| 2273 | 21G15 | 660696 | 5081114 | DR | - | - | 7.28 | 511 | 392 | 156.8 | 167.4 | -4.47 |
| 2274 | 21G15 | 660846 | 5079528 | DR | 195 | 13 | 6.87 | 2400 | 1357 | 205.4 | 740.4 | -2.95 |
| 2275 | 21G15 | 662148 | 5072791 | DR | 40 | - | 6.54 | 381 | 253 | 103.4 | 159.2 | -3.87 |
| 2276 | 21G15 | 660706 | 5070519 | DR | - | 10 | 7.39 | 1050 | 664 | 108.2 | 272.9 | -3.66 |
| 2277 | 21G15 | 660644 | 5070206 | DR | - | - | 6.25 | 188 | 165 | 49.5 | 49.6 | -2.70 |
| 2278 | 21G15 | 660318 | 5069876 | DU | - | 100 | 6.36 | 93 | 88 | 43.2 | 42.5 | -2.67 |
| 2279 | 21G15 | 660036 | 5069346 | DR | 110 | 7 | 6.63 | 168 | 154 | 74.0 | 80.5 | -1.27 |
| 2281 | 21G15 | 659124 | 5068478 | DR | - | 8 | 7.06 | 332 | 236 | 68.7 | 139.5 | -4.37 |
| 2282 | 21G10 | 658832 | 5068036 | DR | 300 | 15 | 7.35 | 176 | 157 | 73.1 | 77.2 | -0.05 |
| 2283 | 21G10 | 658452 | 5067382 | DR | 65 | 3 | 5.83 | 225 | 154 | 83.1 | 45.9 | -3.96 |
| 2284 | 21G10 | 657930 | 5067091 | DR | 135 | 3 | 7.08 | 138 | 125 | 58.1 | 59.3 | -2.59 |
| 2285 | 21G10 | 657230 | 5067062 | DR | 60 | 50 | 6.52 | 188 | 168 | 80.0 | 83.4 | -2.07 |
| 2286 | 21G10 | 656765 | 5066661 | DR | - | - | 6.71 | 145 | 137 | 65.6 | 64.6 | -2.98 |
| 2287 | 21G10 | 656123 | 5066200 | DR | 160 | 12 | 6.89 | 158 | 151 | 73.3 | 66.4 | -2.09 |
| 2288 | 21G11 | 655561 | 5065931 | DR | - | - | 7.22 | 446 | 335 | 120.2 | 179.5 | -3.80 |
| 2289 | 21G11 | 655294 | 5065713 | DR | 100 | 26 | 5.94 | 1060 | 640 | 95.9 | 268.7 | -2.29 |
| 2290 | 21G11 | 654759 | 5065310 | DR | 130 | 22 | 7.01 | 317 | 284 | 121.7 | 165.6 | -2.62 |
| 2291 | 21G11 | 654783 | 5064966 | DR | - | 20 | 7.27 | 202 | 172 | 82.7 | 94.7 | 1.07 |
| 2292 | 21G11 | 654621 | 5064295 | DR | 180 | - | 7.38 | 290 | 255 | 136.5 | 135.3 | 0.45 |
| 2293 | 21G11 | 654447 | 5063446 | DR | 365 | 10 | 7.94 | 377 | 343 | 183.2 | 43.9 | -2.98 |
| 2294 | 21G11 | 655053 | 5062272 | DR | 140 | 1 | 7.46 | 164 | 153 | 77.4 | 75.3 | 3.66 |
| 2296 | 21G11 | 654228 | 5063507 | DR | 196 | 10 | 7.06 | 231 | 204 | 96.0 | 107.6 | 0.50 |
| 2297 | 21G11 | 653694 | 5063661 | DR | - | - | 7.80 | 194 | 172 | 88.3 | 100.5 | -0.07 |
| 2298 | 21G11 | 653540 | 5064246 | DR | 265 | 12 | 7.57 | 212 | 189 | 93.2 | 104.7 | -3.72 |
| 2299 | 21G11 | 653843 | 5063309 | UN | - | - | 6.60 | 163 | 140 | 60.4 | 74.2 | -4.33 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2267 | 19.46 | 7.39 | 61.1 | 1.1 | 37.81 | 1.70 | 8.53 | <20 | 0.41 | <50 | 89 | 91 | 143 | 31 | <7 | 37 | <1 | <1 | <0.2 | <1 | 34 | 14 | 2 | <3 | 675 | 1289 | 8 |
| 2268 | 108.23 | 29.95 | 36.7 | 2.3 | 224.00 | 17.39 | 9.23 | <20 | 0.04 | 285 | 274 | 1396 | 56 | 2 | 175 | 38 | <1 | <1 | 0.6 | <1 | 51 | 24 | 2 | <3 | 296 | 961 | 8 |
| 2269 | 105.79 | 40.79 | 42.8 | 1.4 | 252.00 | 19.69 | 12.12 | <20 | 0.09 | 96 | 274 | 41 | 42 | 1 | <7 | 79 | <1 | <1 | 0.8 | <1 | 33 | 10 | 7 | <3 | 241 | 1061 | 5 |
| 2270 | 51.72 | 28.35 | 110.6 | 1.4 | 265.00 | 27.50 | 8.13 | <20 | 0.06 | 469 | 148 | 510 | 9 | 1 | 12 | 28 | <1 | <1 | <0.2 | <1 | 26 | 10 | 2 | <3 | 89 | 228 | 10 |
| 2271 | 28.42 | 19.50 | 7.2 | 0.5 | 15.03 | 19.94 | 14.02 | <20 | 0.07 | 98 | 92 | 70 | 34 | 1 | 10 | <5 | <1 | <1 | <0.2 | <1 | 13 | 4 | 4 | <3 | 101 | 817 | 14 |
| 2273 | 48.86 | 11.06 | 43.4 | 3.0 | 85.93 | 18.66 | 7.29 | <20 | 0.04 | <50 | 127 | 2806 | 17 | 1 | 9 | 9 | <1 | <1 | <0.2 | <1 | 13 | 5 | 2 | <3 | 94 | 295 | <1 |
| 2274 | 180.46 | 70.52 | 160.4 | 2.0 | 656.00 | 26.80 | 9.49 | 32 | 0.03 | 445 | 413 | 426 | 27 | 7 | 78 | 65 | <1 | <1 | <0.2 | <1 | 77 | 32 | 6 | <3 | 475 | 1202 | <1 |
| 2275 | 56.81 | 4.23 | 12.2 | 4.5 | 24.27 | 13.39 | 5.79 | <20 | 0.06 | 98 | 148 | 18815 | 35 | 566 | 35 | 44 | 3 | <1 | <0.2 | <1 | 28 | 11 | <2 | <3 | 158 | 123 | 62 |
| 2276 | 90.11 | 11.70 | 103.9 | 2.0 | 285.00 | 29.80 | 8.44 | <20 | 0.13 | 588 | 225 | 298 | 24 | 25 | 17 | 28 | <1 | <1 | 0.7 | <1 | 25 | 6 | 4 | 3 | 218 | 1967 | 36 |
| 2277 | 15.62 | 2.58 | 27.2 | 0.7 | 39.81 | 9.03 | 8.93 | <20 | 0.15 | <50 | 49 | 206 | 157 | 33 | 12 | 22 | <1 | <1 | 0.2 | <1 | <13 | <1 | 3 | <3 | 26 | 230 | <1 |
| 2278 | 13.03 | 2.44 | 3.3 | 0.6 | 1.75 | 5.95 | 7.69 | <20 | 0.07 | 98 | 34 | 409 | 17 | 6 | 396 | 59 | <1 | <1 | <0.2 | <1 | <13 | 4 | <2 | <3 | 14 | 56 | 6 |
| 2279 | 25.92 | 3.84 | 4.4 | 0.9 | 7.86 | 8.25 | 11.95 | <20 | 0.11 | <50 | 73 | 93 | 9 | 20 | 34 | 82 | <1 | <1 | <0.2 | <1 | <13 | 4 | 2 | 3 | 124 | 310 | <1 |
| 2281 | 48.86 | 4.27 | 9.1 | 0.7 | 68.96 | 8.77 | 10.62 | <20 | 0.08 | <50 | 129 | 62 | 71 | 254 | 104 | 95 | <1 | <1 | <0.2 | <1 | <13 | 2 | 5 | 4 | 41 | 464 | 19 |
| 2282 | 28.44 | 1.52 | 7.8 | 0.5 | 4.88 | 15.12 | 9.22 | <20 | 0.08 | <50 | 107 | 43 | 45 | 5 | 18 | 27 | 5 | <1 | 0.7 | <1 | 33 | 18 | 2 | 3 | 97 | 761 | <1 |
| 2283 | 12.79 | 3.41 | 22.5 | 0.6 | 21.99 | 3.51 | 6.79 | <20 | 0.04 | <50 | 39 | 514 | 77 | 25 | 144 | 29 | <1 | <1 | <0.2 | <1 | 13 | 6 | <2 | <3 | 40 | 72 | 22 |
| 2284 | 19.58 | 2.54 | 5.7 | 1.4 | 3.33 | 18.04 | 8.07 | <20 | 0.08 | <50 | 69 | 95 | 280 | 75 | <7 | 64 | <1 | <1 | <0.2 | <1 | 14 | 8 | <2 | <3 | 93 | 286 | 5 |
| 2285 | 27.37 | 3.67 | 7.5 | 0.6 | 7.31 | 6.29 | 14.69 | <20 | 0.10 | <50 | 76 | 2261 | 37 | 2 | 115 | 50 | <1 | <1 | 4.6 | <1 | 14 | 7 | <2 | <3 | 90 | 103 | 29 |
| 2286 | 21.63 | 2.60 | 6.3 | 0.4 | 6.33 | 5.73 | 12.01 | <20 | 0.45 | <50 | 66 | 648 | 16 | 2 | 98 | 372 | <1 | <1 | 31.9 | 1 | 13 | 4 | <2 | <3 | 15 | 213 | 78 |
| 2287 | 23.19 | 2.08 | 9.5 | 0.4 | 4.31 | 7.22 | 13.13 | <20 | 1.32 | <50 | 75 | 391 | 23 | 3 | 19 | 10 | <1 | <1 | 635.3 | <1 | 17 | 9 | <2 | <3 | 9 | 612 | 300 |
| 2288 | 61.57 | 6.28 | 20.4 | 0.9 | 67.22 | 12.04 | 14.36 | <20 | 1.28 | 850 | 181 | 3591 | 28 | 5 | 192 | 33 | <1 | <1 | 176.1 | <1 | 32 | 17 | <2 | 3 | 12 | 789 | 7 |
| 2289 | 83.13 | 14.89 | 103.9 | 2.7 | 283.00 | 25.50 | 8.77 | <20 | 0.15 | 161 | 220 | 1140 | 87 | 1 | 193 | 101 | <1 | <1 | 1.1 | <1 | <13 | <1 | 12 | <3 | 53 | 475 | 5 |
| 2290 | 56.95 | 5.72 | 8.2 | 1.1 | 33.56 | 6.57 | 17.67 | <20 | 1.03 | 126 | 148 | 4632 | 43 | 1 | 38 | 17 | <1 | <1 | 20.1 | <1 | <13 | <1 | 10 | <3 | <5 | 181 | 10 |
| 2291 | 33.65 | 2.61 | 5.4 | 0.5 | 4.83 | 5.12 | 14.56 | <20 | 1.20 | 119 | 85 | 2715 | 28 | 1 | 150 | 28 | <1 | <1 | 57.6 | <1 | <13 | <1 | 8 | 3 | <5 | 148 | 65 |
| 2292 | 49.03 | 3.14 | 12.3 | 0.7 | 9.47 | 6.57 | 5.60 | <20 | 0.11 | 62 | 129 | 1657 | <7 | 1 | 18 | <5 | <1 | <1 | 6.7 | <1 | <13 | <1 | 13 | 3 | 126 | 893 | 78 |
| 2293 | 16.33 | 0.76 | 70.6 | 0.6 | 2.37 | 21.70 | 5.91 | 52 | 0.59 | <50 | 66 | 71 | 76 | 31 | 35 | <5 | <1 | <1 | 1.3 | <1 | <13 | <1 | 5 | <3 | 65 | 458 | 3 |
| 2294 | 24.83 | 3.24 | 8.8 | 0.5 | 2.64 | 6.60 | 11.37 | <20 | 0.24 | <50 | 61 | 43 | 20 | 50 | <7 | <5 | <1 | <1 | 0.5 | <1 | <13 | <1 | 3 | <3 | 70 | 136 | 6 |
| 2296 | 39.41 | 2.25 | 7.7 | 0.6 | 15.36 | 6.41 | 14.35 | <20 | 0.14 | <50 | 111 | 162 | <7 | 1 | 856 | 21 | <1 | <1 | 2.6 | <1 | 13 | 5 | 6 | <3 | 108 | 975 | 20 |
| 2297 | 35.41 | 2.96 | 2.8 | 0.8 | 9.65 | 5.35 | 7.12 | <20 | 0.20 | 89 | 94 | 86 | <7 | 1 | 19 | 14 | <1 | <1 | 14.6 | <1 | <13 | 4 | 6 | 3 | 26 | 221 | 12 |
| 2298 | 37.08 | 2.96 | 3.9 | 0.6 | 8.52 | 8.71 | 10.75 | <20 | 0.85 | <50 | 95 | 1720 | <7 | 1 | <7 | 426 | <1 | <1 | 6.3 | <1 | <13 | 4 | <2 | <3 | <5 | 288 | 2 |
| 2299 | 25.99 | 2.27 | 4.5 | 0.5 | 16.13 | 8.94 | 7.69 | <20 | 0.07 | <50 | 73 | 92 | <7 | 1 | 39 | 16 | <1 | <1 | 2.1 | <1 | <13 | 2 | 4 | <3 | 130 | 239 | <1 |

# GSC Open File 3306
## Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2301 | 21G11 | 653381 | 5063086 | DR | 42 | 18 | 7.35 | 262 | 237 | 127.8 | 127.5 | 1.43 |
| 2302 | 21G11 | 653081 | 5062934 | DR | - | - | 7.01 | 164 | 156 | 89.5 | 94.9 | 1.03 |
| 2303 | 21G11 | 652891 | 5062440 | DR | 65 | 4 | 7.49 | 242 | 224 | 118.6 | 132.5 | -0.54 |
| 2304 | 21G11 | 652223 | 5061724 | DU | 14 | 50 | 6.28 | 137 | 113 | 45.8 | 61.9 | -0.83 |
| 2305 | 21G11 | 652499 | 5061264 | DR | 65 | - | 7.05 | 394 | 308 | 120.8 | 175.4 | -3.01 |
| 2306 | 21G11 | 652351 | 5060960 | DR | 180 | 10 | 6.88 | 872 | 577 | 135.8 | 291.8 | -0.48 |
| 2307 | 21G11 | 652054 | 5060675 | DR | 60 | 100 | 6.71 | 259 | 188 | 92.2 | 107.8 | 1.88 |
| 2308 | 21G11 | 651542 | 5059940 | DR | 62 | 20 | 7.17 | 250 | 176 | 88.7 | 101.4 | 3.14 |
| 2309 | 21G11 | 651219 | 5059754 | DR | 84 | 30 | 7.74 | 232 | 218 | 114.8 | 123.0 | 0.05 |
| 2310 | 21G11 | 650475 | 5059591 | DR | - | - | 7.92 | 194 | 191 | 101.8 | 101.2 | 3.15 |
| 2311 | 21G11 | 648907 | 5058342 | DU | 10 | 100 | - | 153 | 102 | 23.9 | 51.6 | -3.61 |
| 2312 | 21G11 | 648617 | 5057735 | DU | 17 | - | 6.11 | 235 | 167 | 52.4 | 99.5 | -0.89 |
| 2313 | 21G11 | 648947 | 5056998 | UN | - | - | 6.27 | 480 | 305 | 37.6 | 192.5 | 1.19 |
| 2315 | 21G11 | 648606 | 5058880 | DU | 12 | 60 | 6.78 | 250 | 233 | 117.9 | 127.9 | 0.33 |
| 2316 | 21G11 | 648098 | 5058590 | DR | 165 | 5 | 7.57 | 175 | 164 | 84.7 | 88.1 | 0.41 |
| 2317 | 21G11 | 647650 | 5058446 | DU | 12 | 18 | 5.79 | 126 | 100 | 33.3 | 39.7 | -1.87 |
| 2318 | 21G11 | 646804 | 5057937 | DR | 120 | 6 | 7.55 | 316 | 241 | 126.8 | 143.4 | 2.32 |
| 2319 | 21G11 | 646026 | 5057874 | DU | 14 | - | 6.68 | 63 | 63 | 27.5 | 28.7 | -1.64 |
| 2321 | 21G11 | 645471 | 5057272 | DR | 180 | 15 | 6.81 | 2990 | 1718 | 119.4 | 548.6 | -1.16 |
| 2322 | 21G11 | 645471 | 5057272 | DU | 10 | 50 | 5.92 | 1388 | 806 | 46.2 | 176.7 | -0.24 |
| 2323 | 21G11 | 646180 | 5056655 | DR | - | - | 6.22 | 83 | 106 | 38.1 | 40.8 | -0.92 |
| 2324 | 21G11 | 648540 | 5053465 | DR | 24 | 12 | 5.58 | 741 | 404 | 10.2 | 56.2 | -3.23 |
| 2325 | 21G11 | 649173 | 5051456 | DR | 40 | 6 | 6.09 | 213 | 158 | 37.3 | 10.8 | -3.34 |
| 2326 | 21G11 | 648731 | 5050357 | DU | - | 8 | 5.61 | 81 | 51 | 11.8 | 17.0 | -0.64 |
| 2327 | 21G11 | 648677 | 5048343 | DR | - | - | 7.02 | 288 | 161 | 40.6 | 94.7 | -0.91 |
| 2328 | 21G11 | 648679 | 5047943 | DR | 80 | 12 | 7.73 | 588 | 297 | 23.6 | 128.8 | 0.02 |
| 2329 | 21G11 | 648042 | 5046483 | DR | 42 | 2 | 8.03 | 366 | 203 | 30.4 | 100.3 | -2.60 |
| 2330 | 21G11 | 647731 | 5045775 | DR | 30 | 37 | 6.64 | 122 | 89 | 28.6 | 51.1 | -0.64 |
| 2331 | 21G11 | 647332 | 5044777 | DR | 130 | 8 | 8.72 | 58 | 59 | 27.9 | 26.6 | -1.43 |
| 2332 | 21G11 | 647208 | 5043407 | DU | - | 60 | 6.27 | 185 | 108 | 29.0 | 61.1 | -4.46 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2301 | 49.63 | 0.89 | 9.3 | 2.9 | 10.06 | 4.71 | 3.25 | <20 | 0.03 | 71 | 121 | 171 | 114 | 2 | 117 | 92 | <1 | <1 | 1.5 | <1 | 13 | 6 | <2 | <3 | 48 | 80 | <1 |
| 2302 | 37.17 | 0.53 | 1.0 | 0.3 | 1.84 | 3.13 | 2.57 | <20 | 0.03 | <50 | 89 | 98 | <7 | 1 | 113 | 12 | <1 | <1 | 0.4 | <1 | <13 | <1 | 3 | <3 | 6 | 23 | 8 |
| 2303 | 49.66 | 2.10 | 2.4 | 0.5 | 9.83 | 6.67 | 6.61 | <20 | 0.06 | <50 | 136 | 247 | 11 | 1 | 797 | 24 | 3 | <1 | 0.8 | <1 | <13 | <1 | 8 | 8 | 27 | 302 | <1 |
| 2304 | 21.75 | 1.84 | 3.1 | 0.8 | 13.26 | 5.95 | 8.60 | 240 | 0.05 | 66 | 67 | 56 | 983 | 86 | 13 | 205 | 2 | <1 | <0.2 | <1 | <13 | <1 | 8 | 8 | 6 | 100 | 1 |
| 2305 | 65.08 | 3.16 | 13.5 | 0.5 | 64.51 | 6.16 | 6.63 | 24 | 0.05 | 88 | 172 | 51 | 78 | 13 | 149 | 334 | <1 | <1 | <0.2 | <1 | 22 | 10 | 4 | 3 | 33 | 150 | 1 |
| 2306 | 108.26 | 5.26 | 68.5 | 0.6 | 211.00 | 8.95 | 7.30 | 26 | 0.03 | 438 | 260 | 971 | 69 | 1 | 25 | 61 | 8 | <1 | 0.5 | <1 | 24 | 7 | 6 | 4 | 92 | 252 | <1 |
| 2307 | 40.21 | 1.81 | 8.2 | 0.3 | 8.97 | 8.67 | 4.58 | <20 | 0.03 | <50 | 117 | 2108 | 38 | 1 | 880 | 106 | <1 | <1 | <0.2 | <1 | <13 | <1 | 5 | 5 | 29 | 63 | <1 |
| 2308 | 37.53 | 1.89 | 6.2 | 0.3 | 8.25 | 7.53 | 5.92 | <20 | 0.03 | <50 | 121 | 106 | 176 | 2 | 18 | 63 | <1 | <1 | 0.4 | <1 | 18 | 7 | <2 | <3 | 42 | 98 | 5 |
| 2309 | 42.95 | 3.85 | 4.5 | 0.6 | 9.35 | 5.31 | 11.00 | <20 | 0.09 | <50 | 115 | 79 | 9 | 1 | 52 | 13 | <1 | <1 | 1.8 | <1 | <13 | 3 | 3 | <3 | 41 | 153 | 27 |
| 2310 | 34.34 | 3.77 | 8.7 | 1.3 | 5.49 | 4.10 | 8.25 | <20 | 0.24 | <50 | 108 | 85 | <7 | 5 | 32 | 97 | 14 | <1 | 5.6 | <1 | 21 | 15 | <2 | <3 | 31 | 328 | <1 |
| 2311 | 18.37 | 1.40 | 8.1 | 0.7 | 35.00 | 5.18 | 5.00 | <20 | 0.03 | <50 | 58 | <25 | 97 | 5 | 207 | 2639 | <1 | <1 | 0.3 | <1 | 18 | 10 | <2 | 4 | 23 | 35 | <1 |
| 2312 | 34.61 | 3.18 | 8.1 | 1.6 | 35.06 | 6.33 | 9.54 | <20 | 0.03 | 53 | 109 | 3632 | 37 | 9 | 559 | 24 | 5 | <1 | <0.2 | <1 | 27 | 16 | <2 | <3 | 38 | 105 | 3 |
| 2313 | 65.16 | 7.27 | 8.2 | 0.9 | 55.71 | 14.70 | 15.50 | <20 | 0.03 | 162 | 231 | 456 | 67 | 498 | 634 | 61 | <1 | <1 | <0.2 | <1 | 33 | 17 | <2 | <3 | 50 | 291 | 13 |
| 2315 | 46.24 | 3.05 | 6.0 | 0.5 | 4.09 | 16.43 | 12.44 | <20 | 0.04 | <50 | 119 | 70 | 51 | 13 | 68 | 68 | <1 | <1 | <0.2 | <1 | 20 | 10 | <2 | 5 | 14 | 205 | 27 |
| 2316 | 31.92 | 2.07 | 4.1 | 0.4 | 3.04 | 4.66 | 12.21 | <20 | 1.50 | 66 | 94 | 93 | <7 | 1 | 63 | 94 | 3 | <1 | 37.9 | <1 | <13 | 6 | <2 | <3 | 15 | 1286 | <1 |
| 2317 | 13.55 | 1.42 | 8.7 | 0.5 | 17.40 | 3.25 | 7.83 | 103 | 0.13 | <50 | 40 | 67 | 5323 | 689 | 10 | 152 | <1 | <1 | 3.2 | <1 | 18 | 8 | <2 | <3 | 70 | 63 | 15 |
| 2318 | 24.97 | 19.71 | 6.3 | 0.8 | 6.48 | 14.76 | 12.61 | <20 | 0.10 | <50 | 101 | 112 | 16 | 3 | 29 | 10 | <1 | <1 | 13.0 | <1 | 30 | 13 | 2 | <3 | 153 | 564 | <1 |
| 2319 | 9.93 | 0.95 | 1.9 | 0.6 | 1.29 | 5.05 | 8.44 | <20 | 0.04 | <50 | 34 | 50 | 36 | 6 | 102 | 616 | <1 | <1 | <0.2 | <1 | 15 | 8 | <2 | <3 | 12 | 39 | <1 |
| 2321 | 160.23 | 36.17 | 406.0 | 1.7 | 918.00 | 33.75 | 10.09 | 26 | 0.04 | 373 | 364 | 5461 | 60 | 1 | 34 | 1023 | 10 | <1 | <0.2 | <1 | 54 | 15 | 4 | <3 | 376 | 910 | <1 |
| 2322 | 54.33 | 10.01 | 223.5 | 2.2 | 424.00 | 16.19 | 5.81 | <20 | 0.04 | 180 | 150 | 1319 | 651 | 11 | 90 | 8482 | <1 | <1 | <0.2 | <1 | 28 | 5 | 2 | <3 | 355 | 158 | <1 |
| 2323 | 13.73 | 1.59 | 8.7 | 0.3 | 1.72 | 4.02 | 8.81 | 25 | 0.05 | <50 | 38 | 63 | 64 | 7 | 674 | 17 | 2 | <1 | <0.2 | <1 | <13 | 5 | <2 | <3 | 16 | 66 | <1 |
| 2324 | 19.02 | 2.14 | 122.0 | 1.6 | 230.00 | 8.87 | 6.62 | <20 | 0.03 | 326 | 52 | 445 | 977 | 22 | 186 | 42 | 116 | <1 | <0.2 | <1 | <13 | 3 | <2 | <3 | 90 | 138 | <1 |
| 2325 | 3.71 | 0.38 | 42.6 | 1.0 | 50.88 | 2.73 | 8.98 | 111 | 0.06 | <50 | 9 | 41 | 1608 | 28 | 76 | 53 | 12 | <1 | 0.8 | <1 | <13 | <1 | <2 | <3 | 5 | 24 | <1 |
| 2326 | 5.41 | 0.86 | 7.0 | 0.4 | 13.75 | 6.41 | 7.92 | 150 | 0.03 | <50 | 16 | 112 | 487 | 50 | 308 | 65 | <1 | <1 | 0.3 | <1 | <13 | <1 | 3 | 4 | 24 | 23 | 3 |
| 2327 | 36.05 | 1.15 | 10.4 | 0.2 | 52.30 | 3.87 | 7.00 | <20 | 0.02 | <50 | 97 | 409 | 34 | 1 | <7 | 8 | <1 | <1 | <0.2 | <1 | <13 | <1 | <2 | <3 | <5 | 139 | 6 |
| 2328 | 48.40 | 1.95 | 51.9 | 0.7 | 148.00 | 9.45 | 7.75 | <20 | 0.03 | 429 | 111 | 149 | 147 | 1 | <7 | 155 | <1 | <1 | 0.2 | 1 | <13 | <1 | <2 | <3 | 17 | 271 | 5 |
| 2329 | 37.45 | 1.66 | 24.4 | 0.3 | 90.00 | 8.07 | 8.27 | <20 | 0.02 | 278 | 98 | 127 | 325 | 3 | <7 | 165 | <1 | <1 | 0.7 | <1 | <13 | 3 | <2 | <3 | 17 | 322 | 5 |
| 2330 | 16.46 | 2.44 | 2.3 | 1.9 | 19.81 | 5.61 | 7.48 | <20 | 0.04 | <50 | 33 | 107 | 774 | 47 | 443 | 549 | 52 | <1 | <0.2 | <1 | <13 | <1 | <2 | <3 | 10 | 42 | 1 |
| 2331 | 9.97 | 0.41 | 2.2 | <0.1 | 1.58 | 2.00 | 8.55 | <20 | 0.04 | <50 | 27 | 70 | 87 | 1 | <7 | 46 | <1 | <1 | 2.7 | <1 | <13 | <1 | <2 | <3 | <5 | 77 | 6 |
| 2332 | 21.75 | 1.67 | 4.0 | 3.0 | 13.51 | 14.60 | 8.75 | <20 | 0.04 | <50 | 67 | 4881 | 44 | 1 | 218 | 13 | 2 | 2 | <0.2 | <1 | <13 | <1 | <2 | <3 | 28 | 80 | <1 |

# GSC Open File 3306
## Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2333 | 21G11 | 647017 | 5042891 | DR | 60 | 12 | 8.28 | 97 | 93 | 44.6 | 47.2 | -4.49 |
| 2334 | 21G11 | 647021 | 5042379 | DR | 212 | 23 | 8.52 | 86 | 88 | 44.4 | 43.7 | -3.62 |
| 2335 | 21G11 | 647427 | 5041767 | DR | 82 | 18 | 8.27 | 134 | 119 | 57.8 | 67.6 | -0.56 |
| 2337 | 21G11 | 647755 | 5040763 | DR | 100 | 5 | 7.52 | 477 | 329 | 112.6 | 152.1 | -4.62 |
| 2338 | 21G11 | 648521 | 5048995 | DR | - | 4 | 8.42 | 86 | 79 | 42.2 | 39.6 | -0.90 |
| 2339 | 21G11 | 651402 | 5059592 | DR | 74 | 20 | 7.57 | 474 | 341 | 124.3 | 222.5 | -3.92 |
| 2341 | 21G11 | 651928 | 5059126 | DR | 120 | 34 | 7.60 | 315 | 278 | 147.7 | 152.9 | -2.52 |
| 2342 | 21G11 | 651880 | 5058514 | DR | 200 | 13 | 7.53 | 310 | 304 | 180.0 | 135.0 | -2.44 |
| 2343 | 21G11 | 652160 | 5057898 | DR | 165 | 12 | 7.89 | 375 | 358 | 203.9 | 91.2 | -0.74 |
| 2344 | 21G11 | 652593 | 5057119 | DR | 156 | 20 | 7.79 | 348 | 350 | 199.2 | 91.4 | -0.44 |
| 2345 | 21G11 | 652767 | 5056668 | DR | - | 20 | 7.78 | 390 | 381 | 206.4 | 79.7 | -0.41 |
| 2346 | 21G11 | 652745 | 5055667 | DU | 6 | 100 | 5.70 | 309 | 204 | 59.1 | 108.9 | -4.04 |
| 2347 | 21G11 | 652889 | 5058372 | DR | - | 5 | 7.67 | 302 | 295 | 167.7 | 60.6 | -2.98 |
| 2348 | 21G11 | 653411 | 5059029 | DR | 80 | 12 | 6.99 | 634 | 637 | 381.1 | 255.1 | -0.87 |
| 2349 | 21G11 | 653976 | 5059510 | DR | 220 | 14 | 7.84 | 225 | 221 | 114.6 | 0.7 | -4.81 |
| 2350 | 21G11 | 654514 | 5058856 | DR | - | 14 | 6.86 | 119 | 98 | 59.3 | 55.3 | -1.10 |
| 2351 | 21G11 | 654699 | 5057994 | DR | 150 | 11 | 6.29 | 75 | 63 | 27.9 | 31.8 | -1.18 |
| 2352 | 21G11 | 654698 | 5057427 | DR | 84 | 9 | 6.15 | 88 | 73 | 37.6 | 40.2 | -1.82 |
| 2353 | 21G11 | 654705 | 5056827 | DR | 120 | 10 | 6.25 | 150 | 122 | 55.4 | 72.0 | -3.72 |
| 2354 | 21G11 | 654688 | 5056259 | DR | - | - | 6.80 | 196 | 165 | 85.5 | 99.9 | -2.09 |
| 2355 | 21G11 | 654645 | 5055447 | UN | - | 50 | 6.45 | 294 | 266 | 146.3 | 150.5 | -1.79 |
| 2356 | 21G11 | 654600 | 5055068 | DR | 180 | 15 | 6.79 | 127 | 104 | 57.0 | 54.7 | -3.09 |
| 2357 | 21G11 | 654568 | 5054778 | DR | 120 | 20 | 6.73 | 152 | 125 | 61.4 | 70.3 | -3.02 |
| 2358 | 21G11 | 654033 | 5052441 | DR | - | - | 5.53 | 35 | 30 | 15.5 | 14.3 | 0.00 |
| 2361 | 21G11 | 653784 | 5051791 | DU | 4 | - | 6.08 | 69 | 58 | 30.6 | 31.3 | -2.45 |
| 2362 | 21G11 | 653217 | 5051054 | DR | 100 | - | 5.60 | 45 | 61 | 160.0 | 33.5 | -2.74 |
| 2363 | 21G11 | 653222 | 5060381 | DR | 32 | 40 | 5.90 | 216 | 161 | 89.5 | 94.6 | -0.23 |
| 2364 | 21G11 | 652911 | 5060684 | DR | 80 | 26 | 7.48 | 201 | 190 | 108.7 | 108.6 | -2.87 |
| 2365 | 21G15 | 662989 | 5070090 | DR | - | - | 6.21 | 89 | 57 | 23.2 | 35.9 | -3.21 |
| 2366 | 21G15 | 662496 | 5069287 | DU | 40 | - | 5.85 | 54 | 41 | 18.0 | 21.6 | -4.12 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2333 | 15.43 | 2.12 | 2.3 | <0.1 | 4.56 | 5.85 | 8.21 | <20 | 0.06 | <50 | 33 | 58 | <7 | 1 | <7 | 8 | <1 | <1 | 7.5 | 1 | <13 | <1 | 4 | <3 | 7 | 98 | 3 |
| 2334 | 15.90 | 0.98 | 2.2 | <0.1 | 3.34 | 2.88 | 7.91 | <20 | 0.05 | <50 | 40 | 67 | 174 | 1 | <7 | 22 | <1 | <1 | 2.1 | <1 | <13 | <1 | 5 | <3 | <5 | 80 | 1 |
| 2335 | 24.39 | 1.65 | 2.3 | <0.1 | 8.22 | 3.94 | 8.31 | <20 | 0.05 | <50 | 62 | 42 | <7 | 1 | <7 | 18 | <1 | <1 | 1.7 | <1 | <13 | <1 | 2 | <3 | <5 | 100 | <1 |
| 2337 | 54.07 | 4.17 | 31.8 | 3.5 | 60.02 | 18.56 | 10.92 | <20 | 0.05 | <50 | 145 | 8824 | 22 | 1 | 12 | 27 | <1 | <1 | 0.4 | <1 | 15 | 9 | <2 | <3 | 39 | 442 | 4 |
| 2338 | 14.76 | 0.68 | 2.4 | <0.1 | 2.93 | 3.21 | 7.88 | <20 | 0.08 | <50 | 55 | 114 | <7 | 2 | <7 | 8 | <1 | <1 | 3.3 | <1 | <13 | 9 | 2 | 3 | 18 | 211 | 16 |
| 2339 | 80.82 | 5.06 | 3.5 | <0.1 | 78.20 | 11.37 | 9.01 | <20 | 0.04 | <50 | 189 | 828 | 18 | 1 | 12 | 57 | <1 | <1 | 1.2 | <1 | 18 | 7 | 4 | <3 | 38 | 295 | 6 |
| 2341 | 52.34 | 5.42 | 7.6 | 0.5 | 11.60 | 7.75 | 10.33 | <20 | 0.12 | <50 | 147 | 1927 | <7 | 1 | 8 | 24 | <1 | <1 | 0.6 | <1 | 19 | 6 | 6 | 4 | 21 | 248 | 6 |
| 2342 | 47.43 | 4.05 | 18.9 | 0.3 | 2.41 | 2.26 | 8.37 | <20 | 0.26 | <50 | 160 | 39 | 14 | 88 | 22 | 47 | <1 | <1 | 1.7 | <1 | <13 | 4 | <2 | 5 | 136 | 844 | 47 |
| 2343 | 30.94 | 3.39 | 55.3 | 0.5 | 1.65 | 8.12 | 8.90 | <20 | 0.50 | <50 | 123 | 44 | 46 | 209 | 14 | 11 | <1 | <1 | 10.9 | <1 | <13 | 2 | <2 | <3 | 89 | 705 | 61 |
| 2344 | 32.58 | 2.45 | 52.7 | 0.8 | 1.35 | 7.29 | 8.96 | <20 | 0.46 | <50 | 119 | 54 | 127 | 67 | <7 | 7 | <1 | <1 | 6.7 | <1 | <13 | <1 | <2 | 5 | 137 | 933 | 39 |
| 2345 | 30.60 | 0.80 | 66.7 | 2.4 | 4.46 | 15.97 | 7.48 | <20 | 0.50 | <50 | 111 | 43 | 147 | 31 | <7 | 21 | <1 | <1 | 19.6 | <1 | <13 | <1 | <2 | 4 | 125 | 808 | 48 |
| 2346 | 34.47 | 5.56 | 13.6 | 4.8 | 46.16 | 17.16 | 5.48 | 22 | 0.06 | 320 | 102 | 4200 | 43 | 217 | 91 | 19 | <1 | <1 | 0.4 | <1 | 20 | <1 | <2 | 3 | 151 | 270 | 15 |
| 2347 | 20.76 | 2.13 | 49.2 | 0.5 | 1.72 | 7.70 | 8.25 | <20 | 0.37 | <50 | 83 | 44 | <7 | 2 | 63 | <5 | <1 | <1 | 7.0 | <1 | <13 | <1 | 6 | <3 | 73 | 547 | 66 |
| 2348 | 74.32 | 16.92 | 57.0 | 1.8 | 1.71 | 0.09 | 12.58 | <20 | 0.44 | 52 | 210 | 1144 | 5097 | 486 | <7 | 15 | <1 | <1 | 31.4 | <1 | 13 | <1 | 5 | 8 | 240 | 812 | 62 |
| 2349 | 0.08 | 0.12 | 55.6 | <0.1 | 1.96 | 15.06 | 7.68 | 321 | 0.26 | <50 | <5 | 80 | 477 | 12 | 28 | <5 | <1 | <1 | 0.7 | <1 | <13 | <1 | <2 | 4 | <5 | <5 | 2 |
| 2350 | 17.41 | 2.89 | 1.2 | <0.1 | 1.89 | 6.43 | 7.39 | <20 | 0.16 | <50 | 55 | 72 | 162 | 4 | 66 | 370 | <1 | <1 | <0.2 | <1 | 18 | 11 | 7 | 5 | 24 | 72 | 1 |
| 2351 | 10.12 | 1.58 | 2.2 | <0.1 | 3.16 | 8.02 | 7.68 | 55 | 0.05 | <50 | 31 | 40 | 78 | 17 | 349 | 9 | <1 | <1 | <0.2 | <1 | <13 | 5 | 7 | 8 | 19 | 68 | 2 |
| 2352 | 13.52 | 1.57 | 0.3 | <0.1 | 4.93 | 5.02 | 8.74 | 41 | 0.05 | <50 | 43 | 43 | 1131 | 319 | 105 | 11 | 32 | <1 | 0.4 | <1 | <13 | 8 | 5 | 3 | 16 | 47 | <1 |
| 2353 | 25.47 | 2.05 | <0.1 | <0.1 | 7.95 | 10.58 | 7.16 | <20 | 0.05 | 63 | 75 | 340 | 31 | 1 | 687 | 64 | <1 | <1 | 0.3 | <1 | <13 | 3 | 7 | 10 | 52 | 77 | 1 |
| 2354 | 35.18 | 2.94 | <0.1 | <0.1 | 7.51 | 14.09 | 9.84 | 23 | 0.05 | <50 | 109 | 633 | 459 | 5 | 16 | 50 | <1 | <1 | <0.2 | <1 | <13 | <1 | 3 | 4 | 173 | 228 | 4 |
| 2355 | 53.18 | 4.34 | 0.7 | 4.1 | 3.31 | 11.84 | 9.04 | 33 | 0.04 | <50 | 164 | 41 | 527 | 89 | 54 | 264 | <1 | <1 | <0.2 | <1 | 41 | 22 | <2 | <3 | 38 | 256 | 1 |
| 2356 | 18.94 | 1.80 | 1.3 | 0.6 | 2.14 | 13.73 | 10.69 | <20 | 0.08 | <50 | 57 | 64 | 112 | 1 | <7 | 166 | 15 | <1 | <0.2 | <1 | <13 | <1 | 8 | <3 | 76 | 248 | 11 |
| 2357 | 23.90 | 2.59 | 0.4 | 1.0 | 7.37 | 12.70 | 11.81 | <20 | 0.07 | <50 | 69 | 104 | 11 | 2 | 216 | 7 | <1 | <1 | <0.2 | <1 | <13 | <1 | 6 | <3 | 50 | 132 | 3 |
| 2358 | 4.57 | 0.71 | 0.4 | 0.2 | 2.24 | 4.62 | 7.18 | 36 | 0.03 | <50 | 22 | 84 | 192 | 13 | 108 | 251 | <1 | <1 | <0.2 | <1 | 29 | 13 | <2 | <3 | 25 | 19 | <1 |
| 2361 | 10.38 | 1.32 | 0.2 | 0.2 | 2.44 | 5.76 | 8.69 | <20 | 0.06 | <50 | 33 | 315 | <7 | 1 | <7 | <5 | <1 | <1 | <0.2 | <1 | <13 | <1 | 6 | 5 | <5 | 54 | 1 |
| 2362 | 12.02 | 0.86 | <0.1 | 0.4 | 1.53 | 4.83 | 5.55 | 121 | 0.03 | <50 | 12 | 39 | 103 | 1 | 120 | 7 | <1 | <1 | <0.2 | <1 | <13 | <1 | 4 | 8 | 9 | 32 | <1 |
| 2363 | 30.39 | 4.57 | 2.4 | 1.4 | 16.92 | 4.96 | 10.69 | <20 | 0.09 | <50 | 86 | 38 | 19 | 1 | 54 | 50 | <1 | <1 | 0.5 | <1 | <13 | <1 | 9 | 5 | 53 | 198 | 2 |
| 2364 | 36.81 | 4.07 | 0.2 | 0.7 | 2.86 | 3.48 | 9.25 | <20 | 0.17 | <50 | 96 | 37 | <7 | 1 | 8 | 38 | <1 | <1 | 5.1 | <1 | <13 | <1 | 2 | 15 | 55 | 196 | 6 |
| 2365 | 10.95 | 2.08 | 0.2 | <0.1 | 12.10 | 6.40 | 7.00 | <20 | 0.06 | <50 | 19 | 70 | 52 | 1 | 69 | <5 | <1 | <1 | <0.2 | <1 | <13 | <1 | 4 | 9 | <5 | 83 | <1 |
| 2366 | 6.69 | 1.20 | <0.1 | 1.0 | 2.73 | 6.20 | 5.97 | 69 | 0.04 | <50 | 12 | 255 | 114 | 5 | <7 | 20 | <1 | <1 | <0.2 | <1 | <13 | <1 | <2 | 5 | <5 | 26 | <1 |

# GSC Open File 3306
# Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2367 | 21G15 | 662167 | 5068178 | DR | 65 | 15 | 7.04 | 262 | 218 | 99.6 | 59.6 | -4.74 |
| 2368 | 21G10 | 660432 | 5067277 | DR | 200 | 1 | 9.16 | 235 | 218 | 115.1 | 7.8 | -4.20 |
| 2369 | 21G10 | 659908 | 5067041 | DR | - | - | 7.51 | 167 | 140 | 83.0 | 80.7 | -1.71 |
| 2370 | 21G10 | 658769 | 5067168 | DR | 130 | 20 | 7.75 | 159 | 142 | 77.2 | 79.4 | -3.39 |
| 2371 | 21G10 | 660814 | 5066331 | DR | - | - | 6.33 | 116 | 71 | 31.7 | 43.2 | -1.20 |
| 2372 | 21G10 | 660439 | 5065765 | DR | 212 | 16 | 7.27 | 187 | 160 | 86.3 | 91.2 | -2.18 |
| 2373 | 21G10 | 661004 | 5064412 | DR | 105 | 6 | 6.67 | 208 | 127 | 39.0 | 84.8 | -3.14 |
| 2374 | 21G10 | 661523 | 5063625 | DR | 165 | 17 | 7.36 | 189 | 170 | 83.3 | 97.9 | -2.02 |
| 2375 | 21G10 | 661474 | 5063402 | DR | 110 | 13 | 7.51 | 205 | 164 | 91.6 | 76.0 | -1.72 |
| 2376 | 21G10 | 662002 | 5062849 | DR | 90 | 12 | 6.75 | 104 | 90 | 47.5 | 48.7 | -0.84 |
| 2377 | 21G10 | 662346 | 5062224 | DR | - | 20 | 6.10 | 198 | 142 | 60.2 | 77.9 | -4.85 |
| 2379 | 21G10 | 662394 | 5062181 | DR | - | - | 6.27 | 49 | 45 | 18.8 | 20.4 | -3.25 |
| 2381 | 21G10 | 662016 | 5061148 | DR | 60 | 9 | 8.00 | 261 | 212 | 103.9 | 75.2 | -3.75 |
| 2382 | 21G10 | 676846 | 5060584 | DU | 24 | 2 | 7.02 | 335 | 285 | 143.4 | 112.3 | -2.75 |
| 2383 | 21G10 | 677584 | 5060382 | DR | 122 | 10 | 7.12 | 324 | 289 | 148.2 | 67.7 | -3.37 |
| 2384 | 21G10 | 678684 | 5060347 | DR | - | - | 6.80 | 166 | 131 | 71.7 | 73.1 | -1.97 |
| 2385 | 21G10 | 679752 | 5060622 | DR | - | - | 7.38 | 377 | 296 | 110.0 | 130.9 | -7.89 |
| 2386 | 21G10 | 680448 | 5060531 | DR | 220 | 5 | 8.12 | 921 | 604 | 121.7 | 40.8 | -2.30 |
| 2387 | 21G10 | 680316 | 5061083 | DU | 12 | 15 | 6.37 | 1454 | 937 | 187.7 | 600.7 | -4.36 |
| 2388 | 21G10 | 680280 | 5061516 | DR | - | - | 8.13 | 328 | 310 | 155.2 | 28.2 | -1.77 |
| 2389 | 21G10 | 680726 | 5062519 | DR | 210 | 25 | 7.92 | 212 | 171 | 61.4 | 75.5 | -3.05 |
| 2390 | 21G10 | 680708 | 5063141 | DR | 125 | 25 | 6.62 | 281 | 237 | 111.1 | 125.3 | 0.61 |
| 2391 | 21G10 | 681368 | 5063216 | DR | - | - | 5.70 | 115 | 71 | 10.8 | 29.7 | -2.04 |
| 2392 | 21G10 | 681474 | 5063852 | DR | 100 | 30 | 5.77 | 96 | 63 | 10.0 | 22.6 | -2.74 |
| 2393 | 21G10 | 681471 | 5064486 | DR | 80 | 5 | 6.41 | 827 | 528 | 93.4 | 315.2 | -4.02 |
| 2395 | 21G10 | 681495 | 5065554 | DR | 50 | 10 | 5.83 | 134 | 102 | 36.9 | 48.3 | -3.41 |
| 2396 | 21G10 | 681449 | 5066598 | DU | 7 | 30 | 5.20 | 521 | 286 | 9.8 | 45.4 | -1.20 |
| 2397 | 21G10 | 681006 | 5067075 | DR | - | 8 | 7.38 | 216 | 191 | 87.3 | 56.8 | -0.84 |
| 2398 | 21G10 | 680501 | 5067872 | DR | 285 | 2 | 8.60 | 974 | 700 | 89.2 | 46.3 | -3.86 |
| 2399 | 21G10 | 680899 | 5068639 | DR | 50 | 40 | 6.60 | 741 | 452 | 68.0 | 263.9 | -3.94 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2367 | 20.34 | 2.16 | 30.5 | 0.2 | 7.52 | 26.95 | 7.91 | <20 | 0.41 | <50 | 87 | 45 | 111 | 31 | <7 | 39 | <1 | <1 | 0.4 | <1 | <13 | <1 | <2 | 11 | 40 | 364 | 20 |
| 2368 | 2.69 | 0.27 | 52.4 | <0.1 | 7.32 | 5.70 | 8.40 | 323 | 0.30 | <50 | 23 | 190 | 237 | 1 | 9 | <5 | <1 | <1 | 9.6 | <1 | <13 | <1 | 5 | <3 | 10 | 65 | 18 |
| 2369 | 26.17 | 3.75 | 0.3 | 0.6 | 2.86 | 5.95 | 8.82 | <20 | 0.13 | <50 | 86 | 102 | <7 | 1 | <7 | 62 | <1 | <1 | 0.6 | <1 | <13 | 3 | <2 | 6 | 141 | 313 | 4 |
| 2370 | 25.27 | 3.98 | 0.2 | 1.8 | 1.67 | 7.89 | 6.86 | <20 | 0.30 | <50 | 64 | 44 | 15 | 1 | 11 | <5 | <1 | <1 | 0.4 | <1 | <13 | <1 | 9 | <3 | 89 | 446 | 21 |
| 2371 | 13.71 | 2.20 | 0.3 | 0.8 | 12.14 | 6.65 | 7.37 | 33 | 0.07 | <50 | 31 | 45 | 51 | 1 | 1278 | 20 | 2 | <1 | <0.2 | <1 | <13 | <1 | 21 | <3 | 5 | 49 | <1 |
| 2372 | 32.16 | 2.67 | 0.4 | 0.5 | 3.36 | 13.83 | 11.45 | <20 | 0.14 | <50 | 98 | 43 | 10 | 95 | 12 | 12 | <1 | <1 | 0.9 | 32 | <13 | <1 | 22 | <3 | 83 | 533 | 6 |
| 2373 | 30.78 | 1.95 | 0.4 | 1.4 | 37.01 | 8.47 | 7.18 | <20 | 0.14 | <50 | 86 | 90 | 221 | 10 | 156 | 552 | <1 | <1 | <0.2 | <1 | <13 | 2 | 19 | <3 | 49 | 75 | 3 |
| 2374 | 35.99 | 1.97 | 0.4 | 0.5 | 4.53 | 13.34 | 11.28 | <20 | 0.10 | <50 | 106 | 39 | 76 | 158 | <7 | 15 | <1 | <1 | 1.0 | <1 | 18 | 9 | 15 | <3 | 113 | 172 | 3 |
| 2375 | 28.02 | 1.48 | 9.1 | 0.4 | 5.06 | 13.96 | 9.64 | <20 | 0.14 | <50 | 99 | 44 | 34 | 82 | 250 | 68 | <1 | <1 | 2.6 | <1 | <13 | 3 | 21 | <3 | 92 | 597 | 14 |
| 2376 | 16.75 | 1.68 | 0.2 | 0.6 | 2.40 | 9.06 | 13.45 | 22 | 0.09 | <50 | 55 | 96 | 88 | 5 | 29 | 83 | <1 | <1 | <0.2 | <1 | <13 | 7 | <2 | 3 | 20 | 72 | 2 |
| 2377 | 25.40 | 3.52 | 0.3 | 3.4 | 23.27 | 6.37 | 11.00 | 62 | 0.05 | 59 | 83 | 42 | 3942 | 1157 | 136 | 9 | 19 | <1 | 0.6 | <1 | <13 | 5 | 7 | <3 | 172 | 106 | 2 |
| 2379 | 6.57 | 0.98 | 0.4 | 1.0 | 2.61 | 4.51 | 8.96 | 72 | 0.04 | <50 | 15 | 91 | 458 | 125 | <7 | <5 | <1 | 2 | 0.4 | <1 | <13 | <1 | 5 | <3 | 36 | 24 | 1 |
| 2381 | 27.83 | 1.41 | 24.0 | 0.4 | 22.21 | 18.96 | 9.27 | <20 | 0.10 | 68 | 96 | 94 | 311 | 139 | <7 | <5 | <1 | <1 | 1.8 | <1 | <13 | 4 | 4 | <3 | 211 | 723 | 16 |
| 2382 | 38.21 | 4.12 | 27.7 | 1.1 | 18.76 | 28.60 | 9.39 | <20 | 0.18 | <50 | 123 | 90 | 14 | 9 | 2229 | 20 | 2 | <1 | 0.5 | <1 | <13 | 8 | 3 | 6 | 39 | 243 | <1 |
| 2383 | 23.68 | 2.09 | 48.6 | 0.3 | 22.97 | 11.66 | 7.81 | <20 | 0.43 | <50 | 91 | 185 | 64 | 7 | <7 | <5 | <1 | <1 | 2.2 | <1 | 14 | 8 | <2 | <3 | 19 | 318 | 2 |
| 2384 | 25.83 | 2.09 | 0.2 | <0.1 | 4.66 | 6.02 | 14.71 | <20 | 0.11 | 53 | 73 | 80 | 51 | 7 | 201 | 14 | <1 | <1 | <0.2 | <1 | 25 | 14 | <2 | <3 | 31 | 88 | 1 |
| 2385 | 46.14 | 3.84 | 24.1 | 0.6 | 65.41 | 11.37 | 9.24 | <20 | 0.16 | <50 | 145 | 622 | 9 | 4 | <7 | 16 | <1 | <1 | 0.6 | <1 | 37 | 21 | <2 | <3 | 158 | 672 | 3 |
| 2386 | 16.02 | 0.20 | 182.0 | <0.1 | 195.00 | 53.70 | 6.68 | <20 | 1.45 | 665 | 87 | 166 | 168 | 12 | 9 | <5 | <1 | <1 | 1.0 | <1 | 24 | 15 | <2 | <3 | 75 | 421 | 24 |
| 2387 | 181.93 | 35.68 | 51.2 | 1.1 | 410.00 | 13.96 | 12.27 | 33 | 0.09 | 173 | 444 | 61 | 822 | 228 | 43 | 155 | <1 | <1 | <0.2 | <1 | 97 | 51 | 6 | <3 | 235 | 1493 | <1 |
| 2388 | 11.00 | 0.18 | 72.0 | <0.1 | 13.80 | 14.67 | 7.80 | <20 | 0.61 | <50 | 78 | 84 | 14 | 66 | <7 | 7 | <1 | <1 | 1.1 | <1 | 45 | 34 | 6 | <3 | 72 | 217 | 5 |
| 2389 | 27.61 | 1.61 | 16.1 | <0.1 | 36.29 | 4.95 | 8.98 | <20 | 0.08 | <50 | 78 | 75 | 162 | 5 | <7 | 104 | <1 | <1 | 6.9 | <1 | 25 | 18 | 10 | <3 | 19 | 369 | 1 |
| 2390 | 44.67 | 3.37 | 12.7 | 0.7 | 18.01 | 6.97 | 12.68 | <20 | 0.06 | 64 | 135 | 2498 | 9 | 3 | 71 | 61 | <1 | <1 | 1.2 | <1 | 25 | 16 | 7 | <3 | 44 | 558 | 1 |
| 2391 | 10.17 | 1.06 | 8.4 | 0.8 | 22.09 | 5.84 | 8.26 | 26 | 0.04 | <50 | 48 | 852 | 11 | 2 | 137 | 12 | <1 | <1 | 0.5 | <1 | <13 | 8 | 4 | <3 | 38 | 34 | <1 |
| 2392 | 7.84 | 0.75 | 8.6 | 0.2 | 20.53 | 4.73 | 7.89 | <20 | 0.04 | <50 | 27 | 48 | 99 | 4 | 172 | <5 | <1 | <1 | 0.7 | <1 | <13 | 10 | 2 | <3 | 33 | 85 | <1 |
| 2393 | 119.10 | 4.40 | 36.1 | 0.2 | 232.00 | 8.96 | 11.50 | 26 | 0.04 | 400 | 286 | 144 | 200 | 333 | <7 | 37 | <1 | <1 | 0.3 | <1 | 60 | 24 | 4 | <3 | 1136 | 2207 | 4 |
| 2395 | 16.49 | 1.75 | 6.6 | 0.2 | 10.58 | 6.75 | 9.93 | 84 | 0.07 | <50 | 60 | 2370 | 117 | 12 | 1752 | 33 | 14 | <1 | 0.5 | <1 | 16 | 9 | 8 | <3 | 21 | 123 | <1 |
| 2396 | 14.83 | 2.04 | 85.4 | <0.1 | 154.00 | 9.34 | 7.83 | 52 | 0.05 | <50 | 44 | 49 | 91 | 165 | 91 | 13 | <1 | <1 | <0.2 | 1 | <13 | <1 | 5 | <3 | 112 | 77 | <1 |
| 2397 | 20.43 | 1.42 | 27.4 | <0.1 | 11.24 | 13.89 | 9.71 | <20 | 0.47 | <50 | 67 | 43 | 22 | 1 | 64 | 14 | <1 | <1 | 8.4 | <1 | <13 | <1 | 17 | 6 | 13 | 332 | 2 |
| 2398 | 18.20 | 0.21 | 207.5 | <0.1 | 184.00 | 170.00 | 6.55 | 32 | 4.09 | 460 | 114 | 62 | 28 | 46 | <7 | 9 | <1 | <1 | <0.2 | <1 | 23 | 12 | <2 | <3 | 12 | 348 | 7 |
| 2399 | 93.76 | 7.30 | 36.6 | 0.4 | 211.00 | 7.49 | 11.51 | 37 | 0.08 | 72 | 247 | 48 | 116 | 3 | 71 | 45 | <1 | <1 | 1.0 | <1 | 35 | 14 | 7 | 7 | 163 | 1189 | 2 |

# GSC Open File 3306
# Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2401 | 21G10 | 680455 | 5060042 | DR | - | - | 8.30 | 1115 | 724 | 81.2 | 61.7 | 0.08 |
| 2402 | 21G10 | 680249 | 5059614 | DR | 191 | 15 | 8.49 | 368 | 340 | 134.9 | 29.9 | -2.54 |
| 2403 | 21G10 | 679322 | 5059587 | DR | 85 | 10 | 8.17 | 213 | 210 | 110.5 | 38.0 | 0.48 |
| 2404 | 21G10 | 678710 | 5059714 | DR | - | - | 6.00 | 84 | 77 | 31.9 | 36.2 | -2.86 |
| 2405 | 21G10 | 677688 | 5059463 | DU | 12 | 20 | 5.21 | 118 | 71 | 11.4 | 31.0 | -4.48 |
| 2406 | 21G10 | 677042 | 5059722 | DU | 14 | 29 | 5.78 | 658 | 373 | 38.3 | 234.5 | -3.07 |
| 2407 | 21G10 | 676411 | 5059960 | UN | - | 10 | 7.63 | 370 | 347 | 165.3 | 55.2 | -2.39 |
| 2408 | 21G10 | 674996 | 5059831 | UN | - | - | 6.00 | 56 | 54 | 23.7 | 20.7 | 0.12 |
| 2409 | 21G10 | 676896 | 5059351 | DR | - | 13 | 7.70 | 754 | 533 | 110.7 | 64.5 | -2.12 |
| 2410 | 21G10 | 676220 | 5058465 | DU | 16 | - | 7.06 | 304 | 278 | 142.1 | 143.9 | 0.06 |
| 2411 | 21G10 | 679962 | 5059305 | DR | - | 74 | 7.77 | 281 | 239 | 81.6 | 15.0 | -3.74 |
| 2412 | 21G10 | 680051 | 5058374 | DU | - | - | 5.34 | 1025 | 577 | 8.0 | 256.8 | -3.88 |
| 2413 | 21G10 | 681164 | 5058695 | DR | 90 | 15 | 7.58 | 161 | 163 | 83.4 | 38.0 | -3.08 |
| 2414 | 21G10 | 680563 | 5059545 | DR | 137 | 8 | 7.60 | 769 | 564 | 132.3 | 135.2 | -2.91 |
| 2415 | 21G10 | 682012 | 5059576 | DR | 112 | 10 | 7.95 | 319 | 308 | 150.9 | 48.2 | -0.97 |
| 2417 | 21G10 | 682676 | 5059262 | DR | 110 | 22 | 8.89 | 89 | 87 | 42.6 | 2.4 | -2.37 |
| 2418 | 21G10 | 683833 | 5059151 | DR | 101 | 20 | 8.85 | 234 | 228 | 111.7 | 8.8 | -1.79 |
| 2419 | 21G10 | 685166 | 5058891 | DR | 220 | 14 | 8.20 | 336 | 294 | 122.1 | 32.7 | -1.25 |
| 2421 | 21G10 | 685992 | 5058404 | UN | - | - | 8.82 | 145 | 137 | 62.7 | 1.9 | -3.08 |
| 2422 | 21G10 | 686055 | 5058128 | DU | 11 | 40 | 5.79 | 740 | 393 | 12.6 | 161.6 | 0.90 |
| 2423 | 21G10 | 686377 | 5056469 | DR | 50 | 34 | 6.03 | 128 | 90 | 29.7 | 53.2 | -2.52 |
| 2424 | 21G10 | 686401 | 5056448 | UN | - | - | 7.90 | 182 | 189 | 94.4 | 20.3 | -4.46 |
| 2425 | 21G10 | 686558 | 5055908 | DR | 75 | - | 6.70 | 117 | 106 | 57.6 | 61.1 | -3.12 |
| 2426 | 21G10 | 684196 | 5059796 | DR | - | 5 | 7.85 | 425 | 394 | 176.7 | 45.7 | -1.44 |
| 2427 | 21G10 | 683525 | 5060076 | DR | 90 | 15 | 8.06 | 353 | 365 | 181.1 | 55.9 | -2.26 |
| 2428 | 21G10 | 682283 | 5060162 | DR | - | - | 5.51 | 189 | 123 | 44.7 | 32.6 | -0.46 |
| 2429 | 21G10 | 681214 | 5060198 | DR | 94 | 20 | 7.47 | 325 | 320 | 161.9 | 126.3 | -2.49 |
| 2430 | 21G10 | 680604 | 5069932 | DR | 85 | 12 | 7.63 | 525 | 391 | 116.3 | 25.6 | -2.45 |
| 2431 | 21G10 | 680295 | 5070401 | DR | 100 | 20 | 7.15 | 176 | 128 | 35.9 | 55.5 | -3.80 |
| 2432 | 21G10 | 686346 | 5058292 | DR | - | - | 6.20 | 133 | 78 | 22.2 | 47.2 | -1.12 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2401 | 24.27 | 0.28 | 233.8 | <0.1 | 306.00 | 52.00 | 6.58 | 32 | 0.52 | 839 | 136 | 81 | 216 | 79 | <7 | 82 | 8 | 3 | 1.5 | <1 | 15 | 3 | <2 | <3 | 111 | 438 | 19 |
| 2402 | 10.83 | 0.71 | 85.4 | 0.2 | 42.22 | 28.67 | 6.61 | 53 | 1.05 | 59 | 65 | 65 | 76 | 15 | <7 | <5 | <1 | <1 | 28.5 | <1 | <13 | 2 | 14 | <3 | <5 | 158 | 9 |
| 2403 | 13.18 | 1.25 | 40.2 | 0.3 | 2.86 | 9.23 | 6.88 | 34 | 0.25 | <50 | 60 | 72 | 602 | 2 | 75 | 14 | <1 | <1 | 4.5 | <1 | 18 | 7 | 6 | <3 | 35 | 188 | 3 |
| 2404 | 11.91 | 1.57 | 2.9 | <0.1 | 5.55 | 5.01 | 10.30 | 22 | 0.08 | <50 | 34 | 53 | 194 | 40 | 18 | 15 | <1 | <1 | 0.4 | <1 | <13 | <1 | 2 | <3 | 9 | 70 | <1 |
| 2405 | 9.33 | 1.88 | 7.3 | 3.9 | 8.29 | 16.48 | 8.47 | 56 | 0.07 | <50 | 42 | 5799 | 17 | 108 | 43 | 7 | <1 | <1 | <0.2 | <1 | <13 | 3 | <2 | 4 | 112 | 55 | <1 |
| 2406 | 73.42 | 12.47 | 29.3 | 1.1 | 195.00 | 3.75 | 9.94 | <20 | 0.05 | 389 | 184 | 431 | 28 | 17 | 161 | 97 | <1 | <1 | <0.2 | <1 | 21 | 7 | 3 | <3 | 82 | 347 | 1 |
| 2407 | 19.75 | 1.43 | 72.2 | 0.2 | 27.49 | 17.25 | 6.70 | <20 | 0.41 | <50 | 69 | 56 | 190 | 67 | 24 | 15 | <1 | <1 | 3.7 | <1 | <13 | <1 | <2 | 6 | 21 | 329 | 4 |
| 2408 | 7.35 | 0.58 | 4.7 | <0.1 | 3.10 | 5.60 | 7.54 | <20 | 0.07 | <50 | 27 | 111 | 183 | 22 | 112 | <5 | <1 | <1 | 0.9 | <1 | <13 | 6 | <2 | <3 | 21 | 41 | <1 |
| 2409 | 25.47 | 0.22 | 145.1 | <0.1 | 148.00 | 69.94 | 6.83 | <20 | 1.21 | 230 | 125 | 73 | 52 | 141 | <7 | 8 | <1 | <1 | 0.9 | <1 | <13 | 4 | <2 | <3 | 9 | 499 | 8 |
| 2410 | 45.94 | 7.12 | 14.6 | 0.7 | 16.79 | 10.05 | 8.60 | 43 | 0.17 | <50 | 132 | 56 | 88 | 70 | 90 | 38 | <1 | <1 | 0.3 | <1 | 40 | 19 | 4 | 9 | 43 | 318 | 1 |
| 2411 | 5.61 | 0.25 | 63.3 | <0.1 | 42.73 | 19.15 | 6.76 | <20 | 0.83 | 60 | 32 | 70 | 47 | 1 | 338 | <5 | <1 | <1 | 16.4 | <1 | <13 | <1 | <2 | <3 | <5 | 91 | 15 |
| 2412 | 79.24 | 14.37 | 101.5 | 1.0 | 355.00 | 9.06 | 6.55 | 40 | 0.06 | 77 | 201 | 74 | 69 | 55 | 173 | 40 | <1 | <1 | 0.3 | <1 | 25 | 7 | <2 | <3 | 185 | 679 | 2 |
| 2413 | 14.49 | 0.45 | 25.7 | <0.1 | 6.87 | 6.16 | 7.12 | <20 | 0.19 | <50 | 43 | 115 | 26 | 17 | 143 | 10 | <1 | <1 | 1.5 | <1 | <13 | <1 | <2 | <3 | 81 | 267 | 6 |
| 2414 | 46.18 | 4.86 | 122.4 | 0.4 | 175.00 | 43.62 | 7.77 | <20 | 0.54 | 461 | 131 | 79 | 526 | 523 | <7 | 86 | <1 | <1 | 0.8 | <1 | <13 | <1 | <2 | <3 | 33 | 549 | 1 |
| 2415 | 15.70 | 2.19 | 63.7 | 0.5 | 6.93 | 27.61 | 6.21 | <20 | 0.57 | <50 | 45 | 74 | 640 | 179 | 17 | <5 | 6 | <1 | 2.6 | <1 | <13 | <1 | <2 | <3 | 11 | 153 | <1 |
| 2417 | 0.87 | 0.05 | 21.3 | <0.1 | 2.14 | 4.49 | 5.72 | 56 | 0.21 | <50 | 5 | 123 | 251 | 1 | <7 | <5 | <1 | <1 | 22.9 | <1 | <13 | <1 | 4 | <3 | <5 | 15 | <1 |
| 2418 | 3.00 | 0.32 | 58.4 | <0.1 | 8.27 | 15.04 | 5.33 | <20 | 0.80 | <50 | 42 | 53 | 154 | 6 | <7 | <5 | <1 | <1 | 4.2 | <1 | <13 | <1 | <2 | 6 | 8 | 49 | 2 |
| 2419 | 11.25 | 1.14 | 70.3 | 0.3 | 23.64 | 31.83 | 5.37 | <20 | 0.98 | <50 | 52 | 49 | <7 | 84 | <7 | 25 | <1 | <1 | 1.4 | <1 | <13 | <1 | 2 | 5 | 18 | 164 | 3 |
| 2421 | 0.74 | <0.03 | 36.1 | <0.1 | 9.61 | 7.73 | 5.85 | 57 | 0.46 | <50 | 35 | 51 | 58 | 1 | <7 | <5 | <1 | <1 | 11.3 | <1 | <13 | <1 | <2 | <3 | <5 | 16 | 5 |
| 2422 | 43.22 | 13.07 | 81.7 | 1.0 | 222.00 | 7.21 | 7.98 | 55 | 0.09 | 409 | 121 | 454 | 65 | 789 | <7 | 48 | <1 | <1 | <0.2 | <1 | 27 | 7 | 3 | 5 | 323 | 370 | 3 |
| 2423 | 14.03 | 4.43 | 3.3 | 0.4 | 8.81 | 11.86 | 6.78 | <20 | 0.07 | <50 | 51 | 3019 | 16 | 91 | 399 | 28 | <1 | <1 | <0.2 | <1 | <13 | <1 | <2 | <3 | 73 | 177 | 3 |
| 2424 | 7.85 | 0.18 | 40.0 | <0.1 | 6.79 | 12.69 | 5.40 | <20 | 0.15 | <50 | 43 | 54 | <7 | 11 | 230 | <5 | <1 | <1 | 1.0 | <1 | <13 | 2 | <2 | 5 | 49 | 154 | 19 |
| 2425 | 21.84 | 1.60 | 0.2 | 0.5 | 2.47 | 4.94 | 3.62 | <20 | 0.06 | <50 | 53 | 54 | <7 | 1 | 108 | 355 | <1 | <1 | 0.8 | <1 | <13 | <1 | <2 | <3 | 182 | 78 | 1 |
| 2426 | 15.30 | 1.84 | 89.4 | 0.2 | 9.16 | 54.55 | 6.97 | <20 | 0.53 | <50 | 58 | 29 | 102 | 45 | <7 | <5 | <1 | <1 | 4.6 | <1 | <13 | <1 | 6 | <3 | 9 | 230 | 13 |
| 2427 | 20.50 | 1.16 | 72.9 | 0.3 | 2.98 | 37.61 | 8.24 | <20 | 0.26 | <50 | 71 | 82 | 211 | 45 | <7 | <5 | <1 | <1 | 2.8 | <1 | 16 | 2 | 6 | 8 | 28 | 328 | 5 |
| 2428 | 10.13 | 1.78 | 20.1 | 3.1 | 16.68 | 25.28 | 11.94 | 149 | 0.03 | 67 | 54 | 2192 | 134 | 2316 | 1039 | 32 | <1 | <1 | <0.2 | <1 | <13 | <1 | 5 | 5 | 36 | 54 | <1 |
| 2429 | 43.63 | 4.23 | 30.1 | 0.3 | 12.71 | 21.44 | 8.98 | <20 | 0.14 | <50 | 119 | 103 | 295 | 153 | 8 | 17 | <1 | <1 | 0.4 | <1 | <13 | <1 | 8 | 6 | 27 | 573 | 3 |
| 2430 | 9.84 | 0.25 | 109.6 | 0.3 | 113.00 | 1.89 | 13.64 | <20 | 0.09 | <50 | 50 | 45 | 84 | 236 | <7 | 23 | 2 | <1 | 2.4 | <1 | <13 | <1 | 4 | 3 | 37 | 169 | 16 |
| 2431 | 20.18 | 1.26 | 14.3 | 0.4 | 34.56 | 5.07 | 7.84 | 36 | 0.06 | <50 | 66 | 1541 | 183 | 7 | <7 | 42 | <1 | <1 | 0.5 | <1 | 23 | 11 | <2 | <3 | 282 | 286 | 2 |
| 2432 | 14.77 | 2.52 | 3.0 | 0.9 | 15.47 | 9.88 | 7.41 | <20 | 0.05 | <50 | 52 | 2107 | 60 | 6 | 1451 | 81 | 12 | <1 | <0.2 | <1 | 24 | 8 | 3 | 5 | 106 | 103 | <1 |

# GSC Open File 3306
# Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2433 | 21G10 | 688220 | 5056158 | DR | 125 | - | 8.86 | 466 | 416 | 58.5 | 13.5 | -3.70 |
| 2434 | 21G10 | 688220 | 5056158 | DR | 234 | 8 | 8.70 | 853 | 551 | 4.8 | 11.1 | -0.08 |
| 2436 | 21G10 | 688775 | 5055841 | DU | - | 50 | 5.75 | 53 | 35 | 8.7 | 9.2 | -3.88 |
| 2437 | 21G10 | 689837 | 5055317 | DR | - | - | 8.88 | 277 | 254 | 134.7 | 16.5 | -1.57 |
| 2438 | 21G10 | 690027 | 5053666 | DR | 87 | 25 | 8.06 | 963 | 600 | 5.7 | 113.6 | -2.15 |
| 2439 | 21G10 | 690068 | 5053100 | DU | 20 | 1 | 5.62 | 675 | 394 | 151.4 | 81.6 | -4.05 |
| 2441 | 21G10 | 689983 | 5052564 | DR | - | - | 5.57 | 78 | 50 | 8.3 | 19.0 | -3.53 |
| 2442 | 21G10 | 690633 | 5051972 | DU | 10 | - | 5.51 | 325 | 226 | 13.0 | 84.5 | -3.22 |
| 2443 | 21G10 | 690741 | 5051508 | DU | 12 | 32 | 4.97 | 670 | 420 | 130.0 | 119.9 | -4.97 |
| 2444 | 21G10 | 690730 | 5050841 | DR | - | - | 7.00 | 234 | 239 | 147.8 | 63.7 | -4.78 |
| 2445 | 21G10 | 690983 | 5050492 | DR | 90 | 1 | 5.93 | 1152 | 687 | 55.4 | 351.7 | -3.74 |
| 2446 | 21G10 | 691316 | 5050058 | UN | - | - | 7.10 | 102 | 94 | 47.9 | 52.4 | -3.42 |
| 2447 | 21G10 | 691766 | 5049404 | UN | - | - | 6.71 | 109 | 109 | 53.1 | 56.9 | -0.24 |
| 2448 | 21G10 | 692144 | 5049027 | DR | - | - | 6.85 | 210 | 202 | 111.7 | 116.2 | -1.72 |
| 2449 | 21G10 | 692480 | 5048526 | UN | - | - | 6.75 | 194 | 145 | 66.9 | 76.1 | -3.62 |
| 2450 | 21G10 | 692582 | 5047995 | UN | - | - | 6.40 | 100 | 92 | 47.9 | 50.4 | -2.88 |
| 2451 | 21G10 | 692327 | 5047398 | UN | - | - | 6.75 | 191 | 183 | 102.4 | 96.8 | -4.66 |
| 2453 | 21G10 | 692334 | 5046920 | DR | 200 | 12 | 7.62 | 334 | 295 | 152.8 | 174.1 | -2.44 |
| 2454 | 21G10 | 692306 | 5046307 | UN | - | - | 7.40 | 570 | 480 | 205.2 | 296.9 | -1.97 |
| 2455 | 21G10 | 692552 | 5045937 | DU | 12 | 25 | 6.81 | 1860 | 1187 | 155.4 | 451.3 | -4.81 |
| 2456 | 21G10 | 693178 | 5045411 | DR | 85 | 17 | 7.91 | 497 | 453 | 190.7 | 0.8 | -2.81 |
| 2457 | 21G10 | 693517 | 5044788 | DR | 100 | 10 | 7.41 | 405 | 368 | 185.4 | 210.9 | -4.16 |
| 2458 | 21G10 | 694169 | 5044452 | UN | - | - | 6.33 | 152 | 138 | 69.1 | 77.3 | -2.19 |
| 2459 | 21G10 | 694766 | 5043826 | DR | 160 | 16 | 7.50 | 236 | 232 | 132.0 | 133.9 | -2.56 |
| 2461 | 21G10 | 695121 | 5043492 | DR | - | - | 7.51 | 360 | 272 | 119.3 | 144.4 | -0.34 |
| 2462 | 21G10 | 688855 | 5055521 | UN | - | - | 6.08 | 41 | 37 | 4.6 | 13.1 | 1.39 |
| 2463 | 21G10 | 688920 | 5055178 | UN | - | - | 5.80 | 48 | 25 | 3.4 | 11.0 | 2.41 |
| 2464 | 21G10 | 689207 | 5053708 | UN | - | - | 6.06 | 72 | 67 | 29.2 | 28.3 | -1.51 |
| 2465 | 21G10 | 688976 | 5051777 | DR | 135 | - | 9.04 | 386 | 305 | 159.0 | 3.8 | 3.05 |
| 2466 | 21G10 | 687464 | 5048573 | DR | 65 | 22 | 7.42 | 209 | 160 | 66.6 | 75.5 | -3.57 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample | Ca | Mg | Na | K | Cl | SO4 | SiO2 | Al | F | Br | B | Tot-N | Fe | Mn | Cu | Zn | Pb | Cd | As | Sb | Ni | Co | V | Zr | Ba | Sr | Li |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | µg/l | mg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l | µg/l |
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2433 | 4.91 | 0.31 | 112.1 | 0.2 | 41.51 | 45.40 | 6.93 | <20 | 2.13 | 64 | 53 | 41 | 176 | 13 | 12 | <5 | <1 | <1 | 5.7 | 1 | <13 | <1 | <2 | <3 | 15 | 74 | 36 |
| 2434 | 4.35 | 0.07 | 202.1 | <0.1 | 262.00 | 62.03 | 7.20 | 46 | 3.43 | 396 | 50 | 44 | 217 | 12 | <7 | 9 | <1 | <1 | 2.7 | <1 | <13 | <1 | 4 | <3 | 25 | 94 | 46 |
| 2436 | 2.72 | 0.58 | 2.1 | 5.2 | 8.01 | 3.16 | 5.39 | 34 | 0.03 | <50 | <5 | 347 | 19 | 4 | 252 | 14 | <1 | <1 | 0.4 | <1 | <13 | <1 | 7 | <3 | 26 | 13 | <1 |
| 2437 | 5.81 | 0.49 | 62.8 | 0.2 | 11.08 | 19.51 | 7.72 | 113 | 1.48 | <50 | 44 | 50 | 73 | 13 | <7 | <5 | <1 | <1 | 0.3 | <1 | <13 | <1 | 5 | <3 | 20 | 83 | 36 |
| 2438 | 33.69 | 7.18 | 176.7 | 2.4 | 362.00 | 0.42 | 7.16 | <20 | 0.64 | 920 | 155 | 801 | 50 | 255 | 162 | 31 | 2 | <1 | 31.6 | <1 | <13 | <1 | 5 | 4 | 235 | 428 | 128 |
| 2439 | 20.33 | 7.51 | 104.5 | 3.0 | 215.00 | 7.93 | 6.40 | 83 | 0.07 | <50 | 62 | 2242 | 176 | 394 | 217 | 839 | <1 | <1 | 0.2 | <1 | 14 | <1 | 4 | <3 | 443 | 199 | 2 |
| 2441 | 4.48 | 1.89 | 1.8 | 6.5 | 9.15 | 9.54 | 7.93 | 35 | 0.03 | <50 | 20 | 1374 | <7 | 7 | 119 | 9 | <1 | <1 | <0.2 | <1 | <13 | 2 | <2 | <3 | 62 | 28 | 1 |
| 2442 | 28.98 | 2.97 | 43.8 | 1.5 | 123.00 | 6.03 | 8.72 | 47 | 0.06 | 52 | 50 | 1854 | 22 | 9 | 379 | 36 | <1 | <1 | <0.2 | <1 | <13 | 7 | <2 | <3 | 86 | 86 | 1 |
| 2443 | 35.96 | 7.33 | 98.1 | 3.7 | 248.00 | 5.67 | 9.64 | 149 | 0.09 | <50 | 97 | 3485 | 239 | 534 | 284 | 51 | <1 | <1 | <0.2 | <1 | 16 | 6 | 2 | <3 | 345 | 214 | 2 |
| 2444 | 22.34 | 1.94 | 42.4 | <0.1 | 52.76 | 9.48 | 12.04 | 33 | 0.36 | <50 | 59 | 2259 | 57 | 2 | 12 | 20 | 2 | 3 | 13.7 | <1 | <13 | 5 | 5 | <3 | 9 | 180 | 52 |
| 2445 | 105.42 | 21.55 | 90.7 | 1.6 | 365.00 | 12.52 | 18.85 | <20 | 0.06 | <50 | 256 | 3158 | 148 | 13 | 512 | 91 | 14 | <1 | 0.7 | <1 | 35 | 17 | 4 | <3 | 86 | 490 | 9 |
| 2446 | 19.86 | 0.70 | 0.5 | <0.1 | 2.29 | 6.03 | 6.24 | <20 | 0.53 | <50 | 56 | 30 | <7 | 1 | 11 | <5 | <1 | <1 | 0.4 | <1 | <13 | 8 | 2 | <3 | 8 | 88 | 2 |
| 2447 | 21.02 | 1.08 | 3.7 | 0.2 | 3.30 | 7.34 | 6.52 | 80 | 0.04 | <50 | 56 | 122 | 130 | 24 | 254 | 60 | <1 | <1 | <0.2 | <1 | <13 | <1 | 5 | 6 | <5 | 91 | <1 |
| 2448 | 43.87 | 1.65 | 1.5 | <0.1 | 2.82 | 7.12 | 8.70 | <20 | 0.03 | <50 | 110 | 305 | 111 | 4 | 25 | 44 | <1 | <1 | <0.2 | <1 | 18 | 7 | 2 | <3 | 18 | 224 | 1 |
| 2449 | 28.23 | 1.39 | 7.6 | 0.3 | 29.64 | 4.11 | 5.33 | <20 | 0.03 | <50 | 64 | 104 | 25 | 3 | 175 | 2671 | <1 | <1 | <0.2 | <1 | 91 | <1 | 2 | 3 | 9 | 135 | <1 |
| 2450 | 18.76 | 0.88 | 0.4 | <0.1 | 1.54 | 4.20 | 7.09 | 28 | 0.03 | <50 | 50 | 29 | 72 | 60 | 146 | 11 | <1 | <1 | 0.2 | <1 | <13 | 5 | <2 | <3 | 9 | 101 | <1 |
| 2451 | 31.83 | 4.23 | 3.1 | <0.1 | 3.20 | 6.51 | 7.19 | <20 | 0.07 | 78 | 84 | 113 | 17 | 1 | 152 | 1568 | 4 | <1 | <0.2 | <1 | <13 | <1 | <2 | <3 | <5 | 141 | <1 |
| 2453 | 42.71 | 16.42 | 6.5 | 0.3 | 34.85 | 13.26 | 14.21 | <20 | 0.11 | 52 | 134 | 121 | 140 | 5 | <7 | 9 | <1 | <1 | 11.1 | <1 | 22 | 7 | 4 | <3 | 141 | 1374 | 17 |
| 2454 | 96.56 | 13.60 | 9.4 | 0.4 | 72.47 | 20.24 | 16.01 | 28 | 0.10 | 130 | 232 | 691 | 14 | 4 | 17 | 244 | <1 | <1 | 0.2 | <1 | 44 | 21 | 5 | <3 | 37 | 396 | 5 |
| 2455 | 138.88 | 25.48 | 214.0 | 0.8 | 596.00 | 17.61 | 11.54 | 35 | 0.07 | 588 | 320 | 1298 | 117 | 11 | 75 | 97 | <1 | <1 | <0.2 | <1 | 55 | 25 | 5 | <3 | 163 | 696 | 4 |
| 2456 | 0.16 | 0.11 | 128.7 | <0.1 | 65.91 | 12.59 | 12.81 | <20 | 0.16 | <50 | 16 | 63 | 60 | 3 | <7 | <5 | <1 | <1 | 1.1 | <1 | <13 | 7 | 2 | <3 | 6 | <5 | 1 |
| 2457 | 55.75 | 17.46 | 8.2 | <0.1 | 32.33 | 14.59 | 12.04 | 24 | 0.10 | 64 | 156 | 818 | 44 | 3 | 13 | 208 | <1 | <1 | <0.2 | <1 | 39 | 20 | 5 | <3 | 44 | 339 | 4 |
| 2458 | 25.66 | 3.22 | 3.2 | <0.1 | 8.91 | 5.39 | 6.58 | 25 | 0.04 | <50 | 77 | 327 | 223 | 12 | 213 | 42 | <1 | <1 | <0.2 | <1 | 24 | 12 | 2 | 4 | 17 | 129 | <1 |
| 2459 | 46.76 | 4.20 | 0.4 | <0.1 | 3.85 | 4.78 | 11.23 | <20 | 0.06 | <50 | 115 | 63 | 22 | 95 | <7 | 19 | <1 | <1 | 13.6 | <1 | 24 | 11 | 4 | <3 | 38 | 444 | 6 |
| 2461 | 50.97 | 4.18 | 21.2 | 0.3 | 63.81 | 7.40 | 8.00 | <20 | 0.05 | <50 | 157 | 71 | <7 | 1 | 55 | 110 | <1 | <1 | 1.1 | <1 | 20 | 13 | <2 | <3 | 49 | 341 | 4 |
| 2462 | 3.84 | 0.85 | 1.1 | 0.3 | 4.39 | 4.02 | 9.61 | <20 | 0.05 | <50 | 10 | 101 | <7 | 1 | 6562 | 24 | 4 | <1 | <0.2 | <1 | <13 | <1 | 5 | 4 | 7 | 25 | <1 |
| 2463 | 3.01 | 0.84 | 2.8 | 0.7 | 6.45 | 3.35 | 1.92 | 741 | 0.03 | <50 | 20 | 343 | 1051 | 290 | <7 | 45 | 7 | <1 | 0.5 | <1 | <13 | 6 | <2 | 4 | 49 | 15 | 1 |
| 2464 | 9.19 | 1.31 | 3.9 | 0.2 | 1.90 | 5.74 | 8.59 | <20 | 0.09 | <50 | 34 | 62 | 239 | 2 | 49 | 86 | <1 | <1 | <0.2 | <1 | <13 | 4 | <2 | 3 | 25 | 54 | 3 |
| 2465 | 1.42 | 0.07 | 87.5 | 0.5 | 4.98 | 16.66 | 6.75 | 308 | 2.04 | <50 | 172 | 100 | 332 | 11 | <7 | <5 | <1 | <1 | 17.7 | <1 | <13 | 5 | 3 | <3 | 34 | 28 | 272 |
| 2466 | 27.97 | 1.40 | 10.0 | <0.1 | 22.30 | 4.72 | 11.01 | <20 | 0.80 | <50 | 104 | 76 | 130 | 4 | 50 | 196 | <1 | <1 | 21.8 | <1 | 19 | 12 | <2 | 5 | 25 | 387 | 90 |

# GSC Open File 3306
# Fredericton Groundwater - Well Information

| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2467 | 21G10 | 685270 | 5048819 | DU | 5 | - | 5.50 | 39 | 31 | 7.3 | 10.8 | -2.11 |
| 2468 | 21G10 | 686192 | 5048269 | DR | 160 | 9 | 7.25 | 217 | 209 | 112.8 | 108.5 | -0.93 |
| 2469 | 21G10 | 689004 | 5049309 | DR | 140 | 7 | 7.70 | 173 | 167 | 90.2 | 33.7 | -0.99 |
| 2470 | 21G10 | 688457 | 5048548 | DR | - | 8 | 7.76 | 188 | 177 | 92.4 | 50.6 | -2.34 |
| 2471 | 21G10 | 688171 | 5047672 | DU | 12 | 35 | 6.40 | 54 | 49 | 22.3 | 23.4 | 0.81 |
| 2472 | 21G10 | 687934 | 5046697 | DR | 140 | 5 | 7.21 | 222 | 212 | 119.0 | 118.0 | -1.73 |
| 2473 | 21G10 | 688009 | 5046032 | DR | - | - | 7.25 | 338 | 328 | 179.3 | 180.5 | -0.33 |
| 2474 | 21G10 | 688352 | 5045542 | DR | - | 20 | 7.00 | 602 | 526 | 249.7 | 316.7 | -4.69 |
| 2475 | 21G10 | 687563 | 5045263 | UN | - | - | 6.46 | 619 | 424 | 134.3 | 260.7 | -4.36 |
| 2476 | 21G10 | 685888 | 5044846 | UN | - | - | 7.22 | 158 | 145 | 84.0 | 87.3 | -0.39 |
| 2478 | 21G10 | 685235 | 5045516 | UN | - | - | 7.08 | 292 | 275 | 165.7 | 162.8 | -1.32 |
| 2479 | 21G10 | 683861 | 5044675 | UN | - | - | 6.48 | 118 | 98 | 56.2 | 58.2 | -0.90 |
| 2481 | 21G10 | 691397 | 5046635 | DR | - | 23 | 6.78 | 202 | 190 | 103.9 | 111.4 | -1.01 |
| 2482 | 21G10 | 689924 | 5046023 | DR | 100 | - | 7.25 | 400 | 361 | 201.4 | 209.1 | -2.82 |
| 2483 | 21G10 | 688957 | 5045683 | DR | 160 | 11 | 7.22 | 361 | 281 | 136.7 | 175.2 | -3.84 |
| 2484 | 21G10 | 693218 | 5046647 | DR | 70 | 25 | 7.58 | 275 | 251 | 145.7 | 143.0 | -2.29 |
| 2485 | 21G10 | 691866 | 5044593 | DR | 67 | 16 | 7.23 | 276 | 249 | 141.9 | 150.1 | -1.91 |
| 2486 | 21G10 | 691069 | 5043312 | DU | 15 | 50 | 7.15 | 359 | 282 | 153.3 | 182.9 | -3.11 |
| 2487 | 21G10 | 689782 | 5041682 | DR | 80 | 12 | 7.21 | 701 | 431 | 121.8 | 252.0 | 0.45 |
| 2488 | 21G10 | 688865 | 5041232 | DU | 12 | - | 6.70 | 234 | 213 | 119.8 | 123.8 | -2.62 |
| 2489 | 21G10 | 692124 | 5043055 | DR | 80 | 15 | 6.93 | 192 | 134 | 68.9 | 82.9 | -2.96 |
| 2490 | 21G10 | 692826 | 5043377 | UN | - | - | 7.04 | 405 | 324 | 175.9 | 196.6 | -4.34 |
| 2491 | 21G16 | 696752 | 5077428 | UN | - | 10 | 8.59 | 428 | 353 | 177.0 | 15.3 | -4.67 |
| 2492 | 21G16 | 696574 | 5076900 | DR | - | - | 7.94 | 398 | 367 | 190.8 | 59.1 | -3.78 |
| 2493 | 21G16 | 696246 | 5075711 | UN | - | 40 | 7.65 | 353 | 309 | 160.7 | 128.8 | -3.52 |
| 2494 | 21G16 | 696398 | 5075104 | DR | 80 | - | 6.80 | 280 | 202 | 76.7 | 120.3 | -3.60 |
| 2495 | 21G16 | 696221 | 5074531 | DR | 103 | 19 | 6.70 | 342 | 272 | 119.6 | 158.0 | -2.01 |
| 2497 | 21G16 | 696031 | 5073913 | DR | - | - | 8.75 | 308 | 293 | 131.8 | 3.2 | -3.69 |
| 2498 | 21G16 | 695998 | 5073478 | DR | 168 | 12 | 8.76 | 544 | 430 | 129.4 | 22.6 | -3.46 |
| 2499 | 21G16 | 695871 | 5072829 | DR | - | - | 8.35 | 760 | 538 | 108.8 | 52.5 | -4.78 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2467 | 3.29 | 0.64 | 0.8 | 1.6 | 2.13 | 4.46 | 7.59 | 684 | 0.12 | <50 | 18 | 50 | 1292 | 164 | 137 | 208 | <1 | <1 | <0.2 | <1 | 14 | 11 | <2 | 3 | 26 | 14 | 4 |
| 2468 | 40.92 | 1.56 | 4.2 | 1.3 | 3.05 | 4.45 | 14.73 | <20 | 0.32 | <50 | 140 | 132 | <7 | 1 | 280 | 13 | <1 | <1 | 13.0 | <1 | 17 | 9 | 5 | 3 | 283 | 954 | 57 |
| 2469 | 11.00 | 1.52 | 29.1 | 0.5 | 3.38 | 8.66 | 10.37 | 45 | 0.85 | <50 | 43 | 116 | 62 | 13 | 33 | 8 | <1 | <1 | 9.7 | <1 | 14 | 12 | <2 | <3 | 14 | 106 | 12 |
| 2470 | 16.56 | 2.27 | 23.3 | <0.1 | 4.35 | 6.31 | 10.39 | <20 | 0.51 | <50 | 52 | 57 | 280 | 33 | 24 | 13 | <1 | 2 | 0.5 | <1 | <13 | 8 | 3 | <3 | 7 | 92 | 10 |
| 2471 | 6.91 | 1.49 | 0.6 | <0.1 | 2.14 | 4.97 | 14.52 | 26 | 0.09 | <50 | 23 | 339 | 17 | 2 | 43 | 51 | 4 | <1 | 0.2 | <1 | <13 | 5 | 2 | <3 | 6 | 30 | 2 |
| 2472 | 40.69 | 4.01 | 3.6 | 0.2 | 4.22 | 5.48 | 8.47 | <20 | 0.05 | <50 | 115 | 111 | 39 | 3 | 100 | 17 | <1 | <1 | 0.9 | <1 | 23 | 14 | 3 | 5 | 57 | 207 | 5 |
| 2473 | 56.43 | 9.65 | 9.6 | 1.3 | 7.65 | 13.97 | 10.09 | 23 | 0.05 | <50 | 172 | 102 | 28 | 19 | 9 | 290 | <1 | <1 | 1.7 | <1 | 37 | 22 | 3 | <3 | 86 | 256 | 4 |
| 2474 | 93.19 | 20.46 | 8.6 | 0.3 | 80.05 | 4.32 | 12.44 | 32 | 0.10 | <50 | 274 | 629 | 41 | 6 | 82 | 994 | <1 | <1 | 0.4 | <1 | 53 | 31 | 6 | <3 | 90 | 480 | 5 |
| 2475 | 75.63 | 17.50 | 18.3 | 0.4 | 142.00 | 9.35 | 15.24 | 38 | 0.07 | 57 | 227 | 65 | 132 | 8 | 41 | 47 | <1 | <1 | 5.0 | <1 | 48 | 29 | 6 | <3 | 42 | 341 | 5 |
| 2476 | 27.57 | 4.50 | 0.3 | <0.1 | 1.39 | 2.62 | 5.77 | 79 | 0.04 | <50 | 74 | 95 | 163 | 46 | <7 | 9 | <1 | <1 | <0.2 | <1 | 16 | 11 | <2 | <3 | 14 | 119 | <1 |
| 2478 | 40.71 | 14.88 | 2.2 | 0.3 | 1.82 | 4.31 | 8.53 | <20 | 0.06 | <50 | 115 | 41 | <7 | 1 | 37 | 7 | <1 | <1 | 0.2 | <1 | <13 | <1 | 5 | <3 | 10 | 274 | 4 |
| 2479 | 16.74 | 3.99 | 0.3 | 0.2 | 1.62 | 6.28 | 5.80 | 22 | 0.04 | <50 | 42 | 91 | 106 | 18 | 129 | <5 | <1 | <1 | 0.5 | <1 | <13 | <1 | <2 | <3 | 7 | 99 | 1 |
| 2481 | 39.62 | 3.06 | 1.6 | 0.8 | 2.71 | 10.23 | 5.13 | <20 | 0.05 | <50 | 102 | 94 | 115 | 4 | 77 | 49 | <1 | <1 | 0.3 | <1 | <13 | <1 | <2 | <3 | 50 | 140 | <1 |
| 2482 | 67.89 | 9.64 | 3.9 | 1.1 | 13.09 | 8.97 | 9.34 | <20 | 0.10 | <50 | 194 | 814 | 17 | 19 | 17 | 66 | <1 | <1 | 3.7 | <1 | 26 | 14 | <2 | <3 | 74 | 292 | 4 |
| 2483 | 50.47 | 11.99 | 5.1 | 0.3 | 53.19 | 5.93 | 6.57 | <20 | 0.03 | <50 | 144 | 163 | 239 | 7 | 43 | 116 | <1 | <1 | <0.2 | <1 | 21 | 12 | <2 | <3 | 80 | 246 | <1 |
| 2484 | 46.33 | 6.67 | 2.9 | 0.3 | 10.15 | 4.99 | 11.29 | <20 | 0.08 | <50 | 129 | 71 | 160 | 643 | 18 | 174 | <1 | <1 | 0.5 | <1 | 13 | 5 | <2 | 5 | 48 | 308 | 1 |
| 2485 | 53.69 | 3.93 | <0.1 | 0.3 | 6.86 | 4.99 | 6.14 | <20 | 0.04 | <50 | 143 | 34 | <7 | 1 | 10 | 12 | <1 | <1 | <0.2 | <1 | 20 | 9 | <2 | 6 | 40 | 240 | <1 |
| 2486 | 54.30 | 11.54 | 1.0 | 0.8 | 50.47 | 6.14 | 10.36 | 46 | 0.09 | <50 | 156 | 48 | 29 | 1 | 42 | 22 | <1 | <1 | 0.3 | <1 | 22 | 7 | 7 | 9 | 21 | 272 | 2 |
| 2487 | 92.95 | 4.89 | 31.2 | 0.5 | 128.00 | 15.18 | 8.89 | 36 | 0.04 | 215 | 235 | 63 | 96 | 1 | 11 | 239 | <1 | <1 | 4.5 | 2 | 32 | 13 | 6 | 5 | 185 | 463 | 5 |
| 2488 | 46.63 | 1.82 | 0.3 | 1.1 | 3.81 | 6.55 | 5.69 | 22 | 0.03 | <50 | 130 | 322 | 105 | 2 | 57 | 67 | <1 | <1 | 0.6 | <1 | 14 | 5 | 2 | <3 | 25 | 162 | 1 |
| 2489 | 29.59 | 2.21 | <0.1 | <0.1 | 12.92 | 8.74 | 5.87 | <20 | 0.03 | <50 | 83 | 179 | 25 | 1 | 55 | 127 | <1 | <1 | 0.7 | <1 | <13 | <1 | <2 | 4 | 5 | 142 | 2 |
| 2490 | 72.23 | 3.98 | 1.3 | 0.4 | 39.98 | 10.32 | 11.34 | 116 | 0.04 | <50 | 198 | 80 | 161 | 5 | 24 | 20 | <1 | <1 | 0.3 | <1 | <13 | <1 | 3 | <3 | 28 | 357 | 2 |
| 2491 | 5.94 | 0.13 | 89.9 | 0.2 | 36.01 | 17.75 | 6.89 | <20 | 0.68 | 64 | 41 | 44 | 9 | 2 | <7 | <5 | <1 | <1 | 1.5 | <1 | <13 | <1 | <2 | 8 | <5 | 109 | 8 |
| 2492 | 22.35 | 0.82 | 71.9 | 0.4 | 12.26 | 45.31 | 7.61 | <20 | 0.17 | 57 | 66 | 95 | 51 | 22 | <7 | <5 | <1 | <1 | 4.2 | <1 | <13 | <1 | 9 | <3 | 10 | 410 | 10 |
| 2493 | 46.78 | 2.92 | 25.6 | 0.8 | 19.37 | 19.16 | 8.23 | <20 | 0.10 | 85 | 147 | 44 | 25 | 119 | <7 | 16 | <1 | <1 | 0.4 | <1 | 23 | 9 | <2 | 7 | 54 | 738 | 2 |
| 2494 | 43.69 | 2.76 | 6.5 | 0.4 | 50.26 | 10.97 | 10.30 | <20 | 0.04 | <50 | 134 | 608 | 15 | 25 | 28 | 6 | <1 | <1 | <0.2 | <1 | 18 | <1 | 3 | 6 | 451 | 790 | 4 |
| 2495 | 51.14 | 7.39 | 9.9 | 0.6 | 44.20 | 9.38 | 12.25 | <20 | 0.11 | <50 | 151 | 1271 | 20 | 1 | 13 | 145 | <1 | <1 | <0.2 | <1 | <13 | <1 | 6 | 3 | 158 | 274 | 2 |
| 2497 | 1.26 | <0.03 | 79.9 | <0.1 | 34.71 | 9.03 | 7.14 | <20 | 0.18 | <50 | 28 | 66 | 32 | 4 | <7 | <5 | <1 | <1 | 0.7 | <1 | <13 | <1 | <2 | <3 | <5 | 24 | 4 |
| 2498 | 8.71 | 0.22 | 122.2 | 0.4 | 106.00 | 25.76 | 6.77 | <20 | 1.36 | <50 | 62 | 59 | <7 | 19 | <7 | <5 | <1 | <1 | 7.5 | <1 | <13 | <1 | 4 | 3 | 37 | 179 | 7 |
| 2499 | 19.67 | 0.84 | 155.5 | 0.3 | 220.00 | 33.22 | 6.35 | <20 | 0.57 | 825 | 66 | 103 | 72 | 61 | <7 | <5 | <1 | <1 | 2.1 | <1 | <13 | <1 | 3 | <3 | 75 | 362 | 9 |

# GSC Open File 3306
# Fredericton Groundwater - Well Information

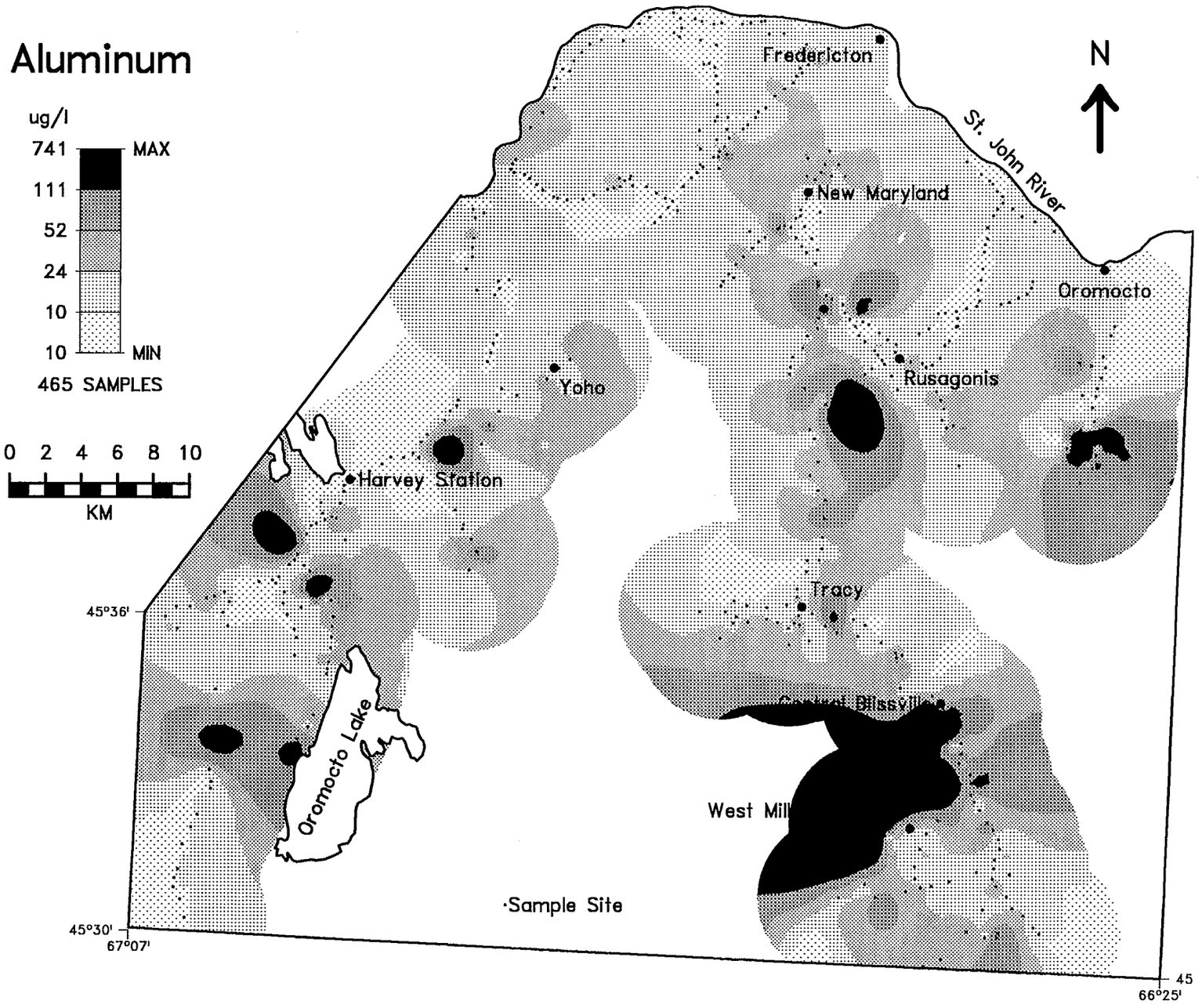
| Sample Number | NTS Mapsheet | Easting | Northing | Well Type | Well Depth m | Well Age Yrs | pH | Conductivity µs/cm | TDS mg/l | Alkalinity mg/l | Hardness mg/l | Balance Error % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2501 | 21G16 | 696034 | 5072090 | DR | - | - | 6.00 | 561 | 317 | 18.8 | 102.9 | -2.07 |
| 2502 | 21G16 | 696201 | 5071483 | DR | 75 | 50 | 5.25 | 237 | 125 | 11.8 | 59.1 | -4.05 |
| 2503 | 21G16 | 696153 | 5070770 | DR | 55 | 2 | 5.96 | 88 | 68 | 28.6 | 21.5 | -6.26 |
| 2504 | 21G16 | 696272 | 5070206 | UN | - | - | 6.54 | 90 | 84 | 37.5 | 13.8 | -4.20 |
| 2505 | 21G16 | 696086 | 5069444 | DR | 103 | 36 | 8.93 | 391 | 288 | 87.6 | 8.8 | -1.68 |
| 2506 | 21G16 | 695500 | 5068580 | DR | 180 | 15 | 5.13 | 886 | 445 | 7.5 | 193.2 | 2.54 |
| 2507 | 21G16 | 695823 | 5069892 | DR | - | - | 5.77 | 115 | 97 | 20.9 | 23.1 | 2.29 |
| 2508 | 21G16 | 695137 | 5070426 | DR | 88 | 9 | 9.20 | 277 | 250 | 140.9 | 1.6 | -4.02 |
| 2509 | 21G16 | 694614 | 5070477 | DR | - | 9 | 7.44 | 308 | 249 | 146.2 | 45.0 | -2.94 |
| 2510 | 21G16 | 695297 | 5071532 | DR | - | - | 7.75 | 345 | 264 | 125.1 | 118.6 | -4.61 |
| 2511 | 21G16 | 695929 | 5071230 | DR | - | - | 6.90 | 480 | 329 | 75.5 | 2.8 | -4.25 |
| 2512 | 21G16 | 696034 | 5072090 | DR | 150 | 20 | 5.55 | 560 | 326 | 15.1 | 111.2 | -14.47 |
| 2513 | 21G16 | 695235 | 5073488 | DR | - | - | 8.98 | 352 | 350 | 189.3 | 6.5 | -1.72 |
| 2514 | 21G16 | 695634 | 5075146 | DR | 55 | 15 | 8.84 | 247 | 204 | 97.0 | 6.6 | -2.92 |
| 2515 | 21G16 | 694947 | 5075236 | UN | - | - | 5.85 | 147 | 77 | 8.8 | 29.9 | 0.22 |

# GSC Open File 3306
## Fredericton Groundwater - Geochemical Analyses

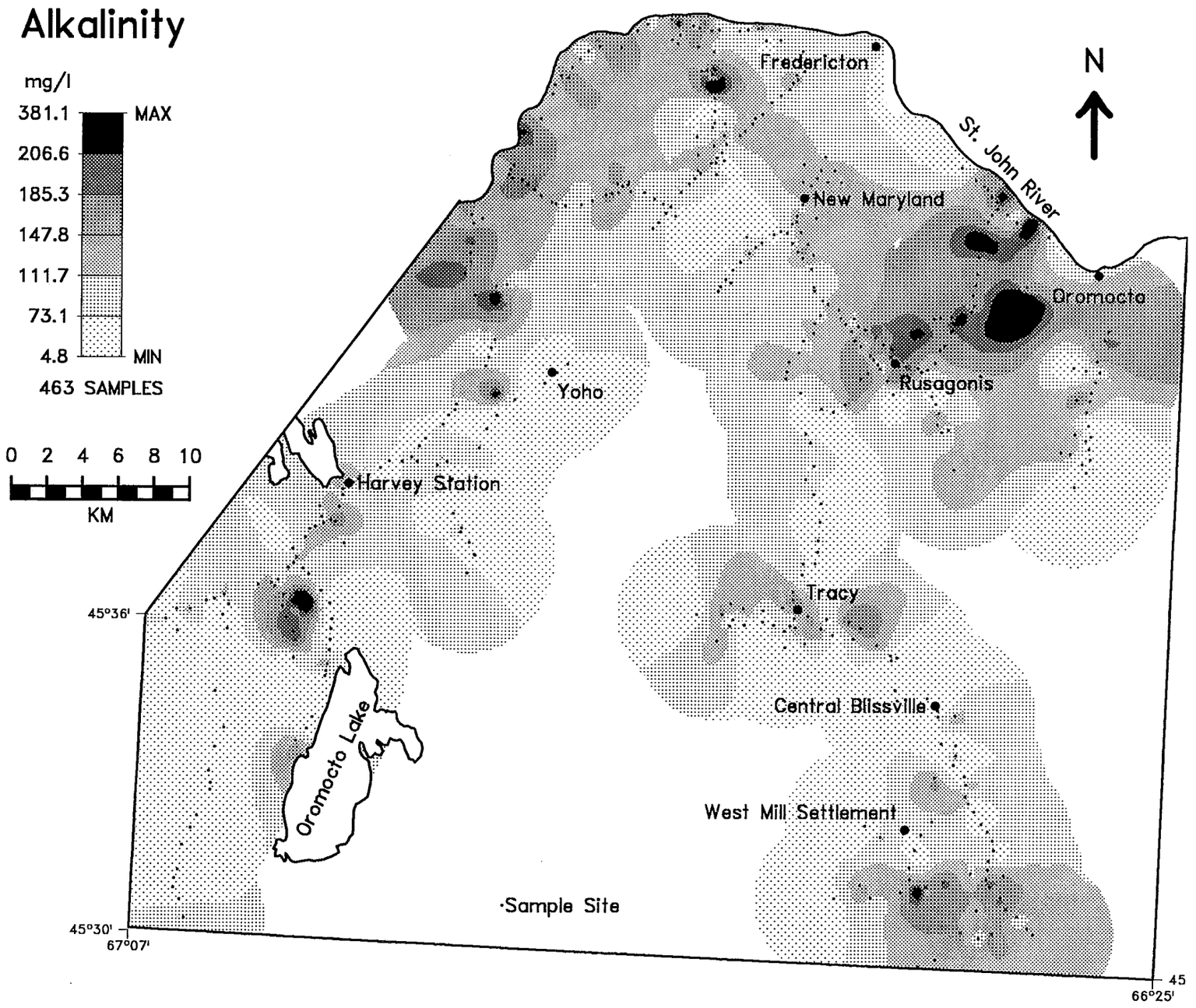
| Sample Number | Ca mg/l | Mg mg/l | Na mg/l | K mg/l | Cl mg/l | SO4 mg/l | SiO2 mg/l | Al µg/l | F mg/l | Br µg/l | B µg/l | Tot-N µg/l | Fe µg/l | Mn µg/l | Cu µg/l | Zn µg/l | Pb µg/l | Cd µg/l | As µg/l | Sb µg/l | Ni µg/l | Co µg/l | V µg/l | Zr µg/l | Ba µg/l | Sr µg/l | Li µg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.01 | 0.03 | 0.1 | 0.1 | 0.05 | 0.05 | 0.01 | 20 | 0.02 | 50 | 5 | 25 | 7 | 1 | 7 | 5 | 1 | 1 | 0.2 | 1 | 13 | 1 | 2 | 3 | 5 | 5 | 1 |
| 2501 | 35.01 | 3.78 | 68.4 | 1.1 | 164.00 | 12.16 | 7.17 | 46 | 0.10 | <50 | 110 | 429 | 184 | 66 | 451 | 1033 | <1 | <1 | 0.5 | 1 | 23 | 9 | <2 | <3 | 211 | 602 | 1 |
| 2502 | 20.06 | 2.19 | 18.9 | 0.8 | 44.38 | 18.98 | 8.43 | 44 | 0.06 | <50 | 87 | 6705 | 9 | 29 | 264 | 25 | <1 | <1 | 0.7 | <1 | 17 | 11 | <2 | <3 | 51 | 332 | 1 |
| 2503 | 6.76 | 1.12 | 3.2 | 0.3 | 5.69 | 3.94 | 14.83 | <20 | 0.08 | <50 | 31 | 53 | 6032 | 343 | 71 | 485 | <1 | <1 | 2.0 | 1 | <13 | 28 | 4 | <3 | 52 | 82 | 2 |
| 2504 | 3.77 | 1.06 | 14.5 | 0.3 | 5.68 | 3.86 | 8.52 | 53 | 0.10 | <50 | 21 | 33 | 502 | 26 | 90 | 93 | 2 | <1 | 1.7 | 1 | <13 | <1 | 2 | <3 | 5 | 42 | <1 |
| 2505 | 2.05 | 0.89 | 85.6 | 0.4 | 73.44 | 9.96 | 8.06 | 126 | 0.23 | <50 | 39 | 33 | 136 | 4 | <7 | <5 | <1 | <1 | 3.6 | <1 | <13 | 4 | 7 | <3 | 10 | 29 | 8 |
| 2506 | 55.87 | 13.07 | 92.8 | 1.2 | 255.00 | 9.78 | 6.28 | 85 | 0.09 | 75 | 164 | 53 | 923 | 141 | 171 | 36 | <1 | <1 | 0.3 | <1 | 23 | 6 | 2 | <3 | 89 | 547 | 2 |
| 2507 | 8.05 | 0.73 | 19.0 | 0.5 | 19.63 | 7.47 | 8.66 | 37 | 0.07 | <50 | 25 | 33 | 48 | 1 | 185 | <5 | <1 | <1 | 2.1 | <1 | <13 | <1 | <2 | <3 | 10 | 102 | 1 |
| 2508 | 0.43 | 0.13 | 64.3 | 0.2 | 9.30 | 13.64 | 9.21 | 559 | 0.40 | <50 | 22 | 69 | 429 | 16 | <7 | <5 | 12 | <1 | 15.2 | <1 | <13 | <1 | 24 | <3 | 9 | 5 | 2 |
| 2509 | 14.98 | 1.86 | 45.7 | 0.3 | 9.16 | 10.37 | 7.97 | <20 | 0.13 | <50 | 61 | 30 | 46 | 21 | 24 | 134 | <1 | <1 | 3.2 | <1 | <13 | 12 | 5 | <3 | 17 | 148 | 2 |
| 2510 | 40.27 | 4.40 | 22.5 | 0.9 | 49.54 | 15.71 | 9.80 | <20 | 0.15 | 135 | 128 | 37 | 104 | 55 | 18 | 64 | <1 | <1 | 1.6 | <1 | 15 | 10 | 13 | <3 | 80 | 410 | 2 |
| 2511 | 0.90 | 0.13 | 104.6 | <0.1 | 113.00 | 15.79 | 14.15 | 476 | 0.11 | <50 | 19 | 3711 | 363 | 15 | 661 | 394 | 17 | <1 | 2.9 | 1 | <13 | 9 | <2 | <3 | 13 | 16 | 3 |
| 2512 | 38.95 | 3.40 | 52.7 | 1.9 | 193.00 | 15.92 | 7.77 | <20 | 0.04 | 379 | 117 | 3101 | 293 | 41 | 215 | 73 | 8 | <1 | 0.9 | <1 | 26 | 11 | <2 | <3 | 223 | 732 | 2 |
| 2513 | 2.57 | 0.03 | 90.9 | <0.1 | 4.14 | 13.67 | 6.82 | <20 | 0.76 | <50 | 43 | 101 | 14 | 9 | <7 | <5 | <1 | <1 | 1.7 | <1 | <13 | 5 | <2 | <3 | 7 | 47 | 5 |
| 2514 | 2.58 | 0.05 | 53.0 | <0.1 | 11.89 | 28.28 | 7.35 | <20 | 0.31 | <50 | 20 | 54 | 10 | 10 | <7 | <5 | <1 | <1 | 2.4 | <1 | <13 | <1 | <2 | <3 | 35 | 47 | 2 |
| 2515 | 10.05 | 1.18 | 12.6 | 0.3 | 32.69 | 6.47 | 7.12 | 76 | 0.06 | <50 | 22 | 28 | 224 | 30 | 42 | 148 | 2 | <1 | 0.9 | <1 | <13 | 7 | <2 | <3 | 39 | 161 | 1 |

# APPENDIX C (MAPS)

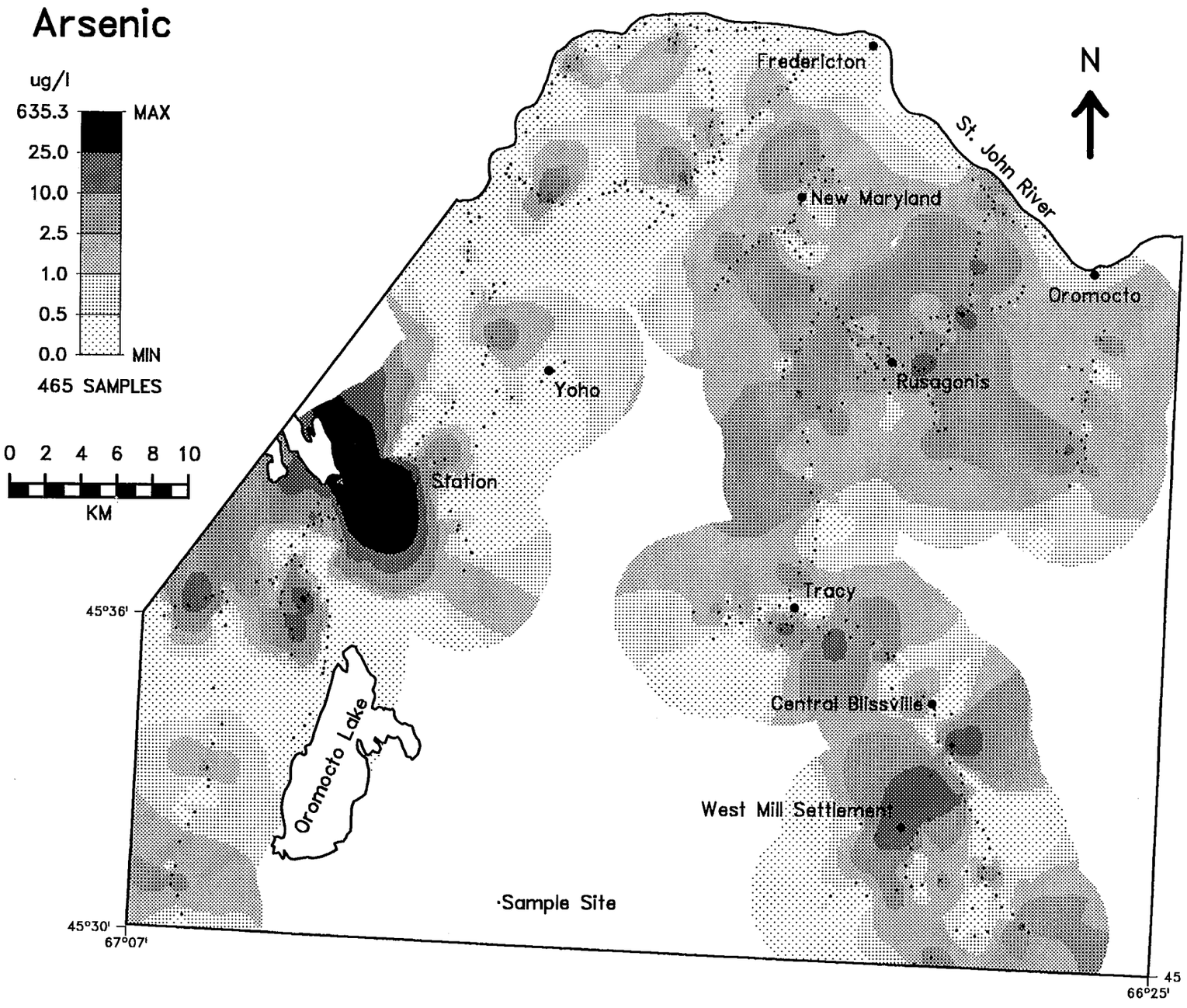
(Elements and Parameters Presented in Alphabetical Order)


Aluminum
ug/l
741 MAX
111
52
24
10
10 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Oromocto Lake
West Mill
Sample Site
45°36'
45°30'
67°07'
45
66°25'

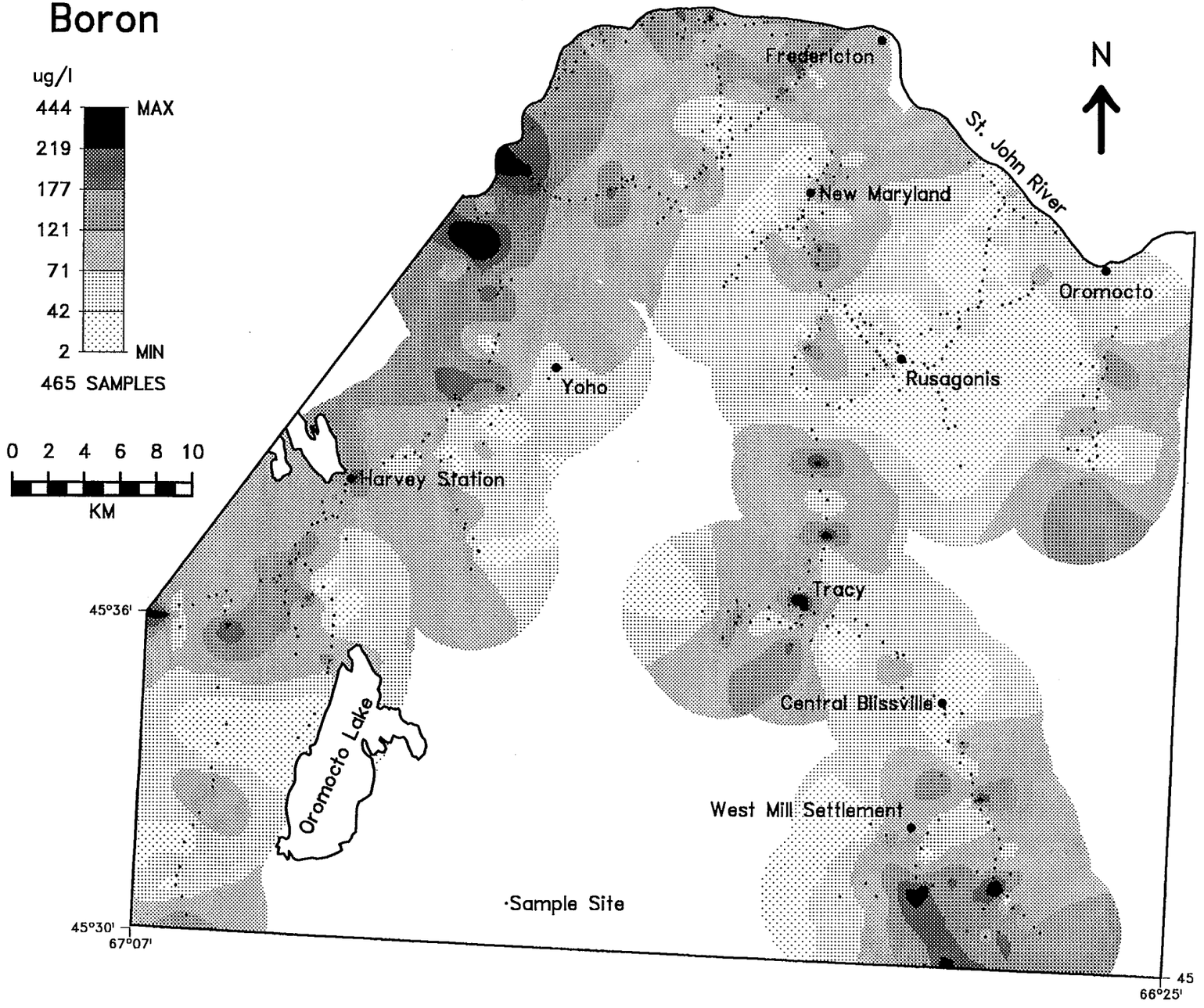
A1


Alkalinity
mg/l
381.1 MAX
206.6
185.3
147.8
111.7
73.1
4.8 MIN
463 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

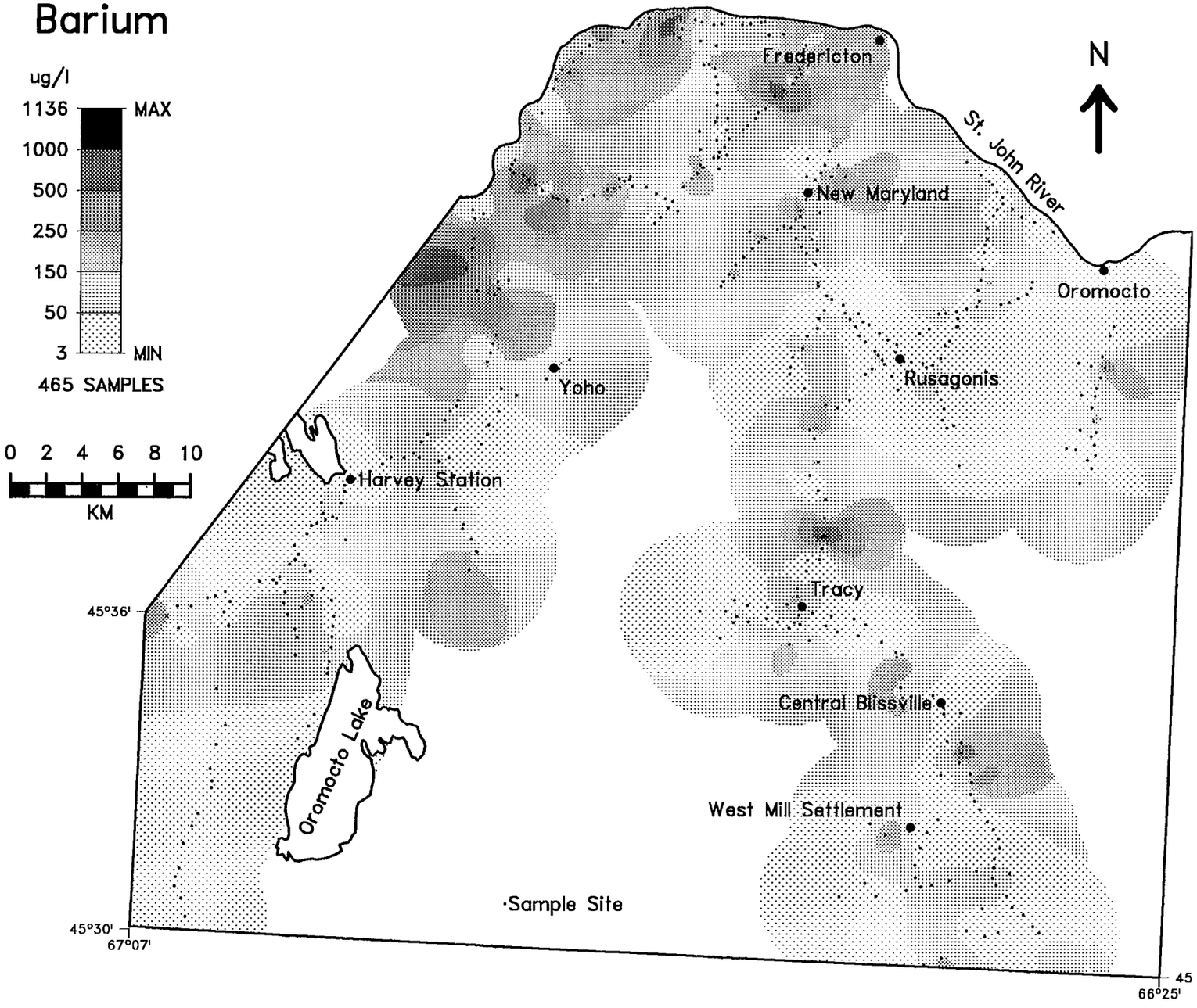
Alk


Arsenic
ug/l
635.3 MAX
25.0
10.0
2.5
1.0
0.5
0.0 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Station
Tracy
Central Bilssville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
66°25'
45

As


Boron
ug/l
444 MAX
219
177
121
71
42
2 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
·Sample Site
45°36'
45°30'
67°07'
45
66°25'

B


Barium
ug/l
1136 MAX
1000
500
250
150
50
3 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
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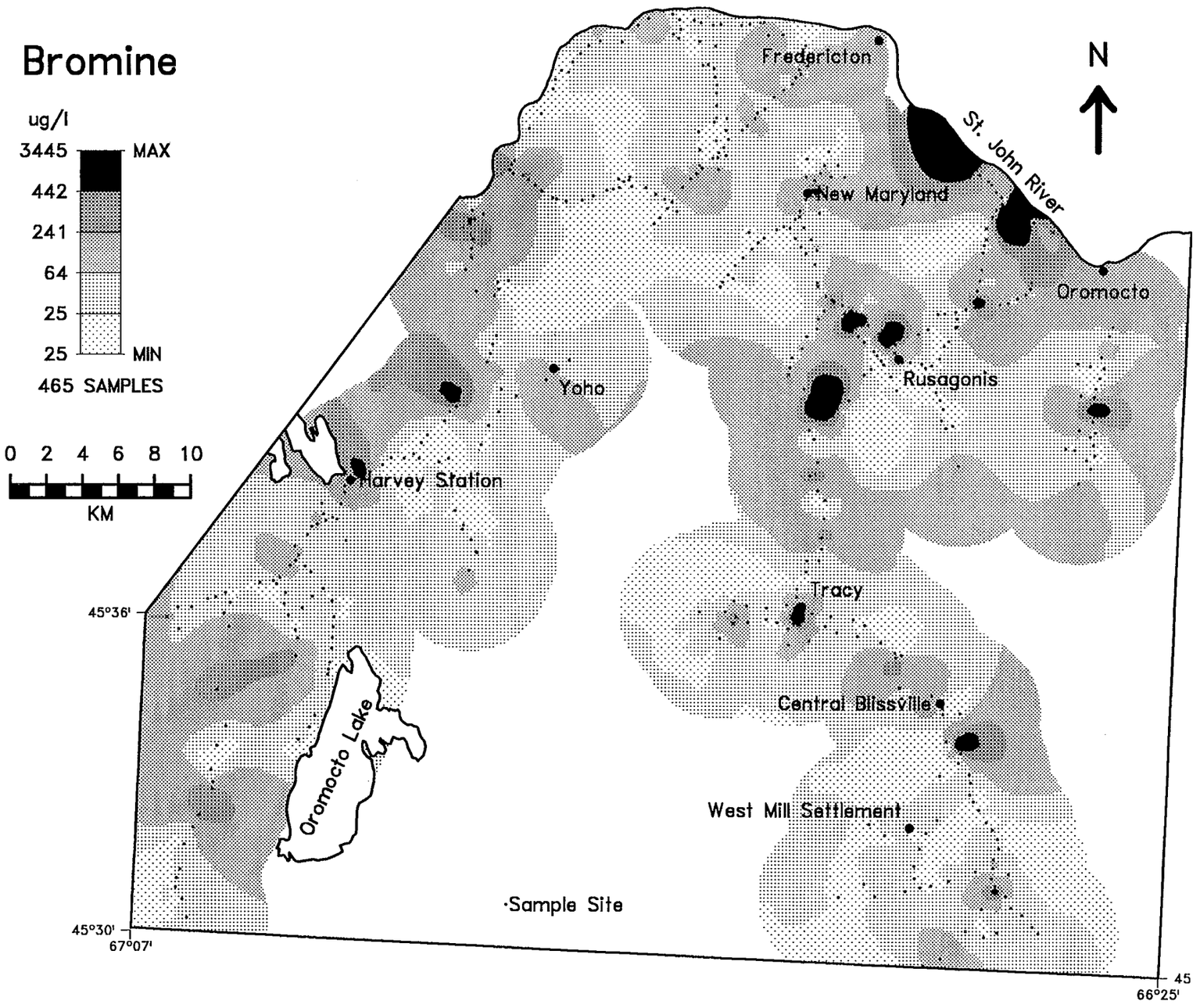
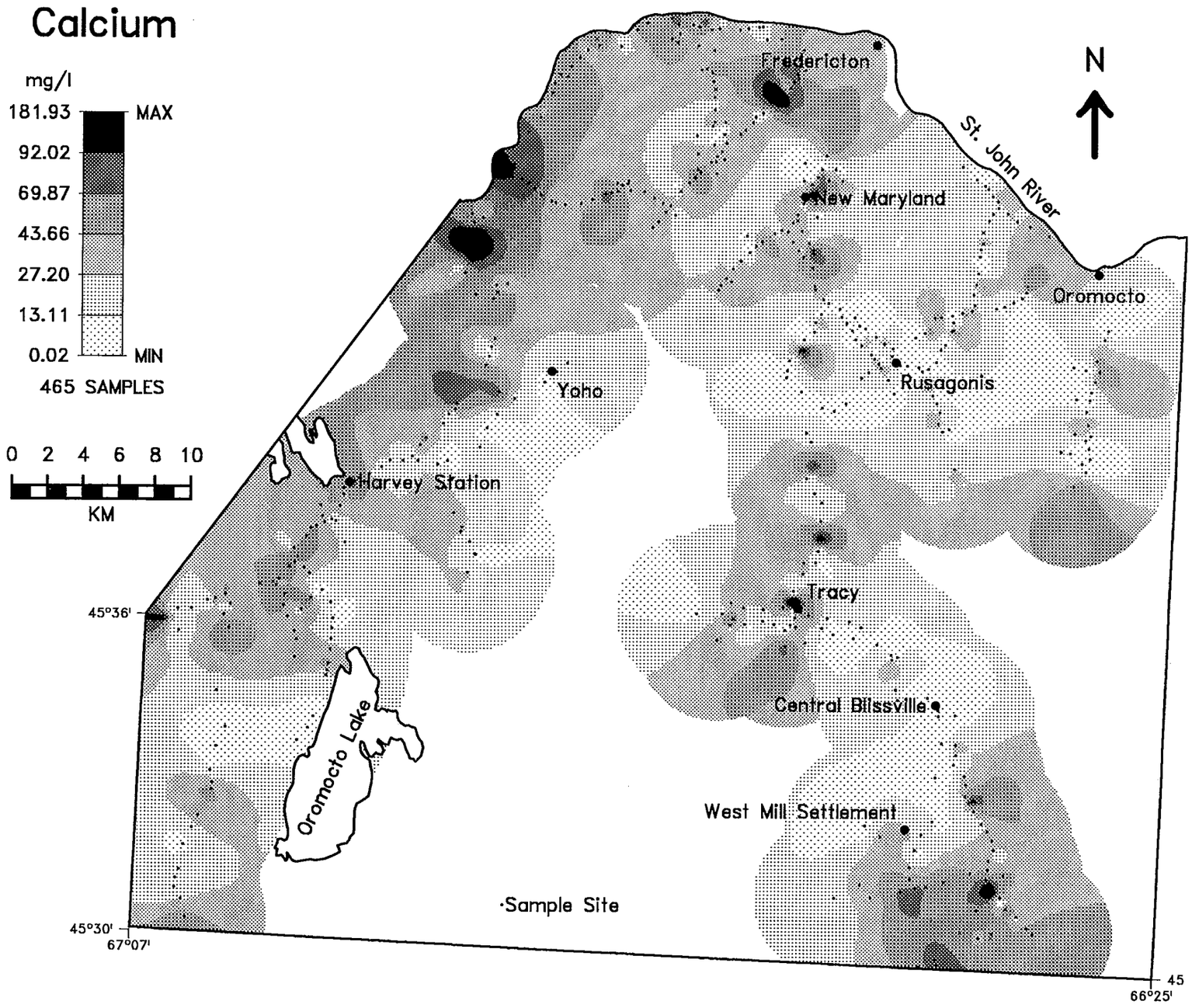
45°30'
67°07'
45
66°25'

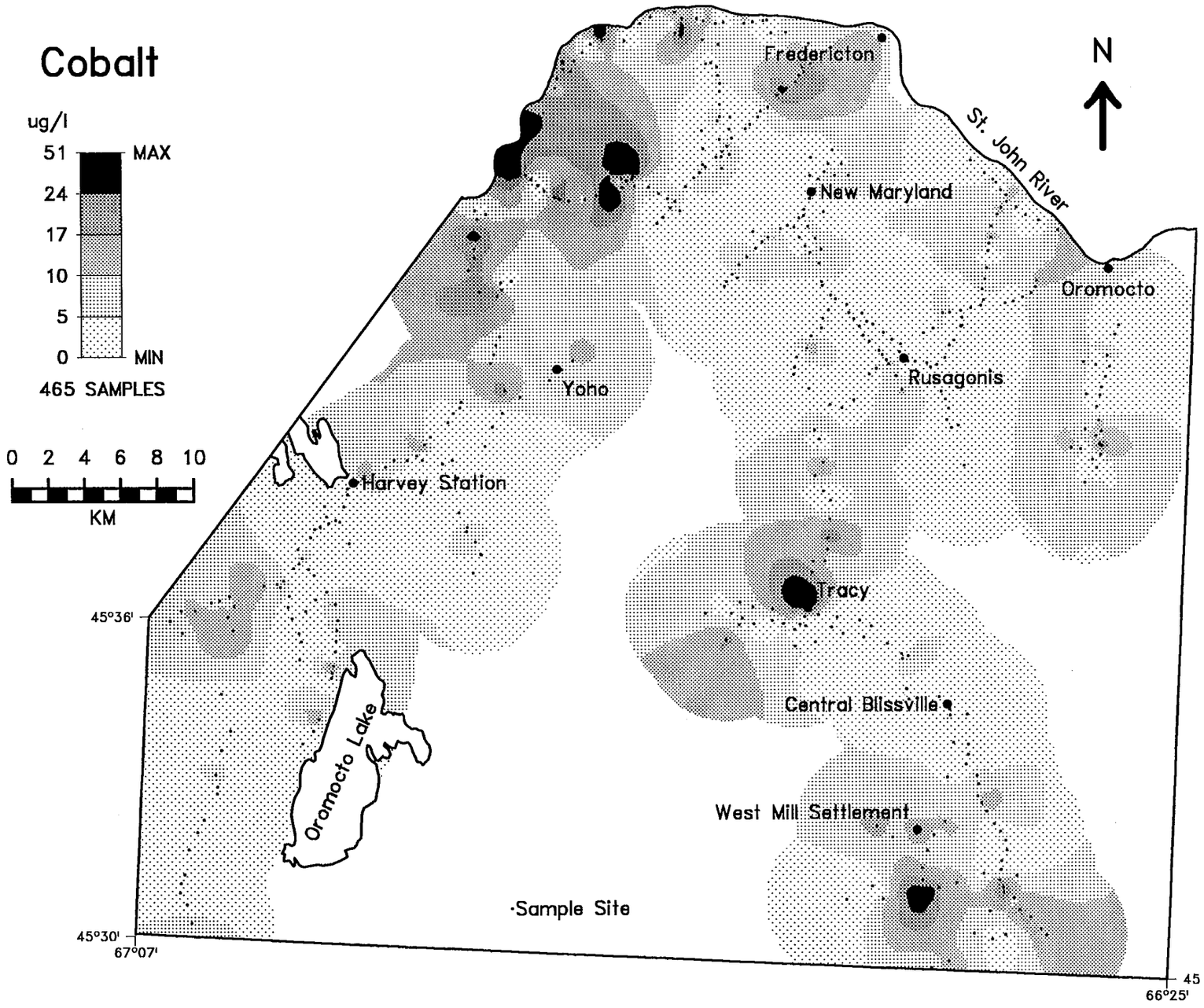
Ba


Bromine
ug/l
3445 MAX
442
241
64
25
25 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
66°25'
45

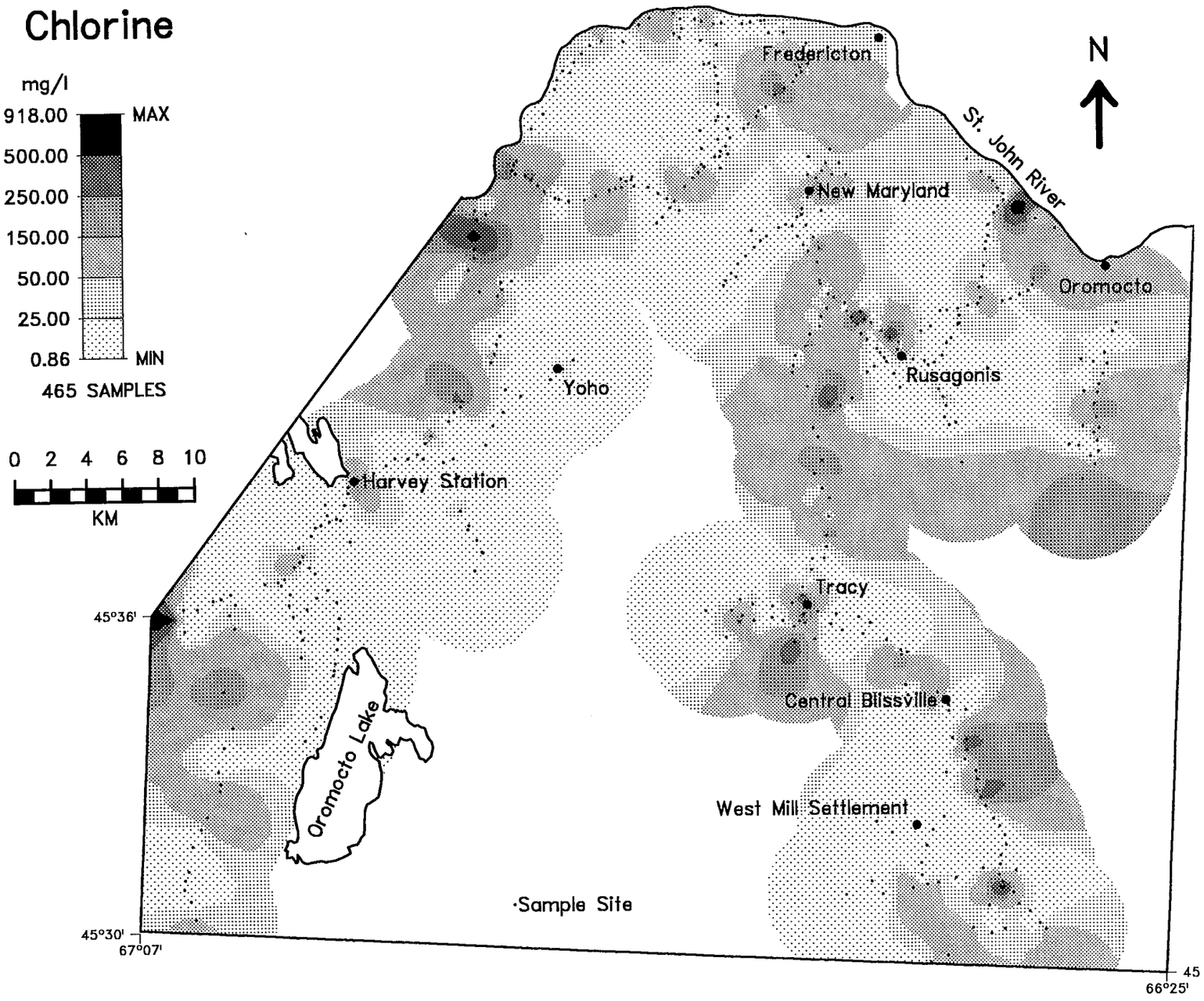
Br


Calcium
mg/l
181.93 MAX
92.02
69.87
43.66
27.20
13.11
0.02 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Bilssville
Oromocto Lake
West Mill Settlement
·Sample Site
45°36'
45°30'
67°07'
45
66°25'

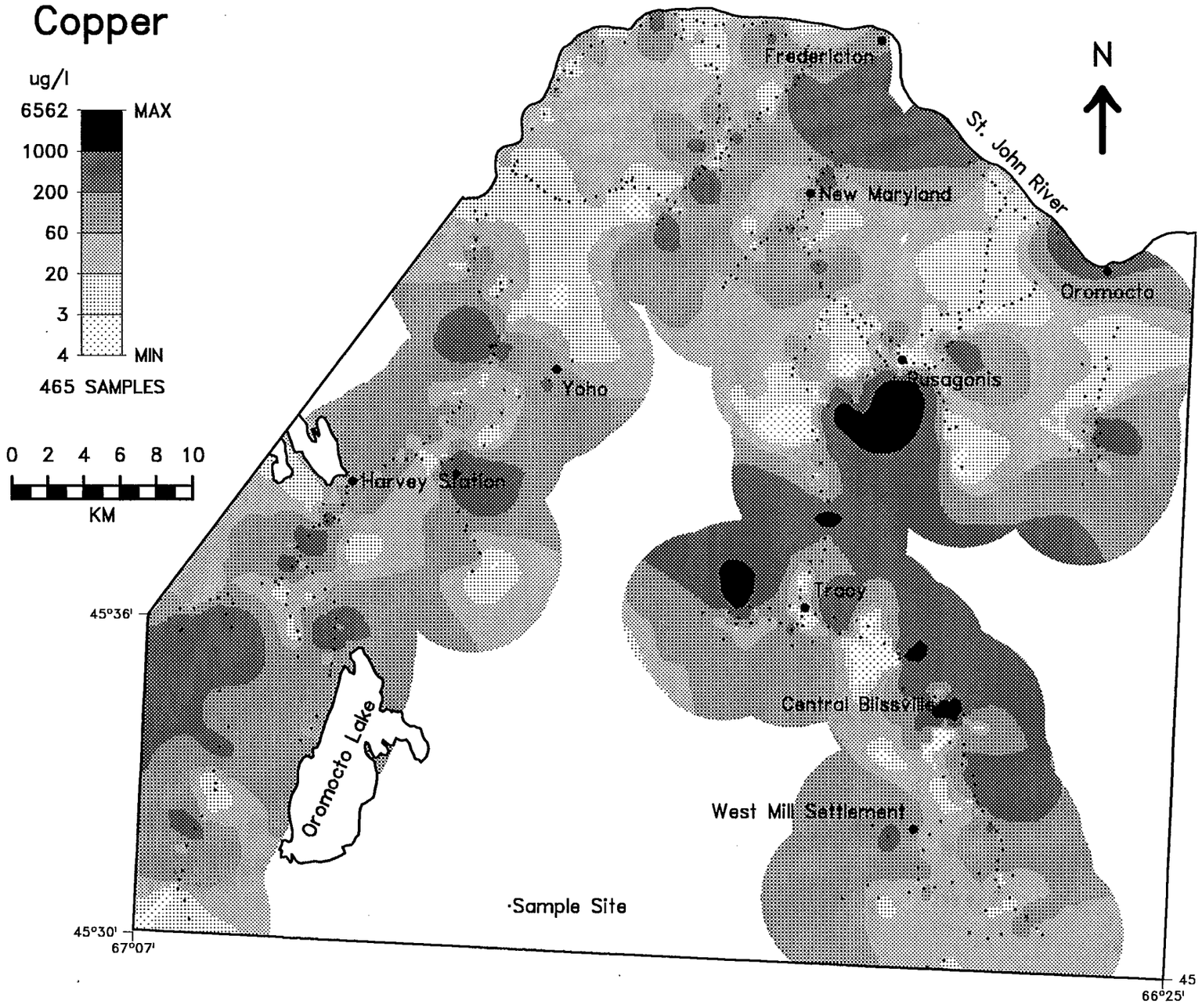
Ca


Cobalt
ug/l
51 MAX
24
17
10
5
0 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
45°36'
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°30'
67°07'
45
66°25'

Co


Chlorine
mg/l
918.00 MAX
500.00
250.00
150.00
50.00
25.00
0.86 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
45°36'
Central Blissville
Oromocto Lake
West Mill Settlement
·Sample Site
45°30'
67°07'
45
66°25'

C1


Copper
ug/l
6562
1000
200
60
20
3
4
MAX
MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Lusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
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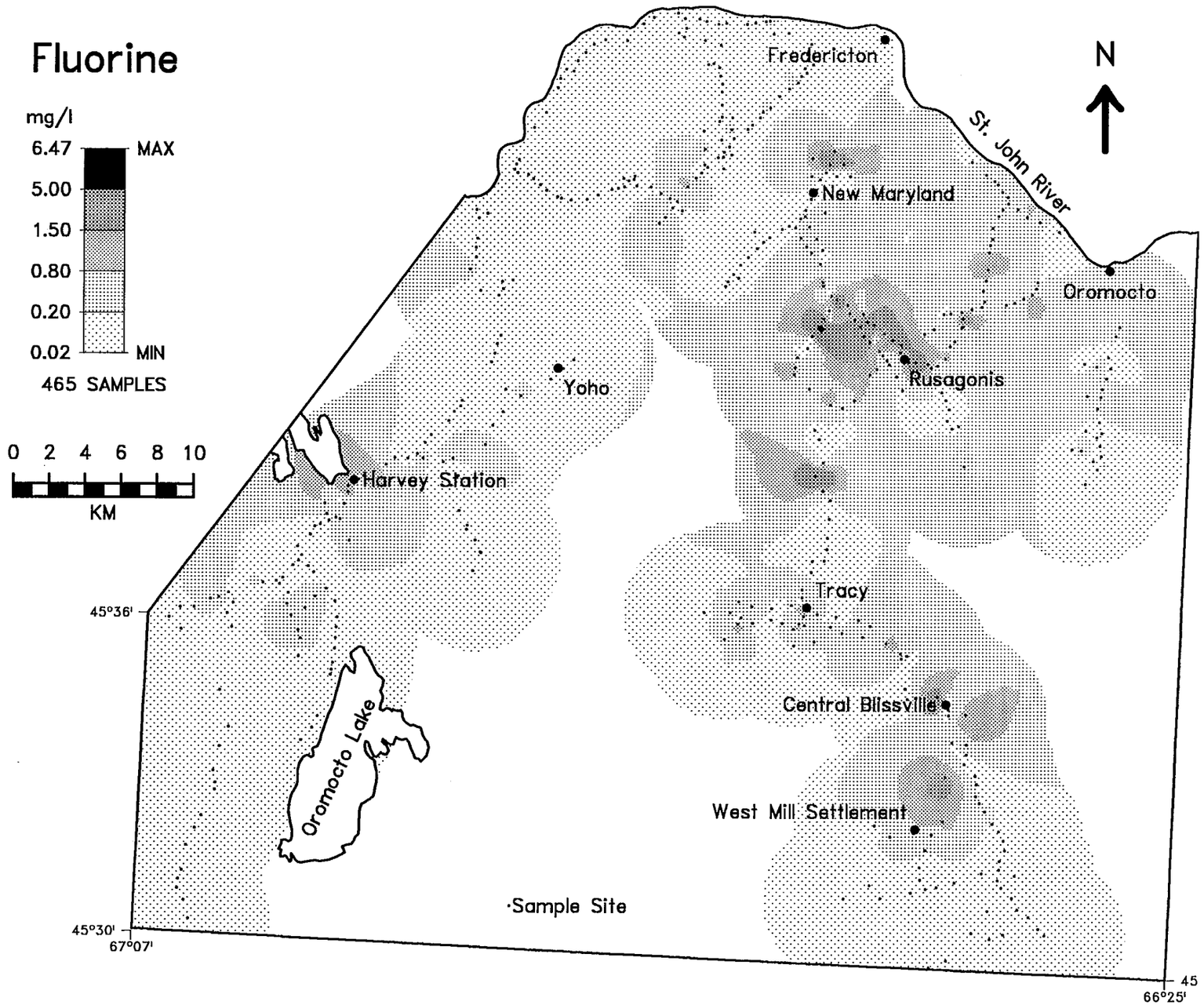
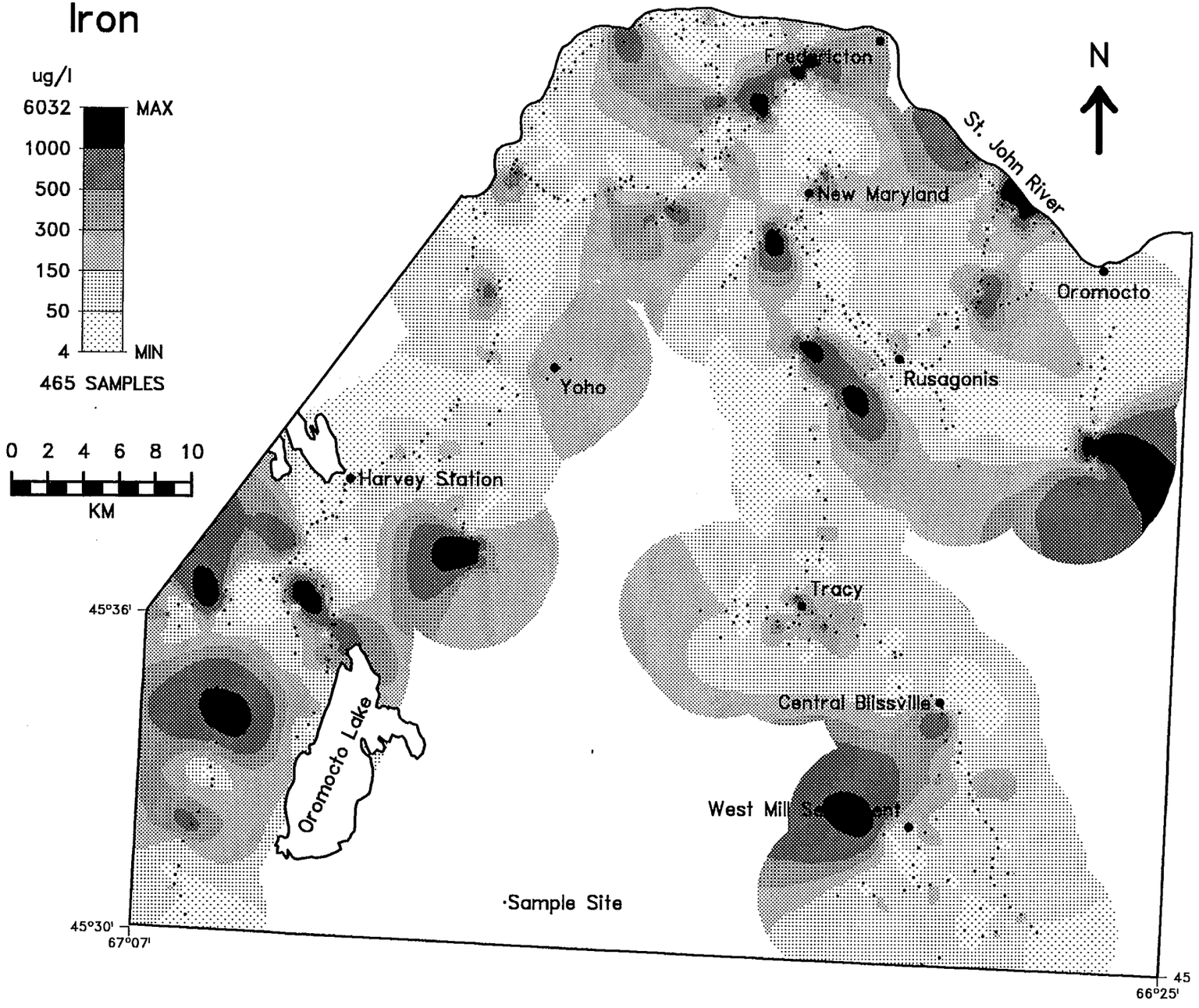
45°30'
67°07'
45
66°25'

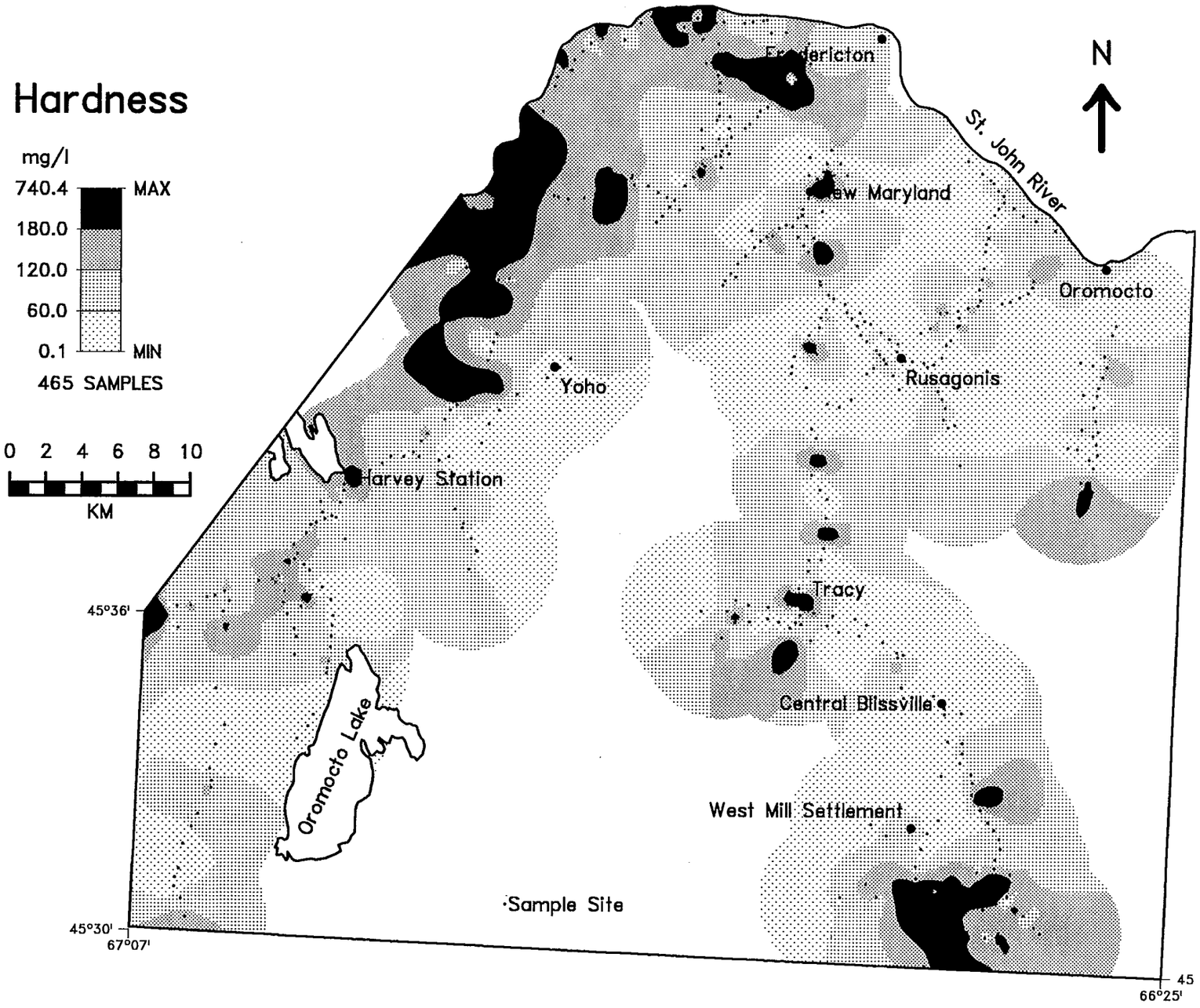
Cu


Fluorine
mg/l
6.47
MAX
5.00
1.50
0.80
0.20
0.02
MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

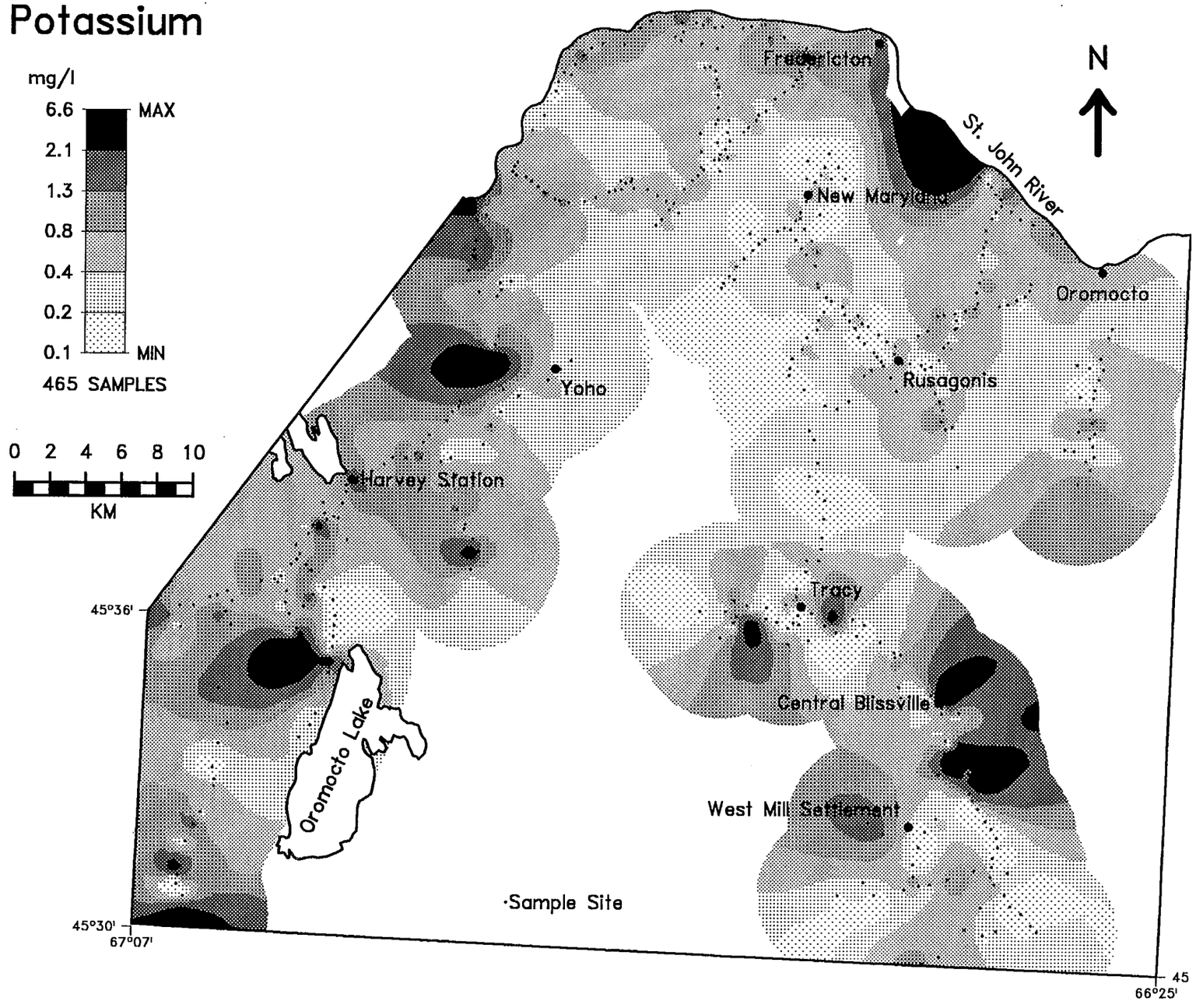
F


Iron
ug/l
6032 MAX
1000
500
300
150
50
4 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Bilssville
Oromocto Lake
West Mill
Sample Site
45°36'
45°30'
67°07'
45
66°25'

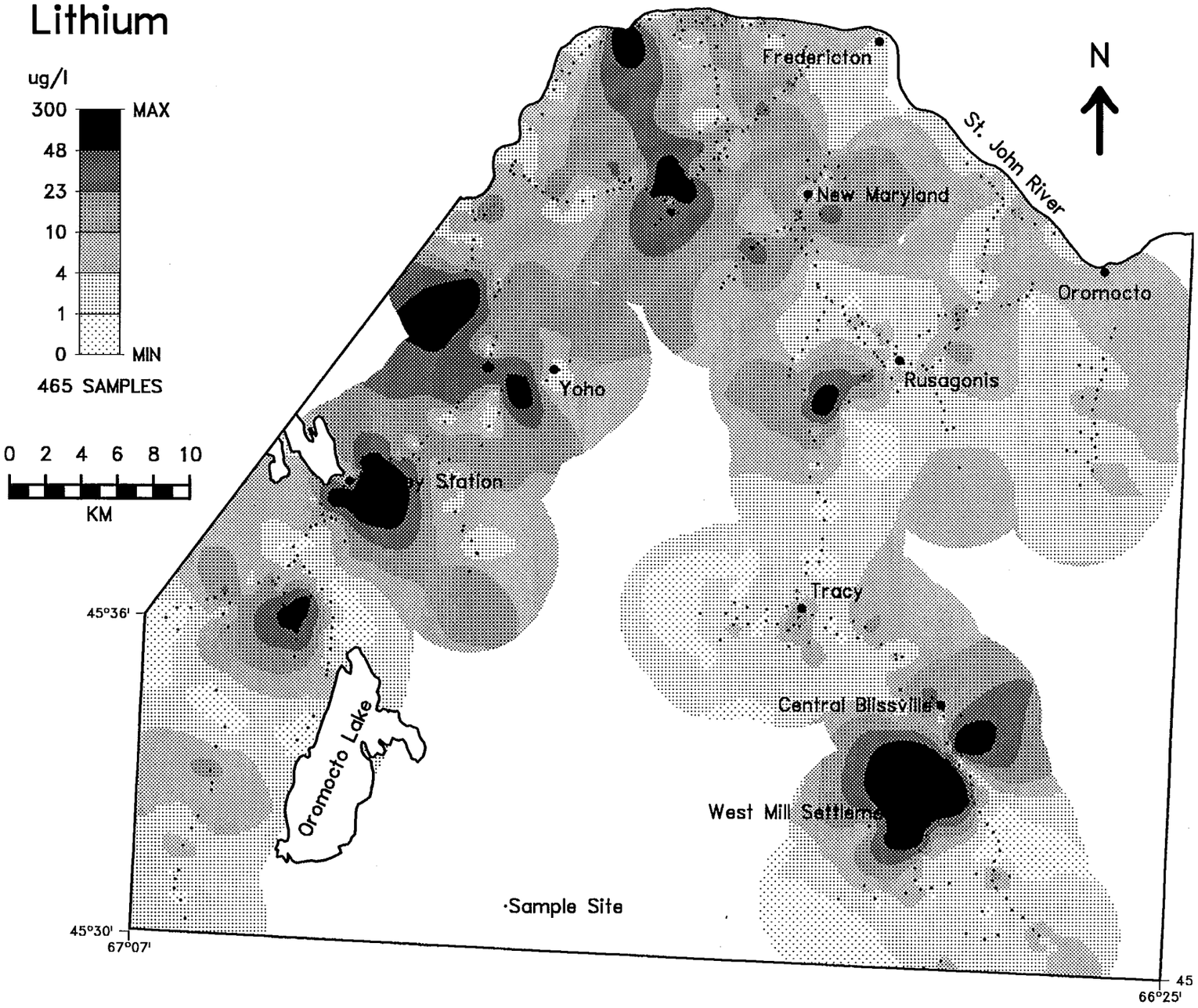
Fe

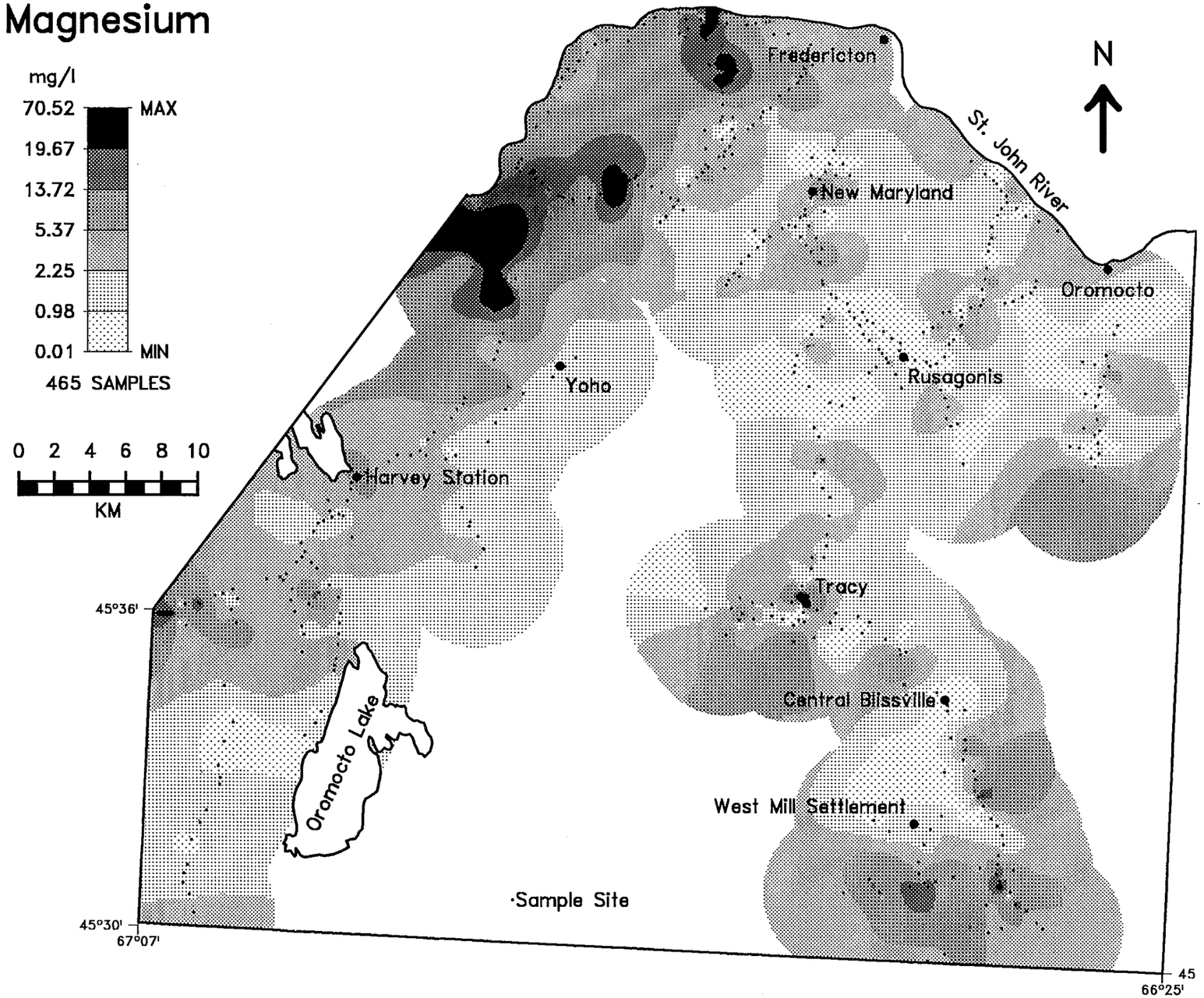

Hardness
mg/l
740.4 MAX
180.0
120.0
60.0
0.1 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
St. John River
Fredericton
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
66°25'
45

Hardness


Potassium
mg/l
6.6 MAX
2.1
1.3
0.8
0.4
0.2
0.1 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
·Sample Site
45°36'
45°30'
67°07'
45
66°25'

K


Lithium
ug/l
300 MAX
48
23
10
4
1
0 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Tracy
Central Blissville
Oromocto Lake
·Sample Site
45°36'
45°30'
67°07'
66°25'


Magnesium
mg/l
70.52 MAX
19.67
13.72
5.37
2.25
0.98
0.01 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Bilssville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
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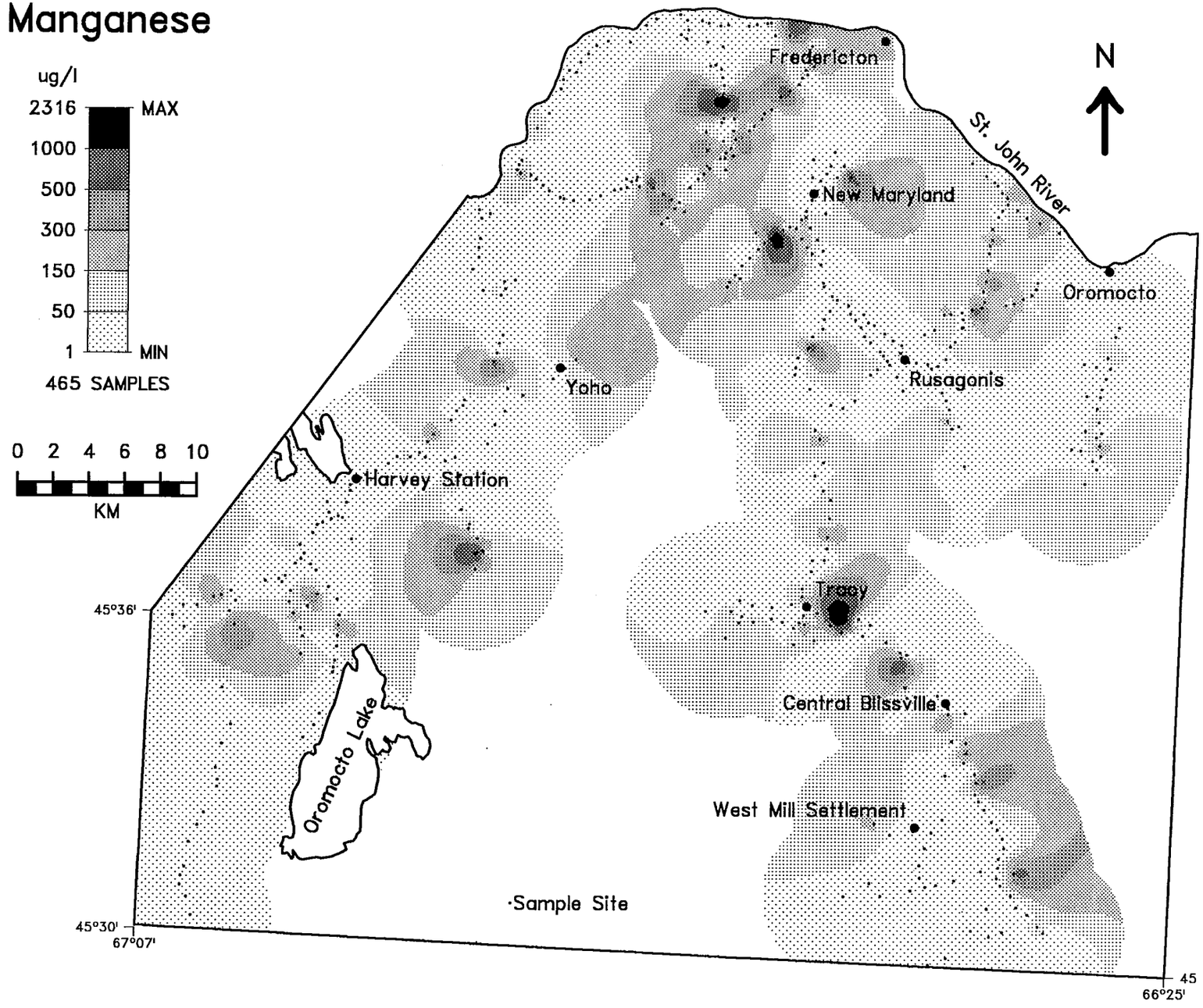
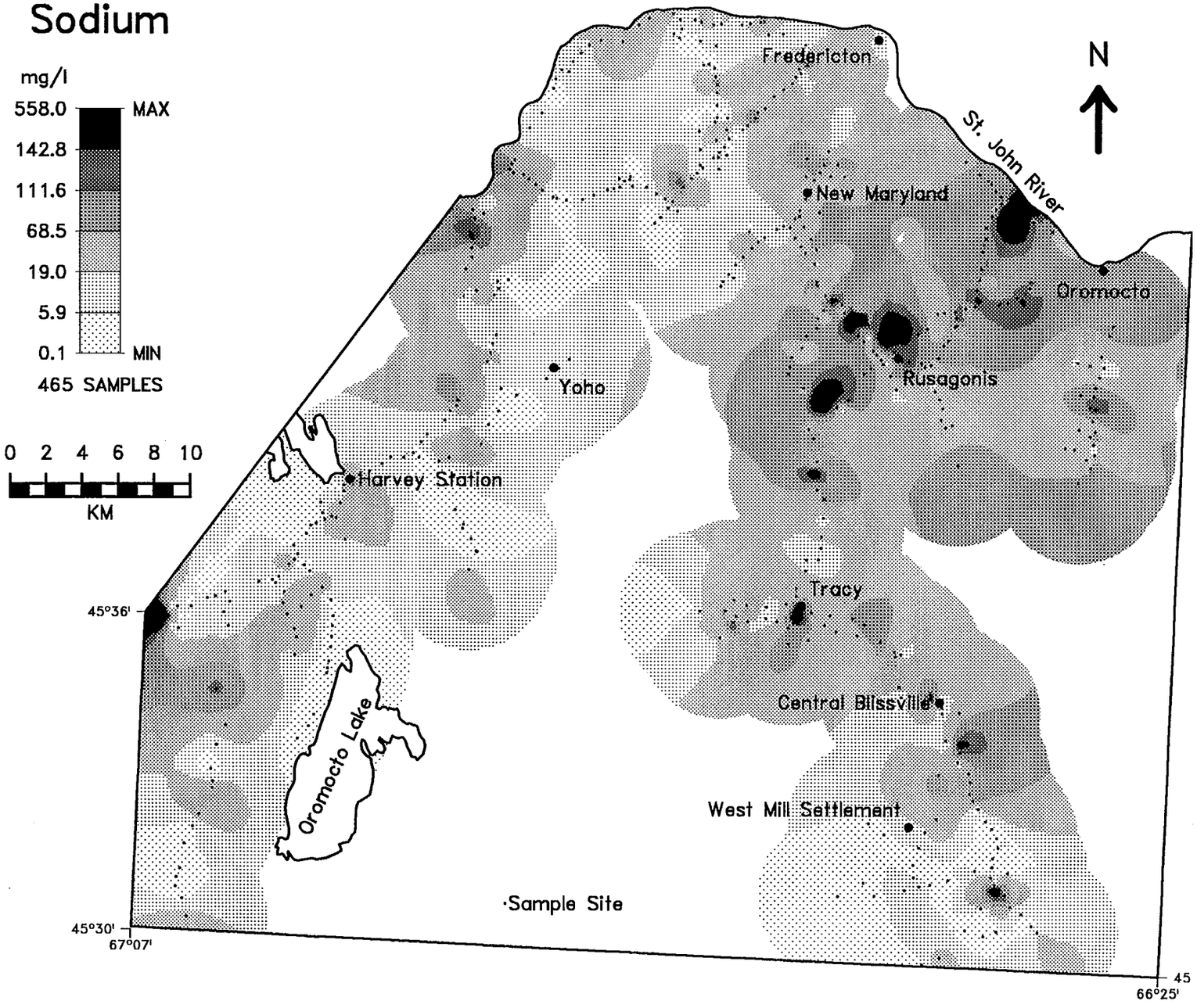
67°07'
45
66°25'

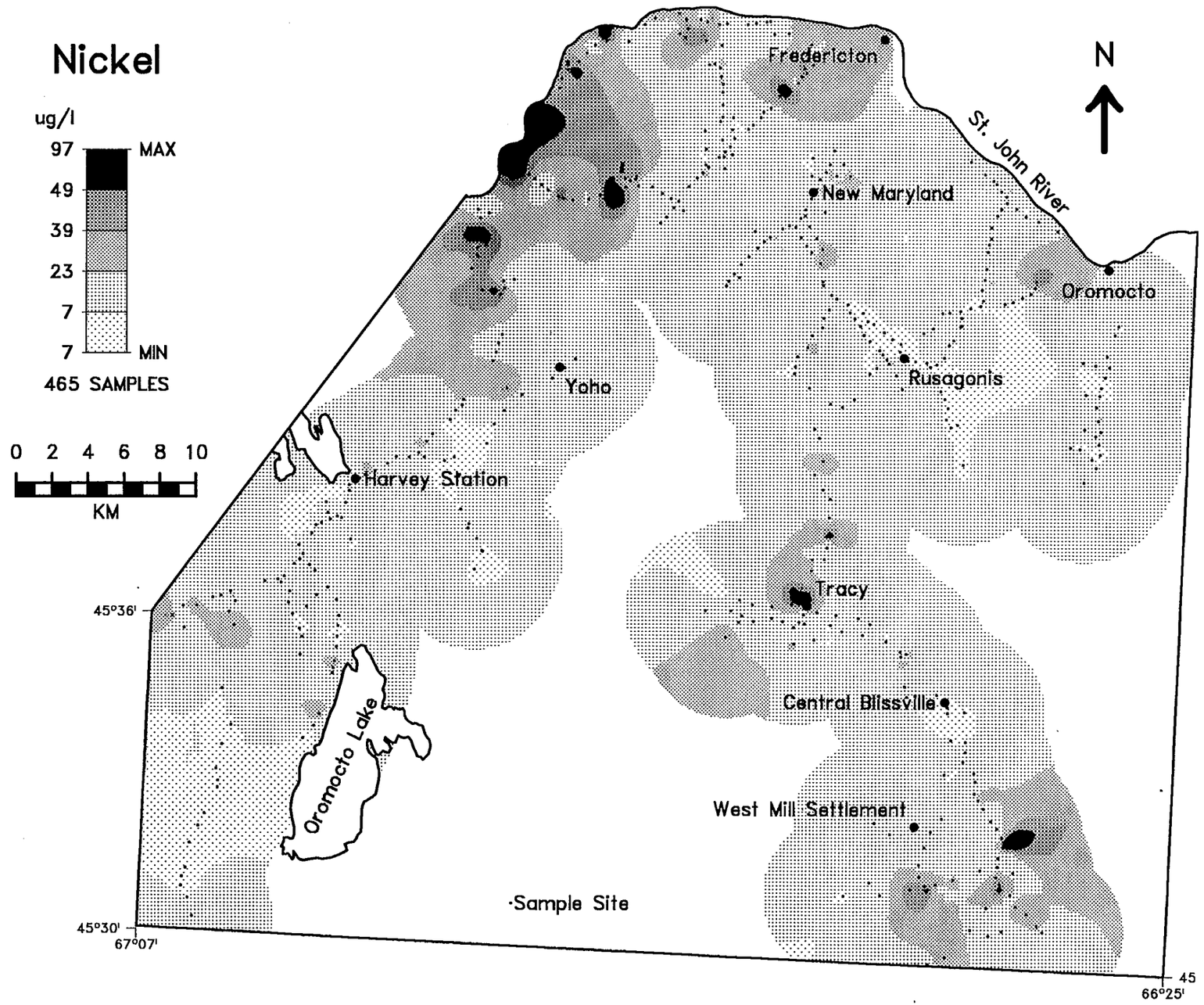
Mg


Manganese
ug/l
2316 MAX
1000
500
300
150
50
1 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

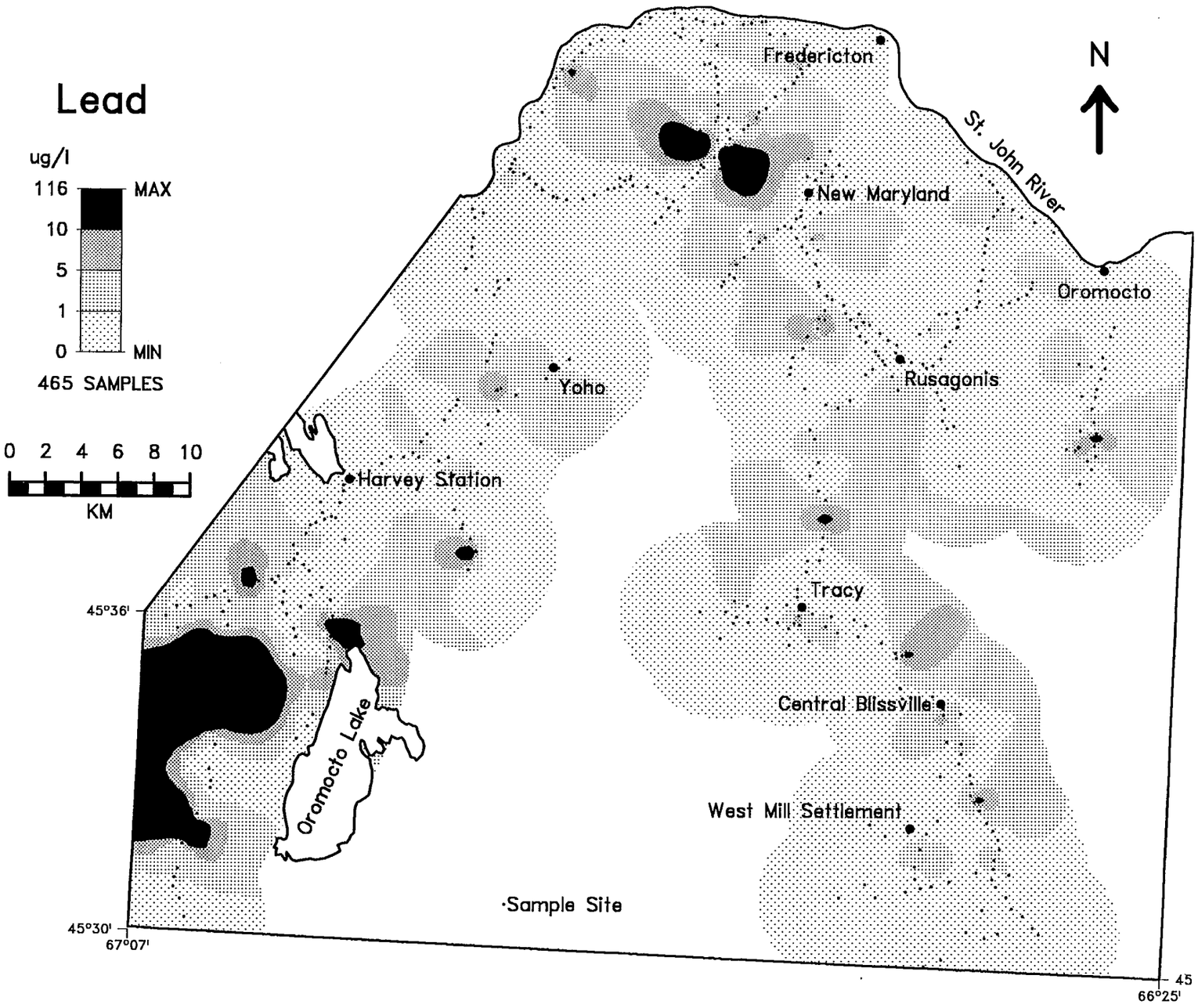
Mn


Sodium
mg/l
558.0 MAX
142.8
111.6
68.5
19.0
5.9
0.1 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

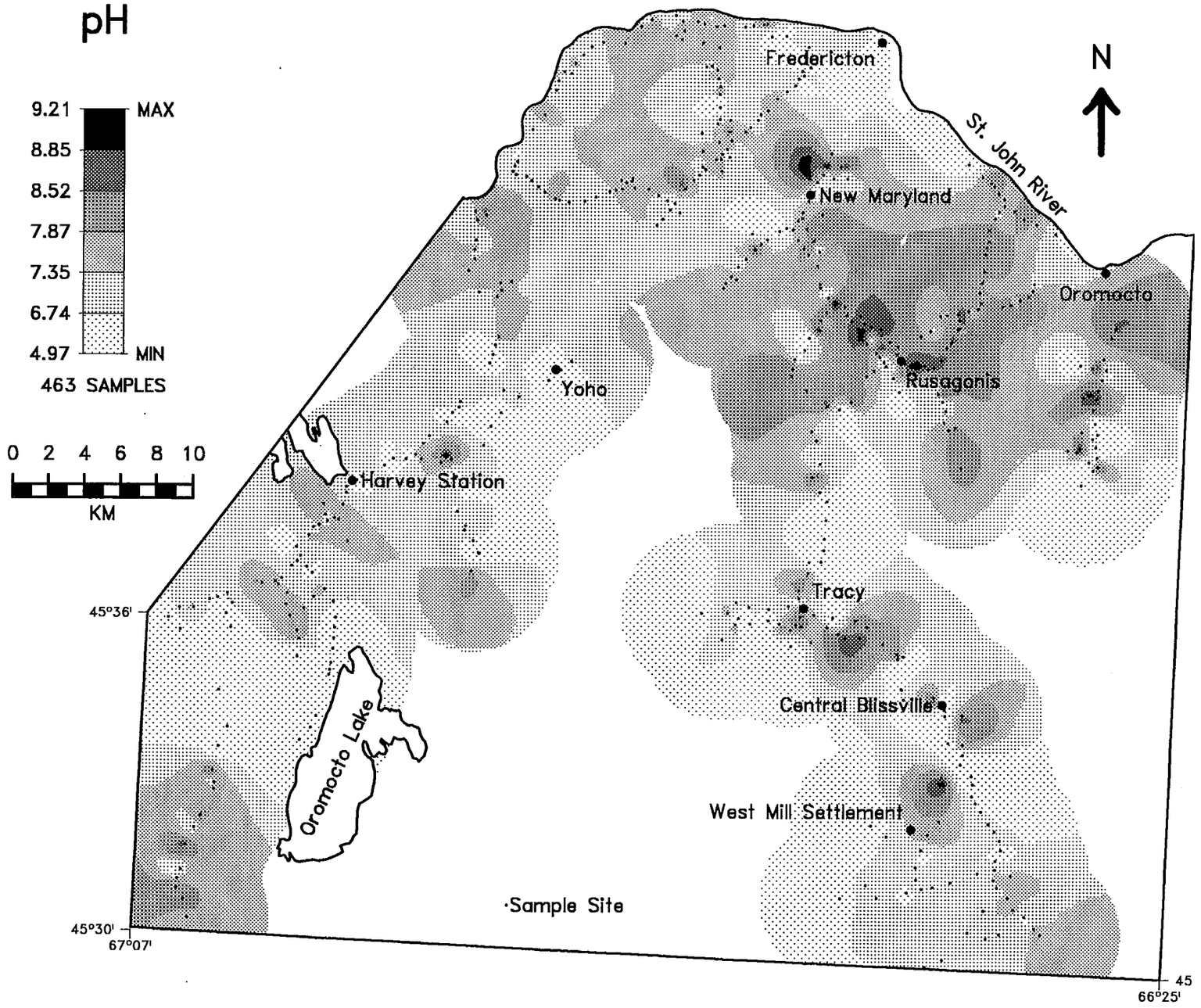
Na


Nickel
ug/l
97 MAX
49
39
23
7
7 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

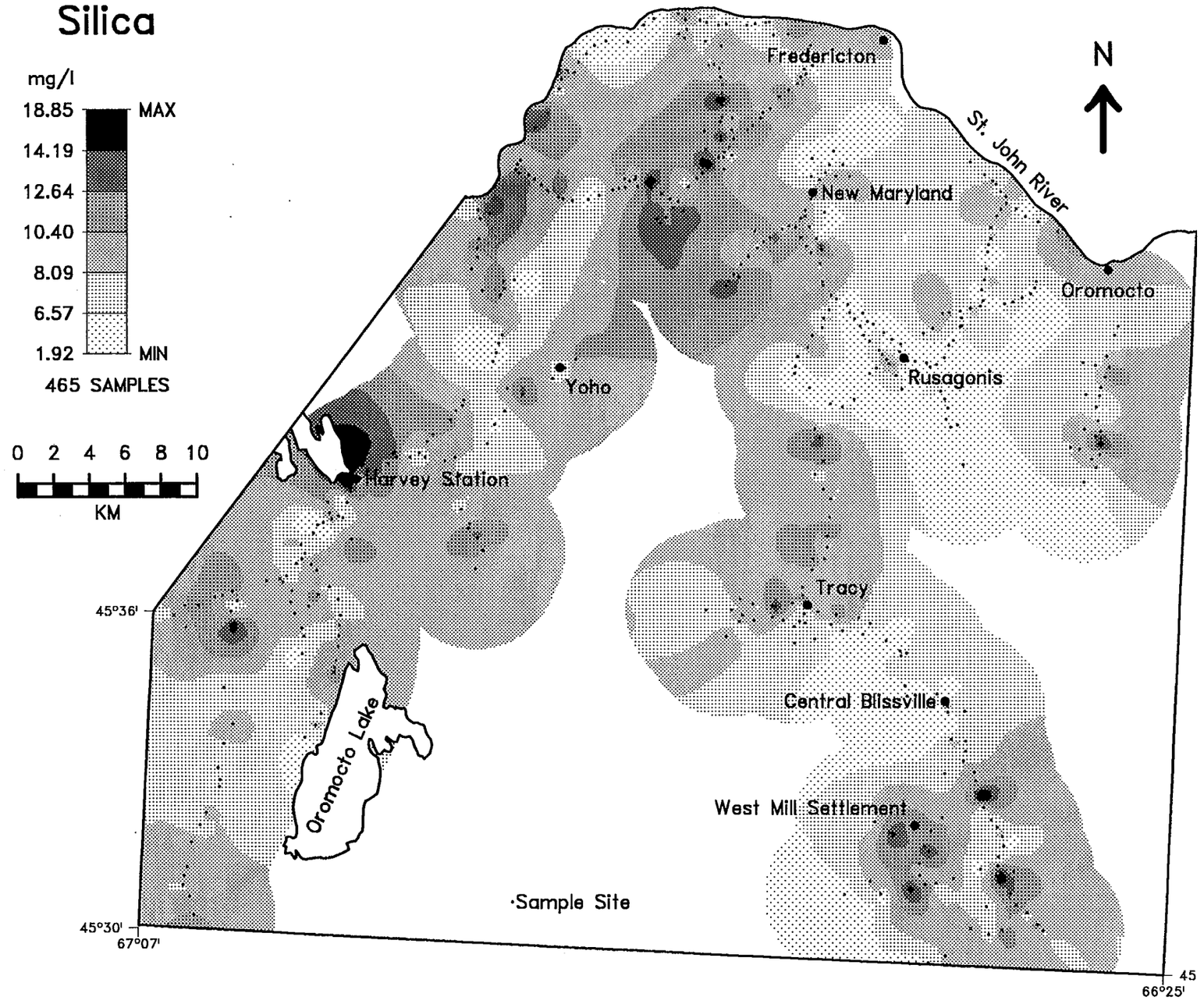
Ni


Lead
ug/l
116 MAX
10
5
1
0 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

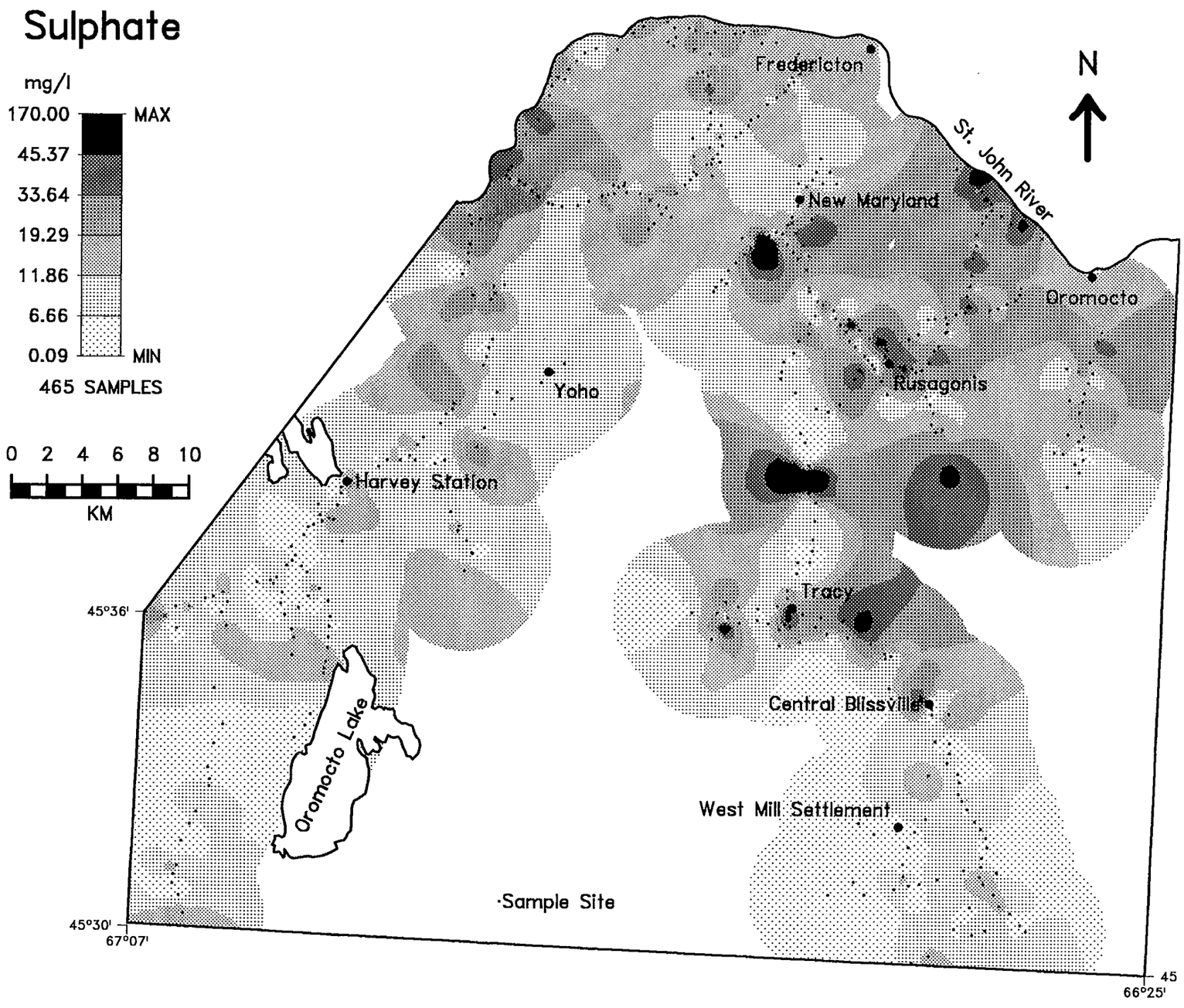
Pb


pH
9.21
8.85
8.52
7.87
7.35
6.74
4.97
MAX
MIN
463 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
66°25'
45

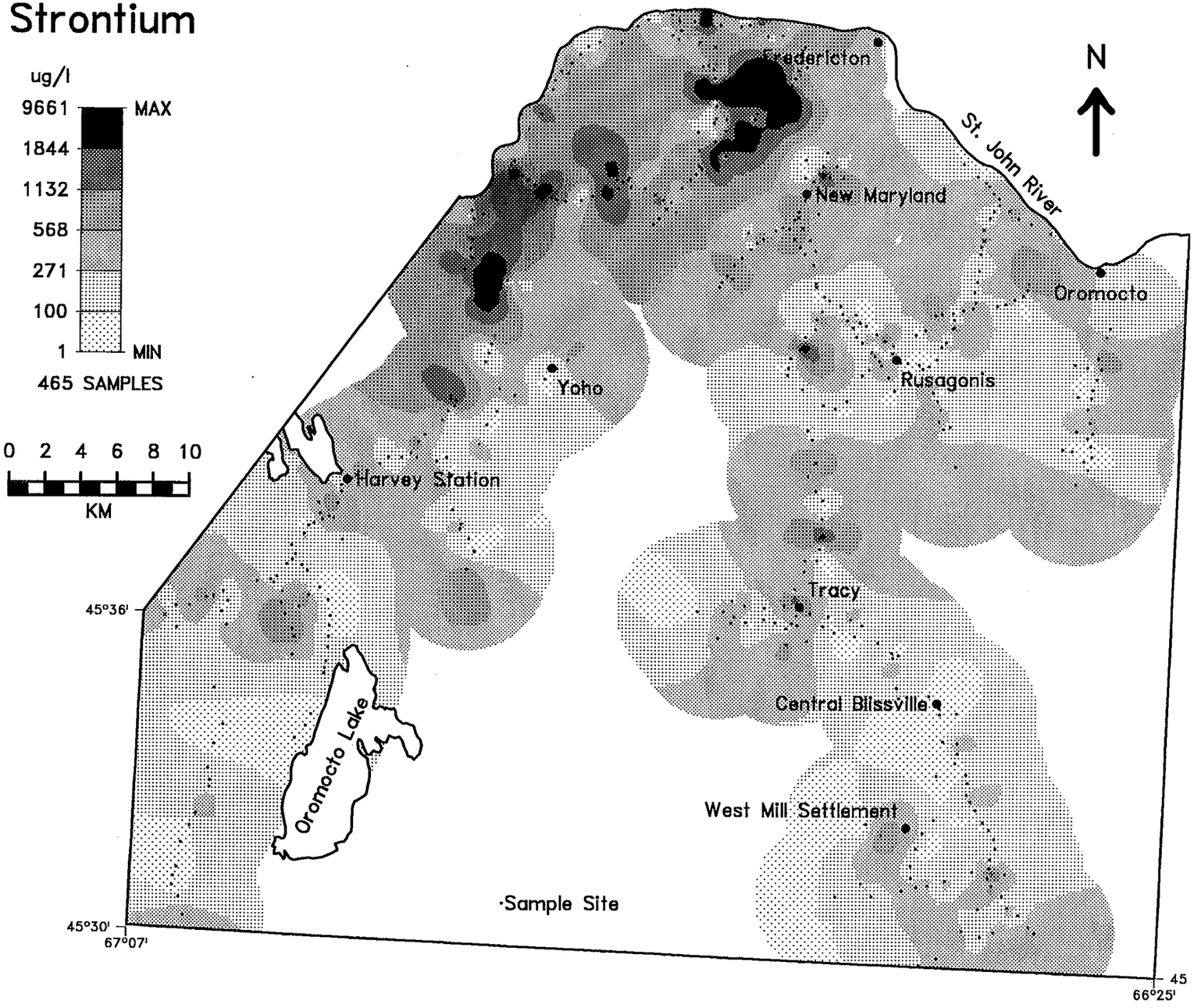
pH


Silica
mg/l
18.85 MAX
14.19
12.64
10.40
8.09
6.57
1.92 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

$SiO_2$

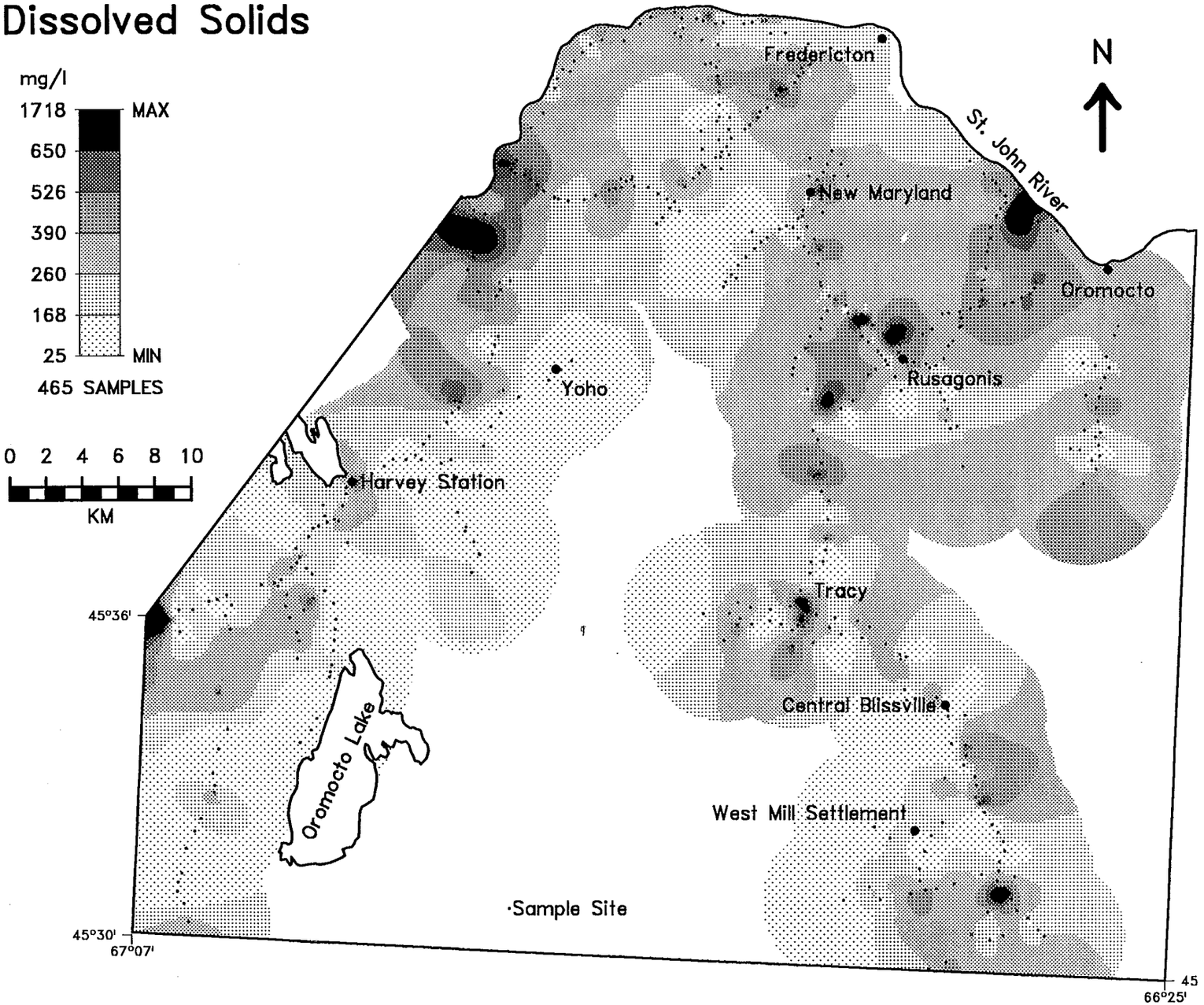

Sulphate
mg/l
170.00 MAX
45.37
33.64
19.29
11.86
6.66
0.09 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

$SO_4$

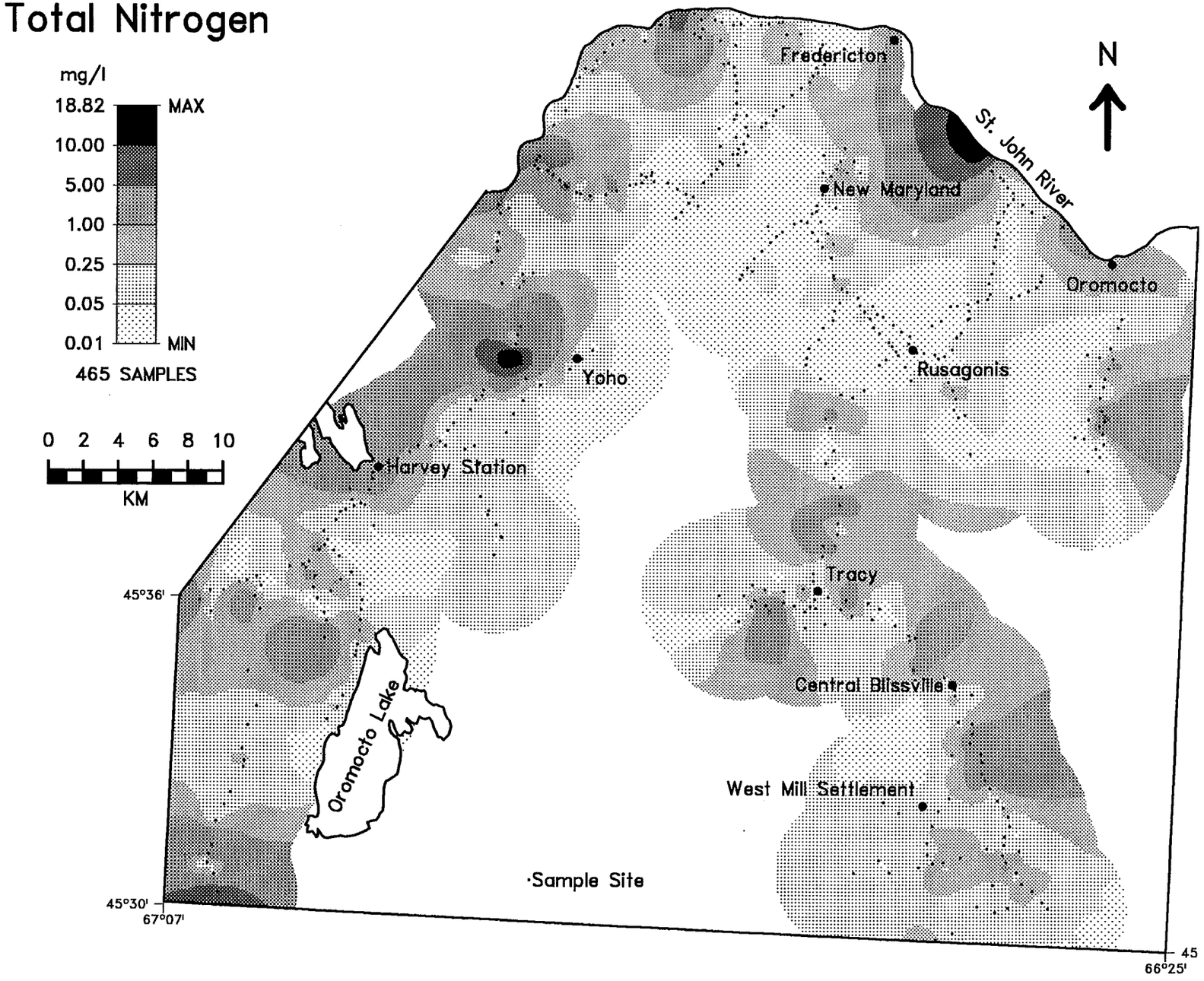

Strontium
ug/l
9661 MAX
1844
1132
568
271
100
1 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

Sr

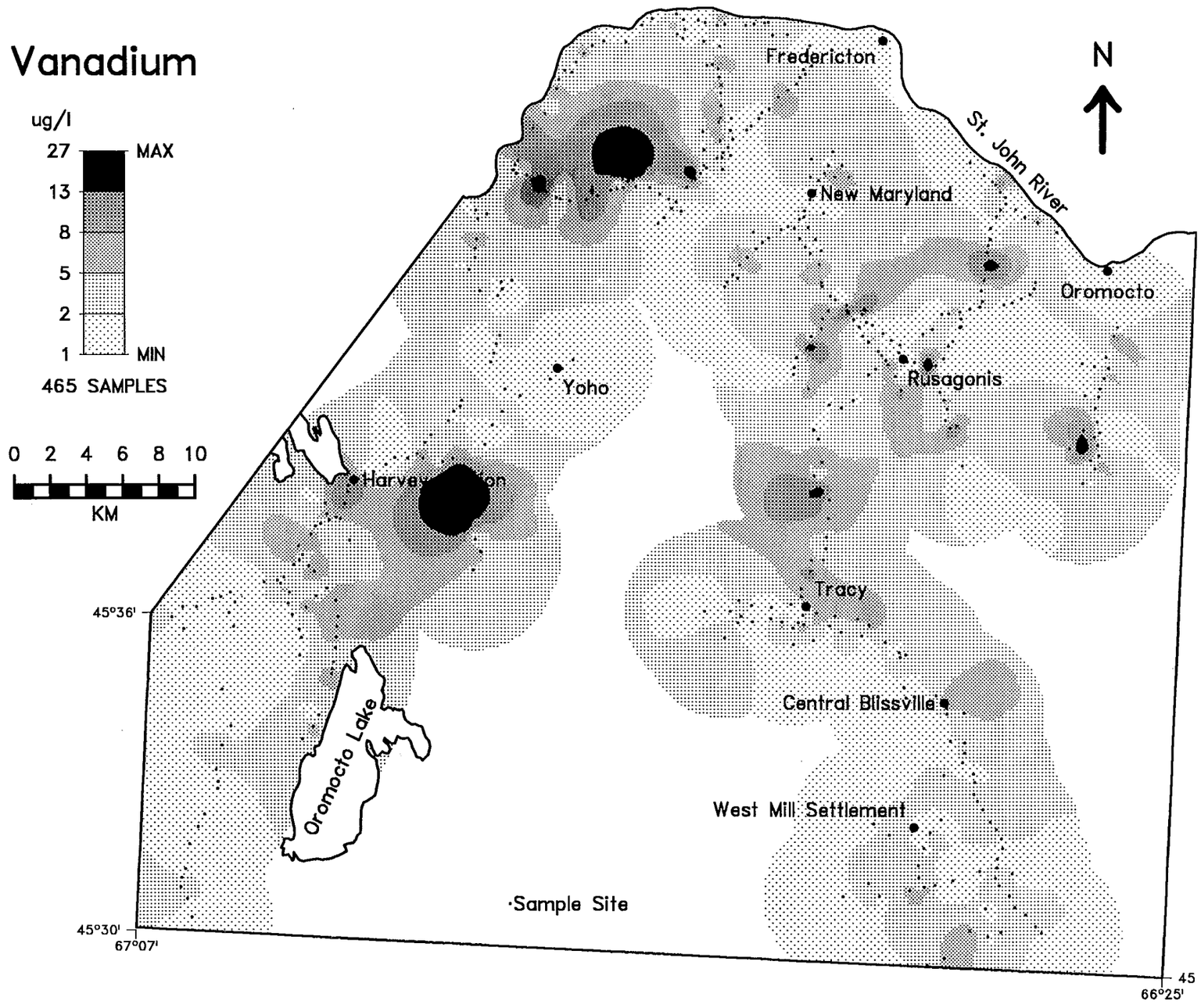
# Total Dissolved Solids



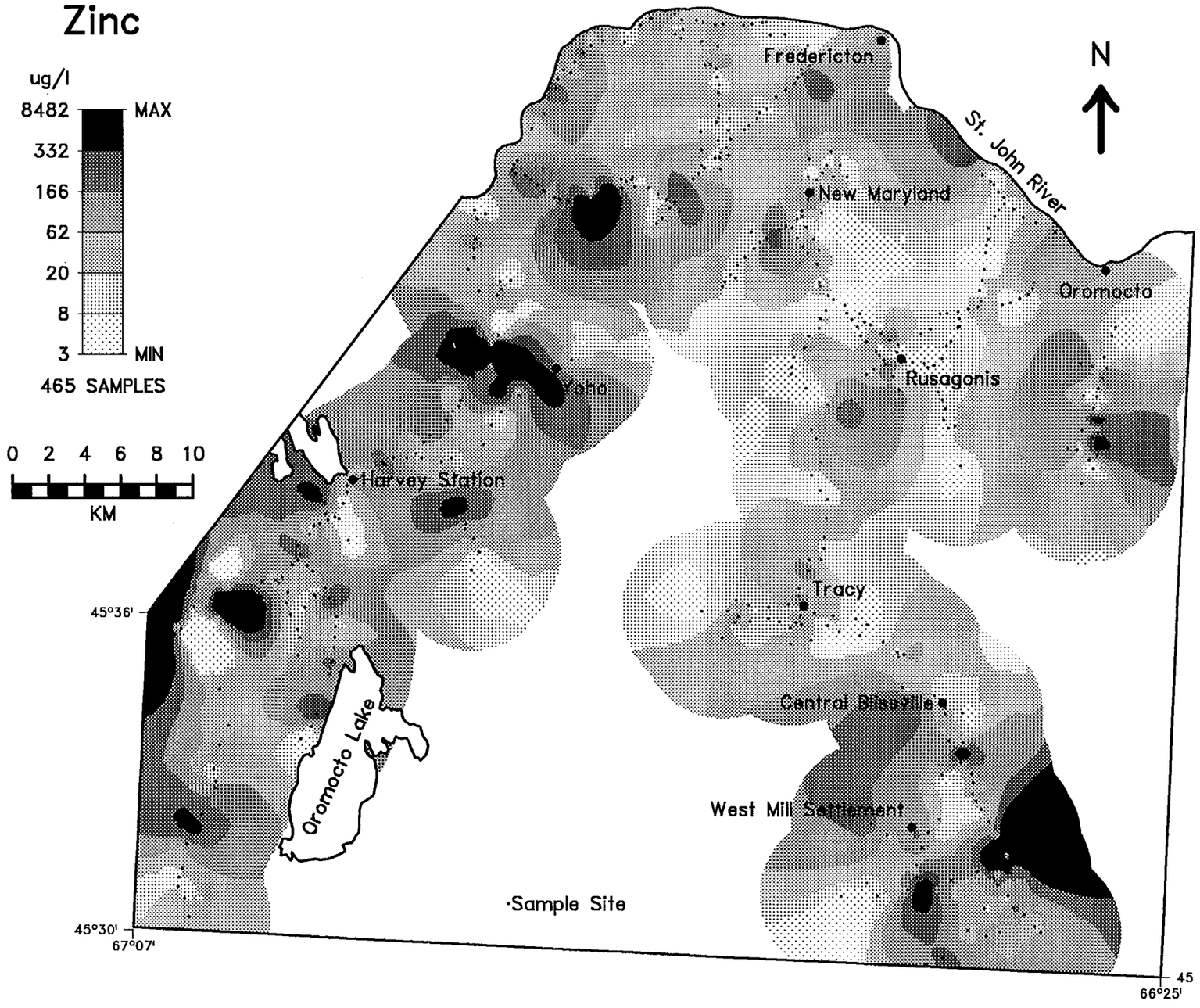

TDS


Total Nitrogen
mg/l
18.82 MAX
10.00
5.00
1.00
0.25
0.05
0.01 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
66°25'
45

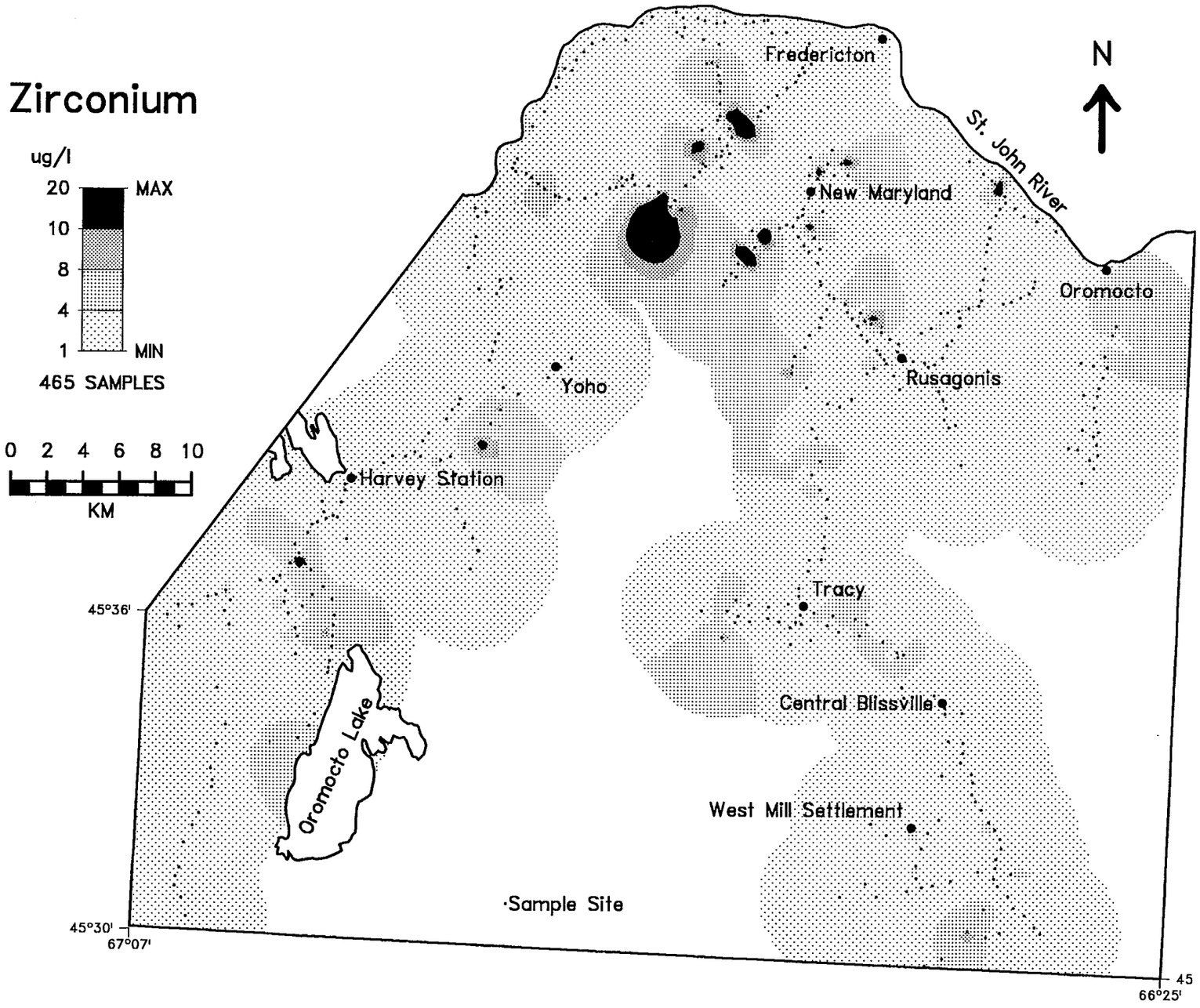
Total N


Vanadium
ug/l
27 MAX
13
8
5
2
1 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

V


Zinc
ug/l
8482 MAX
332
166
62
20
8
3 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Rusagonis
Yoho
Harvey Station
Tracy
Central Blissville
Oromocto Lake
West Mill Settlement
Sample Site
45°36'
45°30'
67°07'
45
66°25'

Zn


Zirconium
ug/l
20 MAX
10
8
4
1 MIN
465 SAMPLES
0 2 4 6 8 10
KM
N
Fredericton
St. John River
New Maryland
Oromocto
Yoho
Rusagonis
Harvey Station
Tracy
45°36'
Oromocto Lake
Central Blissville
West Mill Settlement
Sample Site
45°30'
67°07'
45
66°25'

Zr